

## Non-paper No. 4

2/10/09 @ 14:00

### CONTACT GROUP ON ENHANCED ACTION ON DEVELOPMENT AND TRANSFER OF TECHNOLOGY

#### Further consolidation of text and concepts contained within the reordering and consolidation of text in the revised negotiating text (FCCC/AWGLCA/2009/INF.2, annex V)

#### Non-paper by the co-chairs

##### Preambular paragraphs

1. Confirming that enhanced action on technology should be guided by the principles and provisions of the Convention, the principle of learning-by-doing, the best available science and the broad participation of stakeholders at national, local, and community levels,
2. Recognizing the existing framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention established under decision 4/CP.7 and enhanced under decision 3/CP.13 along with Article 4, paragraphs 1(c) and 5, and Article 11, paragraph 5,
3. Recognizing that climate change poses a serious threat to the social and economic development of all Parties, that the SIDS and LDCs are particularly vulnerable to the adverse effects of climate change and that these groups of countries will suffer disproportionately,
4. Confirming the importance of promoting and cooperating on the research, development, demonstration, deployment, transfer and diffusion of new and existing technologies for mitigation and adaptation under the Convention now, up to and beyond 2012, in order to achieve the ultimate objective of the Convention,
5. Acknowledging the need for intensive support to promote technology transfer, such as the identification of technologies to be deployed and the matching of technology owners with technology recipients in developing countries that have already taken policy measures on greenhouse gas reductions, and have made efforts to enhance the business environment to accelerate technology transfer,
6. Noting the continuing growth in greenhouse gas emissions will significantly contribute to increasing concentrations of greenhouse gases in the atmosphere, with serious potential consequences,

##### Objectives, guiding principles and scope

7. The objective of enhanced action on technology development and transfer is to achieve the full implementation of Article 4.1.(c), 4.3, 4.5, 4.8, and 4.9 of the Convention and the technology transfer framework established by decision 4/CP.7, in the context of Article 4.7 of the Convention.
8. In order to achieve the objective,

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Option 1: a technology mechanism<sup>1</sup> shall be established, which comprises:

- (a) An Executive Body on Technology (paragraph 33) comprised of and supported by a strategic planning committee, technical panels, verification group and secretariat, with a technology action plan as a starting point of its work to enable implementation of enhanced action on technology development and transfer;
- (b) A Multilateral Climate Change Fund (paragraph 37) operating under the COP to support a list of activities and cost eligible for support agreed by the COP.

Option 2: an enhanced framework for technology<sup>2</sup> shall be developed to strengthen the implementation of technology-related commitments under the Convention and elaborated in the Bali Action Plan, and the implementation of national mitigation programmes and national planning related to adaptation, which shall consist of the following elements:

- (a) Key actions including low emission development strategies, enabling environment, capacity building, technology oriented agreements, technology information;
- (b) Institutional arrangements to help guide, support, verify and monitor the activities and commitments related to technology within the Convention;
- (c) Scaled-up public to support developing countries efforts on the key actions mentioned above and to leverage private sector investment.

Option 3: a technology action framework<sup>3</sup> shall be established to promote low emission growth, particularly in developing countries and enhance resilience of communities, particularly in LDCs through support of concrete actions on development and wide diffusion of mitigation and adaptation technologies, including:

- (a) Actions on development and transfer of both new and existing technologies for mitigation and adaptation;
- (b) A Technology Committee and Technology Panel (paragraph 33) to advise the COP on technology related issues;
- (c) A technology window (paragraph 37), established in the new financial mechanism under the control of the COP, to support implementation of concrete and practical technology activities.

Option 4: a set of short-, medium- and long-term national and international cooperative actions shall be developed to support global research, development, diffusion and transfer of technologies for adaptation and mitigation.

Option 5: a financial and technology mechanism shall be created to ensure full, effective and sustained implementation of the Convention and which is comprised of an adaptation and mitigation pillar. Each pillar contains an executive body accountable to the COP and supported by technical panels to perform the functions including organizing, coordinating, monitoring and evaluating the implementation of the comprehensive framework for mitigation and adaptation and governing and disbursing funds to support action of mitigation and adaptation.

9. The [technology mechanism][enhanced framework for technology][technology action framework][set of cooperative actions][financial and technology mechanism] shall be guided by the following principles:

- (a) Be guided by relevant Articles of the Convention and decisions of the COP;
- (b) Build on the existing efforts under the Convention and complement to existing and emerging efforts outside the Convention;

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<sup>1</sup> The proposal by Parties for a technology mechanism is integrated with various other elements of the subsequent text, including the proposed Technology Action Plan (paragraphs 10), the proposed Executive Body on Technology (paragraph 33), and the proposed Multilateral Climate Technology Fund (paragraphs 37)

<sup>2</sup> The proposal by Parties for an enhanced framework for technology is integrated with various other elements of the subsequent text.

<sup>3</sup> The proposal by Parties for a technology action framework is integrated with various other elements in the subsequent text, including the proposal for a Technology Committee (paragraph 33) and the proposed Multilateral Climate Technology Fund (paragraphs 37)

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- (c) Address all aspects of cooperation on technology development cycle including research, development, demonstration, deployment, diffusion and transfer of technologies;
- (d) Aim to removal of barriers and ensure accessibility, affordability, appropriateness and adaptability of the technologies required by developing countries;
- (e) Option 1. Take into account the important role of public finance in supporting technology outcomes, including research and development needs, and in leveraging private-sector investment in the demonstration, deployment, diffusion and transfer of technologies to the developing country Parties;  
Option 2. Ensure adequacy and predictability of funds for technology transfer to support technology outcomes, including research and development needs, and to leverage private-sector investment in the demonstration, deployment, diffusion and transfer of technologies to the developing country Parties;
- (f) Enhance and promote enabling environments for technology development and transfer;
- (g) Address country specific needs and priorities, particular the urgent need for the development and transfer of technologies for adaptation in developing countries, particular in LCD and most vulnerable countries;
- (h) Provide Parties with pathways to a low greenhouse gases emission and climate resilient society.

[Enhanced international action and support on technology]<sup>4</sup>

*Global technology action plan*

10. A technology action plan<sup>5</sup> shall serve as a starting point for the Executive Body on Technology<sup>6</sup>. It shall aim to accelerate action across all stages of the technology development cycle, including research, development, demonstration, diffusion, transfer and use of environmentally sound technologies, in order to support action on mitigation and adaptation and to promote a shift to sustainable development paths. The technology action plan shall:

- (a) Define specific institutional arrangements, policies, actions and funding requirements for all relevant technologies under the following classifications: public domain technologies, [IPR protected] [patented] technologies and know-how, future technologies;
- (b) Include specific actions and timelines for the first three years, and be reviewed updated for successive three-year periods in the light of lessons learned;
- (c) Support the establishment of and/or strengthen existing national and regional technology innovation centres<sup>7</sup>;
- (d) Assess the steps required to accelerate research, development, demonstration, diffusion and transfer of environmentally sound technologies for mitigation and adaptation;
- (e) Develop an effective strategy that identifies and proposes specific measures to overcome the barriers to technology development and transfer.

11. The action plan<sup>8</sup> shall be implemented with financial support through the financial mechanism of the Convention, including all the available means to ensure the affordability of technologies, products and related services.

<sup>4</sup> This is not a proposed heading. It is included only to clarify that the text that follows pertains to enhanced international action and support on technology.

<sup>5</sup> The proposal for a Technology Action Plan is an element of the proposed Technology Mechanism in paragraph 10.

<sup>6</sup> The option for an Executive Body on Technology is contained in paragraph 33.

<sup>7</sup> Technology innovation centres are described in paragraph 34.

<sup>8</sup> The proposal for a Technology Action Plan is integrated with the proposal for a Multilateral Climate Technology Fund (paragraph 37)

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*International technology action plans and road maps for specific technologies*

12. Parties shall promote the development of innovative technologies and strengthen international technology cooperation and technology outcomes through a series of prioritized technology action plans that shall be developed to, inter alia, identify the potential for the technology to contribute to global, regional or national mitigation and adaptation responses, identify the gaps and barriers to commercial maturity and recommend further actions to realize its potential;

- (a) Technology action plans shall be informed and supported by comprehensive global technology road maps that provide an overview of what needs to be done to promote wider and more rapid development and deployment of key technologies, and which shall identify:
  - (i) The current state of development of the technology, including technologies for adaptation;
  - (ii) Key stakeholders and relevant existing and emerging efforts contributing to the development of the technology;
  - (iii) Gaps and barriers to commercial maturity;
  - (iv) Opportunities for cooperation between developed and developing country Parties, including their respective private sectors;
- (b) Technology action plans and technology road maps should build on and work collaboratively with other relevant international and national efforts and institutions to maximize efficiency of effort and avoid duplication.

*[International] cooperative actions*

13. In addition to the arrangements for enhanced international actions outlined above and recognizing that cooperative actions that promote the development and deployment of environmentally sound technologies should be conducted and acknowledged, Parties will, to the extent appropriate to, and consistent with, their national strategies:

- (a) Promote participation in international programmes that support the development and use of common performance standards, testing, verification and certification programmes.

*[Possible placeholder for other international cooperative actions]<sup>9</sup>*

[Enhanced national action and support on technology]<sup>10</sup>

*National technology needs assessments, road maps and action plans*

14. In accordance with their respective commitments under the Convention, Parties [shall][should] promote and support the development and transfer of innovative and climate-friendly technologies including through the formulation and sharing of technology needs assessments, national technology road maps and technology action plans.

15. Options:

Option 1 TNAs are to be fully elaborated, taking into account lessons learned, and expanded to cover more in-depth assessments of obstacles in the access to, functioning, development and transfer of relevant technologies and technology innovation systems, including detailed assessment of technology capacity, barriers and markets. TNAs should continue to be shared and made publicly available, carried out within the framework of the NAPAs/National Adaptation Plans, and NAMAs and other relevant reports, including national communications from non-Annex 1 Parties, in order to ensure consistency and coherence among the various

<sup>9</sup> Paragraph 17 of INF.2 contains a list of actions which were consolidated into the relevant areas of the text, with the exception of those actions that were unique and did not duplicate other elements of the text.

<sup>10</sup> This is not a proposed heading. It is only included to clarify that the text that follows pertains to enhanced national action and support on technology.

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efforts. TNAs should not constitute a barrier to short-term technology transfer to the developing country Parties.

Option 2 A single process will be carried out to identify technology needs, which should be integrated into national low-emission development strategies and which could inform NAMA, NAPA, and National Adaptation Plan processes and country-specific technology development plans. This process will result in the preparation of a national low-emission development strategy, as described in Article X, paragraph Y of the Copenhagen agreed outcome. This document should contain an in-depth assessment of national barriers to the functioning of relevant technology innovation systems, including a detailed assessment of technology capacity and markets. Assessment of technology needs for adaptation, and barriers to the deployment of these technologies, should be carried out in the context of climate-resilient development, as described in Article P, paragraph Q.

Option 3 A single process will be carried out to identify technology needs, which could include NAMAs, NAPAs, and National Adaptation Plans and long-term planning for achieving low-emission development.

16. Technology road maps and technology action plans [shall][should] [include][be consistent with] TNAs, implemented in accordance with Article 4, paragraph 5, of the Convention, and include the elements contained in Annex 1.

17. Developing country Parties shall be assisted in completing technology needs assessments, technology road maps and technology action plans, which may be integrated into national low-emission development strategies.

*National actions*

[Proposal for a separate subsection for developed country Party actions and for developing country Party actions]<sup>11</sup>

18. In addition to the arrangements for enhanced international actions outlined above and recognizing that national policies and actions drive technology financing, leverage the private sector, build capacity, create suitable investment conditions, and support technology research, development, demonstration, deployment, diffusion and transfer, Parties will, in the context of their national strategies, and consistent with their national circumstances:

- (a) Implement actions, consistent with relevant national social, economic, energy and environmental policies, that establish conditions which promote the development, deployment and diffusion of environmentally sound technologies;
- (b) Establish national programmes that support common performance standards, and testing, verification and certification programmes for technologies for mitigation and adaptation.

[Possible placeholder for other national actions]<sup>12</sup>

Promoting cooperative policies between the developed and developing countries on technology research, development, demonstration, deployment, diffusion and transfer

*Enabling environments*

19. Enabling environments, including technology-specific policies and measures with both adaptation and mitigation benefits, that create the conditions conducive to private- and public-sector technology development, deployment, transfer and diffusion should be defined, implemented and strengthened. Policies and measures should include deployment schemes for

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<sup>11</sup> Parties have proposed that this element of the text could be further subdivided into developed country actions and developing country actions.

<sup>12</sup> Paragraph 17 of INF.2 contains a list of actions which were consolidated into the relevant areas of the text, with the exception of those actions that were unique and did not duplicate other elements of the text.

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measures to address barriers to technology development, deployment and diffusion, and transfer of technologies for mitigation and adaptation.

*Capacity-building*

20. Capacity-building activities should be guided by the Convention, taking into account the various activities completed or under way on a bilateral or multilateral basis. Capacity-building needs should be identified and delivered in the overall context of support for mitigation and adaptation.

21. A programme for capacity-building for accelerated technology development, deployment and diffusion in developing countries shall be developed. This programme should include the following elements:

- (a) Analyses, information, training activities and advice on development and implementation of relevant policies, institutional and regulatory frameworks that promote the development and use of environmentally sound technologies;
- (b) Advice and support for the development and implementation of national technology actions;
- (c) Advice and technical assistance in order to facilitate increased private investment in key greenhouse gas emitting sectors, including advice on the establishment of public-private partnerships for promoting environmentally sound technologies;
- (d) Information to support actions that enable technologies for mitigation and adaptation, knowledge, technical and other necessary expertise in existing institutions and organizations;
- (e) Advice and support for the identification of policy instruments and infrastructure required for the deployment, diffusion and transfer of identified technological options;
- (f) Training, information and workforce development programmes to build capacity, including national technology innovation systems, to ensure that all market actors understand the costs, performance and benefits of climate change technologies.

22. Parties shall promote the accelerated penetration of cost-effective technologies in non-Annex I countries through pilot projects that strengthen their capacity, and create human resources necessary for the design, implementation, and operation and maintenance of these applications, appropriate to national circumstances.

*Cooperative actions on and support for research and development*

23. [All Parties] [Developed country Parties], in accordance with national capabilities, [shall][should] make efforts to strengthen their national technology research, development and demonstration (RD&D) programmes with the aim of substantially increasing private and public energy-related RD&D compared with current levels, working towards at least a doubling of global energy-related RD&D by 2012 and increasing it to four times its current level by 2020, with a significant shift in emphasis towards safe and sustainable low greenhouse gas emitting technologies, especially renewable energy.

24. [Developed country Parties [and other developed Parties included in Annex II of the Convention]], in accordance with national capabilities, [shall][should] provide appropriate support to developing country Parties through, inter alia:

- (a) Enhancing cooperation between developing country Parties and between developed and developing country Parties, including city to city twinning arrangements, with the following aims:
  - (i) Promoting the development of technologies, including endogenous technologies and technologies for adaptation;

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- (ii) Prioritizing technologies for mitigation and adaptation that might have high costs but also high potential for greenhouse gas mitigation and/or increasing resilience to the adverse impacts of climate change;
  - (iii) Bringing down costs and increasing the potential for greenhouse gas mitigation and/or resilience to the negative adverse impacts of climate change.
- (b) Providing opportunities for participation by [developing country Parties] [all Parties] in joint research and development programmes, as appropriate, for specific technologies and joint ventures to accelerate deployment, diffusion and effective transfer of technologies [from developed country Parties and other developed country Parties included in Annex II of the Convention to developing country Parties] [from developed to developing country Parties], particularly technologies for adaptation [for SIDS,] [small island developing countries, LCDs and Africa] [for low lying and other small island countries, countries with low-lying coastal, arid and semi-arid areas or areas liable to floods, drought and desertification, and developing countries with fragile mountainous ecosystems are particularly vulnerable to the adverse effects of climate change,] [consistent with the language of the Bali Action Plan and the Convention], in the absence of win-win solutions and market intervention.

*Measures to address intellectual property rights*

25. Option 1: Technology development, diffusion and transfer [shall] be promoted by operating the intellectual property regime in a balanced manner. Parties shall cooperate to develop and deploy patent sharing and/or intellectual property free renewable energy and energy efficiency technologies. Financial support to buy down the full or partial cost of technologies for developing countries, taking into account the ability to pay, should be provided by financial mechanism under the Convention.

Option 2: Any international agreement on intellectual property [shall][should] not be interpreted or implemented in a manner that limits or prevents any Party from taking any measures to address adaptation or mitigation of climate change, in particular the development and transfer of, and access to technologies. Specific and urgent measures include:

- (a) Creation of a Global Technology Pool for Climate Change;
- (b) Use of the full flexibilities contained in the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement, including compulsory licensing;
- (c) Differential pricing between developed and developing countries;
- (d) Reviewing all existing relevant IPR regulations in order to provide certain information to remove the barriers and constraints affecting ESTs;
- (e) Promoting innovative IPR sharing arrangements for joint development of environmentally sound technologies;
- (f) Limited/reduced time patents on climate friendly technologies.

Option 3: All necessary steps required to be immediately taken in all relevant fora to mandatorily exclude patents and revoke existing patents in [developing countries] [LDCs][Countries vulnerable to the adverse effects of climate change] on essential/urgent environmentally sound technologies to adapt and mitigate climate change, including those developed through funding by governments or international agencies and genetic resources and biological resources that are used for adaptation and mitigation of climate change.

Option 4: The Executive Body on Technology should establish a committee, an advisory panel, or designate some other body, to proactively address patents and related intellectual property issues to ensure both increased innovation and increased access both for mitigation and adaptation technologies.

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*Incentive mechanisms for technology transfer*

26. The developed countries shall institute incentives at the national level, through the provision of financial support as appropriate, such as concessional loans and risk guarantees, tax exemption and subsidies for the owners of patented technologies, with a view to promoting transfer and diffusion of environmentally sound technologies to developing countries.

27. An incentive mechanism for enhanced cooperative action on technology development, deployment, transfer and diffusion for mitigation and adaptation projects and programmes [shall][should] be established in order to stimulate accelerated diffusion and transfer of existing and new environmentally safe and sound technologies to developing country Parties, in particular, vulnerable countries in accordance with Article 4, paragraph 9, of the Convention.

28. For the purpose of meeting its commitments a Party may transfer to, or acquire from, other Parties, emission reduction units resulting from projects and programmes registered under the Convention that accelerate the diffusion or transfer of environmentally sound technologies, provided that:

- (a) Host Parties establish technology targets or objectives;
- (b) Any such project results in measurable, reportable and verifiable reductions of greenhouse gas emissions by sources or enhancements of removals by sinks that is additional to any that would otherwise occur;
- (c) Any such project contributes to the achievement of the technology targets and objectives of the Party receiving the technology, is approved by the Parties involved;
- (d) The Party providing the technology shall be rewarded by the emission reduction units resulting from the project and programme, proportionate to total volume of emission reductions;
- (e) Participants in the incentive mechanism may involve private and public companies;
- (f) The acquisition of emission reduction units shall be supplemental to domestic actions for the purposes of meeting commitments and it does not acquire any emission reduction units if it is not in compliance with its obligations.

*[Voluntary agreements][Partnerships]*

29. Focused voluntary technology oriented agreements, including partnerships between Parties and the private sector, academia, civil society organizations and local and subnational governments should be [recognized][encouraged] under the Convention, in accordance with Article 11, paragraph 5, of the Convention. Such agreements could include cooperative research and development, large-scale demonstration and deployment projects on key technologies for mitigation and adaptation, cooperation on specific sectors or gases, and cooperation on climate observation and warning systems for enhancing resilience.

*Technology information*

30. Technological information transfer agreements among Parties to facilitate the spread of environment friendly products should be established.

31. A technology information platform including a global technology database, based on existing platforms, should be developed and be continuously updated to collect information on sector-specific technologies and best practices, including on IPRs and licensing, costs, abatement potentials, barriers and manufacturers of technologies.

*Development and transfer of technologies for adaptation*

32. Development and transfer of technologies for adaptation should be enhanced through practical and concrete actions that support existing and future technologies for adaptation.

[Placeholder for text specific to technologies for adaptation that is additional to where action on technologies for adaptation is addressed in all other elements of the text]<sup>13</sup>

#### Institutional arrangements

33. Option 1 Strengthen cooperation and make efficient use of the current institutional arrangements and establish an enhanced Expert Group on Technology Transfer (EGTT), acting in accordance with decision 4/CP.7 with appropriate improvements, including its mandate, structure, membership, and reporting arrangements to bodies of the Convention. The EGTT, or its technical panels, shall perform the functions specified in annex 2.

Option 2<sup>14</sup> Establish an Executive Body on Technology (EBT), as a subsidiary body under the Convention, in accordance with its Article 7.2 (i). The EBT shall consist of government representatives, elected by the COP, with balanced regional representation, who are experts on matters of technology development and transfer. The EBT shall government Multilateral Climate Technology Fund, in accordance with the indicative list of activities and costs eligible for support Annexed to this decision. The EBT shall be supported by a Strategic Planning Committee, Technical Panels, and a Verification Group and shall be guided by the objectives and guiding principles of the technology mechanism, perform the functions specified in annex 2 and by structured as specified in annex 3.

Option 3<sup>15</sup> Establish a technology committee to advise the COP on technology policy issues. The committee should be serviced by a strengthened professional secretariat and advised by a technology panel comprising experts nominated by Parties. The technology committee and/or the technology panel shall perform the functions specified in annex 2.

Option 4<sup>16</sup> Create an Executive Body on Finance and Technology for Adaptation (EBFTA), and an Executive Body on Finance and Technology for Mitigation (EBFTM), supported by technical panels on Research and Development, Capacity-building, Transfer of Technologies, Observation systems and information management, REDD+ and Market Mechanism, and accountable to the COP, shall be established. The bodies shall, inter alia, perform the functions specified in annex 2 and annex 4.

Option 5<sup>17</sup> Involvement of private entities and/or relevant international organizations, at national and/or sectoral level, through, inter alia, the enhancement of public-private partnership and the provision of advisory functions by experts in public and/or private sectors. To enhance this cooperation, an advisory group for sectoral technology cooperation is established to support the implementation of NAMAs by removing obstacles to and promoting technology transfer and diffusion in all relevant sectors. The advisory group for sectoral technology cooperation should, inter alia, perform the functions specified in annex 2.

#### *National and regional technology innovation centres*

34. National and regional technology innovation centres and networks of centres, shall be established, as appropriate, and existing centres strengthened, particularly in developing countries and in major developing country regions around the world, and should have the functions specified in annex 5.

#### *Technology development and transfer leveraging facility*

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<sup>13</sup> This section of the text is in the context of the proposed Technology Action Framework in Paragraph 8. Many elements of the text in INF.2 duplicated elements of text elsewhere in the document. Parties may wish to further elaborate the actions that should be contained within this section of the text.

<sup>14</sup> This option is presented in the context of the proposal for a Technology Mechanism as described in paragraph 8

<sup>15</sup> This option is presented in the context of the proposal for a Technology Action Framework as described in paragraph 8

<sup>16</sup> This option is presented in the context of the proposal for a Financial and Technology Mechanism as described in paragraph 8

<sup>17</sup> The following option could be integrated with any of the options above

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35. A Technology Development and Transfer Leveraging Facility is hereby established as part of a broader facilitation platform. The purpose of the Facility is undertake the functions specified in annex 6.

36. This Facility would work closely with relevant international financing institutions, multilateral development banks and the private sector, shall be subject to the authority and guidance of the COP, and supervised by a Board with equitable geographical representation to be determined by the COP.

Financing technology development and transfer

*Sources of finance for technology development and transfer*<sup>18</sup>

37. Option 1: Establish a Multilateral Climate Technology Fund (MCTF) to provide technology-related financial resources as determined by the Executive Body on Technology. The MCTF shall operate under the Conference of the Parties as part of the enhanced multilateral financial mechanism set up under the Convention. The MCTF shall be financed by assessed contributions from developed country Parties and other developed Parties included in Annex II of the Convention. Financing transfer to the MCTF and an agreed proportion of contributions by developed country Parties to bilateral and regional cooperation may be considered as contributions to the MCTF, provided that such cooperation is consistent with the policies and scope of the mechanism, and the guidance provided by the EBT. Indicative activities eligible for support under the technology mechanism and the MCTF are specified in Annex 7.

Option 2: A technology window, established in the new financial mechanism under the control of the COP, shall support implementation of concrete and practical technology activities.

Option 3: An Adaptation Fund and a Mitigation Fund to be created under the Convention to implement the Financial and Technology Mechanism and will be governed by Executive Body on Finance and Technology for Adaptation and for Mitigation as described in paragraph 33. (Further provisions on these funds to be inserted).

*International renewable energy and energy efficiency bond mechanism*

38. An international renewable energy and energy efficiency bond mechanism is hereby established. The purpose of the bond mechanism is to provide developing country Parties with interest loans to finance the development and deployment of renewable energy and energy efficiency technologies. Purchasers of renewable energy and energy efficiency bonds shall be provided interest payments through funding provided by the Technology Window of the Multilateral Fund on Climate Change referred to in paragraph 37 above.

39. An international renewable energy and energy efficiency bond commission shall be established to facilitate the issuance of bonds, the issuance of renewable energy and energy efficiency loans and the issuance of interest payments. The international renewable energy and energy efficiency bond commission shall report to the institution described in paragraph 33. The rules, modalities and guidelines for the operation of the international renewable energy and energy efficiency bond mechanism shall be agreed upon by the COP.

40. Each Party, to the extent feasible, shall also develop a system of national renewable energy and energy efficiency bonds to complement the international system.

*Financing technology innovation centres*

41. Adequate, predictable and sustainable financial resources required to support such centres and networks referred to in paragraph 34 above [shall][should] be provided by [the Technology Window of the multilateral financial mechanism][Multilateral Climate Technology Fund][existing bilateral and multilateral cooperative programmes, partnerships and initiatives][by various sources, identified by the COP].]

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<sup>18</sup> Incorporates the concepts for financing of technology development and transfer contained within the technology negotiating text. Other concepts have been proposed in the context of the negotiating text on finance.

**Annex 1**

**Possible elements of national technology action plans and road maps (paragraph 16)<sup>19</sup>**

- (a) a national technology needs assessment;
- (b) identification of technological options for [specific] [all] [sectors] [greenhouse gases] [priority areas by sector and by technology];
- (c) improving the understanding of the role of oceans in climate change and vice versa, and the effects of climate change on marine ecosystems, marine biodiversity and coastal communities, especially in developing countries and small island States, and including marine scientific research and sustained integrated ocean observatory systems;
- (d) identification and removal of barriers to the development, deployment, diffusion and transfer of [win-win technological options such as carbon dioxide capture and storage, clean fossil fuel, non-energy use of fossil fuel technologies][identified technological options];
- (e) policy instruments, enabling environments and infrastructure required for the deployment, diffusion and transfer of identified technological options;
- (f) capacity-building needs;
- (g) opportunities for joint research and development between developing country Parties, and between developed and developing country Parties to be financed by developed country Parties;
- (h) for the most greenhouse gas-intensive sectors, nationally appropriate deployment schemes should be developed, taking into account specific barriers for technology deployment in these sectors;
- (i) Promote wide diffusion of existing and emerging adaptation technologies in similar climates;
- (j) periodic review of progress to identify areas where international cooperation should be strengthened.

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<sup>19</sup> Consideration could be given to clarifying the different characteristics of action plans and road maps

**Annex 2**

**Possible functions of proposed institutional arrangements (paragraph 33)**

**Option 1**

- (a) provide advice and recommendations on the overall implementation of technology action under the Convention;
- (b) develop and recommend a technology action plan and/or technology action plans and road maps for specific technologies;
- (c) seek cooperation and coordination with relevant international technology initiatives and organizations, including financing technology deployment, diffusion and transfer, and advice on issues related to IPR;
- (d) encourage and strengthen collaborative partnership arrangements with national and international public and private sector institutions and initiatives, and stimulate the establishment of facilitative mechanisms to leverage private sector financing to meet developing countries' needs;
- (e) develop special reviews on existing technologies, including undertaking an inventory of existing adaptation technologies in developing countries, including its state of current production;
- (f) provide technical and, technology-related financing and policy advice, including on TNAs, technology development plans or low emission development strategies, to Parties as requested;
- (g) elaborate policy documents, terms of reference, criteria and guidance;
- (h) monitor and assess performance and progress, using performance indicators, and report to the COP.

**Option 2**

- (a) Develop a Technology Action Plan (paragraph 10) to serve as a starting point for the work of the Executive Body.
- (b) accelerate the development, demonstration, deployment, adoption, diffusion and transfer of environmentally-sound technologies from Annex II Parties to developing country Parties, in order to avoid the lock-in effects of non-ESTs, and to promote sustainable development in developing country Parties;
- (c) provide access to technology for adaptation at national, sub-regional and regional levels, enabled by capacity-building, and the provision of new and additional, adequate and predictable financing resources to meet the costs of both integration of adaptation into the development process and stand-alone adaptation activities;
- (d) remove barriers to technology transfer and enhance means of facilitating this transfer, to promote urgent access to advanced ESTs while balancing rewards for innovators with the common good of humankind, including, inter alia, jointly-developed technology and sharing of intellectual property rights;
- (e) enhance enabling environments to facilitate access to technology, including through financing environments that leverages private sector financial resources, including policy dialogues, and involvement in development, demonstration, deployment, adoption, diffusion, and transfer of environmentally-sound technologies (ESTs);
- (f) build on existing activities under the Convention and coordinate action by different stakeholders at international, regional and national levels to promote coherence through the integration of ongoing activities related to development and transfer of technologies;
- (g) provide the means for the full implementation of Convention commitments on development, deployment, adoption, diffusion and transfer of environmentally-sound technologies (ESTs), and related financing and capacity-building;

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- (h) develop strategy and technology action plans and monitor and verify the implementation of the specific operational policies, guidelines and administrative arrangements, including the disbursement of resources, for the purpose of achieving the objectives of the multilateral technology fund taking into account the cost-effectiveness of the proposed activities as well as the potential for their replicability;
- (i) monitor and assess the performance of development and transfer of ESTs in terms of speed, range and size of the technological flow and provide advice and recommendations on the overall implementation of technology action under the Convention;
- (j) provide technical and, technology-related financing and policy advice, including on TNAs, technology development plans or low emission development strategies, to Parties as requested.

**Option 3**

- (a) Identify areas of cooperation and Approve procedures and modalities for technology cooperation with the private sector and make recommendations to the COP for action;
- (b) Review, propose and decide on technology investments and and approve technology funding requests;
- (c) Review progress in the implementation of the technology action framework;
- (d) Identify and promote best practices and best available technologies and appropriate ways of promoting the transfer of existing best available technologies and those that will be available in the short-term, medium-term and long-term;
- (e) Provide guidance and support to developing country Parties on technology needs assessments as part of their low emission development strategies;
- (f) Gather and, where necessary, produce or commission global technology road maps;
- (g) Assist the coordinating mechanism with the assessment of NAMAs and other relevant bodies as required.

**Option 4**

- (a) organize, coordinate, monitor and evaluate the implementation of the comprehensive framework for adaptation and mitigation, including the enabling means of financing, technology and capacity-building.
- (b) guide and supervise the disbursement of the Adaptation Fund and a Mitigation Fund to be created under the Convention.
- (c) coordinate disbursements from the Adaptation Fund according to the needs as indicated in national plans for adaptation submitted by developing countries, and from the Mitigation Fund according to the needs for NAMAs and REDD+ activities as requested by developing countries.
- (d) provide financial and technical support, available upon request by developing countries, for the preparation of REDD+ activities and for the elaboration of national plans for adaptation and NAMAs.
- (e) manage a registry and certification system for receiving financial resources related to mitigation and adaptation in compliance with the financial commitments of developed country Parties under Article 4.3 of the Convention.
- (f) coordinate with regional development banks concessional loan arrangements for the private sector in developing countries for the implementation of specific mitigation activities;

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- (g) articulate technology transfer and financing mechanisms under the Convention with other United Nations organizations, multilateral financial institutions established under bilateral or multilateral development programmes and other relevant international forums not directly related to climate change, with the assistance of technical panels to be created.

**Option 5**

- (a) identify best practices and best available technologies from developed countries and technologies that will be available in the future;
- (b) identify appropriate ways for promoting transfer of existing best available technologies through analysing emission reduction potentials and setting indicators;
- (c) advise on promoting technology transfer and diffusion in all relevant sectors;
- (d) periodically report to the COP on its activities.

**Annex 3**

**Possible structural arrangement of the proposed Executive Body on Technology  
(Option 2, paragraph 33)**

1. A Strategic Planning Committee to:
  - (a) develop strategy;
  - (b) provide regular guidance;
  - (c) assess and elaborate technology-related matters;
  - (d) continuously evaluate progress, including financial and technological flows and range and effectiveness of technologies transferred;
  - (e) develop updates for the Technology Action Plan (TAP), as described below, at regular intervals;
  - (f) perform any other functions to be assigned to it by the EBT;
  - (g) capacity-building.
2. Technical Panels to generate and compile current expert information related to, inter alia:
  - (a) policies and measures;
  - (b) intellectual property cooperation, sharing and partnership;
  - (c) sectoral, cross-sectoral and cross-cutting cooperation;
  - (d) assessment, monitoring and compliance related matters;
  - (e) dissemination of knowledge;
  - (f) documenting, scaling up and diffusion of indigenous adaptation technologies which already exist in developing countries.
3. A Verification Group to put in place a measurement, reporting and verification system for compliance with the provision of financing and the development, demonstration, deployment, adoption, diffusion, and transfer of environmentally-sound technologies by Annex I Parties to developing countries under the mechanism, and the overall compliance with financing and technology commitments under the Convention, including the MRV requirements under the Bali Action Plan.
4. A Secretariat to:
  - (a) support and facilitate the activities of the Executive Body of Technology;
  - (b) compile and prepare a final report on the financial and technological contributions made and reported by Parties to the technology mechanism, including the overall MRV requirements under the Bali Action Plan.

**Annex 4**

**Possible arrangements for technical panels to support the Executive Body on Finance and Technology for Adaptation and the Executive Body on Finance and Technology for Mitigation (Option 4, paragraph 33)**

The technical panels shall comprise government representatives elected by the COP with balanced regional representation, who are experts on matters related to each of the technical panels, and be open to input from other experts.

*Technical Panels*

1. Both Technical Panels on Research and Development (TPRDA and TPRDM) shall, inter alia, coordinate multilateral technology research, development and demonstration programs and provide appropriate support to developing country Parties through North-South and South-South cooperation schemes, and promote joint ventures to accelerate deployment, diffusion and effective transfer of technologies;
2. Both Technical Panels on Capacity Building (TPCBA and TPCBM) shall organize, coordinate, monitor, evaluate and retrofit the implementation of capacity-building activities for adaptation and mitigation and the respective financing and technology development and transfer, in developing countries. TPCBs shall also provide information and views on the fulfillment of support commitments for capacity-building by developed countries. The TPCBs shall create mechanisms for sharing lessons learned, promote south-south cooperation as well as for the dissemination of successful capacity-building activities in developing countries;
3. Both Technical Panels on Transfer of Technologies (TPTTA and TPTTM) shall, inter alia, Provide advice and recommendations to the Executive Bodies on Finance and Technology on the overall implementation of technology; Promote communication and information/knowledge sharing; Monitor and assess the performance and progress of technological research, development, demonstration, diffusion, and deployment, using performance indicators, and report to the COP. In addition, this technical panel shall develop reviews on existing technologies, including information on estimated cost, risks, benefits and limitations, taking into account the circumstances of the host Party;
4. The Technical Panel on Observation Systems and Information Management (TPOSIM) shall, inter alia, organize, coordinate, monitor, evaluate and retrofit the implementation of systematic observation and information management (including data collection and archiving, analysis, modelling, downscaling and dissemination) activities for adaptation in developing countries. The TPOSIM shall create mechanisms for sharing lessons learned, promote south-south cooperation as well as for the dissemination of successful systematic observation and information management activities for adaptation in developing countries;
5. The Technical Panel on REDD+ (TPREDD+) shall, inter alia, determine reference levels methodologies, support enhancement of REDD project activities within countries, and other general methodological issues;
6. The Technical Panel on Market Mechanisms (TPMM) shall, inter alia, organize, coordinate, monitor, evaluate, and retrofit the implementation of mitigation activities in developing countries that are carried out under the market mechanisms. The TPMM will deal with issues such as country-specific sectoral baselines, additionality, monitoring and verification plans, registration of mitigation activities and actions, issuance of credits, etc.;
7. In addition, an MRV Panel to be created under the COP shall be in charge of establishing methodologies for MRV, measuring, reporting and verifying mitigation actions and the support received as required by paragraph 1.(b)(ii) of Decision 1/CP.13, and keeping records of mitigation and adaptation activities implemented by developing countries with their own resources.

The UNFCCC Secretariat shall support and facilitate the activities of the EBFTA, EBFTM, and the technical panels.]

**Annex 5**

**Possible functions of Technology Innovation Centres (paragraph 32)**

1. Be coordinating nodal centres to facilitate and enable:
  - (i) the identification of key technological products that have strong sustainable development and climate change benefits along with their projected price and performance targets;
  - (ii) the development of such products;
  - (iii) the development of markets for these products, in partnership with appropriate public- and private-sector organizations.
2. Promote joint research and development and technology cooperation activities between developing countries and between developed and developing countries, which may include the sharing of intellectual property rights;
3. Promote the deployment, diffusion and transfer of environmentally sound technologies for mitigation and adaptation to developing country Parties;
4. Stimulate capacity-building, in particular for endogenous technologies, including by providing cooperative training and development facilities and training opportunities supported by public-private partnerships to develop and deploy renewable energy and energy efficiency technologies and environmentally sound adaptation technologies;
5. Improve access to information on existing and new technologies.

**Annex 6**

**Possible functions of the Technology Development and Transfer Leveraging Facility  
(paragraphs 33-34)**

1. Identify and help facilitate the transfer of low greenhouse gas emitting technologies, particularly renewable energy and energy efficiency technologies;
2. Assist particularly vulnerable developing countries to identify and help facilitate the transfer of appropriate adaptation technologies;
3. Provide an interactive facilitation service for actions identified through low emission development strategy, TNA, NAMA, and/or NAPA processes;
4. On a voluntary basis, assess potential actions, assist in the development of rigorous projects proposals and assist in matching with the most appropriate form of investment support, particularly with a view to leveraging private sector funding;
5. Assist in the undertaking of nationally appropriate mitigation actions.

**Annex 7**

**Indicative eligible activities for support**

Activities eligible for support from the technology mechanism include, inter alia:

1. Promotion, facilitation and implementation of activities along the entire technology cycle to enable the accelerated adoption of ESTs;
2. Support for research, development, manufacture, commercialization, deployment and diffusion of technologies for adaptation and mitigation in accordance with Decision 1/CP.13.
3. Adaptation technologies to address the adverse effects of climate change and finance the removal of barriers to the large-scale transfer of technologies for adaptation;
4. Technologies to address the adverse impact of response measures, and finance the removal of barriers to the large-scale transfer of technologies for reducing the adverse impact of response measures;
5. Capacity-building to manage and generate technological change, enhance absorptive capacity, create enabling conditions in developing countries, inter alia, costs of:
  - (a) Research, development and demonstration of new technologies;
  - (b) Enhancing human and institutional capacity;
  - (c) Guarantees on foreign direct investment for environmentally sound technologies.
6. Commercialization of new and emerging technologies, inter alia:
  - (a) Venture capital, with public investment leveraging private capital markets for emerging technologies;
  - (b) Research, development, and demonstration of new technologies, financed by venture capital and other sources;
  - (c) Joint technology development
7. Creation of manufacturing facilities for EST, including low-GHG emission technologies, inter alia, costs of:
  - (a) Compulsory licensing, cost associated with patents, designs, and royalties;
  - (b) Conversion of existing manufacturing facilities or of establishing new facilities;
  - (c) Research and development activities, including joint research, development, design, and demonstration;
  - (d) Technology adaptation;
  - (e) Retraining and dissemination of know-how;
  - (f) Operation; and
  - (g) Monitoring and verification.
8. Procurement of low-GHG emission technologies, including software and hardware, inter alia:
  - (a) Cost of premature modification or of replacement of existing equipment, as well as the cost of new equipment;
  - (b) Cost of retraining and dissemination of know-how;
  - (c) Cost of technical assistance for the design, installation, and stable operation of the technology;
  - (d) Cost of fuel and other operational costs;
  - (e) Cost of technologies for fuel switching;
  - (f) Cost of monitoring and verification.

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