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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE
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Item 9 (a) of the provisional agenda

DEVELOPMENT AND TRANSFER OF TECHNOLOGIES

STATUS OF THE CONSULTATIVE PROCESS (DECISION 4/CP.4)

Submissions from Parties

Note by the secretariat

1. At its tenth session, the Subsidiary Body for Scientific and Technological Advice (SBSTA) invited Parties to submit, by 30 November 1999, their views on how the issues and questions listed in the annex to decision 4/CP.4 should be addressed, for compilation into a miscellaneous document (FCCC/SBSTA/1999/6, para. 69 (b)).

2. Four such submissions* have been received. In accordance with the procedure for miscellaneous documents, these submissions are reproduced in the language in which they were received and without formal editing.

* In order to make these submissions available on electronic systems, including the World Wide Web, these contributions have been electronically scanned and/or retyped. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

CONTENTS

PAPER NO. 1: BULGARIA

Answers of the questions setting in order as listed in the Annex to decision 4/CP.4 :

Part I:

Practical steps to promote, facilitate and finance, as appropriate transfer of, and access to, environmentally sound technologies and know-how.

a) On national level the country's legislation has to be changed and amended, so that to facilitate the technology transfers as well as to promote that. Main priority we give of lack of finance means in country, so that more new technologies to be penetrated.
b) Information for few new technologies is available in the some Parties and access to such information some times is difficult. The UNCCC Secretariat is necessary to undertake adequate steps, so that the all available information to be published periodically and all interested institutions, companies etc. to have access to it.
c) Would be useful for all Parties, if the Annex II Parties periodically demonstrate new environmentally sound technologies by means of workshops, seminars and other type of information dissemination.
d) The existing multilateral mechanisms is sufficient, but may be it will be useful the mechanisms to be added with new means of cooperation.
e) The objective of collaboration should be unlimited access to new technologies and assisting for putting into practice.
f) Many of Parties are not familiar with the procedure which have to be carried out, so that the interim financial mechanism to be used.
g) The access to emerging technologies could be facilitating, when the Kyoto Flexible Mechanisms are putting into practice.
h) The private sector has to play a main role in the technology transfer, especially in the countries in transition, where a sector is created at present. The governments of these Parties have to promote the new owners if they do efforts, so that old, emerging in past technologies are replace by new once.

Part II:

Support and enhancement of endogenous capacities and technologies of developing Parties.

We don't have suggestions on that part of Annex.

Part III:

Assistance in facilitating the transfer of environmentally sound technologies and know-how

a) The Convention could oversee the exchange of information among Parties in terms of the transfer of environmentally sound technologies and know-how by an additional information in the Nation Communications, according Article 7.4 of the Kyoto Protocol. Also by reporting on implementation of JI- and CDM-projects, if such information will be requested.

b) If the Parties present an additional information in the Nation Communications, according Article 7.4 of the Kyoto Protocol, about what kind of cooperation approaches they use, then could be possible the information to be completed and synthesized in a Synthesis Report on Innovative Technology Cooperation (or other type of document). The Report has to include only these approaches which are shown already feasible environmental benefits in the Parties. After discussion and adaptation by Subsidiary Bodies, the Report could be forwarded to the COP.
c) Above mentioned Report (document) is possible to be added by a list of projects and programs of technology cooperation, which more of the Parties use, and which can serve as models for improving and diffusion of clean technologies internationally under the UNFCCC.

Part IV:

Other questions

a) The main specific transfer goals should be: Dissemination of the most environmentally sound and cost-effective technology among the Parties on the most appropriate way so that all Parties to have access to such technologies and to have opportunity to penetrated these.
b) We think that it will be difficult to develop indicators and accounting systems to track progress on technology transfer before such technologies to be widely used and a lot of experience be gained.
c) Yes, we think that particular institutional arrangements are needed to monitor progress of the transfer of the environmentally sound technologies and know-how.

PAPER NO. 2: CHINA

Submission on Development and Transfer of Technologies

I. Basis for Action:

The People's Republic of China believes that the following elements shall be the basis for actions on development and transfer of technologies.

1. Provisions and stipulations in Chapter 34 of Agenda 21, as adopted by United Nations Conference on Environment and Development (UNCED), June 1992. This consensus document has been reiterated by the relevant UNFCCC COP Decisions on Development and Transfer of Technology. At the beginning of Chapter 34 of Agenda 21, particularly paragraphs 34.1, 34.2, 34.3 and 34.4, the term of the environmentally sound technologies (ESTs), the transfer of ESTs and their coverage were clearly defined. Some excerpts in this document are as follows:

   "Environmentally sound technologies are not just individual technologies, but total system which include know-how, procedures, goods and services, and equipment as well as organizational and managerial procedures. This implies that when discussing transfer of technologies, the human resources development and local capacity-building aspects of technology choices, including gender-relevant aspects, should also be addressed. Environmentally sound technologies should be compatible with nationally determined socio-economic, cultural and environmental priorities."

   "There is a need for favorable access to and transfer of environmentally sound technologies, in particular to developing countries through supportive measures that promote technology cooperation and that should enable transfer of necessary technological know-how as well as building up of economic, technical, and managerial capacities for the efficient use and further development of transferred technology."

2. Relevant provisions of the UNFCCC, as contained in Articles 4.1, 4.3, 4.5, 4.7, 4.8, 4.9, 9.2, 11.1, 11.5, 12.3, and 12.4.

   Article 4.5 stipulates that "the developed country Parties and other developed Parties included in Annex II shall take all practical steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention....."

   Transfer of environmentally sound technologies and know-how to developing countries are essential requirements for developing countries to contribute to the ultimate objective of the Convention. Just as stipulated by Article 4.7 of the Convention: "The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the

Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties."

3. Relevant Decisions adopted by UNFCCC COP1, COP2, COP3 and COP4 on the issue. In COP4 decision, a consultative process was established by the Chairman of SBSTA. This process will consider the preliminary list of issues and questions contained in the annex to this decision and to make recommendations on how they should be addressed in order to achieve agreement on a framework for meaningful and effective actions to enhance implementation of Article 4.5 of the Convention. The issues defined in the annex include "to initiate and promote the transfer of publicly owned technology and those in the public domain", "to consider appropriate mechanisms for technology transfer within the UNFCCC", "to promote and facilitate, in collaboration with the interim financial mechanism, multilateral and bilateral institutions, the arrangement of financing of technology transfer", "to facilitate the appropriate role of the private sector", etc.

II. Basic Position

The nature and scope of technology transfer under the UNFCCC shall include:
(1) Technology transfer to developing country Parties is a commitment of the developed country Parties included in Annex II to the Convention. The technologies include environmentally sound and economically viable technologies and know-how to mitigating and adapting to climate change (Decision 13/CP.1).
(2) Such kind of technology transfer is on a grant or concessional basis (Article 11.1 of UNFCCC), namely on non-commercial terms.
(3) In the context of the UNFCCC, the pathway or the flow direction of technology transfer is from the developed countries to developing countries, not otherwise.
(4) The roles of the governments, particularly the governments of the developed country Parties, are crucial, even though the technology transfer activities may involve other actors.

China believes that the above four points shall be the basic common understanding when considering the issue of technology transfer under UNFCCC as well as for the consultative process established by COP4.

III. How the issues and questions listed in the annex to decision 4/CP.4 should be addressed and what are needed urgently?

1. The objective for addressing these issues and questions, as stipulated by Decision 4/CP.4 is "to achieve agreement on a framework for meaningful and effective actions to enhance implementation of Article 4.5 of the Convention". In this regard, China welcomes the consultative process established by the Chairman of the SBSTA, as instructed by COP4 decision. China hopes this consultative process will meet the above objective and should promote the concrete actions of technology transfer as a step forward not backward.

2. There are many issues and questions listed in the annex to decision 4/CP.4. It is necessary to deliberate on all the issues and questions listed and try to find the answers. However, China noticed that some of the issues and questions were overlapping. The importance of all these issues and questions for the solution of being lack of progress in technology transfer is also different. Actually the solutions to some specific issues and questions, in some way, may help to resolve others. Therefore, China believes it will be more efficient, effective and constructive to deliberate on those prioritized issues and questions first.

Technology transfer to developing countries is one of the commitments of the developed countries under UNFCCC. The most important at present is to translate words of commitment into deeds by taking concrete measures and actions. Starting from this point of view, China believes the following issues listed in the annex to decision 4/CP. 4 shall be given priority:

(1) to initiate and promote the transfer of publicly owned technology and those in the public domain,
(2) to consider appropriate mechanisms for technology transfer within the UNFCCC,
(3) to facilitate the appropriate role of the private sector, and
(4) to promote capacity building in developing country Parties through provision of concrete programmes.

IV. China's response to some of the issues and questions identified in the annex of the Decision 4/CP.4

1. Issue: Initiate and promote the transfer of publicly owned technology and those in the public domain

Question: What publicly owned technologies are available? How could Annex II Parties report upon them? How should Annex II Parties promote the transfer of publicly owned technologies?

A certain proportion of technology is held or owned by governments of Annex II Parties and their public institutions. Such kind of technologies also includes those results from publicly funded research and development activities. At least, according to the survey, governments of OECD countries effectively own the important categories of technology.

The meeting hosted by the government of the Republic of Korea on publicly owned or supported technologies in February 1998 identified 20 recommendations for governments to facilitate the transfer of publicly owned or supported technologies. However no further actions have been taken for its implementation.

Comparing to the transfer of privately owned technologies, the transfer of publicly owned technologies have fewer barriers and the main and dominated barrier is being lack of political will on the part of Annex II countries to honour their commitments under the Convention.

Governments of the developed country Parties should promote effective modalities for the access and transfer, in particular to developing countries, of such environmentally sound technologies by means of activities, including the following:

----Formulation of policies and programmes for the effective transfer of environmentally sound technologies that are publicly owned or in the public domain;

----Examination by governments and, where appropriate, by relevant organizations of existing policies, including subsidies and tax policies, and regulations to determine whether they encourage or impede the access to, transfer of and introduction of Environmentally sound technologies;

As the first step to enable the publicly owned technologies accessible to and being transferred to developing countries, Annex II Parties are urged to provide a list of environmentally sound technologies and know-how related to adaptation to and mitigation of climate change that are publicly owned, as stipulated in the Decision 4 of COP4.

2. Issue: Facilitate the appropriate role of the private sector

Question: What role is the private sector in technology transfer? What additional role can the private sector play? What barriers prevent their greater participation?

Many of the environmentally sound technologies are owned by the private sector of the developed country Parties. Private sector needs the incentives, at least no restrictions created by the governments of the developed country Parties to ensure their technologies being transferred to developing countries. In this regard, the governments of the developed countries should and can do something to promote transfer of technologies that are privately owned. The corresponding provisions of Chapter 34 of Agenda 21, particularly paragraph 34.18, have clear stipulations.

"In the case of privately owned technologies, the adoption of the following measures, in particular for the developing countries:

----Creation and enhancement by developed countries, as well as other countries which might be in a position to do so, of appropriate incentives, fiscal or otherwise, to stimulate the transfer of environmentally sound technology by companies, in particular to developing countries, as integral to sustainable development;

----Enhancement of the access to and transfer of patent protected environmentally sound technologies, in particular to developing countries;

----Purchase of patents and licenses on commercial terms for their transfer to developing countries on non-commercial terms as part of development cooperation for sustainable development, taking into account the need to protect intellectual property rights;

----In compliance with and under the specific circumstances recognized by the relevant international conventions adhered to by the States, the undertaking of measures to prevent the abuse of intellectual property rights, including rules with respect to their acquisition through compulsory licensing, with the provision of equitable and adequate compensation;

----Provision of financial resources to acquire environmentally sound technologies in order to enable in particular developing countries to implement measures to promote sustainable development that would entail a special or abnormal burden to them."

"Joint ventures should be promoted between suppliers and recipients of technologies, taking into account developing countries policy priorities and objectives. Together with direct foreign investment, these ventures could constitute important channels of transferring environmentally sound technologies. Through such joint ventures and direct investment, sound environmental management practices could be transferred and maintained. ……."

The most important is to put these stipulations into practice. In this regard, the government of the developing countries should also accomplish their corresponding responsibilities. And the capacity-building of the developing countries needs to be enhanced through this process.

3. Issue: Consider appropriate mechanisms for technology transfer within the UNFCCC.
Question: Are existing multilateral mechanisms sufficient? Are new mechanisms needed for technology transfer? If so, what are the appropriate mechanisms for the transfer of technologies among Parties in pursuance of Article 4.5 of the UNFCCC?

Appropriate mechanisms for technology transfer (MTT) under the UNFCCC should be considered and established, without any delay. This is not a new question. The concept has been put forward on the table for a long time and was highlighted in Chapter 34 of Agenda 21 [*34.18(f) Development of mechanisms for the access to and transfer of environmentally sound technologies, in particular to developing countries,.....*]. The importance of MTT has also been accepted widely at many other multilateral environmental agreement forums. Indeed, without an appropriate MTT, the issue of technology transfer will remain an empty talk. Now it should be the time to resolve the problem.

The purpose of the MTT is to assist developing country Parties to obtain their needed environmentally sound technologies and know-how conducive to addressing climate change on non-commercial and preferential terms, thus contributing to the ultimate objective of the Convention.

Initially, the establishment of MTT should include the following components:

----Each Annex II party shall establish the MTT at the national level, which include the specific institutions, as appropriate. Under the national MTT, Annex II Parties shall take practical actions to ensure the full implementation of Article 4.5 of the Convention as well as relevant decisions of the Conference of the Parties. The result of their implementation shall be reported to the Conference of the Parties.

----Each Non-Annex I Party shall also, as appropriate, establish a body to ensure the technologies being transferred smoothly. Through this Non-Annex I Parties will identify their technology and know-how needs and the corresponding priority programmes, and find their financial and technological constrains and difficulties. Such kind of information needs to be reported to the Conference of the Parties, as necessary.

----An Intergovernmental Technology Advisory Panel (ITAP) should be established to provide technical support for MTT, without further delay.

----A trust fund specifically for technology transfer shall be established. Funding sources can be from the Annex II Parties, international organizations, multilateral development banks, etc.

----The Secretariat of UNFCCC shall be strengthened in this regard to facilitate technology transfer. A specific unit with enough staff members is necessary for the establishment of the MTT.

4. Issue: Promote capacity-building in developing country parties through provision of concrete programmes.

Question: What areas should be the focus of capacity building and how should it be undertaken, e.g. what kinds of activities, programmes and institutional arrangements?

Capacity-building should be the first step for technology transfer process. It is the pre-requisite for the successful technology transfer activities. The capacity building for technology transfer in developing countries should go through the whole technology transfer process, which will include the identification of technology needs, personnel training, learning and understanding of the core technology or know-how, technology choice, design, installation, operation and production of the equipment, etc. China believes that capacity-building for technology transfer can be conducted through the technology transfer demonstration projects. Such kind of technology transfer demonstration projects can be arranged as the pilot projects for MTT as mentioned above.

V. The CDM under the Kyoto Protocol should have a component of technology transfer. However technology transfer under CDM should be additional to the commitments of the Annex II Parties under the relevant provisions of the Convention on technology transfer. The objectives, nature and scope of MTT should be elaborated in accordance with relevant provisions in Chapter 34, Agenda 21, relevant Convention provisions and COP decisions.

PAPER NO. 3: KENYA

SUBMISSIONS ON HOW THE ISSUES AND QUESTIONS LISTED IN THE ANNEX TO DECISION 4/CP.4, DEVELOPMENT AND TRANSFER OF TECHNOLOGIES, SHOULD BE ADDRESSED, AS WELL AS SUGGESTIONS FOR ADDITIONAL ISSUES AND QUESTIONS

1. PROMOTION OF THE REMOVAL OF BARRIERS TO TECHNOLOGY TRANSFER

i) Barriers and how they can be removed;

- Intellectual property rights - Negotiation could be initiated with owners of technologies with Annex II Parties playing major role
- Insufficient capacity to identify areas where interventions are needed and how the problems could be addressed
- Provision of incentives for enterprises to replace old and obsolete machinery with modern environmentally friendly technologies conforming to cleaner production. These could be in the form for example of a waiver on import duty
- Facilitation of the training of persons working in the industries. using ESTs so as to have the capacity to manage the imported technology. The training should precede the acquisition of the technology
- Provision of advisory services and technological information to existing companies as well as potential investors and entrepreneurs and general awareness on accessibility to information on appropriate technological solutions and about financial resources available for environmentally sound production.
- Costs - Annex II Parties to facilitate and finance transfer
- This area needs a lot of education training and awareness for both the public and private sector and all levels of society
- Need for enhancement of cooperation between governments and the private sector.
- Need for legal and policy frameworks that are conducive to and support development and use of environmentally sound technologies. Countries need to be assisted in bringing together the different actors so as to facilitate a national policy dialogue

- Developing Country Research and Development institutions need to be strengthened in terms of manpower development and equipment and training

2. INITIATE AND PROMOTE THE TRANSFER OF PUBLICILY OWNED TECHNOLOGY AND THOSE IN THE PUBLIC DOMAIN

Annex I publicly owned environmentally sound technologies, which are proven, should be identified and this information disseminated. This is especially in the areas of agriculture, forestry, waste management, energy and transport.

Annex II Parties should:

- report on the technologies in their national communications
- sensitise non-Annex I Parties on the existence of specific/key technologies in various sectors
- organise regional workshops study tours for participants from non-Annex I Parties where there can be information exchange on these technologies

3. PROMOTE BILATERAL AND MULTILATERAL TECHNOLOGY COOPERATION TO FACILITATE TRANSFER

- Bilateral cooperation between non-Annex I Governments and the industrialised countries should be enhanced
- Multilateral organisations, UN agencies such as UNEP, UNIDO, UNDP should come up with more programmes for assisting non-Annex Parties to change from old/obsolete technologies to modern ESTs as an effort to facilitate technology transfer

Priority areas should be those sectors/sub-sectors that offer the largest potential emission reduction/avoidance and increased economic productivity

- Training of both public and private sector personnel on Environmentally Sound Technologies as they are directly involved in the acquisition process.

4. CONSIDER APPROPRIATE MECHANISMS FOR TECHNOLOGY TRANSFER WITHIN THE UNFCCC

- Existing multilateral mechanisms;

  Though many deal with technology transfer, but a distinction has to be made in the fact that they do not as a matter of course take into account the environmental soundness of technologies. There is a lot of improvement needed in the quality services offered by the existing institutions.

- There is need for a more representative mechanism for technology transfer with a clearing house to assess environmental soundness and durability of technologies

5. COLLABORATION WITH RELEVANT MULTILATERAL INSTITUTIONS TO PROMOTE TECHNOLOGY TRANSFER

- Objectives should entail;

  - training
  - information on the acquired ESTs.
  - technical and financial assistance

- Evaluate performance of existing technology information centres and technology acquisition networks

- Practical steps

  - Establishment of National Environmentally Sound (or Cleaner Production) centres. These could also act as technology clearing houses and facilitate technology diffusion and transfer as well as provide technical information to the national/regional industrial and all sectors of the economy on ESTs.

In collaboration with the multilateral institutions, these national institutions could improve technology information to suit the needs of the users

6. PROMOTE AND FACILITATE, IN COLLABORATION WITH THE FINANCIAL MECHANISM AND MULTILATERAL AND BILATERAL INSTITUTIONS, THE ARRANGEMENT OF FINANCING OF TECHNOLOGY TRANSFER

- Besides the financial mechanism reporting to the COP on its funding operations (Article II.3(c)), it should also include in its reports, the most popular technologies, based on funding requests, in each sub-sector

7. PROMOTE AND ASSIST DEVELOPING COUNTRY PARTIES TO ACCESS TECHNOLOGY INFORMATION

- Information needed;

  - State of the art ESTs in use in various sub-sectors in the Annex I Country Parties, especially in energy utility companies, chemical processing, effluent treatment, waste recycling, agro-processing etc.

  - Costs

- Training opportunities to operate, repair and maintain such technologies

- Operational life of various sub-sector-specific technologies

• Availing information

- Through subsidiary bodies of the UNFCCC or the clearing house when created. The technology transfer mechanism should be networked with the national institutions identified to disseminate this information. These national institutions should have their capacity enhanced so as to be able to make informed decisions in what they choose to disseminate.

8. FACILITATE ACCESS TO EMERGING TECHNOLOGIES

• Assistance be provided to developing Country Parties to have modern communication facilities in selected institutions that would deal directly with technology transfer such as the focal point to the UNFCCC, the National Clearing House, Dept. of Industry etc. This is to facilitate the speed with which the emerging global technologies could be acquired.

• Assist developing country Parties to build capacity in the identification and acquisition of technology.

9. FACILITATE THE APPROPRIATE ROLE OF THE PRIVATE SECTOR

The private sector plays a prominent role in technology acquisition in developing countries. Lack of adequate funds for most local industries to purchase environmentally friendly and modern technologies continues to be a major barrier. Governments need to be assisted to put in place appropriate enabling environments for industry to receive these technologies, foster their development transfer and diffusion.

• Barriers that prevent their greater participation;

- Fear of market reactions

- New technologies require heavy investments while competition is with those that are not ready to make similar investments - therefore disadvantaging those that have acquired new technologies

- Lack of clear policies or in cases a multiplicity of them with several grey areas

SUPPORT FOR THE DEVELOPMENT AND ENHANCEMENT OF INDIGENOUS CAPACITIES AND TECHNOLOGY OF DEVELOPING COUNTRY PARTIES

10. PROVIDE TECHNICAL ADVICE ON TECHNOLOGY TRANSFER TO PARTIES, PARTICULARLY DEVELOPING COUNTRY PARTIES

- Technical advice is needed on technology transfer in areas including the following:
  - Latest state of the art technology suitable for specific sub-sectors
  - Where such technology is available
  - Conditions for transfer
  - Expected operational life
  - Training in handling the technology
- Provision of advice
  - Clearing house/or SBSTA to work out modalities

11. PROMOTING CAPACITY BUILDING IN DEVELOPING COUNTRY PARTIES THROUGH PROVISION OF CONCRETE PROGRAMMES

- Areas of focus on capacity building
  - Capacity building should initially be based on specific industrial sectors with specific needs for changing their current technology to ESTs then embracing good practices throughout the processes
  - Training of Personnel from specific public sector departments (Environment, Industry...) on technology transfer methodology so as to prepare them for their role in getting their industries to change to ESTs.
  - Assessment of environmental soundness of existing technologies in various sectors/sub-sectors
  - Awareness workshops/seminars for industry executives and policy-makers from developing countries
  - Factory training of technical personnel before dispatch of procured technology
  - On site training after installation

- Seminars/workshops, training study-tours on advanced methods and practices e.g in agriculture, forestry renewable energy, coastal adaptation technologies etc.

- Governments should be assisted to set up sustainable institutions and networks which will give meaningful financial support to the private sector and encourage more active involvement of the private sector in capacity building activities

12. ASSISTING DEVELOPING COUNTRY PARTIES, ON REQUEST TO ASSESS REQUIRED TECHNOLOGIES

- A representative Clearing House/SBSTA should be responsible for this activity and should work out the modalities of meeting this need

13. PROMOTE AND ENHANCE ACCESS TO RELEVANT TECHNICAL LEGAL AND ECONOMIC INFORMATION AT NATIONAL AND REGIONAL CENTRES

Access to relevant technological information is a major problem. Existing information centres in developing countries are poorly equipped and lack the capacity to provide the necessary information required by their industrial, private and other sectors of the economy. These centres should be evaluated and assisted financially and technically so that they can provide reliable information and cater to the needs of their private sectors.

14. DEVELOP A CONSENSUS ON PRACTICAL NEXT STEPS TO IMPROVE EXISTING TECHNOLOGY CENTRES AND NETWORKS IN ORDER TO ACCELERATE THE DIFFUSION OF CLEAN TECHNOLOGIES IN NON-ANNEX 1 PARTY MARKETS.

- Non-Annex 1 Parties can specify existing technology centres indicating their activities, their limitations etc. But there is still a great deal of limitations in coming up with a comprehensive list on how these centres can be turned around.

  The type of processes to develop consensus and arrangements to monitor progress should be developed by the subsidiary bodies to the UNFCCC

15. PROMOTE AN ENABLING ENVIRONMENT FOR PRIVATE SECTOR PARTICIPATION

- Measures, programmes and activities that can best help create an enabling environment for private sector investment

- On the part of developing countries, import duty on environmentally sound technologies can be considerably reduced or waived altogether

- Private sector associations in Annex 1 countries in consultation with governments of developing countries should assist and enhance the capacity of similar organisation in the developing countries in enhancing the dissemination of technology information to their members

ASSISTANCE IN FACILITATING THE TRANSFER OF ESTs AND KNOW-HOW

16. OVERSEE THE EXCHANGE OF INFORMATION AMONG PARTIES AND OTHER INTERESTED ORGANISATIONS ON INNOVATIVE TECHNOLOGY COOPERATION APPROACHES, AND THE ASSESSMENT AND SYNTHESIS OF SUCH INFORMATION

- Overseeing of the exchange of information by the convention;

  - This tasks should be assigned to the SBI which would then work out the modalities of undertaking the assignment, noting that exchange of information as is currently done through national communications is falls short of expectations.

17. CONSIDER INFORMATION ON INNOVATIVE TECHNOLOGY COOPERATION APPROACHES AND DEVELOP RECOMMENDATIONS TO THE COP WHICH SHOULD BE RECOGNIZED MORE FORMALLY AND WIDELY IMPLEMENTED UNDER THE CONVENTION

- Compilation and synthesis of information on innovative technology cooperation approaches

  - Type of technology
  - Sector/sub-sector of application
  - When developed

  - If tested
  - Period of testing
  - Where tested (institution and country)
  - GHG emission reduction compared to existing technology
  - Parties cooperating
  - Market response
  - Cost
  - Appropriate recommendations based on the above points

- Timing of forwarding of recommendations to the COP

- Recommendations should be forwarded to the COP when information under 17 is available and compiled perhaps in a tabular form like the CC:INFO.

- Format for provision to the Secretariat, of information on projects and programmes of technology cooperation which can serve as models;

    - Type of project
    - Cooperating Parties
    - Objective of the project
    - Expected results
    - Cost of project
    - Contribution by investing Annex I Party
    - Contribution by hosting non-Annex I Party
    - Project management
    - Expertise of personnel from investing and hosting country Parties
    - Any adverse socio-economic or environmental impacts associated with the project and how they are being addressed

- When information on projects and programmes of technology cooperation which can serve as models should be provided to the secretariat

    - Information should be provided when demonstrable results are available.

18. CAN SPECIFIC TECHNOLOGY GOALS BE SET

- Yes. An attempt should be made with full involvement of the private sector.

Can we develop indicators and accounting systems to track progress on technology transfer

- Yes. Countries should report periodically but SBI should be assigned this task so as to work out the development of the indicators and accounting system.

Are particular institutional arrangements needed to monitor progress?

- The institution to deal with technology transfer would monitor the progress

PAPER NO. 4: SOUTH AFRICA

PRACTICAL STEPS TO PROMOTE, FACILITATE AND FINANCE, AS APPROPRIATE, TRANSFER OF, AND ACCESS TO, ENVIRONMENTALLY SOUND TECHNOLOGIES AND KNOW-HOW

Issues	**Questions**
Promote the removal of barriers to technology transfer	**How should Parties promote the removal of barriers to technology transfer? Which barriers are a priority and what practical steps should be taken?** The following are common barriers to Technology transfer: Limited local skills to adapt to new technologies. Limited support infrastructures to cater for new technologies. Lack of fundamental capacity building to sustain new technologies in the long term, as well as develop new country specific technologies (innovation). Availability of resources, e.g. primary energy sources. Lack of mechanisms for preferential pricing of new and appropriate technologies coupled with perceptions of unreliability and high operating costs for new technologies Low foreign investment rates coupled with reduced levels of ODA and other support. Need to assess performance in a local environment, i.e. undertaking of pilot plant studies. Private sector ownership of technology and capacity of local private sector to participate. The slow rate of economic development in developing nations compromising the availability of funds with which to purchase technology. Excess capacity in some economies - for example in the industrial sector.

	Age of the capital base - young assets still need to be fully depreciated before new ones can be built to avoid problems with "stranded assets." National security concerns. Competition from other current technologies "Locking into" a particular country's technology Non-sustainability due to lack of after-sales-service. "Culture Transfer" is often a component of technology transfer and as such the technology is often resisted. Lack of public awareness and appreciation of climate change and environmental matters in general. Lack of awareness of private sector drivers or motivators. Lack of awareness of technology needs in relation to climate change. Lack of alignment with national policies. Pressures to exclude specific technologies/primary fuel sources, hence introducing uncertainty as to their eligibility for Flexibility Mechanism status. The barriers of skills, technology need and resources are considered primary barriers to the transfer, adaptation and main stream application of technologies, which will support the objectives of the UNFCCC. As such the following strategy is proposed to facilitate the overcoming of barriers: 1. **CAPACITY BUILDING IN DEVELOPING NATIONS** The fundamental capacity of developing nations to assimilate, apply and sustain a variety of technologies needs to be developed. This capacity needs to include a critical mass of adequate core skills. This implies that training programmes need to be established in every developing nation to develop these skills. The development of capacity includes the development of an appropriate support infrastructure for relevant technologies. It should be stressed that capacity building is a long-term issue which should be initiated now, even if the technology is only required if a nation's economy develops adequately to justify it. Capacity building may be facilitated via the establishment of centres and networks. International centres for the dissemination of technology

	information, capacity building and the facilitation of technology transfer should be established via the identification and strengthening of relevant existing institutions in developing nations - locally or on a regional basis. The strengthening of the technological infrastructure in Africa in particular is essential for the sustainability of technology transfer initiatives. In establishing such centres an equitable spread of centres regionally and amongst developing nations must be ensured. Ideally every developing country should have a center, but this is not necessarily cost effective and existing centres and networks should be developed wherever possible. In particular the African Expert Group that was proposed at the Technology Transfer Workshop in Arusha should be seriously considered. This group could identify African specific needs and barriers and would assist in the identification of "lessons learnt" from previous technology transfer and technology diffusion initiatives and the communication of these lessons throughout the African continent. This expert group could assist with co-ordination of the efforts of all the centers at a macro level, thus preventing any duplication of effort in an already resource constrained environment. This south-south technology transfer and diffusion is critical in the adoption of technologies suitable for local conditions. These centres and expert group should play a role in the implementation of the strategy detailed below in co-operation with the secretariat and with a focus on the development of indigenous technological capacity and infrastructure. It is important that this include consideration of unique local cultural issues which could be impacted by imported technologies. As such the human dimension of technology transfer is an important capacity consideration. Indigenous capacity should be used to operate and develop the centres, with specialist support as required. Centres should be financed on the basis of long-term grants from the financial mechanism under the Convention. It is proposed that developing countries be encouraged to prepare detailed proposals for the establishment of such centres in developing countries to be presented to the GEF for funding. It should be stressed that a center can be a virtual center comprising a network of relevant centres in a variety of nations in a region. For example the Power Institute of East and Southern Africa hopes to establish regional centres of expertise in Southern Africa to support the power sector. These could also act as centres for power sector related technology transfer under the UNFCCC.

2. FORMULATION OF NATIONAL STRATEGIES FOR THE DEVELOPMENT AND TRANSFER OF TECHNOLOGIES.

A process needs to be established to address the direct information and technology transfer needs of individual developing nations. Particular attention should be given to matching specific local needs with technologies and relevant mechanisms to effect transfer and full diffusion into the mainstream of recipient nations. It should be noted in all activities that technology transfer includes a component of culture transfer and due sensitivity to the impact of such influence must be shown. In particular respect for the indigenous skills and technology base must be maintained. To further the transfer of technology in achieving the objectives of the Convention, the development of specific national strategies is proposed, that ensure that all relevant stakeholders are included in the development process, including in particular the private sector based organizations and non-government organisations. Funding for developing countries to develop these strategies should be supplied under the financial mechanism to the Convention.

The individual national strategies should be developed as follows:

A. Generic Identification of technologies

The information collected by the secretariat to date should be consolidated into a single database which identifies generic technologies and transfer mechanisms which enable vulnerability assessments, adaptation activities, monitoring, evaluation and impact modeling and emission mitigation. The information collected to date could be supplemented by the secretariat inviting the business sector to submit technologies for inclusion in the database. It is further proposed that the previously proposed specialist task teams or expert technology transfer panels assess these technologies under common efficacy criteria. It should be stressed that technologies assessed would include those in developing nations. This database should identify all relevant technologies, along with a quantification of their economic, environmental and social impacts, costs, ownership, skills and infrastructural requirements and intellectual property issues. Another important issue to be included in the database is the identification of technologies that can be easily replicated either within a specific country or in other developing countries

	to prevent duplication and ease resource constraints. The proposed African expert panel could assist with this identification. **B. National specific technology matching** Based upon the studies in support of national communications currently underway in most developing countries (and completed in some cases), it will be possible for these countries, if adequately resourced, to identify gaps between their current technology base and the technologies required for optimal performance in terms of vulnerability assessment, adaptation and mitigation of GHG emissions. This will enable each nation to develop a sector specific package of technologies which it requires. In addition, national initiatives such as the Foresight Project in South Africa must be identified and included in order to align with national priorities and facilitate the process. The Foresight project aims to assess emerging market opportunities and technological trends as well as inform decisions on the balance and direction of publicly funded science. An innovation fund has also been set up to encourage the development of relevant technologies. This fund could assist with capacity building and technology transfer, if appropriately resourced through the climate change mechanism. **C. Test against national priorities and prioritize** The desirability of transferring the technologies identified above into specific countries needs to be established by testing them against specific national priorities. This will enable those technologies which address both national priorities and the Convention objectives to be identified. **D. Develop a nation specific technology transfer strategy** A technology transfer, adaptation, application, assimilation, monitoring and evaluation strategy should then be defined by each developing nation. In particular country specific strategies for the transfer of the highest priority technologies should be developed on a technology-by-technology and sector-by-sector basis. In this regard African nations attach critical importance to technologies which will enable them to adapt to the negative impacts of climate change. A sound business approach to any strategy will ensure the sustainable utilization of any technology transferred. Funding for the development of these strategies should be sourced from the GEF and technical

	expertise should be made available should it be required. This expertise must be drawn from developing nations to ensure relevancy of the strategies developed. These strategies should include, inter alia • Feasibility studies and pilot plants required to develop local capacity • Skills, capacity building and technological infrastructure requirements • Time frames for implementation • Full costs and support infrastructure for the entire life cycle of the technology • Financing mechanisms, including intellectual property considerations It is essential to ensure that a balanced strategy is developed. In other words a portfolio of projects that include collaborative research and development, demonstration projects and skills development in the public and private sectors all need to be included. It is also important to have a balance between basic or fundamental research and applied research to ensure that long-term sustainability and innovation is encouraged in the research environment. Another important balance is the one that ensures that there is an appropriate spread between adaptation, vulnerability and mitigation projects and the multi disciplinary skills development that is required to support projects of this nature. This would include capacity in techno-economic and techno-political areas as well as basic science and business disciplines. Due to the varied nature of the individual programmes that need to be captured in the strategy, it is recommended that the strategy be broken down into short, medium and long-term sub-sections. This will allow the strategy to take into consideration the short-term realities of the institutional and human capacity of a specific country, as well as allowing long term development of specific research areas. Technology development and innovation within a given country is an essential mechanism for meeting the future challenges of climate change in a cost-effective manner. This strategy could also include performance indicators on progress and must make provision for the documentation of successes for dissemination. Performance indicators for the degree of technology transfer and sustainability are realistically set on a project level, although some high-level country indicators could be developed. Where regional initiatives are feasible, they should be encouraged. In Southern Africa there are a number of bodies through which regional co-operation can be facilitated.

	E. Legislative and Policy Environment The government needs to provide an environment that is conducive to the successful transfer and dissemination of technology. Regional co-operation can also play a role in the successful application of appropriate technologies. The Department of Trade and Industry in South Africa has already taken steps to encourage and maximize on technology transfer activities. Government can also direct research monies into specified technological areas and this is currently occurring in South Africa through the activities of the National Research Foundation. **F. Allocation of tasks** The establishment of the database should be undertaken by the secretariat assisted by the previously proposed sector specific specialist task teams, consisting of experts from developing and developed nations. The technology matching, national priority matching and prioritization should be undertaken by the relevant agencies in developing nations. The GEF should make funding available for this activity. The country specific technology transfer strategy should be developed by the receiving nation, with GEF funding and, if necessary, with specialist assistance.
Initiate and promote the transfer of publicly owned technology and those in the public domain.	**What publicly owned technologies are available?** It is difficult to define "publicly owned" technologies. Even public domain technologies - e.g. solar water heating, requires a commercial vehicle to develop, market and implement it. As such the focus should not be on public or private ownership, but rather on identification of technologies, identifying areas of application and then defining means of overcoming hurdles. **How could Annex II Parties report upon them?** There are several options open to the identification of technological resources. These include: An internet based database which public and private sector organizations, including NGOs, may enter information on environmentally sustainable technologies. Such information could include: • Description of technology and reason for its definition as environmentally sustainable • Cost and ownership issues • Greenhouse gas mitigation potential and related costs per unit reduction

	• Adaptation potential • Availability and potential mechanisms for transfer, including adaptation, demonstration and assimilation strategies • Capacity and support infrastructure required • Inclusion of available technologies in the national communications, including the same level of detail as above. **How should Annex II Parties promote the transfer of publicly owned technologies?** For specific technologies to become fully integrated into the mainstream of a nation's economy and culture, a holistic strategy needs to be established - specific to a particular nation and often to a particular technology. This strategy should be developed as detailed above.
Promote bilateral and multilateral technology cooperation to facilitate technology transfer.	**What additional bilateral and multilateral efforts to promote technology cooperation to facilitate technology transfer should be initiated? What should be the priority?** The priority should be on developing capacity in developing nations as well as preparing and implementing specific national technology transfer strategies as detailed above. **Are existing multilateral mechanisms sufficient?** It is considered that existing multilateral mechanisms are not adequate to facilitate technology transfer. Clearly institutional entities at a macro level are adequate, however even these are inadequate at a local level - especially with respect to poorer nations. Functions and modalities also require modification if Technology Transfer is to succeed in a sustainable manner.
Consider appropriate mechanisms for technology transfer within the UNFCCC.	**Are new mechanisms needed for technology transfer? If so, what are appropriate mechanisms for the transfer of technologies among Parties in pursuance of Article 4.5 of the UNFCCC?** The mechanism proposed above is considered appropriate for effective technology transfer.
Collaborate with relevant multilateral institutions to promote technology transfer.	**What should be the objective of collaboration with relevant multilateral institutions to promote technology transfer and what practical steps should be taken?**

	The primary objective should be capacity building, establishment of technology transfer partnerships and the leverage of skills, resources, institutional capacity and finances to both transfer technology whilst enabling the sustainable utilisation of such technology through sound business principles.
Promote and facilitate, in collaboration with the interim financial mechanism, multilateral and bilateral institutions, the arrangement of financing of technology Transfer	**What additional guidance should be given to the interim financial mechanism?** The strategy detailed above can be used as the basis for the guidance given to the interim financial mechanism. In particular the GEF should be instructed to fund the initial studies, the development of strategies and seed funds for the development of local capacity and initial technology transfer projects. It could be argued that all GEF projects should include a technology transfer strategy - however this is regarded as too restrictive. Instead it is proposed that the GEF use technology transfer and capacity building as some of the project evaluation criteria. This should definitely be a prerequisite for any technology based GEF project.
Promote and assist developing country Parties to access technology information.	**What sort of information is needed and how can this best be done?** See strategy detailed above. Technology information may be collected on an international internet network of databases, however access to information is not considered to be the major constraint to technology transfer. At the same time such a database can be useful in identifying technological opportunities. Information which would be useful would include: • Description of technology and reason for its definition as environmentally sustainable • Cost and ownership issues • Greenhouse gas mitigation potential and related costs per unit reduction • Adaptation potential • Availability and potential mechanisms for transfer, including adaptation, demonstration and assimilation strategies • Capacity and support infrastructure required Case studies on how local barriers have been overcome. In particular technologies which facilitate adaptation to negative impacts whilst promoting sustainability would be useful. Such technologies could relate to:

	• Infrastructure development - energy, water, roads, rail etc. • Food security • Water provision • Disaster response • Risk management • Pest and disease control • Mechanisms to improve the robustness of infrastructure • Clean technologies e.g. clean coal technology, waste management technologies • Etc.
Facilitate access to emerging technologies	**How could access to emerging technologies be facilitated?** Whilst the process described above can play an enabling role, it is suggested that emerging technologies typically exist in the R&D domain - as such it is difficult to include them in the strategy. It is however proposed that mechanisms to promote joint R&D programmes with public and private sector institutions in developing nations can provide this access most cost effectively. Not only can R&D and demonstration programmes be undertaken at low cost in many developing nations, but also the local capacity development will ensure that this process becomes sustainable. As such some mechanism to encourage the execution of R&D in developing nations – especially in the form of pilot demonstrations should be established. The cost efficiency of R&D execution in developing nations should also be promoted.
Facilitate the appropriate role of the private sector.	**What role is the private sector playing in technology transfer?** Currently the private sector is playing the major role in technology transfer through normal market mechanisms. Through private sector initiatives the uptake of efficient and low emitting technologies have been effectively applied throughout the world. **What additional role can the private sector play?** The private sector can operate as the mechanism for the transfer of technologies via enabling mechanisms such as those detailed above. It should be noted that the Kyoto mechanisms could play an important role in enabling technology transfer via activities such as CDM and JI projects. The aspects of technology transfer specific to CDM and other Kyoto mechanisms have not specifically been included in this submission and although some of the aspects are the same as

	for general technology transfer, some are decidedly different and will have to be dealt with separately. **What barriers prevent their greater participation?** • Limited support infrastructures to cater for new technologies • Availability of resources, e.g. primary energy sources • Lack of awareness about climate change and the implications thereof • Lack of mechanisms for preferential pricing of new and appropriate technologies coupled with perceptions of unreliability and high operating costs for new technologies • The slow rate of economic development in developing nations compromising the availability of funds with which to purchase technology • Excess capacity in some economies - for example in the industrial sector • Age of the capital base - young assets still need to be fully depreciated before new ones can be built to avoid problems with "stranded assets" • Cultural resistance • The local and global policy environment
Provide technical advice on technology transfer to Parties, particularly developing country Parties	**Support for the development and enhancement of endogenous capacities and technologies of developing country Parties** **What technical advice on technology transfer is needed? How should such advice be provided?** The technical advice required is as detailed above - namely how to develop a country specific technology transfer strategy. This clearly needs to be linked to information about the availability, cost and efficacy of relevant technologies. It is proposed that a programme to develop this capacity at a local or regional level be established - individual nations will then be able to source this advice locally. The technology transfer centres and expert panel can also play a role in this regard.
Promote capacity building in developing country Parties through provision of concrete programmes.	**What areas should be the focus of capacity building and how should it be undertaken, e.g. what kinds of activities, programmes and institutional arrangements?** In the short term capacity in the area of technology management is required. This should result in the country specific strategies and then technology specific capacity is

	required. This would initially be required in areas focussed on technologies to adapt to the negative impacts of climate change, followed by technologies to maximise the efficacy of mechanisms such as the CDM in promoting sustainability, followed by emission reduction technologies for local application. Proven mechanisms for capacity building include: • Formal training programmes • The execution of local R&D programmes • Undertaking pilot and demonstration programmes using local skills • Local infrastructural development - including academic and R&D capacity • FDI.
Assist developing country Parties, on request, to assess required technologies.	**How, to whom and in what format should developing country Parties make their request for assistance to assess required technologies?** The procedure detailed in the first section of this submission is proposed.
Promote and enhance access to relevant technical, legal and economic information at national and regional centres	**What technical, legal and economic information is needed? What practical steps should be taken to promote and enhance access to such information by national and regional centres?** As per proposal in first section of this submission Develop a consensus on practical next steps to improve on existing technology centres and networks to accelerate the diffusion of clean technologies in non-Annex I Party markets. **What type of process is needed to develop a consensus on practical next steps to improve on existing technology centres and networks to accelerate the diffusion of clean technologies in non-Annex I Party markets. What type of arrangement is needed to monitor progress?** It is proposed that a negotiating text be compiled for finalisation by SBSTA as a matter of urgency. The basis of the negotiating text should be all information submitted to date, with a focus on a mechanism to enable technology transfer. This should include information gathered at the various regional technology transfer workshops held during 1999 and 2000 and common concerns and needs identified. The African expert panel needs to be convened as soon as possible. In order to avoid creating additional mechanisms, it is proposed that additional enabling funds be made available for developing

	nations to include reporting on technology transfer in their national communications. Developed nations should also report on progress in this regard.
Promote an enabling environment for private sector participation.	**What measures, programmes and activities can best help to create an appropriate enabling environment for private sector investment?** Whilst the mechanism detailed above will define a strategic direction for specific countries, it will not enable private sector investment. It is therefore proposed that mechanisms such as the CDM could strongly promote private sector investment as well as technology transfer. Clearly this should be factored into the guidelines for CDM operation and modalities.
Oversee the exchange of information among Parties and other interested organizations on innovative technology cooperation approaches, and the assessment and synthesis of such information.	**Assistance in facilitating the transfer of environmentally sound technologies and know-how** **How should the Convention oversee the exchange of information among Parties and other interested organizations on innovative technology cooperation approaches, and the assessment and synthesis of such information?** As per proposal detailed in the first section of this submission Consider information on innovative technology cooperation approaches and develop recommendations to the Conference of the Parties which could be recognized more formally and widely implemented under the Convention. **How should information be compiled and synthesized on innovative technology cooperation approaches? When should recommendations on such approaches be forwarded to the Conference of the Parties?** As per proposal detailed in the first section of this submission. Identify projects and programmes on technology cooperation, which can serve as models for improving the diffusion and implementation of clean technologies internationally under the Convention, and to provide information on these projects to the UNFCCC secretariat. **How and when should information on projects and programmes of technology cooperation which Parties believe can serve as models for improving the diffusion and implementation of clean technologies internationally under the Convention be provided to the secretariat? How could information on such model programmes be evaluated?**

	Pilot projects established under the AIJ programme, as well as a proposed CDM pilot phase, could be useful case studies - however more focus is required on African nations. Critical success factors would include emission reduction efficacy, adaptation efficacy, capacity built and investment sustained. The African expert panel could be utilised to review such projects as to their applicability to African conditions. **Other questions** **Can specific technology transfer goals be set?** Ideally goals should be set, however these are extremely difficult - unless specific to the degree of uptake of a specific technology - in which case long term skewing of technological priorities can occur with an attendant reduction in innovation. As detailed above this can be achieved with some degree of success on a project level. **Can we develop indicators and accounting systems to track progress on technology transfer?** It is difficult to envisage specific indicators at this stage. Indicators such as technological capacity, technology base of the economy etc can be adopted, however these are at best indirect indicators. As such it is proposed that reporting be qualitative and against progress in implementing the process described in the first section of this submission. Thus some of the indicators could be as follows: • Number of people trained • Number of joint venture projects initiated • Number of demonstration projects initiated • Number of collaborative research projects/centers initiated **Are particular institutional arrangements needed to monitor progress?** Use existing institutional and reporting structures (as for national submissions)