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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

Eighth session

Bonn, 2-12 June 1998

Item 4 (a) of the provisional agenda

NATIONAL COMMUNICATIONS

NATIONAL COMMUNICATIONS FROM PARTIES INCLUDED
IN ANNEX I TO THE CONVENTION

Information submitted by Parties on reporting of information on finance
and transfer of technology

Submissions by Parties

1. At its seventh session, the Subsidiary Body for Scientific and Technological Advice (SBSTA) took note of the document prepared by the secretariat on activities of Parties included in Annex II related to the transfer of technology (FCCC/SBSTA/1997/13), which was based on second national communications.
2. The SBSTA took note of the need for better information with respect to finance and transfer of technology and agreed to consider at its ninth session what, if any, additions and/or amendments to the revised guidelines for the preparation of national communications by Annex II Parties would be required. It invited Parties to submit views to the secretariat by 15 March 1998 on reporting of information related to financing and transferring technology and it requested the secretariat to compile them for consideration at its eighth session.
3. The secretariat has received four such submissions.* In accordance with the procedures for miscellaneous documents, these submissions are attached and reproduced in the language in which they were received and without formal editing.

FCCC/SBSTA/1998/MISC.3
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* 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.

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FOLLOW-UP TO COP 3 AND INPUTS FROM PARTIES
TO THE SESSIONS OF THE SUBSIDIARY BODIES

While for the views on reporting information on finance and transfer of technology contained in document FCCC/SBSTA/1997/13 (Activities of Parties included in Annex II related to Transfer of Technology), Lebanon being a Party not included in Annex I, the Development, Finance, and Transfer of Environmentally Sound Technology are of high interest to us since it will help in curbing the GHG emissions and mainly help in the implementation of cost effective options that will have a positive impact on the national economy.

Therefore we do recommend that Annex II parties, mainly all developed countries should provide in their national communications a more detailed and comprehensive overview of how Transfer of Hard and Soft Technologies to developing countries will take place.

We do think that this Compilation of information contained in document (FCCC/SBSTA/1997/13) regarding transfer of technology is incomplete mainly in providing clear steps of how transfer of technology will occur.

Please note, that a country like Lebanon will need full funding on adoption of environmentally sound technology. Therefore, we would appreciate your emphasis regarding the financial contribution of developed countries, related to this matter as stated in Articles 4.3 and 4.5 of the convention.

PAPER NO. 2: SOUTH AFRICA

SOUTH AFRICAN SUBMISSION ON TECHNOLOGY TRANSFER AND ITS ROLE IN OPTIMISING DEVELOPMENT WHILST CONTRIBUTING TO ACHIEVING THE OBJECTIVES OF THE UNITED NATION FRAMEWORK CONVENTION ON CLIMATE CHANGE

1.1 BACKGROUND

The United Nations Framework Convention on Climate Change (UNFCCC) calls for parties to “Promote and co-operate in the development, application and diffusion, including transfer of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases...” (UNFCCC Art 4(1)c).

The role that technology transfer could play in achieving the objectives of the UNFCCC is apparent from the following figures:

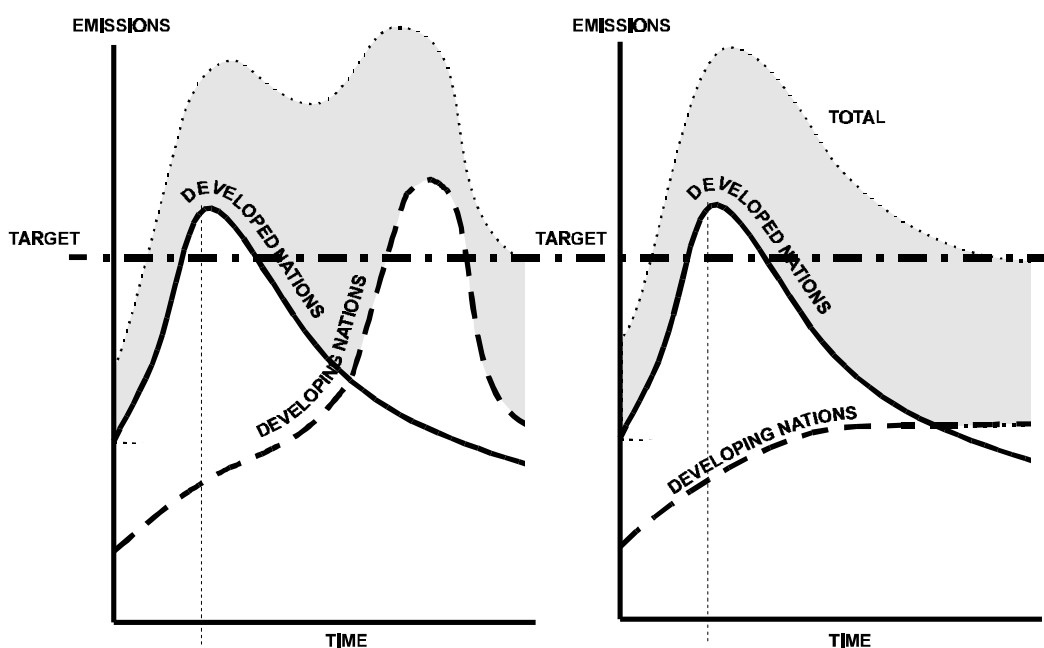


FIGURE A

FIGURE B

The scenario illustrated in Figure B is only feasible with substantial, well engineered technology transfer coupled with financial and technical assistance flowing from the developed nations to the developing nations. This would ensure that ideally optimal use is made of energy and technology to ensure global emission reductions are maximised and increases are optimised. This is considered to be an ideal scenario. In the light of current difficulties in getting technology transfer to work effectively a more likely scenario is presented in Figure A.

In terms of this scenario, it is considered likely that developing nation's emissions will

increase substantially before they decrease gradually, as technology utilisation is optimised due to economic development. This essentially duplicates historical excesses in developed nations. In this scenario this reduction is likely to be driven by evolutionary technological advances, efficiency improvements and economic factors. The challenge for parties to the UNFCCC is for technology to be optimally transferred and assimilated to avoid this evolutionary scenario and move towards revolutionary technological development in developing countries with an ultimate move towards environmental sustainability

The above has resulted in technology transfer being a component of the political negotiations surrounding the UNFCCC. The positions adopted to date are in essence the developing nations requesting access to the latest environmentally friendly technologies whilst the developed nations assert that these technologies are in the hands of the private sector and as such are beyond their control. Proposals for case studies, technology transfer panels and pilot projects have been largely ineffectual in getting technologies applied. The latest calls for technological information centres are likely to be similarly unsuccessful. The frustration surrounding technology transfer is considered to be due to the fact that a holistic approach is not being taken towards this issue. To define technology as hardware or information is highly unlikely to result in the sustainable assimilation of such technology.

The UNFCCC technology transfer roundtable wishes to identify:

- The role of corporations and government in “[making] a big jump in the transfer of environmentally sound technologies to developing countries”.
- Barriers and opportunities relating to the transfer of technology.

It is however, considered appropriate that an understanding of the critical success factors for, and issues to be considered in, technology transfer be developed before the above objectives may be met.

1.2 THE COMPLEXITIES OF TECHNOLOGY TRANSFER

Technology transfer is a major component of business life, ranging from fast food franchises to massive infrastructural projects and as such should be readily achieved. This is indeed the case where the technology being assimilated is required for business purposes and mechanisms are in place to sustain it. This is often not the case where an artificial need is created and a short term hardware or information approach is adopted. Key elements for successful technology transfer are:

- Needs Driven
The technology must be a means to an end - not an end in itself. In this regard technologies identified, under the UNFCCC, for transfer must facilitate the achievement of national goals and not merely be transferred because “donors” are looking for a market.

- **Adaptation**

Technologies are not universally applicable, as such unique local characteristics need to be identified and the technology adapted to suit such characteristics. Adaptation is often required to address issues related to local climate, fuel sources, raw materials, security, skills profiles, cultures, etc.
- **Life Cycle Management**

Technology transfer needs to apply throughout the life cycle of a technology. It is therefore clearly a long-term process. Inherent in the life cycle management of a technology are considerations relating to:

 - Skills required to sustain the technology from design through construction, commissioning, operating and maintaining, life extension and upgrading to final decommissioning and rehabilitation.
 - Infrastructure required to support the technology - including electronics, power, transport, raw materials, spare parts, intellectual infrastructure, etc.
 - Timing of uptake and phase out of the technology in such a way as to optimise benefits - economic, social and environmental.
 - Development of a local technology base via feasibility studies, design, pilot plants, etc.
- **Support Infrastructure**

A support infrastructure which includes skills, after sales-service, institutional support, physical infrastructure and financing, needs to be in place or established.
- **Ownership**

Clear ownership of a technology by an individual or a sector is required to ensure its focused application.
- **Appropriate**

The technology selected to meet a need must be appropriate to that need. This does not imply high tech or low tech, merely using the right technology to achieve the right objective. For example trying to force an environmentally friendly technology into an inappropriate application will inevitably result in failure and wasted resources.
- **Alignment with the Skills Base**

A nation's skills base must be able to support and sustain its technological base. The introduction of technologies which require the development of parallel skills streams in nations where skills are already scarce, is a recipe for disaster. It is far preferable to select technologies which can use the current skills base as a launching point.
- **Full Cost Accounting**

The full life cycle costs of a technology need to be assessed. These should include costs for capacity building, infrastructures, stranded assets, etc.

It is clear from the above that technology transfer is not a simple matter and that a great deal of long term commitment is required of both owner and receiver for it to be fully effective. There are also numerous barriers to technology transfer in many developing nations.

1.3 BARRIERS TO TECHNOLOGY TRANSFER

Barriers to the uptake of technology transfer are numerous and are often specific to individual nations. Generic barriers do however exist – especially when it comes to technologies to combat and adapt to climate change. These include areas such as:

- Limited local skills to adapt to new technologies
- Limited support infrastructures to cater for new technologies
- 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
- Private sector ownership and participation
- 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

In light of this long list it is not surprising that technology transfer under the UNFCCC experiences difficulties!

1.4 SOUTH AFRICAN INITIATIVES IN TECHNOLOGY TRANSFER

2..1..

2..2.. The apartheid legacy left South Africa impoverished in many areas. In spite of a well-developed technological infrastructure, the isolationist policies of the previous regime resulted in a lack of strategic foresight in matters technological. In the New South Africa a long-term approach is being adopted to ensure the social, economic and environmental sustainability of science, engineering and technological capacity. Some of the initiatives currently in hand are as follows:

- A Science and Technology Foresight exercise has identified Environmental

Management as a key technological sector for the competitive positioning of South Africa internationally. This exercise will identify technologies that South Africa has developed and which could be marketed to further the cause of global sustainability.

- A Trade and Industry cluster study is identifying environmental areas of technological congruency, which also support the competitive position of South Africa.
- The establishment of a clean technology centre is being considered to undertake technological and socio-economic Research, Development and Demonstration projects to facilitate the assimilation of environmentally beneficial technologies into the economic mainstream of society.
- The development of an outcomes based education curriculum at primary and secondary school levels which includes both technology as well as environmental sustainability as key subjects.
- NGO and industrial initiatives to facilitate the development and assimilation of environmentally sustainable technologies, capacity and infrastructure. These technologies vary from renewable energy sources for rural electrification to low water utilisation and novel clean coal technologies.
- A programme to assess and develop indigenous technologies in the pursuit of sustainability via the use of traditional technologies and practices which may challenge the paradigms of current technological practice. This is a useful contribution to overall African activities to develop endogenous capacity and the application of appropriate technologies.

Clearly the above is a significant strategy to ensure the development, transfer, adaptation and application of technology to ensure long term environmental sustainability. At the same time it should be stressed that major effort is required to ensure that this plan becomes reality. Whilst the focus of this programme is a domestic and regional one, the realisation of a global contribution from this ambitious programme is dependent on the support of both international partners as well as funding and financing mechanisms which result in a win-win solution to global environmental issues. In this regard a contribution towards the UNFCCC technology transfer debate is submitted below.

1.5 TECHNOLOGY TRANSFER INFORMATION STRATEGY UNDER THE UNFCCC

If technology transfer is to play a role in meeting the objectives of the UNFCCC, then it is clear that major effort needs to go into its planning, implementation, financing and monitoring. In this context a potentially sustainable strategy which could apply is detailed below:

1.5.1 Generic Identification of Technologies

A process should be established, on a sector basis, to identify core technologies that have the potential to contribute to achieving the objectives of the UNFCCC. This should include (in order of priority) technologies for:

- Vulnerability assessment
- Adaptation
- Monitoring, evaluation and modeling
- Mitigation

This assessment should identify all relevant technologies, along with a quantification of their impacts, costs, ownership and intellectual property issues.

1.5.2 Nation Specific Technology Matching

Based upon the country studies currently under way in most developing nations, it will be possible to identify the gaps between their current technology base and the technologies required for optimal performance in terms of vulnerability assessment, adaptation and mitigation of GHG emissions.

A list of technologies which will enable that nation to anticipate and adapt to impacts, whilst optimally developing, will therefore be compiled. Generic technologies need to be established. In this regard a process should be established, on a sector basis, to identify core technologies that have the potential to contribute to achieving the objectives of the UNFCCC. This should include (in order of priority) technologies for:

- Vulnerability assessment
- Adaptation
- Monitoring, evaluation and modeling
- Mitigation

This assessment should identify core technologies, along with a quantification of their impacts, costs, ownership and intellectual property issues. The process to use here could be for the Secretariat to invite business to submit technologies for consideration and then, via the proposed specialist task teams, assess these technologies under some efficacy criteria (essentially develop a “climate friendly” mark). It should be stressed here that technologies assessed would include those in developing nations.

2..1..

1.5.3 Test Against National Priorities and Prioritise

The desirability of assimilating the technologies identified needs to be established by testing against national priorities. This will enable those technologies which will deliver the biggest “bang for the buck” to be identified (both in terms of national priorities and UNFCCC objectives). The technologies identified should then be prioritised in order of need, efficacy and full cost.

- Develop a Technology Transfer, Adaptation, Application and Assimilation

Strategy

A technology transfer, adaptation, application, assimilation, monitoring and evaluation strategy needs to be defined. In particular country specific strategies for the transfer of the highest priority technologies should be developed – primarily by the national governments facilitating actions on the part of the private sector. 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:

- Feasibility studies and pilot plants
- Technology life cycle
- Skills and capacity building requirements
- Timeframes
- Full costs for the entire lifecycle of the technology
- Support infrastructure required – including the human resource development infrastructure
- Financing mechanisms

Financial resources may be obtained from various sources. The most obvious, where incremental UNFCCC related costs are involved, is the GEF. Other options include:

- Joint ventures
- Risk capital with write off provisions if the technology fails
- Cofinancing e.g. utilities, government, private sector, aid agencies, GEF etc.
- Foreign investment
- Venture capital
- Activities Implemented Jointly and potential future Joint Implementation
- Incentives to facilitate private sector uptake.

The latter is considered a particularly promising mechanism as it can encompass the profit motive that is a particularly strong driver. It does however not cover important technological infrastructure issues such as education, capacity building and physical support infrastructure. As such any incentives for the uptake of climate friendly technologies – as identified above – must be made available as a component of a partnership between the appropriate private sectors, the governments of developing nations and the funding mechanism under the Convention as well as any related Protocol.

1.5.4 Allocation of Tasks

The generic identification of technologies should be undertaken by sector specific specialist task teams, (as per the current G77 proposal) consisting of experts from developing and developed nations. (Bearing in mind that technology transfer will not only be from developed nations to developing nations.)

The technology matching, national priority matching and prioritisation (as detailed in 1.5.3 above) should be undertaken by the National Climate Change Committees of developing nations. The GEF should be requested to make funding available for this activity.

This technology transfer strategy should be developed by the receiving nation, if necessary with assistance from a specialist technology transfer team to be established as part of the UNFCCC secretariat or the proposed national/regional centres.

1.6 TECHNOLOGY TRANSFER OPPORTUNITIES

The following technologies could be typical examples of those which could be accredited as “climate friendly” and transferred under this process:

- Renewable energy for rural electrification
- Low water consumption technologies – two way transfer ie from South Africa as well
- Technology training systems
- Sustainable agriculture
- Efficient low cost housing
- Efficient industrial processes
- Demand side management technologies
- Electricity supply side options – including clean coal technologies - two way transfer i.e. from South Africa as well
- Efficient mining practices – two way transfer i.e. from South Africa as well
- End use electrotechnologies
- Information technology for knowledge capture and management
- Coal gasification
- Coal beneficiation – including Sasol type processes – two way transfer i.e. from South Africa as well
- Efficient transport systems
- Electric vehicles

1.7 CONCLUDING REMARKS

Technology transfer is not a simple issue, especially if it is being used to achieve specific objectives not necessarily related to normal good business practice. In such cases it needs a bit of help - hence the methodology proposed above. It should however be noted that the most powerful tool to drive technology transfer is economic development. Sustained economic development in developing nations would go a long way to assimilating the latest, most cost effective and environmentally friendly technologies throughout the world.

PAPER NO. 3: SWITZERLAND

REPORTING INFORMATION ON FINANCE AND TRANSFER OF TECHNOLOGY

In response to the invitation to Parties at the seventh session of the Subsidiary Body for Scientific and Technological Advice to express their views on reporting information on finance and transfer of technology, Switzerland submits the following comments.

1. In the light of the experience with the first two national communications from Annex I Parties, finance and transfer of technology are examples on which the reporting format should be improved. Parties should provide information on the implementation of the Convention in a transparent and comparable way. It seems to us that there is a need to define a framework allowing to increase precision and simplicity in reporting, to remove ambiguities, and to prevent vague answers to precise questions.
2. We would therefore advocate for a type of “question and answer” framework in which unambiguous questions would induce very precise (yes/no-type) answers. Where possible, reporting should consist of filling in tables and/or answering very precise and specific questions. The national communications should be part of a data base in which standardised answers are recorded. The advantage of such a procedure would be enhanced transparency and comparability.
3. Specifically, for finance and technology transfer, the actual system suffers from the broad possibilities which are let to Parties to provide their own interpretation of the guidelines when enumerating activities. This is a consequence of existing ambiguities in the information requested and leads itself to ambiguities in the information supplied. We provide here a list of suggestions and issues to be solved:
 - We strongly support reporting financial contributions in tables. Multilateral and bilateral activities should be clearly separated.
 - Along with the difficulty of Annexe I Parties to determining if financial resources are “new and additional”, there is a difficulty in determining which projects of non-Annex I Parties financed by Annex I Parties are designed to implement measures covered under Article 4.1 of the Convention, and which are the “full incremental costs” of such measures.
 - There is a lack of criteria for determining which are the necessary adaptation measures to adverse effects of climate change of particularly vulnerable Parties and to assess if these measures are well suited. For example: should sectors such as health, water supply and sanitation be considered as related to adaptation measures? How are multiple benefits of (and related multiple motivations for) certain adaptation measures accounted for?
 - Assessing the transfer of financial means, technology and know-how to non-Annex I Parties from activities undertaken by the private sector in the free economy market is much more difficult than from activities undertaken by the public sector.

Furthermore, there is no means to know if these activities are undertaken in order to implement the Convention, or contribute, de facto, to implementing the Convention. Another problem is the assessment of the impact of these activities. There is a lack of indicators for this purpose. Improved guidelines are needed to deal with this issue.

- For both public and private projects, the actual guidelines ask for information on the sector in which they take place, the technology used to mitigate or to adapt to climate change, as well as an assessment of the reduction of GHG emissions that each project generates. We wonder to which extent this information is available (particularly from the private sector), and how the guidelines could be improved for reporting on this.
- An assessment of the effect of contributions to regional or multilateral institutions (other than GEF) has to focus on: (i) the extent to which they have contributed to personal and institutional capacity building, (ii) the replicability potential of the projects, and (iii) their long term impact on the recipient country.
- Finally, precise questions should be asked on the efforts made by the countries to facilitate the diffusion and transfer of technologies and know-how (e.g., if they have created a data base, an information centre, etc.).

PAPER NO. 4: UNITED KINGDOM OF GREAT BRITAIN
AND NORTHERN IRELAND
(on behalf of the European Community and its member States)

TECHNOLOGY TRANSFER: REPORTING BY ANNEX II PARTIES: EU VIEWS

With respect to the reporting guidelines on finance and transfer of technologies, the EU would refer the Secretariat to the statement made by Luxembourg, on behalf of the EU and its Member States, at the 7th session of SBSTA.

The EU believes that any amendments to the reporting guidelines in this area should be part of the second overall revision to the reporting guidelines. The EU would suggest that the Secretariat to produce a more comprehensive report based on reporting in 2nd National Communications and on 2nd In Depth Reviews and then consider how the guidelines might be amended. One suggestion is that the reporting guidelines should ask Annex II Parties to consider the contents of non-Annex 1 national communications in countries where they have significant bilateral aid or commercial involvement and to produce strategies for future involvement that takes these into account. However, it is very difficult to measure technology transfer, as much of it takes place in the private sector, which is not tracked by Governments; nor, by its nature, is it susceptible to ready or robust measurement.

However, the EU believes that the comparability of Annex 2 Parties' reporting could be improved, both within the FCCC itself and between the FCCC and other Conventions. The EU would suggest that the OECD could take on the tasks of developing a "marker" system to indicate the relevance of ODA projects to the objectives of the FCCC, and thus to improve the comparability of reporting in this area.

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PAPER NO. 1: REPUBLIC OF LEBANON

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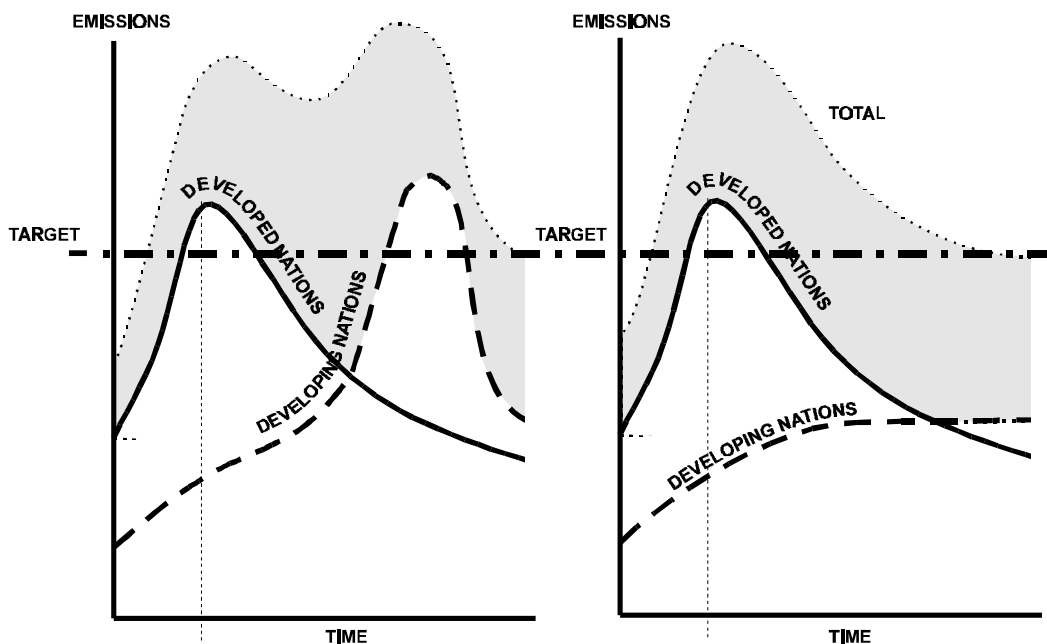


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In terms of this scenario, it is considered likely that developing nation's emissions will increase substantially before they decrease gradually, as technology utilisation is optimised due to economic development. This essentially duplicates historical excesses in developed nations. In this scenario this reduction is likely to be driven by evolutionary technological advances, efficiency improvements and economic factors. The challenge for parties to the UNFCCC is for technology to be optimally transferred and assimilated to avoid this evolutionary scenario and move towards revolutionary technological development in developing countries with an ultimate move towards environmental sustainability

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Barriers to the uptake of technology transfer are numerous and are often specific to individual nations. Generic barriers do however exist – especially when it comes to technologies to combat and adapt to climate change. These include areas such as:

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- Limited support infrastructures to cater for new technologies
- 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
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- Need to assess performance in a local environment
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- 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
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- “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

In light of this long list it is not surprising that technology transfer under the UNFCCC experiences difficulties!

1.4 SOUTH AFRICAN INITIATIVES IN TECHNOLOGY TRANSFER

2..1..

- 2..2.. The apartheid legacy left South Africa impoverished in many areas. In spite of a well-developed technological infrastructure, the isolationist policies of the previous regime resulted in a lack of strategic foresight in matters technological. In the New South

Africa a long-term approach is being adopted to ensure the social, economic and environmental sustainability of science, engineering and technological capacity. Some of the initiatives currently in hand are as follows:

- A Science and Technology Foresight exercise has identified Environmental Management as a key technological sector for the competitive positioning of South Africa internationally. This exercise will identify technologies that South Africa has developed and which could be marketed to further the cause of global sustainability.
- A Trade and Industry cluster study is identifying environmental areas of technological congruency, which also support the competitive position of South Africa.
- The establishment of a clean technology centre is being considered to undertake technological and socio-economic Research, Development and Demonstration projects to facilitate the assimilation of environmentally beneficial technologies into the economic mainstream of society.
- The development of an outcomes based education curriculum at primary and secondary school levels which includes both technology as well as environmental sustainability as key subjects.
- NGO and industrial initiatives to facilitate the development and assimilation of environmentally sustainable technologies, capacity and infrastructure. These technologies vary from renewable energy sources for rural electrification to low water utilisation and novel clean coal technologies.
- A programme to assess and develop indigenous technologies in the pursuit of sustainability via the use of traditional technologies and practices which may challenge the paradigms of current technological practice. This is a useful contribution to overall African activities to develop endogenous capacity and the application of appropriate technologies.

Clearly the above is a significant strategy to ensure the development, transfer, adaptation and application of technology to ensure long term environmental sustainability. At the same time it should be stressed that major effort is required to ensure that this plan becomes reality. Whilst the focus of this programme is a domestic and regional one, the realisation of a global contribution from this ambitious programme is dependent on the support of both international partners as well as funding and financing mechanisms which result in a win-win solution to global environmental issues. In this regard a contribution towards the UNFCCC technology transfer debate is submitted below.

1.5 TECHNOLOGY TRANSFER INFORMATION STRATEGY UNDER THE UNFCCC

If technology transfer is to play a role in meeting the objectives of the UNFCCC, then it is clear that major effort needs to go into its planning, implementation, financing and monitoring. In this context a potentially sustainable strategy which could apply is detailed below:

1.5.1 Generic Identification of Technologies

A process should be established, on a sector basis, to identify core technologies that have the potential to contribute to achieving the objectives of the UNFCCC. This should include (in order of priority) technologies for:

- Vulnerability assessment
- Adaptation
- Monitoring, evaluation and modeling
- Mitigation

This assessment should identify all relevant technologies, along with a quantification of their impacts, costs, ownership and intellectual property issues.

1.5.2 Nation Specific Technology Matching

Based upon the country studies currently under way in most developing nations, it will be possible to identify the gaps between their current technology base and the technologies required for optimal performance in terms of vulnerability assessment, adaptation and mitigation of GHG emissions.

A list of technologies which will enable that nation to anticipate and adapt to impacts, whilst optimally developing, will therefore be compiled. Generic technologies need to be established. In this regard a process should be established, on a sector basis, to identify core technologies that have the potential to contribute to achieving the objectives of the UNFCCC. This should include (in order of priority) technologies for:

- Vulnerability assessment
- Adaptation
- Monitoring, evaluation and modeling
- Mitigation

This assessment should identify core technologies, along with a quantification of their impacts, costs, ownership and intellectual property issues. The process to use here could be for the Secretariat to invite business to submit technologies for consideration and then, via the proposed specialist task teams, assess these technologies under some efficacy criteria (essentially develop a “climate friendly” mark). It should be stressed here that technologies assessed would include those in developing nations.

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1.5.3 Test Against National Priorities and Prioritise

The desirability of assimilating the technologies identified needs to be established by testing against national priorities. This will enable those technologies which will deliver the biggest “bang for the buck” to be identified (both in terms of national priorities and UNFCCC objectives). The technologies identified should then be prioritised in order of need, efficacy and full cost.

- Develop a Technology Transfer, Adaptation, Application and Assimilation Strategy

A technology transfer, adaptation, application, assimilation, monitoring and evaluation strategy needs to be defined. In particular country specific strategies for the transfer of the highest priority technologies should be developed – primarily by the national governments facilitating actions on the part of the private sector. 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:

- Feasibility studies and pilot plants
- Technology life cycle
- Skills and capacity building requirements
- Timeframes
- Full costs for the entire lifecycle of the technology
- Support infrastructure required – including the human resource development infrastructure
- Financing mechanisms

Financial resources may be obtained from various sources. The most obvious, where incremental UNFCCC related costs are involved, is the GEF. Other options include:

- Joint ventures
- Risk capital with write off provisions if the technology fails
- Cofinancing e.g. utilities, government, private sector, aid agencies, GEF etc.
- Foreign investment
- Venture capital
- Activities Implemented Jointly and potential future Joint Implementation
- Incentives to facilitate private sector uptake.

The latter is considered a particularly promising mechanism as it can encompass the profit motive that is a particularly strong driver. It does however not cover important technological infrastructure issues such as education, capacity building and physical support infrastructure. As such any incentives for the uptake of climate friendly technologies – as identified above – must be made available as a component of a partnership between the appropriate private sectors, the governments of developing nations and the funding mechanism under the Convention as well as any related Protocol.

1.5.4 Allocation of Tasks

The generic identification of technologies should be undertaken by sector specific specialist task teams, (as per the current G77 proposal) consisting of experts from developing and developed nations. (Bearing in mind that technology transfer will not only be from developed nations to developing nations.)

The technology matching, national priority matching and prioritisation (as detailed in

1.5.3 above) should be undertaken by the National Climate Change Committees of developing nations. The GEF should be requested to make funding available for this activity.

This technology transfer strategy should be developed by the receiving nation, if necessary with assistance from a specialist technology transfer team to be established as part of the UNFCCC secretariat or the proposed national/regional centres.

1.6 TECHNOLOGY TRANSFER OPPORTUNITIES

The following technologies could be typical examples of those which could be accredited as “climate friendly” and transferred under this process:

- Renewable energy for rural electrification
- Low water consumption technologies – two way transfer ie from South Africa as well
- Technology training systems
- Sustainable agriculture
- Efficient low cost housing
- Efficient industrial processes
- Demand side management technologies
- Electricity supply side options – including clean coal technologies - two way transfer i.e. from South Africa as well
- Efficient mining practices – two way transfer i.e. from South Africa as well
- End use electrotechnologies
- Information technology for knowledge capture and management
- Coal gasification
- Coal beneficiation – including Sasol type processes – two way transfer i.e. from South Africa as well
- Efficient transport systems
- Electric vehicles

1.7 CONCLUDING REMARKS

Technology transfer is not a simple issue, especially if it is being used to achieve specific objectives not necessarily related to normal good business practice. In such cases it needs a bit of help - hence the methodology proposed above. It should however be noted that the most powerful tool to drive technology transfer is economic development. Sustained economic development in developing nations would go a long way to assimilating the latest, most cost effective and environmentally friendly technologies throughout the world.

PAPER NO. 3: SWITZERLAND

REPORTING INFORMATION ON FINANCE AND TRANSFER OF TECHNOLOGY

In response to the invitation to Parties at the seventh session of the Subsidiary Body for Scientific and Technological Advice to express their views on reporting information on finance and transfer of technology, Switzerland submits the following comments.

1. In the light of the experience with the first two national communications from Annex I Parties, finance and transfer of technology are examples on which the reporting format should be improved. Parties should provide information on the implementation of the Convention in a transparent and comparable way. It seems to us that there is a need to define a framework allowing to increase precision and simplicity in reporting, to remove ambiguities, and to prevent vague answers to precise questions.
2. We would therefore advocate for a type of “question and answer” framework in which unambiguous questions would induce very precise (yes/no-type) answers. Where possible, reporting should consist of filling in tables and/or answering very precise and specific questions. The national communications should be part of a data base in which standardised answers are recorded. The advantage of such a procedure would be enhanced transparency and comparability.
3. Specifically, for finance and technology transfer, the actual system suffers from the broad possibilities which are let to Parties to provide their own interpretation of the guidelines when enumerating activities. This is a consequence of existing ambiguities in the information requested and leads itself to ambiguities in the information supplied. We provide here a list of suggestions and issues to be solved:
 - We strongly support reporting financial contributions in tables. Multilateral and bilateral activities should be clearly separated.
 - Along with the difficulty of Annexe I Parties to determining if financial resources are “new and additional”, there is a difficulty in determining which projects of non-Annex I Parties financed by Annex I Parties are designed to implement measures covered under Article 4.1 of the Convention, and which are the “full incremental costs” of such measures.
 - There is a lack of criteria for determining which are the necessary adaptation measures to adverse effects of climate change of particularly vulnerable Parties and to assess if these measures are well suited. For example: should sectors such as health, water supply and sanitation be considered as related to adaptation measures? How are multiple benefits of (and related multiple motivations for) certain adaptation measures accounted for?
 - Assessing the transfer of financial means, technology and know-how to non-Annex I parties from activities undertaken by the private sector in the free economy

market is much more difficult than from activities undertaken by the public sector. Furthermore, there is no means to know if these activities are undertaken in order to implement the Convention, or contribute, de facto, to implementing the Convention. Another problem is the assessment of the impact of these activities. There is a lack of indicators for this purpose. Improved guidelines are needed to deal with this issue.

- For both public and private projects, the actual guidelines ask for information on the sector in which they take place, the technology used to mitigate or to adapt to climate change, as well as an assessment of the reduction of GHG emissions that each project generates. We wonder to which extent this information is available (particularly from the private sector), and how the guidelines could be improved for reporting on this.
- An assessment of the effect of contributions to regional or multilateral institutions (other than GEF) has to focus on: (i) the extent to which they have contributed to personal and institutional capacity building, (ii) the replicability potential of the projects, and (iii) their long term impact on the recipient country.
- Finally, precise questions should be asked on the efforts made by the countries to facilitate the diffusion and transfer of technologies and know-how (e.g., if they have created a data base, an information centre, etc.).

PAPER NO. 4: UNITED KINGDOM OF GREAT BRITAIN
AND NORTHERN IRELAND
(on behalf of the European Community and its member States)

TECHNOLOGY TRANSFER: REPORTING BY ANNEX II PARTIES: EU VIEWS

With respect to the reporting guidelines on finance and transfer of technologies, the EU would refer the Secretariat to the statement made by Luxembourg, on behalf of the EU and its Member States, at the 7th session of SBSTA.

The EU believes that any amendments to the reporting guidelines in this area should be part of the second overall revision to the reporting guidelines. The EU would suggest that the Secretariat to produce a more comprehensive report based on reporting in 2nd National Communications and on 2nd In Depth Reviews and then consider how the guidelines might be amended. One suggestion is that the reporting guidelines should ask Annex II Parties to consider the contents of non-Annex 1 national communications in countries where they have significant bilateral aid or commercial involvement and to produce strategies for future involvement that takes these into account. However, it is very difficult to measure technology transfer, as much of it takes place in the private sector, which is not tracked by Governments; nor, by its nature, is it susceptible to ready or robust measurement.

However, the EU believes that the comparability of Annex 2 Parties' reporting could be improved, both within the FCCC itself and between the FCCC and other Conventions. The EU would suggest that the OECD could take on the tasks of developing a "marker" system to indicate the relevance of ODA projects to the objectives of the FCCC, and thus to improve the comparability of reporting in this area.

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