

**Developing and testing a set of performance indicators
to monitor and evaluate the effectiveness of the implementation
of the technology transfer framework of the UNFCCC**

Methodological sheets¹

¹ Unedited version - 20090325.

By decision 3/CP.13, the Conference of the Parties (COP) requested the Expert Group on Technology Transfer (EGTT) to develop and test a balanced and robust set of performance indicators that could be used by the Subsidiary Body for Implementation to monitor and evaluate the effectiveness of the implementation of the framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention. The outcome of this work could also provide input to the work of the subsidiary bodies on the following matters: (i) reviewing and assessing the effectiveness of the implementation of Article 4, paragraphs 1(c) and 5, of the Convention; (ii) considering the role of new financing mechanisms and tools for scaling up development and transfer of technology; and (iii) long-term cooperative action under the Convention.

Based on earlier work of the EGTT (background paper, first interim report and second interim report), an interim report has been prepared for SB 29 (FCCC/SB/2008/INF.6) and an advanced report as an input to the AWG-LCA (FCCC/SB/2009/INF.3). The specific objectives of these documents are to (i) present the participative design process in developing and testing a set of performance indicators to monitor and evaluate the effectiveness of the implementation of the technology transfer framework, (ii) render the components of the five key themes of the technology transfer framework less abstract in order to design metrics and performance indicators that best reflect the vision and objectives of the Convention on technology transfer, (iii) present a initial selection of performance indicators checked against the causal relationship and earlier proposals made by Parties in their submissions, (iv) report on the experiences in collecting data for measuring the performance indicators and (v) present the results of an overall evaluation of the testing process.

For the testing process, the standard methodological sheet was used as a tool to address, inter alia, the extent to which each performance indicator is specific, measurable, achievable, relevant and time-bound (SMART). A methodological sheet has been completed for each of the 32 performance indicators for monitoring and evaluating the effectiveness of the implementation of the technology transfer framework and for each of the eight indicators for financial flows.

This work on performance indicators by the EGTT may contribute to the work being carried out under the AWG-LCA on matters relating to “measurable, reportable and verifiable, as referred to in paragraph 1 (b) (ii) of the Bali Action Plan (decision 1/CP.13), on the following matters:

- (a) The standard methodological sheet may assist Parties with the operationalization of some”aspects of measurable, reportable and verifiable;
- (b) The performance indicators related to finance and capacity-building might be relevant for operationalizing paragraph 1 (b) (ii) of the Bali Action Plan;
- (c) The indicator technology programmes/projects from technology needs assessments (TNAs) implemented (PI-TNA-06)³ refers in its methodological sheet to the concept of nationally appropriate mitigation actions (NAMAs).

The EGTT is considering the timing and frequency of monitoring and evaluating the effectiveness of the implementation of the technology transfer framework, including the possibility of initiating a pilot activity by 2010 by using the proposed performance indicators on the basis of existing information.

Please, take note, when comparing with the standard methodological sheet (FCCC/SB/2009/INF.3, annex I), one can observe that some fields have been deleted:

- (a) ‘Relevance to sustainable development’: from the testing, it could be concluded that the argumentation in each methodological sheet was similar;
- (b) ‘International Conventions and Agreements’: in each methodological sheet there was a reference to Article 4, paragraph 5 of the UNFCCC;
- (c) International targets/recommended targets: from the testing, it could be observed that for most performance indicators, there are no targets.

Key theme ‘Technology Needs and Needs Assessment’

Financial resources for TNA’s

Description of the performance indicator

Name	Financial resources for TNA’s
Brief definition	Amount of financial resources provided for the TNA process.
Detailed description	Amount of financial resources provided for the TNA process in line with UNDP/GEF Handbook ‘Conducting technology needs assessments for climate change’
Unit of Measurement	USD in total and per Annex II Party.
Targeted stakeholder	Annex II Parties (via intergovernmental organizations)
Classification	Input
Key theme	Technology needs and needs assessment
Code (ID)	PI – TNA – 01

Policy relevance

Purpose	Under the synthesized objective ‘to provide resources’ for this key theme of the ‘technology transfer framework’ the following objectives are formulated: <ul style="list-style-type: none"> ▪ to provide resources, as appropriate to country-specific circumstances (developed country Parties and other developed Parties included in Annex II); ▪ to make available (financial and technical) resources to assist developing countries in the implementation of capacity building to enable developing countries to undertake country-level needs assessments (developed country Parties and other developed Parties included in Annex II).
Linkages to other performance indicators	The other performance indicators related to the key theme TNA’s (PI – TNA – 02 till 06) and those related to the key theme MECH, in particular PI – MECH – 01 and 05.

Methodological description

Underlying definitions and concepts	<p>The GEF, under the enabling activities top-up fund, provided support to non-Annex I Parties to conduct technology needs assessments (TNA's). Some 78 TNA's conducted with assistance from UNDP and some 14 TNA's conducted with assistance from UNEP.</p> <p>Based on the elaboration of the GEF, the UNFCCC Conference of the Parties has adopted at its 14th session the Poznan strategic programme on technology transfer, announcing inter alia a process of funding new TNA's to begin in 2009.</p>
Limitations of the performance indicator	None
Status of the methodology	<p>Till now – due to the specific characteristics of the GEF enabling activities top-up fund - these objectives were hard to monitor.</p> <p>With the new GEF funding mechanism in place it should be easier to lay a causal relationship between the multilateral financial support of Annex II Parties and the publication of TNA's.</p> <p>It seems there is a medium feasibility to collect data from bilateral cooperation.</p>

Assessment of data

Monitoring of data	<p>The data of financial sources needed could be twofold: funding through multilateral and bilateral mechanism.</p> <p>The intergovernmental organizations (IGO's) involved in supporting TNA's are GEF, UNDP and UNEP. These IGO's could deliver yearly the amount of money they spend for the TNA process.</p> <p>Because Annex II Parties might support financially the TNA process in their bilateral cooperation, National Communications can be a source of data.</p>
Data availability	<p>GEF, UNDP and UNEP have been communicating the amount of financial resources (in total and per Non-Annex I Party) spend through a multilateral mechanism, partially for the TNA process.</p> <p>Under the new Poznan strategic programme for technology transfer, setting up a transparent data record is an important requirement to monitor and evaluate this indicator.</p> <p>Annex II National Communications might be a source for collecting data: this needs further investigation.</p>
Data collection limitations	At the multilateral level. Although IGO's - in a position to do - are providing data when requested for, there is no structural agreement on delivering these data.

	At the bilateral level. There are no specific NC Guidelines requesting for these data.
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	None. If the focus lays on financial resources for TNA's via multilateral efforts, the feasibility gets high.
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References

Readings	/
Internet site	UNFCCC: http://unfccc.int/tclear/jsp/TNAReports.jsp GEF, UNDP and UNEP do have a specific internet page/site for TNA: http://ncsp.undp.org/report_detail.cfm?Projectid=158

Factual data and evaluation

Factual data represented in a table	The total amount of top-up funding approved by the GEF and allocated <ul style="list-style-type: none"> ▪ by UNDP: 7,760,300 USD ▪ by UNEP: 1,383,000 USD of which part could be used by Non-Annex I Parties for TNA. See documents in annex to this methodological sheet: <ul style="list-style-type: none"> ▪ UNDP, (2008), Experiences and lessons learned from technology needs assessments (TNA's). ▪ UNEP, (2008), UNEP's assistance to 14 countries within the framework of the global environment facility expedited financing for (interim) measures for capacity building in priority areas.
Factual data represented e.g. in a graph	None
Discussion	In Spring 2008 UNDP and UNEP provided the GEF with a report – inter alia - on the financial support for TNA's. Despite a lot of information in those two reports, because of the nature of top-up funding, this can not be regarded as a zero measurement. It might be expected that the UNFCCC COP decision will help in the future to collect the accurate data. Data of financial sources per Annex II Party for

	TNA's are not available (yet).
Evaluation	As part the 'Results of the assessment by the Expert Group on Technology Transfer' (see document FCCC/SBSTA/2006/INF.4), it can be concluded for now that the barrier of lacking funding for TNA's has been removed.

Programmes/projects for capacity-building on TNA's

Description of the performance indicator

Name	Programmes/projects for capacity-building on TNA's
Brief definition	Number of programmes/projects for capacity-building on TNA's in non-Annex I Parties (including percentage of least developed countries)
Detailed description	Number of programmes/projects for capacity-building to conduct, report and use TNA's in non-Annex I Parties, recognizing the special circumstances of least developed countries.
Unit of Measurement	Number of programmes and projects, including the number of participants (in total, per IGO and per Annex II Party).
Targeted stakeholder	Intergovernmental organizations (and Annex II Parties)
Classification	Input indicator
Key theme	Technology needs and needs assessment
Code (ID)	PI – TNA - 02

Policy relevance

Purpose	Under the synthesized objective 'to build capacity for this key theme of the 'technology transfer framework' the following objectives are formulated: <ul style="list-style-type: none"> • to assist in facilitating the technology needs assessment process; • to provide capacity-building for non-Annex I Parties to conduct, report and use TNA's; • to facilitate and to support the needs assessments process, recognizing the special circumstances of least developed countries.
Linkages to other performance indicators	The other performance indicators related to the key theme TNA's (PI – TNA – 01 and PI – TNA – 03 till 06) and the performance indicators related to the key theme MECH, in particular PI – MECH – 01 and 05.

	Furthermore the performance indicators related to the key theme CB (PI – CB – 01 till 04).
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Methodological description

Underlying definitions and concepts	<p>The UNFCCC-EGTT, IEA-CTI, etc. in the past have been setting up capacity-building programmes/projects for conducting TNA's.</p> <p>Through bilateral cooperation, it might be expected that Annex I Parties have as well been contributing to this synthesized objective.</p>
Limitations of the performance indicator	<p>A couple of questions arise:</p> <ul style="list-style-type: none"> ▪ what can be regarded as a programme or as a project? ▪ how many participants were/are reached through those programmes/projects? ▪ in terms of quality, how were the programmes/projects evaluated? <p>While the synthesized objective 'to built capacity' in relation to TNA's is not questioned, it should be clear that it will be hard to valuate the efficiency or the effectiveness with this indicator.</p>
Status of the methodology	<p>The methodology to monitor or evaluate under the UNFCCC capacity-building in general and in particular for TNA's is not well developed.</p> <p>It seems there is a low feasibility to collect data from bilateral cooperation.</p>

Assessment of data

Monitoring of data	<p>The sources of the data needed could be twofold: capacity-building through multilateral and bilateral cooperation. This needs further investigation.</p> <p>The intergovernmental organizations (IGO's) are involved in supporting TNA's are GEF, UNDP and UNEP. These IGO's could deliver yearly the data needed for this performance indicator.</p> <p>Because Annex II Parties might support as well capacity-building programmes/projects for the TNA process in their bilateral cooperation, National Communications can be a source of data.</p>
Data availability	A discussion with the IGO's on definitions (programmes, projects, participants ...) is needed.
Data collection limitations	/
References	/

Development of new data	/
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Alternative definition(s) or performance indicator(s)

Second-best performance indicator	None, but the development of this performance indicator needs to be linked to the key theme ‘capacity-building’ of the ‘technology transfer framework’ and to other related work under the UNFCCC on capacity-building. If the focus lays on efforts at the multilateral level the feasibility gets medium.
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References

Readings	/
Internet site	UNFCCC: http://unfccc.int/tclear/jsp/TNAReports.jsp GEF, UNDP and UNEP do have a specific internet page/site for TNA: http://ncsp.undp.org/report_detail.cfm?Projectid=158

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	In Spring 2008 UNDP and UNEP provided the GEF with a report on TNA’s. In the report of UNDP recommendations are formulated for programmes/projects related to TNA.
Evaluation	/

Targeted non-Annex I Parties

Description of the performance indicator

Name	Targeted non-Annex I Parties
Brief definition	Number of targeted non-Annex I Parties to built capacity on TNA’s (including percentage of least developed countries)
Detailed description	Number of targeted non-Annex I Parties for capacity-building to conduct, report and use TNA’s, recognizing the special circumstances of least developed countries.
Unit of Measurement	Number in total, per IGO and per Annex II Party

Targeted stakeholder	Intergovernmental organizations (and Annex II Parties)
Classification	Input
Key theme	Technology Needs and Needs Assessment
Code (ID)	PI – TNA – 03

Policy relevance

Purpose	Under the synthesized objective ‘to build capacity for this key theme of the ‘technology transfer framework’ the following objectives are formulated: <ul style="list-style-type: none"> • to assist in facilitating the technology needs assessment process; • to provide capacity-building for non-Annex I Parties to conduct, report and use TNA’s; • to facilitate and to support the needs assessments process, recognizing the special circumstances of least developed countries.
Linkages to other performance indicators	The other performance indicators related to the key theme TNA’s (PI – TNA – 01/02 and 04/05/06) and the performance indicators related to the key theme MECH, in particular PI – MECH – 01 and 05. Furthermore the performance indicators related to the key theme CB: PI - CB – 01 till 04.

Methodological description

Underlying definitions and concepts	The UNDP and UNEP, as implementing agencies, are targeting the Non-Annex I Parties to the UNFCCC. Through bilateral cooperation, it might be expected that Annex I Parties have as well been contributing to this synthesized objective.
Limitations of the performance indicator	The number of Non-Annex I Parties, in particular LDC’s, is one measurement, but the level of support per capita is important as well. This latter is important because needs for capacity-building do have another magnitude in a big developing country comparing with e.g. a small island developing state.
Status of the methodology	/

Assessment of data

Monitoring of data	Number of Non-Annex I Parties, including the level of support per capita. The sources of these data needed could be twofold:
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	capacity-building through multilateral and bilateral cooperation.
Data availability	The intergovernmental organizations (IGO's) are involved in supporting TNA's are GEF, UNDP and UNEP. These IGO's could deliver yearly the data needed for this performance indicator. Because Annex II Parties might support as well capacity-building programmes/projects for the TNA process in their bilateral cooperation, National Communications can be a source of data.
Data collection limitations	/
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	None. If the focus lays on the multilateral level, the feasibility gets high. The development of this performance indicator needs to be linked to the key theme 'capacity-building' of the 'technology transfer framework' and to other related work under the UNFCCC on capacity-building.
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References

Readings	/
Internet site	UNFCCC: http://unfccc.int/ttclear/jsp/TNAReports.jsp GEF, UNDP and UNEP do have a specific internet page/site for TNA: http://ncsp.undp.org/report_detail.cfm?Projectid=158

Factual data and evaluation

Factual data represented in a table	In total there are 150 Non-Annex I Parties to the UNFCCC of which 68 plus 10 Pacific Island Countries have been targeted by UNDP and 14 by UNEP, i.e. 61,33 % Regarding the 49 Least Developed Countries, 31 have been targeted, i.e. 63,27 %. See documents in annex to this methodological sheet: <ul style="list-style-type: none"> ▪ UNDP, (2008), Experiences and lessons learned from technology needs assessments (TNA's). ▪ UNEP, (2008), UNEP's assistance to 14 countries within the framework of the global environment facility expedited financing for
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	(interim) measures for capacity building in priority areas. Quid data of bilateral cooperation?
Factual data represented e.g. in a graph	None
Discussion	/
Evaluation	/

Published TNA's completed or updated

Description of the performance indicator

Name	Published TNA's completed or updated
Brief definition	Number of published TNA's completed or updated by non-Annex I Parties
Detailed description	/
Unit of Measurement	Number
Targeted stakeholder	Non-Annex I Parties
Classification	Output
Key theme	Technology Needs and Needs Assessment
Code (ID)	PI – TNA - 04

Policy relevance

Purpose	<p>Under the synthesized objective 'to make available information of the TNA's' for this key theme of the 'technology transfer framework' the following objectives are formulated:</p> <ul style="list-style-type: none"> ▪ to make available information on the results of their needs assessments in their national communications, other related national reports and channels (for example, technology information clearing houses) ▪ to make these reports available to the secretariat ▪ to provide updated information on their technology needs in the second national communications and other national reports <ul style="list-style-type: none"> ○ and to make them available to the secretariat
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Linkages to other performance indicators	The other performance indicators related to the key theme TNA's (PI – TNA – 01/02/03 and 05/06) and the performance indicators related to the key theme MECH, in particular PI – MECH – 01 and 05.
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Methodological description

Underlying definitions and concepts	The TNA should be the result of a process following the (updated) GEF/UNDP Handbook 'Conducting technology needs assessments for climate change'.
Limitations of the performance indicator	This indicator is not reflecting on the quality of the TNA's. Therefore it is recommended to take this into account when developing the indicator 'Synthesis report on TNA's' (see PI – TNA – 05).
Status of the methodology	/

Assessment of data

Monitoring of data	Number of TNA's
Data availability	Data are available at the level of UNFCCC, GEF, UNDP and UNEP.
Data collection limitations	/
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	/
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References

Readings	/
Internet site	UNFCCC: http://unfccc.int/tclear/jsp/TNAReports.jsp GEF, UNDP and UNEP don't have a specific internet page/site for TNA

Factual data and evaluation

Factual data represented in a table	The number of published TNA's (completed or updated): <ul style="list-style-type: none"> ▪ reported by UNDP: 35 (on a total of 78) ▪ reported by UNEP: 13 (on a total of 14) which means 52,17 % of the Non-Annex I Parties
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	<p>receiving top-up funding.</p> <p>See documents in annex to this methodological sheet:</p> <ul style="list-style-type: none"> ▪ UNDP, (2008), Experiences and lessons learned from technology needs assessments (TNA's). ▪ UNEP, (2008), UNEP's assistance to 14 countries within the framework of the global environment facility expedited financing for (interim) measures for capacity building in priority areas.
Factual data represented e.g. in a graph	
Discussion	It is well known that there are no specific requirements related to the top-up funding for delivering the TNA.
Evaluation	Based on the discussion

Synthesis report on TNA's

Description of the performance indicator

Name	Synthesis report on TNA's
Brief definition	Synthesis report on TNA's made available by the UNFCCC Secretariat and considered by the subsidiary bodies
Detailed description	Synthesis report of the available information on TNA's, made available (every three years) by the UNFCCC Secretariat, for the consideration by the UNFCCC Subsidiary Bodies
Unit of Measurement	Yes/No
Targeted stakeholders	UNFCCC Secretariat
Classification	Output
Key theme	Technology Needs and Needs Assessment
Code (ID)	PI – TNA - 05

Policy relevance

Purpose	<p>Under the synthesized objective 'to consider the synthesis report' for this key theme of the 'technology transfer framework' the following objectives are formulated:</p> <ul style="list-style-type: none"> ▪ to consider on a regular basis
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	<ul style="list-style-type: none"> ▪ to prepare a synthesis report of the information for consideration
Linkages to other performance indicators	Another performance indicator related to the key theme TNA's: PI – TNA – 04.

Methodological description

Underlying definitions and concepts	A first synthesis report has been provided by the UNFCCC Secretariat in 2006 (see document FCCC/SBSTA/2006/INF.1. The outline of this report could form the basis to discuss the expected outline of future synthesis reports.
Limitations of the performance indicator	/
Status of the methodology	/

Assessment of data

Monitoring of data	To describe and to synthesize the technology needs of Non-Annex I Parties, detailed to the level of different sectors and technologies, addressing mitigation and adaptation. The data can be collected through TNA's, NC's and NAPA's.
Data availability	<p>These reports with the data required are available:</p> <ul style="list-style-type: none"> ▪ for TNA's: UNDP and UNEP ▪ for NC's: UNFCCC ▪ for NAPA's: UNFCCC <p>The most important report (TNA's) are not useful for a comparison in time. The frequency of NC's and NAPA's is neither fitting. However the data can be used for a comparison between countries/regions?</p>
Data collection limitations	<p>If a process for supporting financially the completion and update of TNA's is in place (cf. PI – TNA – 01 and 02), provided Non-Annex I Parties respecting the timing, there are no limitations for the data collection for this indicator.</p> <p>It might be expected that Non-Annex I Parties are following a different periodicity for completing and updating their respective TNA's. New information will continuously be available. The question arises what the frequency should be of the synthesis report. A longer period (up to 5 years) allows to be more complete while describing and synthesizing the information from the different TNA's, because more – if not all – Non-Annex I Parties will have delivered their reports. A shorter period (up to 2 years) gives the opportunity 'to share lessons learned, success stories, good practices' (cf. synthesized objective 7)</p>

	and – from there – to reorient programmes and projects ‘to build capacity’ (cf. synthesized objective 3). The cost for making the synthesis report lies within the UNFCCC Secretariat.
References	The available TNA’s, NC’s and NAPA’s are posted on http://www.unfccc.int .
Development of new data	None

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	None
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References

Readings	http://unfccc.int/tclear/jsp/TNAReports.jsp , including the UNDP/GEF Handbook ‘Conducting technology needs assessments for climate change’ Document FCCC/SBSTA/2006/INF.1 of 21 April 2006: see http://unfccc.int/resource/docs/2006/sbsta/eng/inf01.pdf
Internet site	

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	<p>Observation: what should the synthesis report cover? In the past, it has been a way to describe and synthesize the technology needs of Non-Annex I Parties, detailing to the level of different sectors and technologies addressing mitigation and adaptation. Furthermore, former synthesis reports reflected also about the technology needs as described in National Communications and/or NAPA’s. There is a need to make an explicit choice on this.</p> <p>In the future, one might expect new elements to be important for the synthesis:</p> <ul style="list-style-type: none"> ▪ Quality check of the TNA’s; ▪ Efficiency and effectiveness, placed in the causal relationship. <p>If this choice is made, there is an explicit link with</p>

	the other performance indicators for this key theme. The question arises about the frequency of the synthesis reports: yearly, every two years ...
Evaluation	

Technology programmes/projects from TNA's implemented

Description of the performance indicator

Name	Technology programmes/projects from TNA's implemented
Brief definition	Number of technology programmes/projects from TNA's implemented by non-Annex I Parties
Detailed description	Number of technology programmes/projects, expressed as needs in the respective TNA's, implemented by non-Annex I Parties
Unit of Measurement	Number
Targeted stakeholders	Non-Annex I Parties
Classification	Outcome
Key theme	Technology Needs and Needs Assessment
Code (ID)	PI – TNA - 06

Policy relevance

Purpose	Under the synthesized objective 'to implement the results of the technology needs assessment' for this key theme of the 'technology transfer framework' the following objectives are formulated: <ul style="list-style-type: none"> ▪ to provide regular updates on progress of the implementation of the results of technology needs identified in TNA's.
Linkages to other performance indicators	The other performance indicators related to the key theme TNA's (PI – TNA – 01 till 05) and the performance indicators related to the key theme MECH, in particular PI – MECH 01 and 05.

Methodological description

Underlying definitions and concepts	Since a couple of years/months there is an evolution in the line of thinking about the post-TNA process up to the implementation of the environmental sound technologies needed. The UNFCCC EGTT developed two years ago a
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	<p>process ‘From TNA’s to financial closure of projects’. This process has been supported – inter alia – by CTI/PFAN.</p> <p>The UNFCCC COP 14 adopted the ‘Poznan strategic programme on technology transfer’, in which GEF elaborates further its line of thinking started in the Spring 2008 (see document FCCC/SBI/2008/16). As a follow-up of TNA’s, the GEF defined the concept of TMA’s, technology market assessments.</p>
Limitations of the performance indicator	<p>A couple of questions arises:</p> <ul style="list-style-type: none"> ▪ via which reporting mechanism the number of technology programmes/projects implemented can be counted? ▪ what level of implementation should be reached (demonstration, deployment, and diffusion)? ▪ what happens if technology programmes/projects are implemented due to factors external at the initiatives of the UNFCCC, GEF and its implementing agencies? ▪ who will do the double check? ▪ ...
Status of the methodology	This methodology needs further developments.

Assessment of data

Monitoring of data	/
Data availability	/
Data collection limitations	/
References	/
Development of new data	Yes.

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	It could be considered to formulate the second-best performance indicator as follows: “Number and percentage of technology programmes/projects supported by UNFCCC, GEF and its implementing agencies”.
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References

Readings	/
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Internet site	/
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Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Key theme 'Technology Information'

Training programmes and workshops for building capacity on TI

Description of the performance indicator

Name	Training programmes and workshops for building capacity on TI
Brief definition	Number of training programmes and workshops for building capacity on TI
Detailed description	Number of training programmes and workshops for building capacity on TI of experts in the creation of their national technology information databases.
Unit of Measurement	Number
Targeted stakeholders	International organizations (and Annex II Parties?)
Classification	Input
Key theme	Technology information
Code (ID)	PI – TI - 01

Policy relevance

Purpose	Under the synthesized objective 'to built capacity' for this key theme of the 'technology transfer framework' the following objective is formulated: <ul style="list-style-type: none"> ▪ to encourage the organization of training programmes and workshops for building capacity of experts in the creation of their national technology information databases.
Linkages to other performance indicators	The other performance indicators related to the key theme TI (PI – TI – 02 till 05) and the performance indicators related to the key theme CB (PI – CB – 01 till 04).

Methodological description

Underlying definitions and concepts	In the past the UNFCCC-EGTT has been setting up some capacity-building programmes/projects. Through bilateral cooperation, it might be expected that Annex I Parties have as well been contributing to this synthesized objective.
Limitations of the performance indicator	A couple of questions arise: <ul style="list-style-type: none"> ▪ what can be regarded as a programme or as a workshop? ▪ how many participants were/are reached through

	<p>those programmes/workshops?</p> <ul style="list-style-type: none"> in terms of quality, how were/are the programmes/workshops evaluated? <p>While the synthesized objective ‘to built capacity’ in relation to TNA’s is not questioned, it should be clear that it will be hard to valuate the efficiency or the effectiveness with this indicator.</p>
Status of the methodology	The methodology to monitor or evaluate under the UNFCCC capacity-building in general and in particular for TNA’s is not well developed.

Assessment of data

Monitoring of data	Number of programmes and workshops, including the number of participants.
Data availability	The sources of the data needed are twofold: capacity-building through multilateral and bilateral cooperation. This needs further investigation.
Data collection limitations	/
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	The development of this performance indicator needs to be linked to the key theme ‘capacity-building’ of the ‘technology transfer framework’ and to other related work under the UNFCCC on capacity-building.
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References

Readings	/
Internet site	UNFCCC: http://unfccc.int/tclear/jsp/Information.jsp

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/

Evaluation	/
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National communications with information on technology transfer activities

Description of the performance indicator

Name	National communications with information on technology transfer activities
Brief definition	Number of national communications with information on technology transfer activities
Detailed description	
Unit of Measurement	Number of National Communications
Targeted stakeholders	All Parties
Classification	Input
Key theme	Technology information
Code (ID)	PI – TI - 02

Policy relevance

Purpose	Under the synthesized objective ‘to make available information through NC’s’ for this key theme of the ‘technology transfer framework’ the following objectives are formulated: <ul style="list-style-type: none"> ▪ to provide more information on their technology transfer activities in their national communications.
Linkages to other performance indicators	The other performance indicators related to the key theme TI (PI – TI – 01 and 03/04/05).

Methodological description

Underlying definitions and concepts	NC’s are an important source of information to the UNFCCC process. Providing information on technology transfer activities is regarded useful for the multilateral community.
Limitations of the performance indicator	... (cf. check against CGE template for minimum requirements)
Status of the methodology	Idem

Assessment of data

Monitoring of data	National Communications of all Parties.
Data availability	/
Data collection limitations	/
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	/
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References

Readings	/
Internet site	/

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Information on maintaining, updating and developing TT:CLEAR

Description of the performance indicator

Name	Information on maintaining, updating and developing TT:CLEAR
Brief definition	Synthesis report with information on maintaining, updating and developing TT:CLEAR, addressing gaps and user needs, made available (every three years) by the UNFCCC Secretariat and considered by the subsidiary bodies
Detailed description	

Unit of Measurement	Yes/no
Targeted stakeholders	UNFCCC Secretariat
Classification	Process
Key theme	Technology information
Code (ID)	PI – TI - 03

Policy relevance

Purpose	<p>Under the synthesized objective ‘to maintain, update and further develop TT:CLEAR’ for this key theme of the ‘technology transfer framework’ the following objectives are formulated:</p> <ul style="list-style-type: none"> ▪ to maintain, update and further develop TT:CLEAR taking into account relevant conclusions of the SBSTA at its twentieth session and client surveys; ▪ to further define user needs, criteria for quality control, technical specifications and the role and contribution of the Parties; ▪ to identify gaps in existing EST inventories, and update and develop inventories, as needed.
Linkages to other performance indicators	The other performance indicators related to the key theme TI (PI – TI – 01/02/04/05).

Methodological description

Underlying definitions and concepts	In the past some reports on TT:CLEAR, focussing on certain aspects, have been published by the UNFCCC Secretariat. These reports can form the basis for the envisaged outline of the synthesis report.
Limitations of the performance indicator	/
Status of the methodology	/

Assessment of data

Monitoring of data	Cf. outline.
Data availability	The data are available at the UNFCCC Secretariat and in the NC’s.

Data collection limitations	/
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	/
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References

Readings	/
Internet site	UNFCCC: http://unfccc.int/tclear/jsp/Information.jsp and ... (NC's)

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Technology information centers and networks connected to TT:CLEAR

Description of the performance indicator

Name	Technology information centers and networks connected to TT:CLEAR
Brief definition	Number of technology information centers and networks connected to TT:CLEAR
Detailed description	Number of technology information centers and networks, meeting the minimum standards, connected to TT:CLEAR
Unit of Measurement	Number (total, AI and NAI)
Targeted stakeholders	UNFCCC Secretariat

Classification	Output
Key theme	Technology information
Code (ID)	PI – TI - 04

Policy relevance

Purpose	<p>Under the synthesized objective ‘to network with technology information centers’ for this key theme of the ‘technology transfer framework’ the following objectives are formulated:</p> <ul style="list-style-type: none"> ▪ to accelerate its work on networking of an international technology information clearing house under the Convention, and enhancement of technology information centers and networks; ▪ to establish a network of technology information centers, by the time of the eighth session of the Conference of the Parties, taking into consideration the conclusions of the SBSTA, at its sixteenth session, on the above-mentioned report; ▪ to encourage the link between TT:CLEAR and technical information providers, including the private sector, in technology transfer; ▪ to share experiences and lessons learned among national and regional experts participating in the pilot project on TT:CLEAR networking through the organization of expert meetings; ▪ to use TT:CLEAR and the network of technology centers developed through the current pilot programme to share technical information on technologies for adaptation and the associated capacity-building to meet the needs for technology information of vulnerable communities and countries;
Linkages to other performance indicators	<ul style="list-style-type: none"> ▪ The other performance indicators related to the key theme TI (PI – TI – 01/02/03/05).

Methodological description

Underlying definitions and concepts	The technology information centers and networks need to meet minimum standards set by the UNFCCC Secretariat before being connected to TT:CLEAR. These requirements are listed in the Informal Paper EGTT/2004/3.
Limitations of the performance indicator	As part of the technology transfer framework, it can be expected that the targeted stakeholder are Non-Annex I Parties. Therefore, in order to reflect the real objective, next to a total number the number of IGO’s, AI, NAI and others (private sector ...) should

	be mentioned.
Status of the methodology	Well developed.

Assessment of data

Monitoring of data	Number of technology information centers and networks
Data availability	The data are available at the UNFCCC Secretariat.
Data collection limitations	/
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	/
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References

Readings	/
Internet site	UNFCCC: http://unfccc.int/ttclear/jsp/Information.jsp

Factual data and evaluation

Factual data represented in a table	The number of technology information centers and networks connected to TT:CLEAR is 6 of which: <ul style="list-style-type: none"> ▪ 1 IGO ▪ 2 AI ▪ 3 NAI ▪ 0 Others
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	Based on the discussion

Users of TT:CLEAR from developing countries

Description of the performance indicator

Name	Users of TT:CLEAR from developing countries
Brief definition	Number of users of TT:CLEAR from developing countries.
Detailed description	/
Unit of Measurement	Number
Targeted stakeholders	UNFCCC Secretariat
Classification	Outcome
Key theme	Technology information
Code (ID)	PI – TI - 05

Policy relevance

Purpose	Under the synthesized objective ‘to increase the number of users’ for this key theme of the ‘technology transfer framework’ the following objective is formulated: <ul style="list-style-type: none"> ▪ to enhance outreach activities to increase the numbers of users of TT:CLEAR from developing country Parties.
Linkages to other performance indicators	The other performance indicators related to the key theme TI (PI – TI – 01 till 04).

Methodological description

Underlying definitions and concepts	/
Limitations of the performance indicator	/
Status of the methodology	/

Assessment of data

Monitoring of data	/
Data availability	/

Data collection limitations	/
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	/
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References

Readings	/
Internet site	/

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Key theme ‘Enabling Environments’

Performance on World Bank’s Governance Indicators

Description of the performance indicator

Name	Performance on World Bank’s Governance Indicators
Brief definition	Performance on each of the six World Bank’s governance indicators (can be done for one country, a selection of countries, or an entire region)
Detailed description	/
Unit of Measurement	Percentile ranking and indicator measurement ranging from –2.5 to 2.5
Targeted stakeholders	All Parties All Parties, particularly developed country Parties
Classification	Input
Key theme	Enabling environments
Code (ID)	PI - EE - 01

Policy relevance

Purpose	Under the synthesized objective ‘to enhance legal systems (including those related to trade and IPR’s), the following objectives are formulated: <ul style="list-style-type: none"> ▪ to enhance legal systems (All Parties, particularly developed country Parties) ▪ to protect intellectual property rights (All Parties, particularly developed country Parties) ▪ to avoid trade and intellectual property rights policies (or lack thereof) that restrict technology transfer (All Parties) ▪ to ensure fair trade policies (All Parties, particularly developed country Parties)
Linkages to other performance indicators	The other performance indicators related to the key theme EE, in particular PI – EE – 08 and 10.

Methodological description

Underlying definitions and concepts	“Governance” has been defined differently by different international organizations. The World Bank defines governance as follows: Governance consists of the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the
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	<p>government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them.” Source: http://info.worldbank.org/governance/wgi/index.asp</p> <p>The World Bank’s Governance Indicators involve 6 different dimensions:</p> <ul style="list-style-type: none"> ▪ Voice and Accountability: the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. ▪ Political Stability and Absence of Violence: perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism ▪ Government Effectiveness: quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies ▪ Regulatory Quality: ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development ▪ Rule of Law: the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence ▪ Control of Corruption: the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests <p><u>However NONE of them specifically address IPR’s.</u></p>
<p>Limitations of the performance indicator</p>	<p>There are <u>several</u> limitations to this set of performance indicators. Firstly, looking at the 6 dimensions, the World Bank’s governance indicators do not help us to meet the key synthesized objective “to enhance legal systems (particularly those related to trade and IPR’s)” of the technology transfer framework. In fact, none of the six dimensions are related to IPR’s, except for “regulatory quality” broadly speaking. The World Bank’s indicators are thus far too broad and limited in their usefulness or applicability to the technology transfer framework.</p>
<p>Status of the methodology</p>	<p>The World Bank’s governance indicators are a result of the compilation of responses given by a large number of enterprise, citizen, and expert surveys in</p>

	industrial and developing countries, as reported by a number of survey institutes, think tanks, non-governmental organizations, and international organizations. Using an “unobserved components model” the six governance indicators are measured in units ranging from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. The methodology is described in detail in Kaufmann et. al (2008).
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Assessment of data

Monitoring of data	Data for all countries are monitored annually by the World Bank.
Data availability	The Worldwide Governance Indicators (WGI) project of the World Bank reports aggregate and individual governance indicators for 212 countries and territories over the period 1996–2007.
Data collection limitations	No limitations, since the methodology and dataset are well developed at this point.
References	The full dataset can be downloaded in the format of an excel sheet at: http://info.worldbank.org/governance/wgi/pdf/wgidataset.xls
Development of new data	None

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	It could be questioned if the initial selected indicators reflect properly the synthesized objective. Therefore it is suggested the UNFCCC Secretariat look into the possibilities of developing an alternative indicator with WIPO on the basis of their existing or planned data collection. Moving from a performance indicator based on data collection from World Bank to WIPO could mean a decrease in the feasibility, but an increase in the relevance.
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References

Readings	Kaufmann, Daniel, Aart Kraay and Massimo Mastruzzi (2008). "Governance Matters VII: Governance Indicators for 1996-2007". World Bank Policy Research June 2008
Internet site	http://info.worldbank.org/governance/wgi/index.asp

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Joint research and development (R&D) opportunities for EST's provided by governments

Description of the performance indicator

Name	Joint research and development (R&D) opportunities for EST's provided by governments
Brief definition	Total volume (Number and dollar value) of joint R&D opportunities for EST's provided (primarily by developed country) governments
Detailed description	“Joint” R&D opportunities refers to collaborative efforts primarily between developed and developing country governments, as well as between governments and private firms to research, develop, and disseminate mitigation and adaptation technologies.
Unit of Measurement	Total number and amount in USD invested annually
Targeted stakeholders	All Parties All Parties, particularly developed country Parties Private firms UNFCCC Secretariat
Classification	Output
Key theme	Enabling environments
Code (ID)	PI - EE - 02

Policy relevance

Purpose	Under the synthesized objective ‘to promote joint R&D’, the following objectives are formulated: <ul style="list-style-type: none"> ▪ to promote joint research and development programmes both bilaterally and multilaterally
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	<p>(All Parties)</p> <ul style="list-style-type: none"> ▪ to use TT: CLEAR and other means to make available information on planned publicly funded R&D activities where there are opportunities for non-Annex I Parties to jointly participate in R&D activities, along with terms of participation and steps necessary to establish such a collaborative relationship (developed country Parties) ▪ to provide opportunities for reporting joint R&D agreements, including voluntary agreements, on TT: CLEAR (particularly developed country Parties) ▪ to invite relevant intergovernmental organizations (e.g. Intergovernmental Panel on Climate Change, UNDP, UNEP, United Nations International Development Organization, Food and Agriculture Organization of the United Nations) and international organizations (e.g. IEA) to provide information on supported R&D activities relating to climate change (the Secretariat) ▪ to invite governments to encourage academia and industry to develop research programmes to address climate-friendly technologies and to promote investment in climate change (All Parties).
<p>Linkages to other performance indicators</p>	<p>Another performance indicator related to the key theme EE, in particular PI – EE – 03. Performance indicators related to the key theme TI (PI – TI – 02 till 05). Furthermore a performance indicator related to the key theme CB (PI – CB – 04) and one related to the key theme MECH (PI – MECH – 05).</p>

Methodological description

<p>Underlying definitions and concepts</p>	<p>“Research and development (R&D)” is sometimes also referred to as research and technology development (RTD) and research, development, and demonstration (RD&D). The term encompasses the innovation, laboratory research, field-testing, adaptation, and pilot demonstration. The IPCC has identified five main phases of technology development: 1) assessment, 2) agreement, 3) implementation, 4) evaluation and adjustment, and 5) replication.</p> <p>“Joint” suggests that the technologies will be developed considering the circumstances and absorptive capacities of host countries.</p> <p>“National Systems of Innovation” is a term frequently used in the context of R&D on climate technology. The term refers to specialized national laboratories, academic institutions, and other research organizations.</p>
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Limitations of the performance indicator	The indicator does not reflect the extent to which technology is actually <i>transferred</i> , although it may be assumed that joint R&D supports the transfer process. The indicator also does not provide explicit information on: a) whether the parties involved are developing or developed country Parties, b) amount invested by private firms vs. government, or c) the quality/efficacy of the R&D.
Status of the methodology	There is no single accepted methodology for this indicator.

Assessment of data

Monitoring of data	<ol style="list-style-type: none"> 1) Number and dollar value of joint R&D opportunities between developed and developing countries provided by developed country governments for mitigation technologies → Data can be gathered from individual initiatives such as the Climate Technology Initiative or the IEA's Greenhouse Gas R&D Program or can be consolidated in a database such as TT:CLEAR 2) Number and dollar value of joint R&D opportunities between developed and developing countries provided by developed country governments for adaptation technologies → Data can be gathered from individual initiatives such as the Consultative Group on International Agricultural Research (CGIAR) or can be consolidated in a database such as TT:CLEAR
Data availability	<p>Data on developed country Parties' domestic R&D investments for adaptation/mitigation technologies exist. For instance, the Australian government estimates that it invested \$9.4 million over 2004-2008 for agricultural R&D related to climate change (see http://www.climatechange.gov.au/agriculture/pubs/rdplan.pdf). Similarly, the US government proposes to invest \$36 million to 15 projects that advance research on carbon capture (see http://www.fossil.energy.gov/news/techlines/2008/08030-CO2_Capture_Projects_Selected.htm)</p> <p>One example of the Australian government's collaborative R&D efforts in the adaptation sector is the Australian Center for International Agricultural Research (ACIAR) which supports collaborative research and development projects between Australian and developing country organizations.</p> <p>Largely the data does not exist for collaborative R&D between developed and developing countries.</p>

Data collection limitations	There is currently no <i>comprehensive</i> database on opportunities for joint R&D on climate change technology, although TT: CLEAR lists some bilateral and multilateral opportunities. Several reports and anecdotal case studies exist on previous efforts, such as the OECD's International Energy Technology Collaboration and Climate Change Mitigation reports (with case studies). Fourth National Communications also provide information on ongoing and completed joint R&D efforts. Individual case studies and organizations such as the International Rice Research Institute and CGIAR for adaptation and the GEF and IEA for mitigation also provide information on R&D initiatives, but, again, these are not organized in any comprehensive manner.
References	No single data source exists. Sources may include: OECD reports (e.g. http://www.iea.org/textbase/papers/2005/cp_synthesis.pdf) or websites of individual R&D partnerships.
Development of new data	In order to monitor this indicator, new data will be needed on collaborative efforts and investment in joint R&D for mitigation and adaptation sectors separately.

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	Number of government agencies that regularly access and utilize TT: CLEAR as a primary source of information on joint R&D opportunities.
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References

Readings	<p>IPCC. 2000. Methodological and Technological Issues in Technology Transfer.</p> <p>Davidson, Ongulade. 2007. Climate Change and Strategies for Agricultural R&D in ACP Countries.</p> <p>OECD's International Energy Technology Collaboration and Climate Change Mitigation. Case Studies 1 and 4 and Synthesis Report.</p> <p>Ad Hoc Working Group On Long-Term Cooperative Action Under The Convention. Report on the workshop on cooperation on research and development of current, new and innovative technology, including win-win solutions. Fourth session Poznan, 1–10 December 2008, FCCC/AWGLCA/2008/CRP.8</p>
Internet site	<p>http://www.iea.org/textbase/papers/2005/cp_synthesis.pdf</p> <p>http://www.oecd.org/dataoecd/25/10/34008665.pdf</p> <p>http://www.oecd.org/dataoecd/22/38/34878689.pdf</p> <p>http://www.grida.no/publications/other/ipcc_sr/?src=/</p>

	Climate/ipcc/tectran/index.htm
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Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	Currently, very little quantitative data exists to evaluate.

Presence of clear policy guidelines on how to move from research stage to commercialization stage

Description of the performance indicator

Name	Presence of clear policy guidelines on how to move from research stage to commercialization stage
Brief definition	Presence of clear policy guidelines to the recipients of public funding on how to move from research stage to commercialization stage of technology transfer process
Detailed description	/
Unit of Measurement	Yes/No
Targeted stakeholders	All Parties, particularly developed country parties
Classification	Input
Key theme	Enabling environments
Code (ID)	PI – EE – 03

Policy relevance

Purpose	<p>Under the synthesized objective ‘to promote transfer of publicly owned technologies’ the following objectives are formulated:</p> <ul style="list-style-type: none"> ▪ to improve access to publicly funded technologies and other programs (All Parties, particularly developed country Parties)
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	<ul style="list-style-type: none"> ▪ to promote the transfer of publicly owned technologies (developed country Parties)
Linkages to other performance indicators	Other performance indicators related to the key theme EE, in particular PI – EE – 02. The performance indicators related to the key theme TI (PI – TI – 02 till 05). Furthermore a performance indicator related to the key theme CB (PI – CB – 04) and one related to the key theme MECH (PI – MECH – 05).

Methodological description

Underlying definitions and concepts	<p>“Research and development (R&D)” is sometimes also referred to as research and technology development (RTD) and research, development, and demonstration (RD&D). The term encompasses the innovation, laboratory research, field-testing, adaptation, and pilot demonstration. The IPCC has identified five main phases of technology development: 1) Technology assessment, 2) agreement, 3) implementation, 4) evaluation and adjustment, and replication.</p> <p>“Commercialization” is a broad term that refers to patenting, licensing, and/or the creation of spin-off (also known as start-up) firms for marketing a technology.</p>
Limitations of the performance indicator	Public agencies that provide funding to universities or research lab for R&D do not require the commercialization of the research, although several are likely to provide incentives. Moreover, guidelines are specific to the type of technology, type of funding agency, and type of research institution. This indicator is far too broad, shows low feasibility, and is not very useful.
Status of the methodology	No accepted methodology.

Assessment of data

Monitoring of data	Data could be obtained from various public science and technology funding agencies, such as the National Science Foundation of the United States or the Prime Minister’s Science, Engineering, and Innovation Council of Australia.
Data availability	Data is not widely available.
Data collection limitations	Data not specific to EST’s.

References	/
Development of new data	Data on incentives and guidelines governments provide for commercializing publicly funded research.

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	Presence of government support for moving EST's from R&D phase into commercialization phase for adaptation and mitigation technologies
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References

Readings	Prime Minister's Science, Engineering And Innovation Council of the Government of Australia. Seventh Meeting-28 June 2001. "Commercialization of Public Sector Research".
Internet site	/

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Bilateral and multilateral programs that have helped developing countries develop and implement regulations for EST's

Description of the performance indicator

Name	Bilateral and multilateral programs that have helped developing countries develop and implement regulations for EST's
Brief definition	Number of bilateral and multilateral programs that have helped developing countries develop and implement regulations promoting the use, transfer of and access to EST's
Detailed description	/
Unit of Measurement	Number

Targeted stakeholders	All Parties, particularly developed country Parties All Parties, particularly developing country Parties
Classification	Input
Key theme	Enabling environment
Code (ID)	PI - EE – 04

Policy relevance

Purpose	Under the synthesized objective ‘to strengthen regulatory frameworks’ the following objectives are formulated: <ul style="list-style-type: none"> ▪ to strengthen environmental regulatory frameworks (All Parties, particularly developed country Parties) ▪ to develop and implement standards and regulations promoting the use, transfer of, and access to EST’s, taking cognizance of country-specific policies, programmes and circumstances (particularly developing country Parties)
Linkages to other performance indicators	Other performance indicators related to the key theme EE, in particular PI – EE – 12. The performance indicators related to the key theme CB, in particular PI – CB – 01 till 03.

Methodological description

Underlying definitions and concepts	/
Limitations of the performance indicator	The indicator is extremely broad, encompassing regulations of various types – from labeling, to emissions controls, to energy efficiency standards. Moreover, the indicator simply counts the number of bilateral and multilateral programs which does not provide indication about the quality/efficacy of the programs in terms of lowering GHG's or helping adaptation.
Status of the methodology	No methodology developed to date.

Assessment of data

Monitoring of data	The data for this indicator are the various bilateral and multilateral programs related to climate technology cooperation – and in particular, those that have a capacity building component related to improving knowledge of regulations.
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Data availability	Data for this indicator can be found in various places, including NatComs, individual databases of bilateral organizations or countries (e.g. http://www.usctcgateway.gov/usctc/programs/) or TT: CLEAR.
Data collection limitations	It is not always clear from the databases listed above whether the program helps developing countries develop and implement regulations for EST's, although for some that are extremely well-known – e.g. Collaborative Labeling and Appliance Standards Program – this is not a problem.
References	http://www.clasponline.org/index.php http://www.usctcgateway.gov/usctc/programs/ http://unfccc.int/ttclear/jsp/Projects2.jsp
Development of new data	TT: CLEAR could develop a separate search function for regulations.

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	Presence of policies or guidelines that require the adoption of adaptation and mitigation technologies that have taken into account developing country circumstances
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References

Readings	UNFCCC. 2007. Compilation and synthesis of fourth national communications. Note by the secretariat. “Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention FCCC/SBI/2007/INF.6/Add.2 19.
Internet site	/

Factual data and evaluation

Factual data represented in a table	Currently, there is no information on number of bilateral or multilateral programs, however, the summary of the Fourth NatComs provides information on financial contributions to multilateral institutions. Similar data could be developed for this indicator. See tables below
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Tax preferences for EST's

Description of the performance indicator

Name	Tax preferences for EST's
Brief definition	Presence of tax preferences and incentives on imports/exports for EST's
Detailed description	/
Unit of Measurement	Yes/No
Targeted stakeholders	All Parties, particularly developed country Parties Developed country Parties
Classification	Output
Key theme	Enabling environments
Code (ID)	PI - EE - 05

Policy relevance

Purpose	Under the synthesized objective 'to utilize tax preferences' the following objectives are formulated: <ul style="list-style-type: none"> ▪ to utilize tax preferences (All Parties, particularly developed country Parties) ▪ to promote and implement export credit programs and tax preferences, and regulations (developed country Parties)
Linkages to other performance indicators	Other performance indicators related to the key theme EE, in particular PI – EE – 06.

Methodological description

Underlying definitions and concepts	<p>Preferential taxes (or preferential “tariffs”) are usually applied to imported goods. Preferential taxes encompass a range of policies from reduced import duties, to reduced value added taxes, and reduced sales taxes.</p> <p>A commonly associated term is the Most favored nation (MFN) clause. This is a status awarded by one nation to another in international trade. It means that the receiving nation will be granted all trade advantages—such as low tariffs—that any other nation also receives. In effect, a nation with MFN status will not be treated worse than any other nation with MFN status.</p>
Limitations of the performance indicator	Certain provisions of the WTO may not allow countries to provide tax preferences for trade in EST's. Further research and experience are needed

	into the potential areas of conflict and compatibility between the WTO and climate regimes. Also tax preferences are most often given to imported goods (by the importing country) while export credit guarantees are given to exported goods (by the exporting countries). The wording of this indicator is therefore problematic.
Status of the methodology	No accepted methodology for this indicator.

Assessment of data

Monitoring of data	The data for this indicator may be obtained from NatComs and can be collected at the level of individual countries
Data availability	Currently, data is available as case studies of export credit programs (for exported goods) and tax incentives (for imported goods). For instance OECD (2006) describes two cases of favorable tariffs for imported goods: (1) In India tax incentives were provided for imports of wind energy capital goods, and tariffs on the import of wind turbines were lifted. (2) In 2000, the Kenyan Minister for Finance committed to reducing duties and value added taxes on solar modules and panels to zero. This contributed to the ease with which solar PV technology was imported and the profitability of operations, where cost margins between less environmentally benign alternatives were small (Duke 2002 cited in OECD 2006).
Data collection limitations	Developing countries (who are likely to be the providing tax preferences for EST's) do not systematically report data on tax preferences for EST's.
References	IPCC. 2000. Methodological and Technological Issues in Technology Transfer. OECD. 2005. Achieving The Successful Transfer Of Environmentally Sound Technologies: Trade-Related Aspects. OECD Trade and Environment Working Paper # COM/ENV/TD(2004)33/FINAL prepared by Cristina Tébar Less and Steven McMillan.
Development of new data	Comprehensive records of tax preferences and export credit guarantees are needed.

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	Because it is not possible to have the presence of tax preferences and incentives on imports of EST's in developing countries in the same performance indicator as on exports of EST's from developed countries, to take the following two possibilities into consideration: 1. PI – EE – 06 is a performance indicator – for the
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	<p>same synthesized objective - focussing on incentives for export from developed countries; therefore deleting 'exports' in this indicator (PI – EE – 05) could be considered;</p> <p>2. PI – EE – 05 is split into an a) and a b) part, respectively focussing on the imports in developing countries and on the exports from developed countries.</p> <p>None of this information is made available through NC's at present.</p>
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References

Readings	<p>Duke, R. and D. Kammen. 1999. The economics of energy market transformation programs. The Energy Journal, Vol. 20, Issue 4, pp.15-64.</p> <p>OECD. 2005. Achieving The Successful Transfer Of Environmentally Sound Technologies: Trade-Related Aspects. OECD Trade and Environment Working Paper # COM/ENV/TD(2004)33/FINAL prepared by Cristina Tébar Less and Steven McMillan.</p>
Internet site	/

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Export credits for EST's

Description of the performance indicator

Name	Export credits for EST's
Brief definition	Volume (in USD) of export credits to encourage the transfer of EST's
Detailed description	/
Unit of Measurement	Amount of USD/year
Targeted stakeholders	All Parties, particularly developed countries

Classification	Outcome
Key theme	Enabling environments
Code (ID)	PI - EE – 06

Policy relevance

Purpose	Under the synthesized objective ‘to utilize tax preferences’ the following objectives are formulated: <ul style="list-style-type: none"> ▪ to utilize tax preferences (All Parties, particularly developed country Parties) ▪ to promote and implement export credit programs and tax preferences, and regulations (developed country Parties)
Linkages to other performance indicators	Other performance indicators related to the key theme EE, in particular PI – EE – 05.

Methodological description

Underlying definitions and concepts	/
Limitations of the performance indicator	This performance indicator asks for amount of USD used to encourage EST’s. However, most countries do not list this amount in their National Communications.
Status of the methodology	No accepted methodology for this indicator.

Assessment of data

Monitoring of data	The data to be collected from NatComs are: Amount of financial resources (in USD) devoted to export credit programs of adaptation and mitigation technologies for export of EST’s annually.
Data availability	Relevant NatComs list export credit programs, although in not much detail.
Data collection limitations	Countries may not track financial amounts in export credit programs for EST’s separate from other types of goods and services.
References	UNFCCC Fourth National Communications of Annex I Parties
Development of new data	New data will be needed to track financial resources for export credit programs related to EST’s specifically.

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	Presence of export credit programs to encourage the transfer of EST's (yes/no)
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References

Readings	OECD. 2005. Achieving The Successful Transfer Of Environmentally Sound Technologies: Trade-Related Aspects. OECD Trade and Environment Working Paper # COM/ENV/TD(2004)33/FINAL prepared by Cristina Tébar Less and Steven McMillan.
Internet site	/

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	Even though a comprehensive search was not done for export credit programs, it is clear from a cursory search that not all Annex I Parties have export credit programs, let alone export credit programs for EST's. Moreover, very few countries list budgetary amounts for these programs.
Evaluation	An evaluation cannot be done at this stage of the data collection process.

Presence of EST transfer in National Sustainable Development Strategies

Description of the performance indicator

Name	Presence of EST transfer in National Sustainable Development Strategies
Brief definition	Whether mention of environmentally sound technology transfer is made in National Sustainable Development Strategies
Detailed description	/
Unit of Measurement	Yes/No
Targeted stakeholders	All Parties, particularly developed country Parties
Classification	Output

Key theme	Enabling environments
Code (ID)	PI - EE - 07

Policy relevance

Purpose	<p>Under the synthesized objective ‘to integrate technology transfer into national policies’, the following objectives are formulated:</p> <ul style="list-style-type: none"> ▪ to integrate the objective of technology transfer to developing countries into national policies, including environmental and research and development policies and programmes (All Parties, particularly developed country Parties) ▪ to integrate technology transfer into national policies and to enhance interaction between government and private sector (All Parties)
Linkages to other performance indicators	Other performance indicators related to the key theme TI, in particular PI – TI – 02.

Methodological description

Underlying definitions and concepts	<p>NSDS are comprehensive strategies that help countries achieve their economic, environmental and social objectives in an integrative manner. They are typically the outcome of an iterative and participatory process, and their development involves consultations with a broad set of stakeholders.</p> <p>Despite their heterogeneity, most NSDS's can be broadly described as following a three level structure. At the first level, countries identify three to six main strategic policy areas or dimensions of sustainable development. At the second level, countries typically list more concrete objectives. The third level includes a more disaggregated and specific list of aims and concrete actions.</p>
Limitations of the performance indicator	The indicator is binary (i.e. yes/no) and does not provide information on how much or the type of EST transfer envisaged in the NSDS.
Status of the methodology	<p>The methodology of analyzing how climate change is addressed in NSDS has been developed by the UN Commission on Sustainable Development. See http://www.un.org/esa/sustdev/csd/csd16/documents/bp12_2008.pdf</p>

Assessment of data

Monitoring of data	The data can be collected directly from NSDS submitted by Parties to the UN CSD.
Data availability	As above.

Data collection limitations	Analysis of NSDS have not till date looked specifically at technology transfer, although the UN CSD 2008 document incorporates climate change related technology transfer. Future studies could focus specifically on this.
References	http://www.un.org/esa/sustdev/csd/csd16/documents/bp12_2008.pdf
Development of new data	Since NSDS are already being prepared by Parties, there is no need for new data.

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	None.
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References

Readings	UN CSD. 2008. Addressing climate change in national sustainable development strategies – common practices. Commission on Sustainable Development Sixteenth Session 5-16 May 2008, New York
Internet site	http://www.un.org/esa/sustdev/natlinfo/nsds/nsds.htm

Factual data and evaluation

Factual data represented in a table	See tables listed in annex of UN CSD 2008 document
Factual data represented e.g. in a graph	/
Discussion	<p>UN CSD found that, of 60 countries that formally submitted their NSDS to the UN CSD Secretariat, most countries address climate change mitigation and, less often, adaptation in their NSDS. Only 11 of the 60 countries did not make any specific reference to climate change in their strategy, but nevertheless addressed climate change implicitly by incorporating policies with significant co-benefits for climate change mitigation and/or adaptation.</p> <p>In a few cases, developed countries make concrete and specific offers for climate change related technology transfer, as does Iceland with regard to geothermal energy. Some developing countries, such as China or Viet Nam, identify explicitly sectors and technologies for which international collaboration is sought. Some countries, such as Bhutan or Brazil, note their interest to participate in international financial mechanisms based on carbon sequestration</p>

	by forests.
Evaluation	/

Rating of investment climate according to World Bank

Description of the performance indicator

Name	Rating of investment climate according to World Bank's World Business Environment Survey
Brief definition	Indicator details how feasible it is to do business in countries/regions of the world depending on business environment, corruption, financial development, firm behavior/performance, influence, lobbying and information flows, legal system, public policy, public services, and regulation.
Detailed description	/
Unit of Measurement	Multiple – based on responses in a firm survey
Targeted stakeholders	All Parties
Classification	Output
Key theme	Enabling environment
Code (ID)	PI - EE - 08

Policy relevance

Purpose	<p>Under the synthesized objective ‘to create an environment conducive for investments’, the following objectives are formulated:</p> <ul style="list-style-type: none"> • to encourage Parties to create an environment conducive for private sector investments by providing such incentives as greater access to multilateral sources and other sources of targeted “smart” subsidy schemes that trigger private sector co-financing (All Parties) • to strengthen the dialogue between government and industry to encourage discussions between relevant ministries in recipient countries and private sector organizations to enhance the investment conditions for climate-friendly technologies (All Parties)
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Linkages to other performance indicators	Other performance indicators related to the key theme EE, in particular PI – EE – 01 and 10.
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Methodological description

Underlying definitions and concepts	/
Limitations of the performance indicator	Indicator consists of multiple indicators formulated through survey questions carried out by the World Bank such as How problematic are obstacles in the business environment in the following areas? Infrastructure. This makes it difficult and time-consuming to track.
Status of the methodology	The World Business Environment Survey (WBES 2000) is a survey of over 10,000 firms in 80 countries that examines a wide range of interactions between firms and the state. It is based on face-to-face interviews with firm managers and owners in late 1999 and early 2000.

Assessment of data

Monitoring of data	Data collected in 1999-2000 and updated (not clear how frequently)
Data availability	Data available through WBES
Data collection limitations	/
References	http://info.worldbank.org/governance/wbes/front.htm
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	Because it seems this indicator is not updated frequently (the data publicly available are dating from 1999 and 2000), an alternative performance indicator could be suggested: 'Value (expressed in USD) of incentives including "smart subsidies" and risk coverage, provided to encourage private firms to transfer EST's to developing countries'.
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References

Readings	Batra, Geeta, Daniel Kaufmann , Andrew H. W. Stone. 2003. Investment Climate Around the World: Voices of the Firms from the World Business Environment Survey. Washington DC: World Bank.
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Internet site	http://info.worldbank.org/governance/wbes/front.htm
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Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Government procurement budget spent on EST's

Description of the performance indicator

Name	Government procurement budget spent on EST's
Brief definition	Proportion of budget for public procurement of environmentally sound technologies.
Detailed description	Proportion of federal/state/municipal budget for procurement of equipment, technology, materials and other supplies related to environmentally sound technologies.
Unit of Measurement	Percentage
Targeted stakeholders	All Parties
Classification	Output
Key theme	Enabling environments
Code (ID)	PI - EE – 09

Policy relevance

Purpose	Under the synthesized objective 'to explore preferential government procurement' the following objective is formulated: <ul style="list-style-type: none"> ▪ to explore preferential government procurement
Linkages to other performance indicators	None

Methodological description

Underlying definitions and concepts	<p>“Environmentally preferable purchasing”, “green acquisition”, “green procurement” are related terms that refer to public procurement of environmentally sound technologies, goods and services.</p> <p>“Procurement” refers to any federal/national agency or any state agency or agency of a political subdivision of a state, which is using appropriated federal/national funds for procurement.</p>
Limitations of the performance indicator	<p>This indicator does not provide information on which level of government is carrying out the procurement. It also aggregates all EST’s, while governments may track data on vehicles, and chemicals, for instance, separately. The indicator does not quantify the environmental benefits (e.g. reduced GHG emissions) or cost benefits, pay-back time, etc resulting from green public procurement.</p>
Status of the methodology	<p>There is no single accepted methodology for this indicator.</p>

Assessment of data

Monitoring of data	<ol style="list-style-type: none"> 1) Percentage of annual procurement budget spent by federal/state/municipal governments on mitigation technologies 2) Percentage of annual procurement budget spent by federal/state/municipal governments on adaptation technologies
Data availability	<p>Several developed countries, such as the United States, Canada and Switzerland have regulations for environmentally sound public procurement (e.g. in the US, the Environmental Protection Agency’s Environmentally Preferable Purchasing program helps the federal government "buy green," and in doing so, helps stimulate market demand for green products and services). Data on green public procurement is generally available at the state or country level, and each jurisdiction may differ in the way it chooses to track procurement. The state of Massachusetts, for instance, tracks the success of its environmental purchasing efforts by monitoring number of trees saved, avoidance of GHG emissions, amount of material diverted from landfills, and barrels of oil saved, while in Minnesota, environmental product codes are used to electronically track environmentally preferable product purchase. King County, Washington tracks its expenditures on green products.</p>
Data collection limitations	<p>Data on green public procurement is rarely aggregated at the national level, and developing countries rarely track environmentally preferable</p>

	procurement.
References	No single database. Several case studies are listed below.
Development of new data	Currently, countries and government agencies track their green procurement differently, if at all. It is suggested that a standardized way to track green procurement can be made mandatory in NatComs. In this regard, OECD (2007) carried out a survey on green public procurement for its member countries. See references for OECD 2007 report.

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	Existence of law incentivizing or mandating government agencies to procure EST's (yes/no).
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References

Readings	<p>Towards Greener Government Procurement: An Environment Canada Case Study. http://www.apo-tokyo.org/gp/e_publi/gsc/0305RES_PAPERS.pdf</p> <p>Commission for Environmental Cooperation of North America. 2003. Green Procurement: Good Environmental Stories for North America http://www.cec.org/files/pdf/ECONOMY/2003-GreenProcurementReview_en.pdf</p> <p>Energy efficiency in the Public Sector. http://www.pepsonline.org/publications/Public_Sector_EE_2008_ENG.pdf</p> <p>Liddel, B. 2003. Environmentally Preferable Purchasing (EPP) Programs and Strategies: Integrating Environmental and Social Factors into Procurement Practices. www.pprc.org/pubs/epp/epp_programs_and_strategies.doc Pacific NW Pollution Prevention Resource Center (PPRC)</p> <p>OECD. 2007. Improving the Environmental Performance of Public Procurement: Report on Implementation of the Council Recommendation. Report no. ENV/EPOC/WPNEP(2006)6/FINAL.</p>
Internet site	<p>European Union: http://europa.eu.int/comm/environment/gpp/</p> <p>Canada's Office of Greening Government Operations: http://www.tpsgc-pwgsc.gc.ca/greening/text/proc/pol_faq-e.html</p> <p>Canada's Green Procurement Reporting Framework: http://www.tbs-sct.gc.ca/cmp/green-vert/grnproc_e.asp#Specific%20Indicators</p> <p>The City of Santa Monica's Environmental Purchasing Case Study: http://www.epa.gov/epp/pubs/case/santa.pdf</p>

	State of California's Green Procurement Policies: http://www.ciwmb.ca.gov/Buyrecycled/Policies/
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Factual data and evaluation

Factual data represented in a table	None
Factual data represented e.g. in a graph	None
Discussion	<p>Even data for OECD countries on green public procurement is not widely available, given that not all countries implement such programs. The European Commission recently conducted a study on the comprehensiveness of green public procurement programs and policies in all 25 EU Member States (April 2005-April 2006). The results of this study show that only 7 Member States demonstrate an "advanced" level of green public procurement (with more than 60% of all tender documents containing "green" criteria).</p> <p>In a survey conducted by the OECD, of 19 respondents, 13 were able to report the approximate share of total public procurement of GDP. The average share is about 10.7% of GDP. On the other hand, only 5 respondents knew the approximate share of public procurement which can be described as "green". The responses range widely, from 6% (Korea) to 60% (Sweden). The average is 32%. On the basis of the evidence provided, the OECD report state that the Korean response seems to be particularly comprehensive.</p> <p>A majority of countries (12 of 19) stated that green public procurement has been increasing over the period 2000-04. In the case of Korea, figures were provided for recycled products, with over 20% growth between 2000 and 2003, and over 100% growth in eco-labeled product procurement.</p>
Evaluation	/

Disclosure and transparency regarding approval processes

Description of the performance indicator

Name	Disclosure and transparency regarding approval processes
Brief definition	Degree of disclosure and transparency regarding the approval processes of technology transfer projects
Detailed description	/

Unit of Measurement	Unknown (still to be developed)
Targeted stakeholders	All Parties
Classification	Process
Key theme	Enabling environments
Code (ID)	PI - EE - 10

Policy relevance

Purpose	Under the synthesized objective ‘to explore transparent and efficient approval procedures’, the following objectives are formulated: <ul style="list-style-type: none"> ▪ to explore transparent and efficient approval procedures for technology transfer projects (All Parties)
Linkages to other performance indicators	Other performance indicators related to the key theme EE, in particular PI – EE – 01 and 08.

Methodological description

Underlying definitions and concepts	Depending on the type of technology transfer project (e.g. bilateral or multilateral assistance, private sector investment, government supported, etc), approval processes, time frames, and project life cycles are likely to differ. For the purposes of this indicator, “approval processes” refers to a broad range of steps that must be taken from conception to execution in order for a technology transfer project to take place.
Limitations of the performance indicator	This indicator is extremely broad and leaves much room for the interpretation of “disclosure”, “transparency”, and “approval processes”.
Status of the methodology	There is no accepted methodology for this indicator.

Assessment of data

Monitoring of data	Length of approval procedures, degree of transparency, etc.
Data availability	Currently, no data comprehensive data exists on these statistics.
Data collection limitations	/

References	/
Development of new data	New data and a rating system will be needed on experiences with approval procedures of technology transfer projects.

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	It can be observed that the selected performance indicator (cf. document FCCC/SB/2008/INF.6) is extremely broad and leaves much room for interpretation. Therefore it is suggested to look for a new formulation in line with the objective from the technology transfer framework (“to explore transparent and efficient approval procedures for technology transfer projects”) and drawing from experiences in intergovernmental and international organizations. Elements such as ‘number of steps needed’ and ‘time taken’ to approve technology transfer projects in host countries are important.
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References

Readings	/
Internet site	/

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Studies that explore EST's

Description of the performance indicator

Name	Studies that explore EST's
Brief definition	Number of technical studies that explore barriers, good practices, and recommendations for enhancing enabling environments
Detailed description	/

Unit of Measurement	Multiple: Number of studies Rating system (to be determined) Number co-authored by developed and developing countries
Targeted stakeholders	Secretariat Relevant international organizations
Classification	Process
Key theme	Enabling environment
Code (ID)	PI - EE – 11

Policy relevance

Purpose	Under the synthesized objective ‘to prepare technical studies for developing enhanced enabling environments’ the following objective is formulated: <ul style="list-style-type: none"> to prepare technical studies on barriers, good practice, and recommendations for developing enhanced enabling environments that accelerate the development and transfer of EST’s at the national and international levels (The Secretariat, relevant international organizations)
Linkages to other performance indicators	Another performance indicator related to the key theme MECH, in particular PI – MECH – 04.

Methodological description

Underlying definitions and concepts	/
Limitations of the performance indicator	Several hundred studies on EST transfer exist at this point: this indicator does not provide information on the type of studies to be evaluated (e.g. UN reports, academic studies, country-specific studies, etc). Also, a rating system will have to be developed to evaluate the quality of studies.
Status of the methodology	No methodology developed to date.

Assessment of data

Monitoring of data	The data for this indicator would have to be compiled from several hundreds (thousands?) of studies that exist on barriers and opportunities for technology transfer.
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Data availability	Data exists in multiple reports – there is no single source from which to compile this indicator.
Data collection limitations	It would be difficult to determine all studies that have ever been written on technology transfer.
References	<p>Multiple studies exploring barriers and good practice in technology transfer exist such as:</p> <p>IPCC (2000) Report on Methodological and Technological Issues in Technology Transfer</p> <p>Birner, S. Martinot, E. 2002. The GEF Energy-Efficient Product Portfolio: Emerging Experience and Lessons.”, GEF Monitoring and Evaluation Working Paper (Global Environment Facility, Washington, DC, 2002).</p> <p>CTI. 2000. Technology Diffusion in Asia and Pacific. Proceedings of the Workshop in Cebu City, Philippines, 14–15 January 2000.</p> <p>FAO. 1996. Technology assessment and transfer for sustainable agriculture and rural development in the Asia–Pacific Region.</p> <p>IEA/OECD. 2001. Technology without Borders. Case Studies of Successful Technology Transfer, Paris.</p> <p>OECD. 2003. Technology Transfer, Cooperation and Capacity Development. Note by the Secretariat.</p> <p>UNCTAD. 1998. Report of the Expert Meeting on the Impact of Government Policy and Government/Private Action in Stimulating Inter-Firm Partnerships regarding Technology, Production and Marketing, with Particular Emphasis on North–South and South–South Linkages in Promoting Technology Transfers</p> <p>Van Berkel, R. and Arkesteijn, E. 1998. Transfer of Environmentally Sound Technologies and Practices under the Climate Convention. Survey of experiences, needs, and opportunities among non-Annex II countries. IVAM Environmental Research; University of Amsterdam.</p>
Development of new data	No new data is needed for this indicator.

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	/
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References

Readings	/
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Internet site	/
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Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Percentage of partnerships with developing country participation

Description of the performance indicator

Name	Percentage of partnerships with developing country participation
Brief definition	Percentage of partnerships with thematic foci on climate change and sustainable development with meaningful participation by developing country Parties
Detailed description	/
Unit of Measurement	Percentage
Targeted stakeholders	International organizations Governments NGOs
Classification	Input
Key theme	Enabling Environments
Code (ID)	PI - EE - 12

Policy relevance

Purpose	Under the synthesized objective ‘to cooperate closely with public and private partnerships’, the following objectives are formulated <ul style="list-style-type: none"> ▪ to cooperate closely with public and private partnerships which have been established in global processes such as WSSD, G8, REEEP, Johannesburg Renewable Energy Coalition, Carbon Sequestration Leadership Forum, CTI, and other IEA agreements (Parties, the private sector)
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Linkages to other performance indicators	Another performance indicator related to the key theme EE (PI – EE – 04) and one related to the key theme MECH (PI – MECH – 01).
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Methodological description

Underlying definitions and concepts	/
Limitations of the performance indicator	The indicator does not provide information on the quality of the partnership nor the effectiveness and terms of participation by developed and developing country members.
Status of the methodology	Methodology for tracking partnerships developed by UN CSD through partnerships database (see below).

Assessment of data

Monitoring of data	The UN Commission on Sustainable Development routinely counts and tracks partnerships related to sustainable development through its partnership database launched in 2004. The database is also searchable by country (http://www.un.org/esa/sustdev/natlinfo/natlinfo.htm). Once registered, it is the responsibility of the implementing parties to update information on the partnership. Periodic updates and background papers provide statistics on the registered partnerships and trends.
Data availability	The data is available to the extent to which partnerships are registered in the UN CSD's partnership database.
Data collection limitations	Currently, UN CSD's data is limited because it does not specifically track developing country participation, but it does track regional participation. However, it will most likely be a feasible task to use the UN CSD's data to monitor developing country participation since the database is searchable by country. Another limitation is that the UN CSD's partnership database may not monitor all partnerships related to technology transfer.
References	Partnerships for Sustainable Development – CSD Partnership Database available at http://webapps01.un.org/dsd/partnerships/public/welcome.do (last accessed Jan 5, 2009)
Development of new data	Further efforts to ensure all new partnerships are indeed being registered in the UN CSD's database should be made. The partnership database may also like to specifically track parameters that are of interest to the UNFCCC Secretariat.

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	Number of partnerships that focus on improving enabling environments for EST's
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References

Readings	UN ECOSOC. 2005. Partnerships for Sustainable Development – Update. Background Paper No. 1. DESA/DSD/2005/1. http://www.un.org/esa/sustdev/csd/csd13/documents/bgound_1.pdf
Internet site	http://webapps01.un.org/dsd/partnerships/public/welcome.do

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	See Geographic scope & primary themes of partnerships from UN CSD website
Discussion	/
Evaluation	/

Key theme ‘Capacity Building’

Financial resources for CB

Description of the performance indicator

Name	Financial resources for CB
Brief definition	Amount of financial resources provided for the Capacity Building for development and transfer of technology (DTT).
Detailed description	Amount of financial resources including scholarships, technical assistance, support for workshops and seminars provided for the CB in line with Decision 4CP7
Unit of Measurement	USD in total per period per stakeholder. When data improve through submissions, the indicator could be expressed at regional and national level on a per capita or GDP basis for comparison.
Targeted stakeholder	Developed country Parties, GEF; other IGOs.
Classification	Input
Key theme	Capacity Building
Code (ID)	PI – CB - 01

Policy relevance

Purpose	<p>Under the synthesized objective ‘. To implement/ support capacity-building activities for the development and transfer of technologies (DTT) in developing country Parties’ the following objectives from 4CP7 and 3CP13 are addressed:</p> <ul style="list-style-type: none"> ▪ to implement regional sub regional and national CB activities (developed country Parties and IGOs); ▪ To support capacity building activities to promote TT at regional and national levels (developed country Parties and IGOs). ▪ To organize seminars/training/workshops on CB
Linkages to other performance indicators	The other performance indicators related to the key theme CB (PI – CB – 02 till 04). Performance indicators related to the key theme TNA (PI- TNA – 01 and 02) and to the key theme MECH (PI – MECH – 01).

Methodological description

Underlying definitions and concepts	Financial resources in this case should include capacity building resources committed by developed countries (as reflected in Annex II National Communications); GEF, UNEP, UNDP, World Bank, Climate Technology Initiative (CTI); GEEREF of EC, CDM and Adaptation fund
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Limitations of the performance indicator	<p>Failure to:</p> <p>Capture South- South support for capacity building for DTT.</p> <p>Separate resources for capacity building for DTT from those committed for other policies and measures e.g. in the case of GEF and bilateral.</p> <p>Separate financial resources for DTT from those of other capacity building activities.</p> <p>Realize capacity building resources embedded in regular projects/programmes.</p> <p>To adequately capture private sector injections.</p>
Status of the methodology	<p>There is no separated documentation of resources committed to capacity building for DTT. A synthesis report of the various sources of financial resources and interpretation of what can be allocated to DTT is required.</p> <p>The new GEF funding mechanism in place does not separate out allocation to CB for DTT.</p> <p>Data from bilateral cooperation and NGOs should be collected.</p>

Assessment of data

Monitoring of data	<p>The data of financial sources needed are/could be/maybe twofold: funding through multilateral and bilateral mechanism.</p> <p>The intergovernmental organizations (IGO's) involved in supporting CB could deliver yearly the amount of money they spend for the CB process for DTT.</p> <p>Because Annex II Parties might support financially the CB process in their bilateral cooperation, such data can be monitored.</p>
Data sources and availability	<p>GEF, UNDP and UNEP have been communicating the amount of financial resources (in total and per Non-Annex I Party) spend through a multilateral mechanism, but specific data on capacity building for DTT are not readily available.</p> <p>Under the new Poznan strategic programme for technology transfer, setting up a transparent data record is an important requirement to monitor and evaluate this indicator.</p> <p>Annex II National Communications might be a source for collecting data: this needs further investigation.</p>
Data collection limitations	<p>Amount of financial support for technical assistance and workshops/seminars may not be readily documented.</p>
References	/
Development of new data	<p>Support for LDC may require that per capita GDP or income is included so that the financial support indicator may be expressed for developing countries of different income levels.</p>

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	None
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References

Readings	NC synthesis reports for AI Parties
Internet site	

Factual data and evaluation

Factual data represented in a table	<p>The total amount of top-up funding approved by the GEF and allocated</p> <ul style="list-style-type: none"> ▪ by UNDP: 27,057,879 USD ▪ by UNEP: 1,383,000 USD <p>of which part could be used by Non-Annex I Parties for CB for DTT.</p> <p>See documents in annex to this methodological sheet:</p> <ul style="list-style-type: none"> ▪ UNEP, (2008), UNEP's assistance to 14 countries within the framework of the global environment facility expedited financing for (interim) measures for capacity building in priority areas. <p>Bilateral contribution reported in NC4 of Annex II Parties for capacity building in Adaptation US\$242 million out of total for adaptation of US\$345 million. Contribution to Mitigation from bilateral reported in NC4 was US\$140 billion but is not separated out for capacity building.</p> <p>Annex II Parties contribution to GEF in 2004 US\$557million but no separation into capacity building</p> <p>Annex II Parties contribution to other Multilateral Organizations in 2003 US\$7580 million but no separation into CB for DTT.</p>
Factual data represented e.g. in a graph	None
Discussion	<p>It might be expected that the UNFCCC COP decision will help in the future to collect the accurate data.</p> <p>Data of financial sources per Annex II Party for CB specifically for DTT are not available (yet).</p>
Evaluation	/

Needs and priorities for CB

Description of the performance indicator

Name	Needs and priorities for CB
Brief definition	Reported needs and agreed priorities for capacity-building for development and transfer of technology
Detailed description	A synthesized report of national capacity needs and priorities for CB for DTT in line with Decision 4CP7
Unit of Measurement	Yes/No.

Targeted stakeholder	UNFCCC Secretariat.
Classification	output
Key theme	Capacity Building
Code (ID)	PI – CB - 02

Policy relevance

Purpose	Under the synthesized objective ‘.. To report on capacity-building needs and experiences for the development, deployment, diffusion and transfer of technologies of the developing country Parties;’ the following objectives from 4CP7 and 3CP13 are addressed: to prepare periodic reports containing information relating to capacity building needs for development deployment, application and transfer of technologies-for both mitigation and adaptation
Linkages to other performance indicators	The other performance indicators related to the key theme CB (PI – CB – 01/03/04). Performance indicators related to the key theme TNA (PI – TNA – 05) and to the key theme TI (PI – TI – 02 and 03).

Methodological description

Underlying definitions and concepts	Capacity Needs and priorities encompass those stipulated by non-Annex I Parties in their National Capacity Self Assessment reports, NCs and NAPA's
Limitations of the performance indicator	None
Status of the methodology	Synthesis of NCSA's and NCs for capacity building needs specifically for DTT is necessary but is still to be made for the purpose of deriving this indicator.

Assessment of data

Monitoring of data	The data of developing country Parties’ needs and priorities can be obtained from NCSA’s, NCs and NAPA’s of Non-Annex I countries. Synthesis should also examine requests by Non Annex I Parties to IGOs such as GEF, UNDP, UNEP, etc. for capacity building for DTT.
Data sources and availability	UNFCCC synthesis reports on CB needs in NCSA, NC and NAPA reports and reports of GEF, UNDP and UNEP specific data on capacity building for DTT are not readily available. Under the new Poznan strategic programme for technology transfer, setting up a transparent data record is an important requirement to monitor and evaluate this indicator. Annex II National Communications might also indicate

	developing country needs that are to be met and such data need to be investigated.
Data collection limitations	Some of the needs and priorities may not be well captured in the submissions and frequency of reporting (NCSA, NCs, and NAPA's) will limit frequency of reporting on the indicator.
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	None
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References

Readings	/FCCC/SBSTA/2006/INF.1.
Internet site	http://ttclear.unfccc.int/ttclear/html/IfPG.htm

Factual data and evaluation

Factual data represented in a table	None
Factual data represented e.g. in a graph	

Discussion	Synthesis report on needs and priorities for CB specifically for DTT is not available and this should be a good starting point to derive information for the indicator.
Evaluation	/

Participants/experts in CB programmes for DTT

Description of the performance indicator

Name	Participants/experts in CB programmes for DTT
Brief definition	Number of participants/experts in training programmes on the development and transfer of technologies, in particular on the EST related activities
Detailed description	No of experts from developing country Parties (in particular those of LDC) that are qualified to undertake adoption, adaptation, installation, management, operation and maintenance; and development of standards and regulations related to EST's
Unit of Measurement	No. of experts trained and operating as recognized experts in all developing country Parties; and per region
Targeted stakeholder	UNFCCC Secretariat.
Classification	output
Key theme	Capacity Building
Code (ID)	PI – CB - 03

Policy relevance

Purpose	<p>Under the synthesized objectives ‘ To provide training on EST’s in developing country Parties; & To develop and implement standards and regulations for EST’s’, the following objectives from 4CP7 and 3CP13 are addressed:</p> <ul style="list-style-type: none"> ▪ To organize training in management and operation of climate technologies ▪ To provide opportunities for training in the use of EST through demonstration projects ▪ To enhance skills in adoption, adaptation, installation, operation and maintenance of specific EST’s ▪ To train in project development and the management and operation of climate technologies ▪ To build capacity for adapting to the adverse effects of climate change ▪ To develop and implement standards and regulations that
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	<p>promote the use, transfer of and access to EST's</p> <ul style="list-style-type: none"> ▪ To develop skills and know-how in conducting TNA's
Linkages to other performance indicators	The other performance indicators related to the key theme CB (PI – CB – 01/02/04). Performance indicators related to the key theme TNA (PI – TNA – 02) and for the key theme TI (PI – TI – 01/05).

Methodological description

Underlying definitions and concepts	Data in NCSA, NCs will provide various expertises in the developing country Parties. Roster of Experts within UNFCCC and other IGOS(GEF,UNDP,UNEP, WB, CTI) could also be a source of data for experts e.g. in mitigation and adaptation
Limitations of the performance indicator	Differentiating training for DTT and general capacity building as there is an overlap
Status of the methodology	Rosters of experts are typical examples of the skills register that may be emulated to arrive at the indicator. Such comprehensive roster does not exist for all possible experts and needs to be compiled.

Assessment of data

Monitoring of data	The data of developing country Parties on skills status can be monitored from NCSA's and NCs of Non-Annex I countries. Synthesis should also examine roster of experts for IGOs
Data sources and availability	<p>Non-Annex I reports- NCSA, NC and roster of experts for IGOs such as GEF, UNDP, UNEP etc, and Annex II bilateral organizations.</p> <p>Roster of Experts was originally proposed in the Convention and established in 1996. the two main criteria for nominating individuals to the roster as a whole (rather than individual projects) were technical competence and regional balance. Currently, three rosters exist to address: in-depth reviews of national communications from Parties included in Annex I to the Convention; technology and technology transfer; and methodologies.</p> <p>http://unfccc.int/parties_and_observers/roster_of_experts/items/534.php.</p>
Data collection limitations	Trying to count experts may not be reliable but limiting to those that have been supported through DTT processes. Training Experts is also a process that may be a result of various efforts, other than those under the UNFCCC.
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	None
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References

Readings	/FCCC/SBSTA/2007/11
Internet site	http://ttclear.unfccc.int/ttclear/html/IfPG.htm http://unfccc.int/parties_and_observers/roster_of_experts/items/534.php .

Factual data and evaluation

Factual data represented in a table	Referring to updated list of roster of experts 325 experts from Non Annex I Parties were counted.
Factual data represented e.g. in a graph	None
Discussion	/
Evaluation	/

National and regional institutions, operating as centers of excellence for development and transfer of technologies (DTT)

Description of the performance indicator

Name	National and regional institutions, operating as centers of excellence for development and transfer of technologies (DTT)
Brief definition	Number of new and existing national and regional institutions, operating as centers of excellence, on the DTT.
Detailed description	Number of new and existing national and regional institutions, operating as centers of excellence, on the development and transfer of technologies (in particular those of LDC) that are qualified to undertake research, development, technological innovation, adoption and adaptation, transfer and O&M of EST's; and climate change observation.
Unit of Measurement	Total No. of new and existing national and regional institutions established as centers of excellence on DTT.
Targeted stakeholder	UNFCCC Secretariat.
Classification	Output
Key theme	Capacity Building

Code (ID)	PI – CB – 04
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Policy relevance

Purpose	Under the synthesized objective ‘To establish/strengthen capacity for the DTT in institutions of developing country Parties’ the following objectives from 4CP7 and 3CP13 are addressed: <ul style="list-style-type: none"> ▪ To strengthen capacities of existing national and regional institutions ▪ To establish and/or strengthen as appropriate relevant organizations and institutions ▪ To strengthen the endogenous capacities and capabilities...
Linkages to other performance indicators	The other performance indicators related to the key theme CB (PI – CB – 01 till 03). Performance indicators related to the key theme TNA (PI – TNA – 03) and to the key theme TI (PI – TI - 04).

Methodological description

Underlying definitions and concepts	Data in NCSA, NCs will provide various expertises in the developing country Parties. Roster of organizations that undertake assignments for UNFCCC and IGOs are included. NCs of Annex II may also indicate collaborating institutions in Non-Annex I Parties.
Limitations of the performance indicator	None
Status of the methodology	Not well developed but list of renowned institutions that have been supported by IGOs and bilateral and those collaborating with UNFCCC can be created to arrive at this PI.

Assessment of data

Monitoring of data	The data of developing country Parties on centers of excellence on EST (mitigation and adaptation) and climate change observations may be available in NCs of Non-Annex I countries and reports of IGOs such as GEF, UNDP, UNEP etc but a synthesis is required.
Data Sources and availability	Websites for network of centers registered under UNFCCC and IGOs (UNEP, UNDP, GEF, WB CTI etc). Centers used by Annex II bilateral organizations can also be included if data can be available.
Data collection limitations	Data on bilateral support to national and regional institutions will be scattered and hence not easy to synthesize but this could be a requested submission of Annex II Parties.
References	/
Development of new data	/TT:CLEAR you will find a dbase of programmes/projects with institutions

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	None
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References

Readings	FCCC/SBI/2007/25
Internet site	http://unfccc.int/cooperation_and_support/capacity_building/items/4093.php

Factual data and evaluation

Factual data represented in a table	There are 467 registered organizations with UNFCCC-TT for all categories of technology on TT:CLEAR website and about 350 of them are in developing country Parties (national and regional institutions). The list is not comprehensive and also include government institutions that may not be involved in DTT per se.
Factual data represented e.g. in a graph	None
Discussion	FCCC/AWGLCA/2008/CRP.8-relevant proposals of the (AWG-LCA)
Evaluation	

Key theme ‘Mechanisms’

Innovative public/private financing mechanisms and instruments

Description of the performance indicator

Name	Innovative public/private financing mechanisms and instruments
Brief definition	Number and volume of reported innovative public/private financing mechanisms and instruments
Detailed description	Number and volume of reported innovative public/private financing mechanisms and instruments that increase access to developing country project and business developers that play a role in the transfer, development and/or deployment of EST's within the context of the UNFCCC.
Unit of Measurement	Number in total and by Party Volume in USD in total and by Party
Targeted stakeholders	All Parties
Classification	Output
Key theme	Mechanisms
Code (ID)	PI – MECH - 01

Policy relevance

Purpose	Under the sub-theme ‘Innovative options for financing the development and transfer of technologies’ for this key theme in the ‘technology transfer framework’ the following objectives are formulated: <ul style="list-style-type: none"> ▪ to scale up and/or develop innovative public-private financing mechanisms and instruments that increase access to developing country project and business developers that play a role in the transfer, development and/or deployment of EST's.
Linkages to other performance indicators	Another performance indicator related to the key theme TNA (PI – TNA – 06).

Methodological description

Underlying definitions and concepts	/
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Limitations of the performance indicator	It need to be defined what ‘financing mechanisms and instruments’ are? Furthermore, a total number and volume is not reflecting the equal distribution.
Status of the methodology	It seems there is a low feasibility to collect data from bilateral cooperation.

Assessment of data

Monitoring of data	Because Annex II Parties might support financially the TNA process in their bilateral cooperation, National Communications can be a source of data.
Data availability	The definition mentions ‘reported’. Within the context of the UNFCCC it means that the data should be found in the national communications, but there are no specific guidelines requesting for these data.
Data collection limitations	/
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	/
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References

Readings	/
Internet site	/

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Cooperation between the UNFCCC and other multilateral environmental agreements

Description of the performance indicator

Name	Cooperation between the UNFCCC and other multilateral environmental agreements
Brief definition	Report on the possible ways to enhance cooperation between the UNFCCC and other multilateral environmental agreements (MEA's)
Detailed description	
Unit of Measurement	Yes/no
Targeted stakeholders	UNFCCC EGTT
Classification	Output
Key theme	Mechanism
Code (ID)	PI – MECH - 02

Policy relevance

Purpose	Under the sub-theme 'Possible ways and means to enhance cooperation with relevant conventions and intergovernmental processes' for this key theme in the 'technology transfer framework' the following objectives are formulated: <ul style="list-style-type: none"> ▪ to explore possible ways to enhance cooperation between the UNFCCC and other multilateral environmental agreements (MEA's).
Linkages to other performance indicators	Other performance indicators related to the key theme MECH: <ul style="list-style-type: none"> ▪ Report on the references to objectives of other MEA's in national communications

Methodological description

Underlying definitions and concepts	/
Limitations of the performance indicator	The way the indicator is formulated now limits the action to one report.
Status of the methodology	There is no such a report available.

Assessment of data

Monitoring of data	/
Data availability	/
Data collection limitations	/
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	<p>It might be expected that a performance indicator allows tracking progress over the years. As formulated under 'Limitations of the performance indicator', this indicator will measure if the report has been made available once upon time (yes/no).</p> <p>A better (not a second best) performance indicator could be: "Report on the progress made the possible ways to enhance cooperation between the UNFCCC and other multilateral environmental agreements (MEA's)." But this formulation is deviating from the objective as phrased in the technology transfer framework.</p>
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References

Readings	/
Internet site	/

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

References to objectives of other MEA's

Description of the performance indicator

Name	References to objectives of other MEA's
Brief definition	Report on the references to objectives of other MEA's in national communications
Detailed description	
Unit of Measurement	Yes/no
Targeted stakeholders	UNFCCC Secretariat
Classification	Input
Key theme	Mechanism
Code (ID)	PI – MECH – 03

Policy relevance

Purpose	<p>Under the sub-theme 'Possible ways and means to enhance cooperation with relevant conventions and intergovernmental processes' in the 'technology transfer framework' the following objectives are formulated:</p> <ul style="list-style-type: none"> ▪ to encourage Parties, when formulating climate change strategies, programmes and projects, to take into consideration objectives of other MEA's
Linkages to other performance indicators	Another performance indicator related to the key theme MECH (PI – MECH – 02).

Methodological description

Underlying definitions and concepts	NC's are an important source of information to the UNFCCC process. Providing information on enhancing cooperation with relevant MEA4s is regarded useful for the multilateral community.
Limitations of the performance indicator	
Status of the methodology	It seems there is a medium feasibility to collect data from NC's.

Assessment of data

Monitoring of data	/
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Data availability	NC's
Data collection limitations	/
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	/
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References

Readings	/
Internet site	/

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Barriers and good experiences in the development of endogenous technologies

Description of the performance indicator

Name	Barriers and good experiences in the development of endogenous technologies
Brief definition	Number of reported barriers and good experiences in the development of endogenous technologies.
Detailed description	Number of reported barriers encountered in the development of endogenous technologies, and share good experiences in the promotion of endogenous technologies in non-Annex I Parties.

Unit of Measurement	In total and by non-Annex I Party
Targeted stakeholders	Non-Annex I Parties
Classification	Output
Key theme	Mechanisms
Code (ID)	PI – MECH – 04

Policy relevance

Purpose	Under the sub-theme ‘Promotion of endogenous development of technology through the provision of financial resources and joint research and development’ of the key theme ‘Mechanisms’ in the ‘technology transfer framework’ the following objectives are formulated: <ul style="list-style-type: none"> ▪ to provide information on barriers encountered in the development of endogenous technologies, and to invite Parties to share good experiences in the promotion of endogenous technologies in non-Annex I Parties.
Linkages to other performance indicators	None

Methodological description

Underlying definitions and concepts	/
Limitations of the performance indicator	/
Status of the methodology	It seems there is a medium feasibility to collect data from NC’s and NAPA’s.

Assessment of data

Monitoring of data	/
Data availability	Some of this information is already made available through NC’s at present.
Data collection limitations	/
References	/

Development of new data	/
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Alternative definition(s) or performance indicator(s)

Second-best performance indicator	/
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References

Readings	/
Internet site	/

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

Guidance for reporting on joint R&D needs

Description of the performance indicator

Name	Guidance for reporting on joint R&D needs
Brief definition	Report with guidance for reporting on joint R&D needs.
Detailed description	Report to provide guidance for reporting in TNA's and in National Communications on identifying needs and opportunities for joint R&D
Unit of Measurement	Yes/no
Targeted stakeholders	UNFCCC EGTT
Classification	Input
Key theme	Mechanisms
Code (ID)	PI – MECH – 05

Policy relevance

Purpose	Under the sub-theme ‘Promotion of collaborative research and development on technologies’ of the key theme ‘Mechanisms’ in the ‘technology transfer framework’ the following objectives are formulated: <ul style="list-style-type: none">▪ to provide guidance for TNA reporting on joint R&D needs and use of information in the national communications and TNA’s to identify needs and opportunities for R&D.
Linkages to other performance indicators	/

Methodological description

Underlying definitions and concepts	/
Limitations of the performance indicator	/
Status of the methodology	/

Assessment of data

Monitoring of data	/
Data availability	/
Data collection limitations	/
References	/
Development of new data	/

Alternative definition(s) or performance indicator(s)

Second-best performance indicator	/
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References

Readings	/
Internet site	/

Factual data and evaluation

Factual data represented in a table	/
Factual data represented e.g. in a graph	/
Discussion	/
Evaluation	/

‘Financial flows’

Total Annual Global Investment and Financial Flows in Climate Change Mitigation Technologies

DESCRIPTION OF THE PERFORMANCE INDICATOR

Name	Total Annual Global Investment and Financial Flows in Climate Change Mitigation Technologies
Brief definition	A combined total annual estimate of all sources of finance
Detailed description	<p>This indicator is the sum of the total annual investment and financial flows by source of finance, where sources of finance include:</p> <ul style="list-style-type: none"> • Convention Financial Mechanism (PI – FIN - 03) • Kyoto Protocol Flexibility Mechanisms (PI – FIN - 04) • Bilateral sources (including ECA's) (PI – FIN - 05) • National Sources (PI – FIN - 06) • Multilateral sources (PI – FIN - 07) • Private Financing (PI – FIN - 08) <p>Since there is significant interaction between sources of finance, care should be taken to ensure that double counting is prevented. The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007.</p> <p>Ideally the indicator would also be presented in the following formats:</p> <ul style="list-style-type: none"> • Total Annual Global Investment and Financial Flows in Climate Change Mitigation Technologies by country • Total Annual Global Investment and Financial Flows in Climate Change Mitigation Technologies by state of technological maturity • Total Annual Global Investment and Financial Flows in Climate Change Mitigation Technologies by technology • Total Public and Total Private Annual Global Investment and Financial Flows in Climate Change Mitigation Technologies • Total Annual Global Investment and Financial Flows in Climate Change Mitigation Technologies under the Convention and Outside of the Convention
Unit of Measurement	USD billion

Classification	Output
Key theme	Financing
Code (ID)	PI – FIN - 01

POLICY RELEVANCE

Purpose	The total investment and financial flows for mitigation technologies is central to achieving the objectives of the Convention.
Linkages to other performance indicators	This is a headline indicator that aggregates indicators of investment and financial flows for each source of finance

METHODOLOGICAL DESCRIPTION

Underlying definitions and concepts	The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007.
Limitations of the performance indicator	By itself the quantity of investment and financial flows does not indicate the quality and hence the impact of investment and financial flows for reducing emissions. Two equivalent quantities of finance may result in very different efficiencies and effectiveness in terms of emission reductions and technological and other sustainable development outcomes.
Status of the methodology	The methodology is well established, however, there remain significant difficulties in obtaining data for some important sources of finance, as explained in Tables 2 and 3.

ASSESSMENT OF DATA

Monitoring of data	<p>This indicator is an aggregate indicator of each major source of finance, which are in themselves aggregations of like sources of finance. The data needs for each source of finance are explained within the relevant methodological sheets (PI - FIN - 03 till PI – FIN - 08). The required adjustments to each indicator to prevent double counting are explained in the following formulae:</p> <p>Total Annual Global Investment and Financial Flows = Annual investment and financial flows from Convention Financial Mechanism + total investment and financial flows through the Kyoto Protocol Flexibility Mechanisms + National sources + [Total investment and financial flows from Bilateral sources (including ECA’s) – investments and financial flows in the Kyoto Protocol Flexibility Mechanisms] + [Total investment and financial flows from Multilateral sources – investments and financial</p>
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	flows in the Kyoto Protocol Flexibility Mechanisms] + [Private Investment - investments and financial flows in the Kyoto Protocol Flexibility Mechanisms]
Data availability	Data sources and availability of data are described in Tables 2 and 3. Country level data is not available for several sources of finance, and consequently total investment and financial flows by country is not currently available.
Data collection limitations	Refer to methodological sheets for specific indicators of financial sources (PI – FIN – 03 till 08)
References	Refer to methodological sheets for specific indicators of financial sources (PI – FIN – 03 till 08)
Development of new data	Refer to methodological sheets for specific indicators of financial sources (PI – FIN – 03 till 08)

ALTERNATIVE DEFINITION(S) OR PERFORMANCE INDICATOR(S)

Second-best performance indicator	If it is not possible to obtain data for a significant portion of the sources of finance, such that the indicator no longer approximates total global investment and financial flows, then the second best indicator will be total investment and financial flows for each individual source of finance for those where data is available.
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REFERENCES

Readings	UNFCCC (2007) Investment and Financial Flows to Address Climate Change; FCCC/SB/2008/INF.7, FCCC/TP/2007/4; FCCC/TP/2008/7
Internet site	Refer to methodological sheets for specific indicators of financial sources (PI – FIN – 03 till 08)

FACTUAL DATA AND EVALUATION

Factual data represented in a table	See Tables 3 and 4
Factual data represented e.g. in a graph	
Discussion	Total annual investment and financial flows for mitigation technologies in 2007 was USD 140–230 billion.
Evaluation	Total annual investment needs for mitigation technologies from 2010-2050 is estimated at 520-1230 billion per annum (additional investment of 380-1000 billion per annum)

Total Global Investment and Financial Flows in Climate Change Adaptation Technologies

DESCRIPTION OF THE PERFORMANCE INDICATOR

Name	Total Global Investment and Financial Flows in Climate Change Adaptation Technologies
Brief definition	A combined total estimate of all sources of finance
Detailed description	<p>This indicator is the sum of the total investment and financial flows by source of finance, where sources of finance include:</p> <ul style="list-style-type: none"> • Convention Financial Mechanism (PI – FIN - 03) • Kyoto Protocol Flexibility Mechanisms (PI – FIN - 04) • Bilateral sources (including ECA's) (PI – FIN - 05) • National Sources (PI – FIN - 06) • Multilateral sources (PI – FIN - 07) • Private Financing (PI – FIN - 08) <p>Since there is significant interaction between sources of finance, care should be taken to ensure that double counting is prevented. The definitions of 'technology', 'investment' and 'financial flows' are consistent with UNFCCC, 2007.</p> <p>Ideally the indicator would also be presented in the following formats:</p> <ul style="list-style-type: none"> • Total Annual Global Investment and Financial Flows in Climate Change Adaptation Technologies by country • Total Annual Global Investment and Financial Flows in Climate Change Adaptation Technologies by state of technological maturity • Total Annual Global Investment and Financial Flows in Climate Change Adaptation Technologies by technology • Total Public and Total Private Annual Global Investment and Financial Flows in Climate Change Adaptation Technologies • Total Annual Global Investment and Financial Flows in Climate Change Adaptation Technologies under the Convention and Outside of the Convention
Unit of Measurement	USD billion
Classification	Output

Key theme	Financing
Code (ID)	PI – FIN - 02

POLICY RELEVANCE

Purpose	The total investment and financial flows for adaptation technologies is central to achieving the objectives of the Convention.
Linkages to other performance indicators	This is a headline indicator that aggregates indicators of investment and financial flows for each source of finance (PI – FIN - 03 till 08)

METHODOLOGICAL DESCRIPTION

Underlying definitions and concepts	The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007.
Limitations of the performance indicator	By itself the quantity of investment and financial flows does not indicate the quality and hence the impact of investment and financial flows for adaptation. Two equivalent quantities of finance may result in very different efficiencies and effectiveness in terms of adaptive responses and adaptive capacity.
Status of the methodology	The methodology is preliminary and work is underway to develop improved estimates of financing for adaptation (World Bank Economics of Adaptation Project; finalization of FCCC/SBSTA/2008/INF.02/Annex 2. There remain significant difficulties in obtaining data for some important sources of finance, as explained in Tables 2 and 3.

ASSESSMENT OF DATA

Monitoring of data	<p>This indicator is an aggregate indicator of each major source of finance, which are in themselves aggregations of like sources of finance. The data needs for each source of finance are explained within the relevant methodological sheets (PI – FIN - 03 till 08). The required adjustments to each indicator to prevent double counting are explained in the following formulae:</p> <p>Total Annual Global Investment and Financial Flows = Annual investment and financial flows from Convention Financial Mechanism + National sources + Total investment and financial flows from Bilateral sources + Total investment and financial flows from Multilateral sources + Private Investment</p>
Data availability	Data sources and availability of data are described in Tables 2 and 3. Country level data is not available for several sources of finance, and consequently total

	investment and financial flows by country is not currently available.
Data collection limitations	Refer to methodological sheets for specific indicators of financial sources (PI – FIN – 03 till 08)
References	Refer to methodological sheets for specific indicators of financial sources (PI – FIN – 03 till 08)
Development of new data	Refer to methodological sheets for specific indicators of financial sources (PI – FIN – 03 till 08)

ALTERNATIVE DEFINITION(S) OR PERFORMANCE INDICATOR(S)

Second-best performance indicator	If it is not possible to obtain data for a significant portion of the sources of finance, such that the indicator no longer approximates total global investment and financial flows, then the second best indicator will be total investment and financial flows for each individual source of finance for those where data is available.
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REFERENCES

Readings	UNFCCC (2007) Investment and Financial Flows to Address Climate Change; FCCC/SB/2008/INF.7, FCCC/TP/2007/4; FCCC/TP/2008/7
Internet site	World Bank Study on Economics of Adaptation to Climate Change http://www.worldbank.org/environemnt/eacc Refer to methodological sheets for specific indicators of financial sources

FACTUAL DATA AND EVALUATION

Factual data represented in a table	See Tables 3 and 4
Factual data represented e.g. in a graph	
Discussion	Total annual investment and financial flows for adaptation technologies will be provided in the final report to the COP as per FCCC/SBSTA/2008/INF.02/Annex 2
Evaluation	The UNFCCC estimates the incremental investment and financial flows needed to adapt to climate change in selected sectors total \$49 to \$171 billion globally in 2030 with \$28 to \$67 billion of this total being needed in developing countries. Other recent estimates of adaptation costs for developing countries include: World Bank (\$9–41 billion), ² Oxford

² World Bank, 2006, Table K.1. Current needs, based on share of investment estimated to be climate sensitive.

	Institute for Energy Studies (\$2–17 billion), ³ Oxfam (greater than \$50 billion) ⁴ and UNDP (\$86 billion). ⁵ While these estimates differ in terms of their scope and approach, and hence are not directly comparable, they all show that tens of billions US dollars annually will be needed by developing countries to adapt to climate change.
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Total Annual Investment and Financial Flows in Climate Change Technologies - Convention Financial Mechanisms

DESCRIPTION OF THE PERFORMANCE INDICATOR

Name	Total Annual Investment and Financial Flows in Climate Change Technologies - Convention Financial Mechanisms
Brief definition	Total annual of investment that results from the operation of the Convention Financial Mechanisms.
Detailed description	<p>This indicator is the total annual investment and financial flows that results directly and indirectly through the:</p> <ul style="list-style-type: none"> • GEF Trust Fund and its specific funds (LDCF; SCCF) • Kyoto Protocol Adaptation Fund <p>The indicator will present [committed/actual] investments for each specific fund, and for the programmes administered through the GEF on an annual basis for mitigation and adaptation technologies. Investment figures will be divided into direct investment and indirect investment which is co-financing by other financial sources. Co-financing is defined in accordance with the decisions of the GEF Council (GEF C22/Annex C⁶) and will be reported for both public and private sources. The sum of the total direct investment and the total indirect investment will be reported for all of the Convention Financial Mechanisms.</p> <p>The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007. Ideally the indicator would also be presented in the following formats:</p> <ul style="list-style-type: none"> • Total Annual Investment and Financial Flows in Climate Change Mitigation Technologies by country • Total Annual Investment and Financial Flows in Climate Change Adaptation Technologies

³ Müller and Hepburn, 2006, p. 14. Current needs based on extrapolations of LDC *National Adaptation Programmes of Action* (NAPA's).

⁴ Oxfam 2007, p. 3. Current needs, based on extrapolations of NAPA's.

⁵ UNDP 2007. Needs in 2015.

⁶ http://www.gefweb.org/Documents/Council_Documents/GEF_C22/Annex_C_-_Cofinancing_for_GEF_Projects.doc (last accessed 20 January 2009)

	<p>by country</p> <ul style="list-style-type: none"> • Total Annual Investment and Financial Flows in Climate Change Adaptation Technologies by sector • Total Annual Investment and Financial Flows in Climate Change Mitigation Technologies by state of technological maturity • Total Annual Global Investment and Financial Flows by technology • Total Annual Public and Private co-financing/leveraging achieved by the Convention Financial Mechanisms
Unit of Measurement	USD billion
Classification	Input
Key theme	Financing
Code (ID)	PI – FIN - 03

POLICY RELEVANCE

Purpose	The indicator monitors the contribution that the Convention Financial Mechanisms make to global financing of climate change technologies.
Linkages to other performance indicators	This indicator contributes to the aggregate indicators of total global investment and financial flows (PI – FIN - 01 and PI – FIN - 02)

METHODOLOGICAL DESCRIPTION

Underlying definitions and concepts	<p>The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007. The definition of co-financing is contained in GEF Council Decision GEF C22/Annex C⁷</p> <p>Finance provided through non-climate change focal areas of the GEF for climate change related projects will be treated as co-financing.</p>
Limitations of the performance indicator	By itself the quantity of investment and financial flows does not indicate the quality and hence the impact of investment and financial flows for adaptation. Two equivalent quantities of finance may result in very different efficiencies and effectiveness in terms of adaptive responses and adaptive capacity.

⁷http://www.gefweb.org/Documents/Council_Documents/GEF_C22/Annex_C_-_Cofinancing_for_GEF_Projects.doc (last accessed 20 January 2009)

Status of the methodology	The methodology is well established and there are only minor issues with obtaining the relevant data to support this indicator.
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ASSESSMENT OF DATA

Monitoring of data	This indicator is calculated according to the following formulae: Total Annual Investment and Financial Flows in Climate Change Technologies - Convention Financial Mechanisms = [GEF Trust Fund (Adaptation/Mitigation) – Enabling Activities – Project Preparation Grants] + SCCF (Adaptation/Mitigation) + [LCDF (Adaptation) – Enabling Activities] + Adaptation Fund (Adaptation)
Data availability	Data is maintained by the GEF Evaluation Office.
Data collection limitations	Data is not currently available by technology. The GEF would need to be requested to report financing by technology, and a consistent technology typology should be used.
References	GEF Monitoring and Evaluation Policy (http://thegef.org/MonitoringandEvaluation/MEAbout/documents/Policies_and_Guidelines-me_policy-english.pdf)
Development of new data	Since the Adaptation Fund has only recently been operationalised, new data will need to be collected for the investment and financial flows from the Adaptation Fund.

ALTERNATIVE DEFINITION(S) OR PERFORMANCE INDICATOR(S)

Second-best performance indicator	-
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REFERENCES

Readings	UNFCCC (2007) Investment and Financial Flows to Address Climate Change; FCCC/SB/2008/INF.7, FCCC/SBI/2007/21; FCCC/TP/2008/7
Internet site	www.thegef.org http://unfccc.int/cooperation_and_support/financial_mechanism/items/2807.php

FACTUAL DATA AND EVALUATION

Factual data represented in a table	See Tables 3 and 4. Total Annual Investment and Financial Flows in Climate Change Technologies - Convention Financial Mechanisms is estimated in FCCC/SB/2008/INF.7 as was USD 0.22-0.32 billion averaged for the 4 th replenishment of the GEF. Investment in adaptation technologies during the reporting period September 2007 – August 2008 was
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	14.7 [SPA – GEF Trust Fund] + 25.2 [LCDF] + 29.4 [SCCF] = 69.3 and Investment in mitigation technologies during the reporting period September 2007 – August 2008 was 198.29-5 [GEF Trust Fund - Enabling Activities] = 193.29 (units in 2008 USD million)
Factual data represented e.g. in a graph	
Discussion	
Evaluation	The UNFCCC estimates the incremental investment and financial flows needed to adapt to climate change in selected sectors total \$49 to \$171 billion globally in 2030 with \$28 to \$67 billion of this total being needed in developing countries. Total annual investment needs for mitigation technologies from 2010-2050 is estimated at 520-1230 billion per annum (additional investment of 380-1000 billion per annum). It would be useful to determine the expected public/private share of investment by stage of technological maturity and region, and benchmark the Total Annual Investment and Financial Flows in Climate Change Technologies - Convention Financial Mechanisms against the public share, taking into account other public sources outside of the Convention as appropriate.

Total Annual Investment and Financial Flows in Climate Change Technologies - Kyoto Protocol Flexibility Mechanisms

DESCRIPTION OF THE PERFORMANCE INDICATOR

Name	Total Annual Investment and Financial Flows in Climate Change Technologies - Kyoto Protocol Flexibility Mechanisms
Brief definition	Total annual of investment that results from the operation of the Kyoto Protocol (KP) Flexibility Mechanisms.
Detailed description	<p>This indicator is the total annual investment and financial flows that results directly and indirectly through the:</p> <ul style="list-style-type: none"> • CDM • JI <p>The indicator will aggregate estimates of investment resulting from each mechanism on an annual basis for mitigation and adaptation technologies. Investment figures will be divided into direct investment and indirect investment which is co-financing by other financial sources. Co-financing is</p>

	<p>defined consistent with the decisions of the GEF Council (GEF C22/Annex C⁸) and will be reported for both public and private sources. The sum of the total direct investment and the total indirect investment will be reported for all of the KP Flexibility Mechanisms.</p> <p>The indicator could also report both the total investment in projects that have been registered, and the total investment in projects that are in the CDM/JI pipeline. The later will give an indication of total investment and the supply of CER's in future years.</p> <p>The definitions of 'technology', 'investment' and 'financial flows' are consistent with UNFCCC, 2007. Ideally the indicator would also be presented in the following formats:</p> <ul style="list-style-type: none"> • Total Annual Investment and Financial Flows in Climate Change Mitigation Technologies by country • Total Annual Investment and Financial Flows in Climate Change Mitigation Technologies by state of technological maturity • Total Annual Global Investment and Financial Flows by technology • Total marginal investment (value of Car's and ERU's) • Total Annual Public and Private co-financing/leveraging achieved by the KP Flexibility Mechanisms
Unit of Measurement	USD billion
Classification	Input
Key theme	Financing
Code (ID)	PI – FIN - 04

POLICY RELEVANCE

Purpose	The indicator monitors the contribution that the Convention Financial Mechanisms make to global financing of climate change technologies.
Linkages to other performance indicators	This indicator contributes to the aggregate indicators of total global investment and financial flows (PI – FIN - 01 and PI – FIN - 02)

⁸http://www.gefweb.org/Documents/Council_Documents/GEF_C22/Annex_C_-_Cofinancing_for_GEF_Projects.doc (last accessed 20 January 2009)

METHODOLOGICAL DESCRIPTION

Underlying definitions and concepts	The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007. The definition of co-financing is contained in GEF Council Decision GEF C22/Annex C ⁹
Limitations of the performance indicator	By itself the quantity of investment and financial flows does not indicate the quality and hence the impact of investment and financial flows for adaptation. Two equivalent quantities of finance may result in very different efficiencies and effectiveness in terms of adaptive responses and adaptive capacity.
Status of the methodology	The methodology could be refined by UNFCCC Secretariat/UNEP Risoe and reported to the COP via the CDM EB.

ASSESSMENT OF DATA

Monitoring of data	This indicator is calculated according to the following formulae: Total Annual Investment and Financial Flows in Climate Change Technologies - Kyoto Protocol Flexibility Mechanisms = [CDM Investment ¹⁰ + marginal abatement financial flow (value of Car’s)] + [JI Investment + marginal abatement financial flow (value of Era’s)]
Data availability	Data is maintained by UNEP Risoe and is based on UNFCCC CDM/JI data and the International Transaction Log (ITL).
Data collection limitations	Total investment from the CDM and JI is estimated by Haites (2007) and Seres and Haites (2008) ¹¹ as commissioned studies for the UNFCCC Secretariat. For projects that provide information on the capital cost (about half), the capital cost is expressed as a cost per annual tCO ₂ e reduced based on the estimated annual reductions for the project. An average value is then calculated for each project type given the available data. The average cost per annual tCO ₂ e reduced is multiplied by the estimated annual reductions for all projects of that type both registered and in the pipeline. Verification of actual investment made (ex-post) would be useful to improve the estimates of total investment. The marginal abatement financial flow is the value of the Car’s and Era’s calculated at the average price for Car’s and Era’s for that year.

⁹ http://www.gefweb.org/Documents/Council_Documents/GEF_C22/Annex_C_-_Cofinancing_for_GEF_Projects.doc (last accessed 20 January 2009)

¹⁰ For both registered projects and projects in the pipeline.

¹¹ Unlike the 2007 report, the 2008 report does not provide estimates for JI Investment.

References	Seres and Haites (2008) Analysis of Technology Transfer in CDM Projects, Prepared for the UNFCCC Registration & Issuance Unit CDM/SDM. UNEP RISOE CDM Pipeline http://www.cdmpipeline.org/ UNFCCC ITL Statistics http://cdm.unfccc.int/Statistics/index.html
Development of new data	-

ALTERNATIVE DEFINITION(S) OR PERFORMANCE INDICATOR(S)

Second-best performance indicator	-
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REFERENCES

Readings	UNFCCC (2007) Investment and Financial Flows to Address Climate Change; FCCC/SB/2008/INF.7; FCCC/TP/2008/7; Fennan (2008) Guidance to the CDM/JI Pipelines, UNEP RISOE; Haites (2007) Carbon Markets, Prepared for: United Nations Climate Change Secretariat Bonn
Internet site	http://www.cdmpipeline.org http://cdm.unfccc.int/Statistics/index.html

FACTUAL DATA AND EVALUATION

Factual data represented in a table	See Tables 3 and 4. Total Annual Investment and Financial Flows in Climate Change Technologies - Kyoto Protocol Flexibility Mechanisms in 2006 was: <i>Registered Projects</i> (CDM USD1.85 billion + USD2.69 billion) + ? + 0.132] <i>Projects in Pipeline</i> (CDM USD26.1 billion + USD2.69 billion) + (JI USD6.3 billion + USD0.22 billion) = USD35.31 billion
Factual data represented e.g. in a graph	
Discussion	
Evaluation	Total annual investment needs for mitigation technologies from 2010-2050 is estimated at 520-1230 billion per annum (additional investment of 380-1000 billion per annum). It would be useful to determine the expected public/private share of investment by stage of technological maturity and

	region, and benchmark the Total Annual Investment and Financial Flows in Climate Change Technologies - Convention Flexibility Mechanisms against the public share, taking into account other public sources outside of the Convention as appropriate.
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Total Annual Investment and Financial Flows in Climate Change Technologies – Bilateral Sources

DESCRIPTION OF THE PERFORMANCE INDICATOR

Name	Total Annual Investment and Financial Flows in Climate Change Technologies – Bilateral Sources
Brief definition	Total annual of investment that results from Bilateral Sources of finance for climate change technologies.
Detailed description	<p>This indicator is the total annual investment and financial flows that results directly and indirectly through:</p> <ul style="list-style-type: none"> • Bilateral ODA • Export Credit Agencies • International technology research development and technology transfer programmes <p>The indicator will aggregate estimates of investment resulting from each source on an annual basis for mitigation and adaptation technologies. Investment figures will be divided into direct investment and indirect investment which is co-financing by other financial sources. Co-financing is defined consistent with the decisions of the GEF Council (GEF C22/Annex C¹²) and will be reported for both public and private sources. The sum of the total direct investment and the total indirect investment will be reported for all bilateral sources.</p> <p>Bilateral ODA will use the Climate Change Rio Marker as the method for isolating climate change related ODA.</p> <p>The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007. Ideally the indicator would also be presented in the following formats:</p> <ul style="list-style-type: none"> • Total Annual Investment and Financial Flows in Climate Change Mitigation Technologies by country (output and input) • Total Annual Global Investment and Financial Flows by technology • Total Annual Public and Private co-

¹²http://www.gefweb.org/Documents/Council_Documents/GEF_C22/Annex_C_-_Cofinancing_for_GEF_Projects.doc (last accessed 20 January 2009)

	financing/leveraging achieved by bilateral sources
Unit of Measurement	USD billion
Classification	Input
Key theme	Financing
Code (ID)	Fin5

POLICY RELEVANCE

Purpose	The indicator monitors the contribution that bilateral sources make to global financing of climate change technologies.
Linkages to other performance indicators	This indicator contributes to the aggregate indicators of total global investment and financial flows (PI – FIN - 01 and PI – FIN - 02)

METHODOLOGICAL DESCRIPTION

Underlying definitions and concepts	The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007. The definition of co-financing is contained in GEF Council Decision GEF C22/Annex C ¹³
Limitations of the performance indicator	By itself the quantity of investment and financial flows does not indicate the quality and hence the impact of investment and financial flows for adaptation. Two equivalent quantities of finance may result in very different efficiencies and effectiveness in terms of adaptive responses and adaptive capacity.
Status of the methodology	ODA is reported consistent with OECD (2007) DAC Statistical Reporting Directives, DCD/DAC(2007)34 The methodology for calculating ECA investment has not been reviewed. Official or private bilateral loans which are primarily export-facilitating in purpose. They are usually tied to a specific export from the extending country and not represented by a negotiable instrument. As they have a primarily commercial motive, official export credits are classified as OOF (Other Official Flows), not as ODA. Premia paid to insure export credits, and indemnities paid under such insurance, do not constitute flows and are not recorded in DAC statistics.

ASSESSMENT OF DATA

¹³http://www.gefweb.org/Documents/Council_Documents/GEF_C22/Annex_C_-_Cofinancing_for_GEF_Projects.doc (last accessed 20 January 2009)

<p>Monitoring of data</p>	<p>This indicator is calculated according to the following formulae:</p> <p>Total Annual Investment and Financial Flows in Climate Change Technologies – Bilateral Sources = Bilateral ODA + ECA finance + International Technology Development and Transfer Investment additional to ODA</p>
<p>Data availability</p>	<p>The DAC is the permanent body where bilateral donors work with multilaterals towards co-ordinating international support for developing countries.</p> <p>2002 OECD DAC report on aid targeting the objectives of the Rio Conventions (FCCC, CCD, and CBD), using the so called “Rio Markers” The aim is to be able to distinguish between climate-related funding and other environment-related funding, and to distinguish between funding for mitigation and for adaptation. Since 2003: Integration of “Rio Markers” into standard reporting on ODA for a trial period of 3 years (2004-2007)</p> <p>OECD data on ECA finance for climate change related technologies is much less accessible and comprehensive than ODA data. The annual OECD Publication series <i>Statistics on Export Credit Activities</i> has not been published since 2005 (http://www.oecd.org/dataoecd/30/35/37931024.pdf). Therefore, it is only possible to make a rough estimate of ECA financing.</p> <p>There is currently no available data for international technology development and transfer expenditures that are additional to ODA.</p> <p>It is also not currently possible to separate investment in mitigation and adaptation technologies.</p>
<p>Data collection limitations</p>	<p>ODA data is not available for all countries. The following countries report ODA investments to the OECD DAC:</p> <p>OECD DAC members: Australia, France, Luxembourg, Sweden, Austria, Germany, Netherlands, Switzerland, Belgium, Greece, New Zealand, United Kingdom, Canada, Ireland, Norway, United States, Denmark, Italy, Portugal, European Commission (Multilateral), Finland, Japan, Spain</p> <p>Non-DAC reporting: Arab Donors, Israel, Slovak Republic, Czech Republic, Korea, South, Slovenia, Estonia, Mexico, Thailand, Hungary, Latvia, Taiwan, Iceland, Lithuania, Turkey, Poland</p>
<p>References</p>	<p>www.oecd.org</p>

Development of new data	New data will be required for ECA investments and for international investment in technology development and transfer that is additional to ODA.
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ALTERNATIVE DEFINITION(S) OR PERFORMANCE INDICATOR(S)

Second-best performance indicator	-
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REFERENCES

Readings	UNFCCC (2007) Investment and Financial Flows to Address Climate Change; FCCC/SB/2008/INF.7; FCCC/TP/2008/7; OECD (2007) DAC Statistical Reporting Directives, DCD/DAC(2007)34
Internet site	http://www.oecd.org (http://www.oecd.org/dataoecd/30/35/37931024.pdf)

FACTUAL DATA AND EVALUATION

Factual data represented in a table	See Tables 3 and 4. Total Annual Investment and Financial Flows in Climate Change Technologies in 2006 – Bilateral Sources = USD1.1 billion + USD1-2 billion + 0 [International Technology Development and Transfer Investment additional to ODA] = USD 2.1-3.1 billion
Factual data represented e.g. in a graph	
Discussion	
Evaluation	<p>The UNFCCC estimates the incremental investment and financial flows needed to adapt to climate change in selected sectors total \$49 to \$171 billion globally in 2030 with \$28 to \$67 billion of this total being needed in developing countries. Total annual investment needs for mitigation technologies from 2010-2050 is estimated at 520-1230 billion per annum (additional investment of 380-1000 billion per annum).</p> <p>It would be useful to determine the expected public/private share of investment by stage of technological maturity and region, and benchmark the Total Annual Investment and Financial Flows in Climate Change Technologies - Bilateral sources against the public share, taking into account other public sources outside and inside of the Convention as appropriate.</p> <p>The greenhouse gas emissions intensity of overall investment by Bilateral sources of finance is also an important evaluative criterion, which should indicate whether a shift in financing toward low carbon</p>

	options is occurring.
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Total Annual Investment and Financial Flows in Climate Change Technologies – National Sources

DESCRIPTION OF THE PERFORMANCE INDICATOR

Name	Total Annual Investment and Financial Flows in Climate Change Technologies – National Sources
Brief definition	Total annual of investment that results from National Sources of finance for climate change technologies.
Detailed description	<p>This indicator is the total annual investment and financial flows that results directly and indirectly through:</p> <ul style="list-style-type: none"> • Domestic technology development incubators and programmes • National subsidies • Other investments <p>The indicator will aggregate estimates of domestic investment in technology programmes and national subsidies on an annual basis for mitigation and adaptation technologies. The amount of ‘leveraged’ private investment (divided into corporation and private households) will also be reported.</p> <p>There may be other investments made by national governments that do not fall under the categories of technology programmes or subsidies, which will be calculated separately.</p> <p>The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007. Ideally the indicator would also be presented in the following formats:</p> <ul style="list-style-type: none"> • Total Annual Domestic Investment and Financial Flows in Climate Change Mitigation Technologies by country • Total Annual Domestic Investment and Financial Flows in Climate Change Adaptation Technologies by country • Total Annual Domestic Investment and Financial Flows by technology • Total Annual Domestic Private leveraging achieved by national sources
Unit of Measurement	USD billion

Classification	Input
Key theme	Financing
Code (ID)	PI – FIN - 06

POLICY RELEVANCE

Purpose	The indicator monitors the contribution that national sources make to global financing of climate change technologies.
Linkages to other performance indicators	This indicator contributes to the aggregate indicators of total global investment and financial flows (PI – FIN - 01 and PI – FIN - 02)

METHODOLOGICAL DESCRIPTION

Underlying definitions and concepts	The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007. The definition of leveraging is contained in GEF Council Decision GEF C22/Annex C ¹⁴
Limitations of the performance indicator	The indicator may not currently reflect total domestic investment in climate change technologies. To represent total domestic investment it would be necessary to combine this indicator with the domestic investment components of the indicator of private finance (Fin8) By itself the quantity of investment and financial flows does not indicate the quality and hence the impact of investment and financial flows for adaptation. Two equivalent quantities of finance may result in very different efficiencies and effectiveness in terms of adaptive responses and adaptive capacity.
Status of the methodology	The methodology should be consistent with national reporting through national communications.

ASSESSMENT OF DATA

Monitoring of data	This indicator is calculated according to the following formulae: Total Annual Investment and Financial Flows in Climate Change Technologies – National Sources = National subsidies (of which...investment in domestic technology programmes) + Other investments
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¹⁴http://www.gefweb.org/Documents/Council_Documents/GEF_C22/Annex_C_-_Cofinancing_for_GEF_Projects.doc (last accessed 20 January 2009)

Data availability	There is currently not data collection for national subsidies. This information would need to be provided by Parties, perhaps through national communications. Data on national technology development expenditure is available and is reported to the IEA, and is tracked separately by NEF (including specific data on incubators). However, not all countries are included in these data sets and they only cover the energy sector. NEF data is privately owned and would need to be purchased.
Data collection limitations	Data on national subsidies may not be available in a consistent format. Definitions of ‘subsidy’ differ between studies. If possible a methodology should be agreed and used consistently. Data on the amount of private sector investment leveraged by national technology programmes and subsidies is not often available, may use varying methods and may involve some double counting as multiple government interventions may claim to leverage the same private sector investment. Because investment in technology programmes and incubators is a form of subsidy so the figures cannot be added to create a total (one is a subset of the other)
References	Stern et al, 2006; UNEP (2008) Reforming Energy Subsidies: Opportunities to Contribute to the Climate Change Agenda
Development of new data	Consideration should also be given to reporting both subsidies for climate change technologies and subsidies for conventional technologies (particularly in the energy sector)

ALTERNATIVE DEFINITION(S) OR PERFORMANCE INDICATOR(S)

Second-best performance indicator	-
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REFERENCES

Readings	UNFCCC (2007) Investment and Financial Flows to Address Climate Change; FCCC/SB/2008/INF.7; FCCC/TP/2008/7
Internet site	http://www.iea.org/Textbase/stats/rd.asp

FACTUAL DATA AND EVALUATION

Factual data represented in a table	See Tables 3 and 4. Total Annual Investment and Financial Flows in Climate Change Technologies – National Sources (subsidies) is: <ul style="list-style-type: none"> • estimated by Stern et al (2006) at 33 billion
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	<p>for energy technologies only.</p> <ul style="list-style-type: none"> • estimated by Doornbosch, R., et al (2008)¹⁵ at 45 billion per annum for energy technologies only.
Factual data represented e.g. in a graph	-
Discussion	-
Evaluation	<p>Total additional annual investment needs for the early deployment of mitigation technologies from 2010-2050 is estimated at 100-200¹⁶; 57-94¹⁷ or 25-35¹⁸ billion per annum. The UNFCCC estimates the incremental investment and financial flows needed to adapt to climate change in selected sectors total \$49 to \$171 billion globally in 2030 with \$28 to \$67 billion of this total being needed in developing countries.</p> <p>A comparative evaluation of the value of subsidies to greenhouse gas emission intensive technologies and to low greenhouse gas emitting technologies is also important as an indication of the shift in patterns of subsidies that is expected over time.</p>

Total Annual Investment in Climate Change Technologies – Multilateral Sources

DESCRIPTION OF THE PERFORMANCE INDICATOR

Name	Total Annual Investment in Climate Change Technologies – Multilateral Sources
Brief definition	Total annual of investment that results from Multilateral Sources of finance for climate change technologies.
Detailed description	<p>This indicator is the total annual investment that results directly and indirectly through multilateral development banks (MDB's) including:</p> <ul style="list-style-type: none"> • World Bank Group (IRDB; IFC; IDA; MIGA) • Regional Development Banks: <ul style="list-style-type: none"> ○ African Development Bank ○ Asian Development Bank ○ The European Bank for

¹⁵ Doornbosch, R., Gielen, D. and P. Koutstaal (2008). Mobilising Investments in Low-Emission Energy Technologies on the Scale Needed to Reduce the Risks of Climate Change, OECD SG.SD/RT(2008)

¹⁶ Doornbosch, R., Gielen, D. and P. Koutstaal (2008).

¹⁷ UNFCCC, 2007, pg 90, paragraph 331-332 based on Stern and IEA estimates of existing deployment support.

¹⁸ UNFCCC (2007) pg 6

	<p>Reconstruction and Development</p> <ul style="list-style-type: none"> ○ European Investment Bank ○ The Inter-American Development Bank ○ Other IFIs¹⁹ <p>The indicator will aggregate estimates of investment resulting from each source on an annual basis for mitigation and adaptation technologies. Investment figures will be divided into direct investment and indirect investment which is co-financing by other financial sources. Co-financing is defined consistent with the decisions of the GEF Council (GEF C22/Annex C²⁰). The sum of the total direct investment and the total indirect investment will be reported for all multilateral sources.</p> <p>A significant portion of MDB investment is in the form of loans and other concessional financial instruments. The value of loans other non-grant investments will be treated consistent with the DAC and Credit Reporting System Statistical Reporting Directives (DCD/DAC(2007)34; DCD/DAC(2006)43; DCD/DAC(2002)21) which are updated from time to time.</p> <p>The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007. Ideally the indicator would also be presented in the following formats:</p> <ul style="list-style-type: none"> • Total Annual Investment in Climate Change Adaptation Technologies by country • Total Annual Investment in Climate Change Mitigation Technologies by country • Total Annual Investment by technology • Total Annual Public and Private co-financing/leveraging achieved by multilateral sources
Unit of Measurement	USD billion
Classification	Input
Key theme	Financing

¹⁹ Other regional International Financial Institutions such as the Islamic Development Bank, Caribbean Development Bank, Central American Bank for Economic Integration, while not currently significant investors in climate change technologies may also be included in the indicator in the future.

²⁰http://www.gefweb.org/Documents/Council_Documents/GEF_C22/Annex_C_-_Cofinancing_for_GEF_Projects.doc (last accessed 20 January 2009)

Code (ID)	PI - FIN - 07
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POLICY RELEVANCE

Purpose	The indicator monitors the contribution that multilateral sources make to global financing of climate change technologies.
Linkages to other performance indicators	This indicator contributes to the aggregate indicators of total global investment and financial flows (PI – FIN - 01 and PI – FIN - 02)

METHODOLOGICAL DESCRIPTION

Underlying definitions and concepts	The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007. The definition of co-financing is contained in GEF Council Decision GEF C22/Annex C ²¹
Limitations of the performance indicator	By itself the quantity of investment and financial flows does not indicate the quality and hence the impact of investment and financial flows for adaptation. Two equivalent quantities of finance may result in very different efficiencies and effectiveness in terms of adaptive responses and adaptive capacity.
Status of the methodology	The methodology for the treatment of non-grant financing (e.g. concessional loans, credit guarantees) should be refined by the UNFCCC Secretariat to ensure that the indicator is accurately measuring the public investment in climate change technologies. Consideration should also be given to the treatment of capacity building and technical assistance grants and activities which are not direct investments in technology development or transfer. These should be excluded and reported separately in indicators of capacity building.

ASSESSMENT OF DATA

Monitoring of data	<p>This indicator is calculated according to the following formulae:</p> <p>Total Annual Investment and Financial Flows in Climate Change Technologies – Multilateral Sources = World Bank Group (IRDB; IFC; IDA; MIGA) + African Development Bank + Asian Development Bank + The European Bank for Reconstruction and Development + European Investment Bank + The Inter-American Development Bank+ Other IFIs (all investments reported consistent with DAC/CRS Reporting Directives)</p>
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²¹http://www.gefweb.org/Documents/Council_Documents/GEF_C22/Annex_C_-_Cofinancing_for_GEF_Projects.doc (last accessed 20 January 2009)

Data availability	The UNFCCC Secretariat undertook an assessment of financing from Mob's in FCCC/TP/2007/4 and found that it was not possible to accurately identify climate change technology investments from annual reports and other reporting mechanisms of Mob's. Discussion with Mob's to establish a common reporting framework and technology typology for climate change mitigation and adaptation technologies is necessary. Application of the 'Rio Markers' approach used by the OECD DAC may provide a means of achieving a consistent reporting arrangement.
Data collection limitations	Currently only data for investment in renewable energy and energy efficiency technologies can be clearly identified.
References	OECD (2007) DAC Statistical Reporting Directives, DCD/DAC(2007)34 OECD (2006) Reporting Directives For The Creditor Reporting System, DCD/DAC(2006)43 OECD (2002) Reporting Directives For The Creditor Reporting System, DCD/DAC(2002)21
Development of new data	

ALTERNATIVE DEFINITION(S) OR PERFORMANCE INDICATOR(S)

Second-best performance indicator	-
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REFERENCES

Readings	UNFCCC (2007) Investment and Financial Flows to Address Climate Change; FCCC/SB/2008/INF.7; FCCC/TP/2008/7; FCCC/TP/2007/4
Internet site	-

FACTUAL DATA AND EVALUATION

Factual data represented in a table	See Tables 3 and 4. Total Annual Investment and Financial Flows in Climate Change Technologies – Multilateral Sources is estimated in FCCC/SB/2008/INF.7 at USD 5-10 billion per annum.
Factual data represented e.g. in a graph	-
Discussion	-

<p>Evaluation</p>	<p>The UNFCCC estimates the incremental investment and financial flows needed to adapt to climate change in selected sectors total \$49 to \$171 billion globally in 2030 with \$28 to \$67 billion of this total being needed in developing countries. Total annual investment needs for mitigation technologies from 2010-2050 is estimated at 520-1230 billion per annum (additional investment of 380-1000 billion per annum).</p> <p>It would be useful to determine the expected public/private share of investment by stage of technological maturity and region, and benchmark the Total Annual Investment and Financial Flows in Climate Change Technologies - Multilateral sources against the public share, taking into account other public sources outside and inside of the Convention as appropriate.</p> <p>The greenhouse gas emissions intensity of overall investment by multilateral sources of finance is also an important evaluative criterion, which should indicate whether a shift in financing toward low carbon options is occurring across the entire investment portfolio of Mob's.</p>
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Total Annual Investment and Financial Flows in Climate Change Technologies – Private Sources

DESCRIPTION OF THE PERFORMANCE INDICATOR

<p>Name</p>	<p>Total Annual Investment and Financial Flows in Climate Change Technologies – Private Sources</p>
<p>Brief definition</p>	<p>Total annual of investment that results from Private Sources of finance for climate change technologies.</p>
<p>Detailed description</p>	<p>This indicator is the total annual investment and financial flows from the following private sources of finance:</p> <ul style="list-style-type: none"> • Domestic Private Investment (excluding investment by households) • Foreign Direct Investment • Household investment • Venture capital and private equity • Clean technology and carbon funds • Voluntary carbon market • Private investment in technology research and development • Philanthropic sources <p>The indicator will aggregate estimates of investment resulting from each source on an annual basis for</p>

	<p>mitigation and adaptation technologies.</p> <p>The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007. Ideally the indicator would also be presented in the following formats:</p> <ul style="list-style-type: none"> • Total Annual Investment and Financial Flows in Climate Change Mitigation Technologies by country • Total Annual Investment and Financial Flows in Climate Change Adaptation Technologies by country • Total Annual Global Investment and Financial Flows by technology and by stage of technological maturity
Unit of Measurement	USD billion
Classification	Input/Output
Key theme	Financing
Code (ID)	PI – FIN - 08

POLICY RELEVANCE

Purpose	The indicator monitors the contribution that private sources make to global financing of climate change technologies.
Linkages to other performance indicators	This indicator contributes to the aggregate indicators of total global investment and financial flows (Fin1 and Fin2). Indicators Fin3-Fin7 each attempt to monitor the leveraging effect of public investment on the private sector.

METHODOLOGICAL DESCRIPTION

Underlying definitions and concepts	The definitions of ‘technology’, ‘investment’ and ‘financial flows’ are consistent with UNFCCC, 2007. The definition of co-financing is contained in GEF Council Decision GEF C22/Annex C ²²
Limitations of the performance indicator	The level of private sector financing for climate change technologies does not necessarily correlate directly with the policy objectives of technology transfer or emissions reductions. Indicators of financing should be coupled with indicators of emissions reductions and technology transfer to reveal the effectiveness of such investments.

²²http://www.gefweb.org/Documents/Council_Documents/GEF_C22/Annex_C_-_Cofinancing_for_GEF_Projects.doc (last accessed 20 January 2009)

Status of the methodology	There is no established methodology for calculating total private sector investment in climate change technologies, and for some private sources of finance data is not available.
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ASSESSMENT OF DATA

Monitoring of data	<p>This indicator is calculated according to the following formulae:</p> <p>Total Annual Investment and Financial Flows in Climate Change Technologies – Private Sources = Total Sum of Domestic Private Investment (all countries, including household investment) + Private investment in technology research and development + philanthropic investment.</p>
Data availability	<p>Data for the following sources of private investment in climate change technologies are unavailable:</p> <ul style="list-style-type: none"> • Domestic Private Investment (excluding investment by households) • Foreign Direct Investment • Household investment • Private investment in technology research and development • Philanthropic sources <p>Consultation with Parties, technical experts and inter-governmental organizations during the development of FCCC/TP/2007/7 revealed that UNCTAD was examining the potential to report FDI for climate change technologies (see UNFCCC Secretariat (2007) <i>Summary of Key Elements Discussed at the Workshop on Investment and Financial Flows To Address Climate Change: The Way Forward</i>, 31 October 2007, Bonn, Germany).</p> <p>UNESCO has data on private investment in R&D for all purposes but not for climate change technologies. This data is obtained through national surveys. Discussions with UNESCO would be necessary to determine whether adjustments to survey methodologies could be made to obtain data on private technology research and development on climate change related technologies in a manner consistent with the technology categorization used for other sources of finance (and as developed for FCCC/SB/2008/INF.7).</p> <p>Household investment in climate change technologies would need to be recorded in national accounts or would need to be the subject of a specific international statistical survey.</p>

	Data on philanthropic investments is partially reported in OECD DAC database, and is more comprehensively treated by the Center for Global Prosperity annual report 'Index of Global Philanthropy'. However, specific data is not available for climate change technologies.
Data collection limitations	Venture capital and private equity data is available through NEF. The data only tracks energy sector investments.
References	UNFCCC Secretariat (2007) <i>Summary of Key Elements Discussed at the Workshop on Investment and Financial Flows To Address Climate Change: The Way Forward</i> , 31 October 2007, Bonn, Germany Center for Global Prosperity (2008) <i>Index of Global Philanthropy</i>
Development of new data	To service this indicator new data (or new data collection methods that are specific to climate change technologies) would be needed for: <ul style="list-style-type: none"> • Domestic Private Investment (excluding investment by households) • Foreign Direct Investment • Household investment • Private investment in technology research and development • Philanthropic sources

ALTERNATIVE DEFINITION(S) OR PERFORMANCE INDICATOR(S)

Second-best performance indicator	Due to the lack of country specific data on all investment in all climate change technologies, it may be necessary to use a second-best performance indicator which tracks private investments in a selection of climate change technologies. This approach would utilize the best available source of data for private investment in 'clean energy technologies' published annually by UNEP SEFI as ' <i>Global Trends in Sustainable Energy Investment</i> '. As no equivalent data is available for adaptation technologies, it may only be possible to monitor private investment in adaptation technologies using the data from other indicators (3-7) on private sector leveraging.
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REFERENCES

Readings	UNFCCC (2007) <i>Investment and Financial Flows to Address Climate Change</i> ; FCCC/SB/2008/INF.7; FCCC/TP/2008/7; UNEP SEFI and New Energy Finance (2008) <i>Global Trends in Sustainable Energy Investment 2007</i> .
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FACTUAL DATA AND EVALUATION

Factual data represented in a table	See Tables 3 and 4. Total Annual Investment and Financial Flows in Climate Change Technologies – Private Sources is estimated by FCCC/SB/2008/INF.7 at USD 157.8 billion in 2007.
Factual data represented e.g. in a graph	
Discussion	
Evaluation	<p>Total annual investment needs for mitigation technologies from 2010-2050 is estimated at 520-1230 billion per annum (additional investment of 380-1000 billion per annum).</p> <p>It would be useful to determine the expected public/private share of investment by stage of technological maturity and region, and benchmark the Total Annual Investment and Financial Flows in Climate Change Technologies - Private sources against the private share.</p> <p>It is also important to evaluate performance within the context of overall shifts in private sector investment. The indicator could be benchmarked against total global investment (i.e. the proportion of investment in climate change technologies relative to total global investment in all technologies).</p>