Annex 2
SIMPLIFIED MODALITIES AND PROCEDURES FOR SMALL SCALE PROJECT ACTIVITIES UNDER THE CLEAN DEVELOPMENT MECHANISM

ELEMENTS FOR DEVELOPING A PROPOSAL ON THE INTERPRETATION OF DEFINITIONS

Note by the secretariat

I. BACKGROUND

1. Paragraph 6, subparagraph (c) of decision 17/CP.7 on modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol requests the executive board "to develop and recommend to the Conference of the Parties (COP), at its eighth session, simplified modalities and procedures for the following small-scale clean development mechanism project activities:

(a) Renewable energy project activities with a maximum output capacity equivalent of up to 15 megawatts (or an appropriate equivalent);

(b) Energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 gigawatthours per year;

(c) Other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually".

2. At its second meeting, the executive board considered the "Draft work plan to develop recommendations to COP 8 on simplified modalities and procedures for small scale CDM project activities" (Annex 4 of the proposed agenda and annotations) and agreed:

(a) To seek public comment, including from Parties, NGOs and institutions, on the draft work plan contained in Annex 4 to the annotated agenda, from 25 January to 8 February 2002;

(b) To further consider how to interpret definitions of small-scale project activities (section III of the draft work plan). It requested the secretariat to conduct further work to develop a proposal on this issue for the consideration of the board, taking into account public comments on the draft work plan, at its third meeting;

(c) To launch a panel at its third meeting to develop recommendations to the board on simplified modalities and procedures for small-scale CDM project activities (section V of the draft work plan).

3. The secretariat made the draft work plan publicly available on the UNFCCC CDM web site and announced a call for public comments from 25 January to 8 February 2002. A total of 24 submissions were received, including 6 submissions from Parties (Spain on behalf of the European Community and its member states, Australia, India, Japan, Netherlands and United Kingdom). The submissions were made available to board members and alternates via list serve and were taken into account, as appropriate, in this note.

4. This note was prepared in response to the mandate referred to in sub-paragraph 2 (b) above. It intends to assist the executive board in further clarifying definitions related to CDM small-scale project activities which are contained in decision 17/CP.7 and in elaborating recommendations to COP 8 on simplified modalities and procedures for CDM small-scale project activities.

II. POSSIBLE SCENARIO OF WORK UNTIL AND AT THE FOURTH MEETING OF THE EXECUTIVE BOARD

5. At its third meeting, the executive board may wish to consider this note and:

(a) Agree on approaches for defining project types and, to the extent possible, on proposed clarifications;

(b) Consider technical elements requiring further input by the secretariat before at its fourth session;

(c) Determine technical elements to be considered by the "panel to develop recommendations to the board on simplified modalities and procedures for small-scale project activities" (hereafter referred as "SSC panel");

(d) Provide any further guidance to the secretariat, and/or to the SSC panel, as necessary.

III. CRITERIA FOR SMALL-SCALE CDM PROJECT ACTIVITIES

A. Type (i) project activities: Renewable energy project activities with a maximum output capacity equivalent of up to 15 megawatts (or an appropriate equivalent) (subparagraph 6 (c) (i)):

1. Definition of "renewable energy":

6. In defining "renewable energy", the executive board may wish to refer to the following approaches or to a combination thereof:

(a) It may attempt to draw up an indicative list of energy sources/eligible project activities, as provided for in the attachment. Following the CDM "bottom-up" project cycle approach, this list could evolve and be further elaborated in time as new project activities are proposed and registered. In drawing up such a list, the board may consider existing recognized classifications of renewable energy technologies/sources[1] and take into account experience based on completed or ongoing small-scale projects in relevant fields;

(b) It may consider recommending to the Conference of the Parties (COP) to limit the eligibility of some sources/project activities up-front. On the basis of further technical analysis, it may, for example consider the extent to which the burning of waste, and in particular the burning of peat, should qualify as a renewable energy source. Implications regarding the eligibility for the use of biomass as renewable energy may also deserve some further analysis.

(c) It may decide to recommend to the COP the use of a general definition of renewable energy project activity, such as "a project activity that uses partly or in its entirety sources of energy that do not use up the earth's finite mineral resources and that is replaced rapidly by natural processes."[2]. The

[1] E.g. Working Group II to the Second Assessment Report of the Intergovernmental Panel on Climate Change, "Inventory of Technologies, Methods, and Practices for Reducing Emissions of Greenhouse Gases", technical appendix to Climate Change 1995: Impacts, Adaptations, and Mitigation of Climate Change: Scientific Technical Analyses, contribution of, ed. WMO/UNEP, 1995 **or**
UNDP - UN Department of Economic and Social Affairs - World Energy Council, World Energy Assessment: Energy and the Challenge of Sustainability, Chapter 7: Renewable Energy Technologies, New York, 2000.

[2] Isaacs, A., J. Daintith and E. Martin, A Dictionary of Science. Oxford University Press, Oxford, 1999 **and**
Myhr, F. H., Definition: Renewable Energy Resource, http://www.cpast.org/Articles/fetch3.adp?artdesnum=11, 1998.

board may, in addition, decide to further elaborate its own definition by specifying what are "renewable sources of energy" and what appropriate "time scale[3]" is considered as maximum for a source to be renewed or replenished.

(d) It may combine some of/all these methods.

2. Definition of "maximum output capacity equivalent of up to 15 megawatts (or an appropriate equivalent)":

7. "Maximum output": In defining the appropriate equivalent of 15 MW, the board may define which "outputs" should be included in the project:

(a) Option 1: Installed/rated capacity: 15 MW can be defined as the maximum capacity as indicated by the manufacturer who delivers the equipment or plant, disregarding the actual load factor of the plant. As the rated capacity is easier to access and verify, the choice of using it may increase the transparency and decrease transaction costs. This option may, however, limit the eligibility of larger plants with low load factors to qualify as small-scale CDM project activities.

(b) Option 2: Utilized output/actual average of operational capacity: 15 MW could also refer to the maximum output during the operation of a plant. The utilized output corresponds to the actual operating capacity of a plant. For example, under this scenario a wind power plant with a rated capacity of 60 MW(e) could qualify if its load factor is 25%, which would mean that at any time the operating capacity of this plant would be 60 MW(e) * 25% = 15 MW(e). The average output in this case has to be measured over a relatively long period of time (a year), because the activity levels commonly fluctuate.

8. "Appropriate equivalent of 15 MW": The board may further consider whether MW is an appropriate unit to measure all potential outputs from renewable projects, especially given variability of load factors. While paragraph 6 (e) (i) of decision 17/CP.7 refers to MW, project proposals may refer to MW(p), MW(e), MW (th), etc. As MW(e) is the most common denomination, and MW(th) only refers to the production of heat which can also be derived from MW(e), the board may wish to define MW as MW(e) and otherwise propose an appropriate conversion rate. A useful conversion for 15 MW(e) could be an expression in Joule or in Volt Ampère, which captures the energy content of biomass fuels more directly: *15 MW(e) = 15 MJ/s = 15*0.8 MVA*, where MW(e) stands for megawatt electric, MJ stands for megajoule, s stands for seconds, and MVA stands for Mega Volt Ampère. The equation helps compare projects on an equal basis even if their original measurement is not expressed in MW(e).

3. Clarification may be required on whether and how a renewable energy project activity larger than 15 MW may be subdivided into smaller units which would meet the size criterion:

9. Concerns relating to the possibility of a project activity larger than 15 MW be allowed to be subdivided in smaller units refer to two main issues:

(a) The first issue relates to the need for clarifying steps to prevent "debundling**"** large project activity, when there is a danger that a project developer would "package a single large project" into a number of smaller units only in order to benefit from the simplified modalities and procedures. Modalities to prevent "debundling" should be considered jointly with the development of possible modalities for bundling of small-scale project activities. Currently the draft terms of reference for the SSC panel foresee the second issue to be addressed. The board may consider, however, whether both issues deserve more

[3] If the board decides for example that a renewable energy project is a project where the energy source may be renewed within the timeframe of a human life (e.g. 35-70 years) geothermal projects might be eligible under the renewable energy category, while peat might not.

detailed analysis in the form of a technical paper and/or whether the SSC panel should consider the two issues of "debundling" and "bundling modalities".

(b) Another issue may arise when a project is larger than 15 MW, but its renewable component is smaller than 15 MW. Could, for example, a solar power generating project of 40 MW with a diesel back-up qualify for the simplified modalities and procedures, provided that it is possible to estimate the renewable component of electricity generation to be smaller than 15 MW and as distinct from the diesel based generation? The same concern could apply to the expansion or change of an existing renewable energy system (one more unit to the plant, replacing an old unit or making a new grid connection). Could in this case the additional "module" be considered as eligible if it would be smaller than 15 MW and additional? The board may decide whether this issue is to be addressed in a technical paper or by the SSC panel when addressing the issue of project boundary.

B. Type (ii) project activities: Energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 gigawatthours per year (subparagraph 6 (c) (ii)):

1. "Energy efficiency improvement project activities":

10. In defining "energy efficiency", the executive board may wish to refer to the following approaches or to a combination thereof:

11. (a) It may attempt to draw up an indicative list of eligible project activities/sectors, as provided for in the attachment. Following the CDM "bottom-up" project cycle approach, this list could evolve and be further elaborated in time as new project activities are proposed and registered. In drawing up such a list, the board may consider existing recognized classifications of energy efficiency[4] and take into account experience based on completed or ongoing small-scale projects in relevant fields;

(a) It may decide to recommend to the COP the use of a general definitions such as:

(i) Energy efficiency as "improvement in the service provided per unit power, i.e. project activities which increase unit output of traction, work, electricity heat light (or fuel) per MW input are energy efficiency project activities", and

(ii) Energy consumption as "reduced and measured in watt-hours with reference to an approved baseline";

(b) It may combine some of/all these methods.

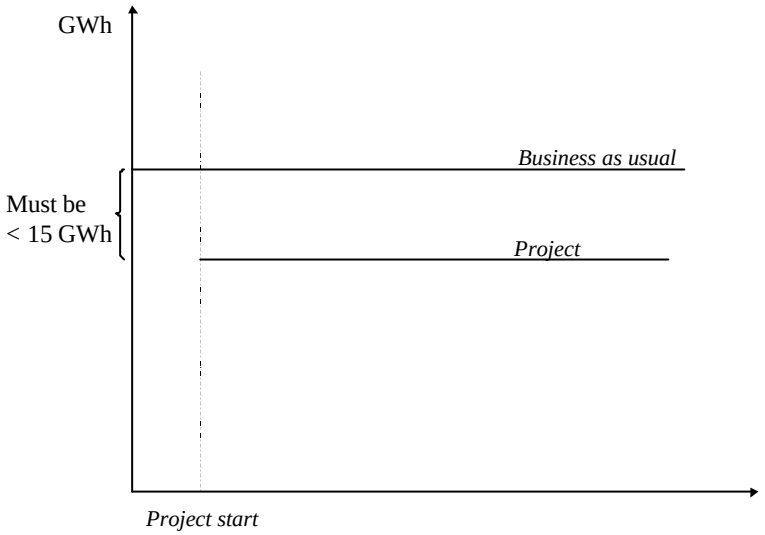
12. The specification of energy efficiency makes explicit reference to projects both from demand side and supply side. While the definition encompasses a wide range of activities in the energy sector, the category allows only for projects that reduce an activity by a maximum of 15 GWh, as figure 1 illustrates.

13. A total saving of *15 GWh is equivalent to 1000 hours operation of a 15 MW plant or 15*3.6 TJ = 54 TJ*, where TJ stands for terajoules. This equation can assist in evaluating projects on an equal basis even if the measurement is not expressed in GWh. For example, if the project consists of implementing more efficient oil burners in households, then the energy content - as expressed in terajoules - of the fuel may be used as the basis for calculating the GWh used by the project. The energy content

[4] E.g. "Inventory of Technologies, Methods, and Practices for Reducing Emissions of Greenhouse Gases", technical appendix to Climate Change 1995: Impacts, Adaptations, and mitigation of Climate Change: Scientific Technical Analyses, contribution of Working Group II to the Second Assessment Report of the Intergovernmental Panel on Climate Change, ed. WMO/UNEP, 1995.

can therefore act as the basis for calculating whether a project is suitable as a small-scale project activity or not.

Figure 1: Eligibility for type (ii) project activities



2. The point in the project activity lifetime at which reductions are to be measured:

14. The board may further define where reductions are to be accounted for and how regularly do measurements need to be made to ensure that reductions are real and verifiable. The board may wish to clarify that measurement needs to take place at the point where emissions are technically reduced, not before or after that point. The point of mitigation may be identified by the nature of the project. For example in the case of an energy-efficient lighting project, the direct consumption through lighting should be measured, and not the energy input used to produce the electricity for lighting.

15. Options for the moment of measurement could be:

(a) The end of the project;

(b) Every 6 months or annually;

(c) A period decided with reference to the reasonable lifetime of the efficiency gains achieved by the project;

(d) A period to be decided with reference to:

(i) the nature of the project,

(ii) the need for effective management of the scheme,

(iii) the lifetime of the technology involved,

(e) According to a schedule referring to specific project types (see below lifetime reference values), e.g.

(i) Provision of efficient domestic equipment (at least every 3 years)

(ii) Efficient turbines (annually)

(iii) Management systems (annually)

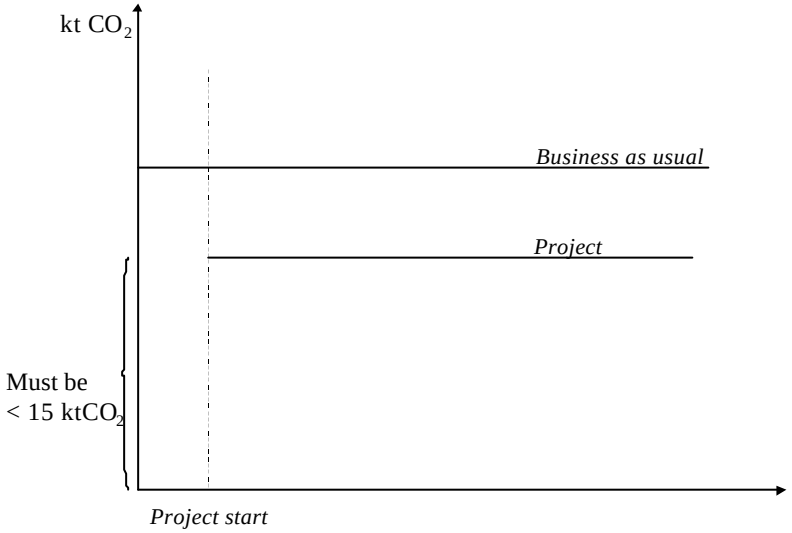
16. The board may consider whether these options would need more detailed analysis in the form of a technical paper and/or whether the SSC panel could consider these.

C. Type (iii) project activities: Other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually (subparagraph 6 (c) (iii)):

1. Types of project activities which qualify under type (iii), possibly providing further detail:

17. As figure 2 illustrates, type (iii) projects shall not exceed total direct emissions of 15kt of CO_2 equivalent annually, and must reduce greenhouse gas emissions.

Figure 2: Eligibility for type (iii) projects under the small-scale rule



18. As presented in the attachment, type (iii) could allow for agricultural projects, fuel switching, industrial processes or other projects to qualify as CDM small-scale projects. Possible projects in the agricultural sector include manure management, reduction of enteric fermentation, improved fertilizer usage, water management in rice cultivation, and reduced savannah burning.

19. Fuel switching projects may in some cases not qualify under type (ii). Although they may increase the efficiency relating to carbon intensity and therefore have high potential to reduce emissions, it will not necessarily improve the efficiency relating to the energy intensity of a project. On the other hand, even if it has a high potential for reducing emissions from fossil combustion, the potential use of fuel switching project activities would be in general limited if only eligible under type (iii).

20. Other projects that could qualify include CO2 recycling, carbon electrodes, adipic acid production and hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6) use. For such projects, a direct reference to the emission reductions generated by a project, and expressed in CO2 equivalent, could be appropriate. In order for these to be calculated in a consistent and transparent manner, baseline methodologies would need to be developed.

2. The current formulation in subparagraph 6 (c) does not specify whether small-scale CDM project activities may qualify under more than one of the three criteria. May a project activity not qualify under type (i) or type (ii) still be eligible under type (iii)?

21. The board may consider that the three project types are mutually exclusive. This should require however the board to further clarify categorization of project activities under each type. This may be for example relevant when a project would have both a renewable energy and an energy efficiency component. A project could at the same time promote the replacement of a fossil energy source by a renewable energy and combine it with improvements of energy management and control systems. In this case, the board may decide that the project activity in order to benefit from simplified modalities and procedures, would need to be eligible under the threshold criteria for both "renewable energy" and "energy efficiency".

22. Using project/sector categories elaborated in the attachment, table 1 provides a snapshot of the implications of applying the "mutually exclusive" against "mutually inclusive" rule. The "mutually exclusive" rule allows for a clearer delineation of project eligibility, while "mutually inclusive" allows for greater flexibility.

Table 1: Eligibility of project types

Project categories	**With *mutually inclusive* interpretation of project types**	**With *mutually exclusive* interpretation of project types**
RENEWABLE ENERGY PROJECTS		
Solar	(i)	(i)
Wind	(i)	(i)
Hybrid systems	(i)	(i)
Biogas	(i)	(i) or (iii)
Biomass	(i)	(i)
Water	(i)	(i)
Geothermal	(i)	(i)
Waste	(i)	(i) or (iii)
ENERGY EFFICIENCY IMPROVEMENT PROJECTS		
Supply side projects	(i), (ii)	(ii)
End-use projects in all sectors	(i), (ii)	(ii)
End-Use Residential	(i), (ii)	(ii)
End-use Service	(i), (ii)	(ii)
End-use Industry - cross-cutting technologies	(i), (ii)	(ii)
End-use Industry - sectors	(i), (ii)	(ii)
End-use transport	(i), (ii)	(ii)
OTHER PROJECTS		
Agriculture	(i), (ii), (iii)	(iii)
Other	(i), (ii), (iii)	(iii)

D. Cross-cutting issues for all three types

1. Some CDM project activities may have components that could fit in different criteria of paragraph 6, subparagraph (c)

23. As explained in sections A.3 and C.2 above, the same project may be composed of different "CDM project activities"/ "components". The executive board may examine conditions under which the project could be eligible as a whole or whether emissions reductions could be claimed separately for different "components/activities" of a project. In the case of a 20 MW (e) co-generation unit in a processing factory fuelled by agricultural residues from which 8 MW (e) are for internal use (same as in baseline case), could the delivery of 12 MW (e) carbon neutral electricity to the grid qualify as a small-scale CDM project activity? If the board decides that this project could be eligible, it may then consider that only the emission reductions from the part of a project that leads to eligibility under small-scale rules (e.g. the "CDM project activity") would be eligible for issuance of certified emission reductions (CERs).

2. Emissions from a project activity may decrease or increase over time. The executive board may wish to further clarify up to which point in the CDM project activity lifetime reference values under the three types apply

24. The reduction in energy consumption may not be constant over the CDM project crediting time. Project emissions could therefore decrease or increase over time. It is therefore important to make explicit at which point in time the reference values under all three small-scale categories should apply. A simple and conservative value would take the maximum annual value of MW capacity, GWh reduced or direct project emissions in Kt of CO_2 that occurs during the crediting lifetime of the project. If the maximum value during the crediting period is smaller than the maximum value during the entire lifetime of the project, a decision needs to be taken as to which value should be used as a reference value.

25. Ideally, the calculation of emission reductions should reflect accurately the level of emissions reduced at any point in time. The accumulated annual emissions reductions could be the basis for the baseline calculation.

Attachment

PRELIMINARY ASSESSMENT OF CATEGORIES

1. In order to assess the scope of work required for developing simplified modalities and procedures for CDM small-scale project activities, the secretariat has informally been seeking advice on technical issues from experts in the field. One objective was to be able to provide background material to the executive board in its effort to accomplish, within the limited time available, its work plan until COP 8 on developing and recommending to COP simplified modalities and procedures for CDM small-scale project activities indicated in subparagraphs 6 (c) (i), (ii) and (iii) of decision 17/CP.7.

2. One issue on which background information was deemed to be useful is a preliminary assessment of categories of projects which may qualify as CDM small-scale project activities, i.e. meet the criteria established in paragraph 6 (c). Without prejudging the direction of work which the executive board wishes to pursue, the preliminary assessment is intended to facilitate not only the work of the executive board but also of its panel.

3. The attached table has been prepared by the United Nations Environment Programme Collaborating Centre on Energy and Environment (UNEP/CCEE). It should be noted that the secretariat is presenting this information without technical and/or editorial changes. The secretariat wishes to gratefully acknowledge the good collaboration which it has received from the UNEP CCEE in providing this material.

4. The table provides examples of ongoing projects of a small size, by category and sub-category; and provides a compilation of 89 small-scale projects which are grouped, in analogy with paragraph 6(c), as follows:

(a) Renewable energy projects

(b) Energy efficiency improvement projects

(c) Other projects.

5. The Table identifies 17 areas for small-scale projects and 89 different project types that would potentially qualify for small-scale projects that would be eligible under paragraph 6 (c) of decision 17/CP.7. This sub-categories is consistent with recognized classifications of renewable energy and energy efficiency such as contained in the "Inventory of Technologies, Methods, and Practices for Reducing Emissions of Greenhouse Gases" of the IPCC working group II[5]. The classification of project activities falling in type (iii) was prepared following analysis of section C of this paper. It is recognized that this table is not exhaustive and that it project type categories could be broke down further.

6. For each identified project type it was attempted to find a suitable project example, for which details are given on size in MW(e) rated capacity, reduction in terms of GWh, direct project emissions, annual yearly reduction (average), total investment, and for which small-scale project-type such a project would qualify.

7. Project examples included as first choice projects reported as activities implemented jointly at pilot phase ("AIJ projects") in Parties not included in Annex I to the Convention ("non-Annex I Parties"). In the absence of AIJ projects, examples of projects in developing countries were sought from the Prototype

[5] "Inventory of Technologies, Methods, and Practices for Reducing Emissions of Greenhouse Gases", technical appendix to Climate Change 1995: Impacts, Adaptations, and mitigation of Climate Change: Scientific Technical Analyses, contribution of Working Group II to the Second Assessment Report of the Intergovernmental Panel on Climate Change, ed. WMO/UNEP, 1995.

Carbon Fund-PIN database, the ALGAS studies and UNEP country studies. If there was no project in a (non-Annex I Party a project example from an AIJ project in an economy in transition was selected, or as last resort, for illustrative purposes only, an example from an Party included in Annex II to the Convention. Of the 109 projects from the Global Environment Facility climate change portfolio, fifteen projects were included.

Table: PROJECT EXAMPLES BY CATEGORY

Project Category	*Example*	*Size MW(e)*	*Reduction GWh/yr*	*Final $ktCO_2/yr$*	*Reduction $ktCO_2/yr$*	*Total investment kUS$*	*Small-scale type*
RENEWABLE ENERGY PROJECTS							
Solar							
Solar water heating	(Maya et al, 1993) UNEP Zimbabwe (Phase 2), Solar water heaters on 1000 geysers		2.6		2.90	878	(ii)
Photovoltaics, off grid	(UNFCCC, 2001b) AIJ Bolivia, Rural solar electrification in Bolivia	0.002			0.07		(i)
Photovoltaics, grid connected	(UNFCCC, 2001b) AIJ Fiji, Grid connected photovoltaic project	0.011			0.01	84	(i)
Solar thermal power	(CADDET, 2001a) Australia, Parabolic dish concentrator	0.05	0.02		0.02	318	(i)
Solar water pumping	(Sow et al, 2001) UNEP-GEF, Economics of GHG Limitations, Senegal	0.705			65.40	10,000	(i)
Other solar installations	(GEF, 2001) South Africa (med.sized proj.proposal), Solar cookers		13.8		20.0	900	(ii)
Wind							
Large off-shore wind turbine	(Middelgrunden, 2001) Danish wind park at Middelgrunden (5 of the 20 turbines each 2MW)	10			34.00		(i)
Large on-shore wind turbine	(UNFCCC, 2001b) AIJ Costa Rica, Aeroenergía S.A. Wind Facility	6.4			28.00	9,300	(i)
Small wind power (electric/mechanical)	(UNFCCC, 2001b) AIJ Mauritania, Alizés Electrification Rurale	0.3			0.88	2,750	(i)
Hybrid systems							
Hybrid mini grid (baseline isolated diesel)	(UNFCCC, 2001b) AIJ Mexico, APS/CFE renewable energy mini grid project	0.117		0.066	0.25	4,200	(i)

Project Category	*Example*	*Size MW(e)*	*Reduction GWh/yr*	*Final $ktCO_2/yr$*	*Reduction $ktCO_2/yr$*	*Total investment kUS$*	*Small-scale type*
Hybrid mini grid (baseline: no electr. + kerosene)	(UNFCCC, 2001b) AIJ Indonesia, Eastern Indonesia hybrid energy project)	0.008		0.298	1.05	945	(i)
Biogas							
Farm scale biogas	(Maya et al, 1993) UNEP Zimbabwe (Phase 2), Biogas plant on 1000 small farms		14.1		9.10	326	(ii)
Institution/enterprise/community biogas	(EcoSecurities Ltd., 2001) UNEP-IAF The Phillipines, Phil Bio (sugar distillery) Biogas Plant	2			53.50		(i)
Biomass							
Biomass combustion	(Pöyry, 1999) UNEP-IAF Tanzania, The practice of the use of non-sustainable deforestation is replaced by use of wood from a plantation (afforestation).						**not eligible**
Biomass gasification							
Improved cooking stoves							
Oil-plants (biodiesel, Jatropha, etc.)	(Own calculation) Mali, Switch from diesel to pourghère oil on multifunctional platform		0.05		0.013	3	(ii)
Water							
Hydro power	(WB-PCF, 2001b) Uganda, West Nile hydropower project	6.6			15-151	21,000	(i)
Wave power							
Tidal power							
Geothermal							
Power and heat production	(WB-PCF, 2001a) PCF-PIN Guatemala, GEOTECA geothermal project	15			62.70		(i)

Waste							
Power and heat production from waste	(UNFCCC, 2001b) AIJ Honduras, Biogen biomass power generation project, Phase 1	15			118.00	n.a.	(i)
Landfill gas plants	(WB-PCF, 2001a) PCF-PIN Costa Rica, Rio Azul landfill gas energy project in Costa Rica	4		37	193.00	3,564	(i)
Anaerobic waste water treatment	(UNFCCC, 2001b) AIJ Costa Rica, Waste water treatment plant in coffee mills			3.48	14.99	932	(iii)
Briquetting of crop waste							
Management of solid wastes at local levels in stead of open burning							
ENERGY EFFICIENCY IMPROVEMENT PROJECTS							
Supply side projects							
Coal mining and transformation							
Coalbed methane recovery							
Improved charcoal production kilns							
Venting and flaring	(SFT, 2001) Reduced flaring at Troll Kollsnes plant			24.5	4.5	1,600	**not eligible**
Natural gas production							
Natural gas transmission & distribution	(UNFCCC, 2001b) AIJ Russia, RUSAGAS fugitive gas capture project			0	926.10	192.5	**not eligible**
Oil production, refining and distribution							
Electricity and heat production, efficiency improvement	(UNFCCC, 2001b) AIJ Mauritius, Fuel efficiency improvement at power station		3.9		1.00	78	(ii)
Heat transmisson and distributrion, efficiency improvement	(UNFCCC, 2001b) AIJ Estonia, Adavere district heating renovation		0.6		0.47	201	(ii)
Electricity transmission and distribution, efficiency improvement							
End-use projects in all sectors							
High efficiency lighting	(UNFCCC, 2001b) AIJ Mexico, ILUMEX high efficiency lighting		13.7		10.61	23,000	(ii)

Daylight systems	(CADDET, 2001b) Sweden, Unique daylight system for building illumination		0.033		0.03	50	(ii)
Improved heating/cooling	(CADDET, 2001b) Norway, Heat pump installation in indoor swimming pool		5.8		5.80	800	(ii)
New low energy houses/passive solar	(UNFCCC, 2001b) AIJ South Africa, The Guguletu ecohomes project		n.a.		0.49	n.a.	(ii)
Improved water heating	(Maya et al, 1993) UNEP Zimbabwe (Phase 2), Time switches on 1000 geysers		2.6		2.90	900	(ii)
Improved insulation	(UNFCCC, 2001b) AIJ Estonia, Mustamë Tee energy efficiency (424 flats)		1.4		0.46	633	(ii)
End-Use Residential							
Improved cooking stoves	(GEF, 2001) Mongolia (med.sized proj.proposal), Reduced coal use in household stoves		15.0		5.10	12	(ii)
Improved household electrical appliances	(UCCEE, 1999) UNEP-GEF, Economics of GHG Limitations, Vietnam country study		9.3		27.00	3,500	(ii)
End-use Service							
Improved office electrical equipment							
Heating, Ventilation and Air Conditioning (HVAC) improvements	(UNFCCC, 2001b) AIJ Solomon Islands, Air conditioner energy conservation		1.6		1.39	74	(ii)
End-use Industry - cross-cutting technologies							
High efficiency electric motors	(UCCEE, 1999) UNEP-GEF, Economics of GHG Limitations, Vietnam country study		3.4		2.10	225	(ii)
Improved boilers	(Maya et al, 1993) UNEP Zimbabwe (Phase 2), Solar water heaters on 1000 geysers		3.1		1.05	89	(ii)
Improved pumping	(UNFCCC, 2001b) AIJ India, Integrated agriculture demand-side management		0.1		381.6	4,600	(ii)
Improved cooling							
Improved ventilation							
More efficient process heat/steam systems							

Expanded use of cogeneration							
Improved electronics							
Improved compressors (air)							
Power factor correction	(Maya et al, 1993) UNEP Zimbabwe (Phase 2), Power factor equipment in industry		2.3		0.80	5,200	(ii)
Waste heat recovery	(UNFCCC, 2001b) AIJ Thailand, Effective utilisation of energy in re-heating furnace		11.6		3.10	6,860	(ii)
End-use Industry – sectors							
Mining and quarrying							
Iron and steel furnaces	(UNFCCC, 2001b) AIJ China, Energy conservation in electric furnace (FeCr)		11.1		29.20	262	(ii)
Non-ferrous metals							
Aluminium productions (including PFCs)							
Metal processing and metal products							
Non-metallic products (cement, glass, ceramics, etc.)	(UNFCCC, 2001b) AIJ Vietnam, Cement plant HATIEN 2		7.7		5.50	4,400	(ii)
Petrochemicals (incl. fertilisers, etc.)							
Chemicals production							
Food, beverages, tobacco	(Maya et al, 1993) UNEP Zimbabwe (Phase 2), Tobacco curing		1.9		0.64	4.6	(ii)
Pulp, paper and printing	(CADDET, 2001b) Netherlands, Energy saving on paper mill by more efficient drying		7.6		1.50	315	(ii)
Wood and wood products							
Textile and leather							
Construction							
Improved energy use in agriculture	(UNFCCC, 2001b) AIJ Russia, Horticulture project in Tyumen (greenhouse)	**not available**			19.50	3,226	(ii)

Project Category	*Example*	*Size MW(e)*	*Reduction GWh/yr*	*Final $ktCO_2/yr$*	*Reduction $ktCO_2/yr$*	*Total investment kUS$*	*Small-scale type*
End-use transport							
Increased fuel efficiency	(SFT, 2001) 6.5% of Norwegian fishing fleet		15.0		5.75	1,250	(ii)
Transport mode switching (road to rail, improv. public transport, non-motorized)							
Activity change							
Load factor increases							
OTHER PROJECTS							
Agriculture							
Reduction of enteric fermentation (CH4)	(Olesen, 2001) Reduced enteric fermentation by increased fat in cow fodder		6.5	13.40			(iii)
Improved manure management	(Olesen, 2001) Reduced ammonia emission from animal fertilisers		23	13.00			(iii)
Water management in rice cultivation	(ADB/GEF/UNDP, 1998) ALGAS Vietnam, Country study report (10,000 ha)			3.15	1.05	690	(iii)
Improved fertilizer usage							
Fuel Switching							
Electricity and heat production, switch between fossil fuels	(UNFCCC, 2001b) AIJ Slovakia, Swiss energy efficiency project in Bucina	3.2			12.60	2,710	(iii)
Fuel switching in transport	(CONAM, 1998) 1000 taxies switched from gasoline to natural gas in Peru		26.7	13.50	11.10	2,000	(iii)
Fuel switching in other end-use sectors							
Industrial Processes							
Carbon electrodes							
CO_2 recycling	(UNFCCC, 2001b) AIJ Croatia, CO_2 recovery in a brewery in Zagreb			3.49	3.35	786	(iii)

Reduction of NMVOC emissions	(SFT, 2001) Reduced evaporation of NMVOC from oil storage tanks			**not available**	0.70	45	(iii)
Adipic acid production (N_2O)							
HFCs, SF6 and Other PFCs							

How to read the table:

The **first column** of this table gives a breakdown of possible project categories under the headings of renewable energy, energy efficiency, and other projects. The **second column** gives an example of a concrete project that would fit under the given category. The following columns list some of the characteristics of this project example. The characteristics correspond to the references in size that are made in the Marrakesh Accords under decision -/CP.7 (Article 12). **The column "Size MW(e)"** lists the operating capacity of a project in megawatt of electricity (MW(e)), and has to be compared with category (i) of the small-scale project rules. For example, the rural solar electrification project in Bolivia, that is listed in the category of off-grid photovoltaics, is of a size of 0.002 MW(e). The project remains thereby clearly below the 'maximum output capacity' of 15 MW that is prescribed for small-scale projects under category (i), as the **last column** of the table entitled **"small-scale type"** indicates.

The fourth column entitled "Reduction GWh/yr" indicates by how much a project reduces the energy use as compared to a business as usual situation. As unit of measurement gigawatt hours per year (GWh/yr) are used as in the Marrakesh Accords for category (ii). For example, the Mexican Ilumex high efficient lighting project, which is listed in the category 'high efficiency lighting', reduces emissions by 13.7 GWh per year. This amount remains clearly below the figure of 15 GWh indicated in the Marrakesh Accords. The Ilumex project would thus qualify under category (ii) as a small-scale project. This is indicated by the (ii) in the last column of the table. For the third category of small-scale projects (iii) eligibility as stated in the Marrakesh Accords hinges on two criteria: (1) that a project directly emits less than 15 kt of CO_2 annually, and (2) that a project reduces emissions.

The column entitled "final $ktCO_2$/yr" presents the annual direct emissions of the project example at the time when a project has become fully operational. For example, in the case of the Peruvian 1000 taxies project where fuel is switched from gasoline to natural gas, the final direct project emissions of the project would amount to 13.50 $ktCO_2$/yr. As this is lower than 15 $ktCO_2$/yr, this project will be eligible under small-scale type (iii). The taxi project is listed in the category "other projects", "fuel switching in transport". The second criterion for eligibility under "other projects" is whether a project reduces emissions. To take account of this the table contains **a column entitled "reduction $ktCO_2$/yr"**. This represents an estimate of the annual CO_2 equivalent emissions reduction of a project as measured in $ktCO_2$/yr. **The column entitled "total investment kUS$"** gives the total investment volume required for realising the project example given in any row. The investment volume is given in thousand US Dollars (kUS$).

Note: As a first choice, AIJ projects in developing countries were selected that could fit the categories of decision -/CP.7, paragraph 6(c) (UNFCCC, 2001a). Then projects in developing countries from the PCF-PIN database, the ALGAS studies, and the UNEP country studies were added. Next AIJ projects in economies in transition were selected. Finally gaps were matched to the categories. Where no projects could be matched from developing countries or economies in transition, examples from OECD countries are mentioned for illustrative purposes. n.a. stands for not applicable.

Sources: CONAM (1998), SFT (2001), Maya et al (1993), UNFCCC (2001b), CADDET (2001a), CADDET (2001b), Sow et al (2001), GEF (2001) and personal communication from the GEF, WB-PCF (2001a), Middelgrunden (2001), Pöyry (1999), UCCEE (1999), ADB/GEF/UNDP (1998), Olesen (2001) and own calculations.

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