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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

AD HOC GROUP ON THE BERLIN MANDATE
Eighth session, second part
Kyoto, 30 November 1997
Agenda item 3

INFORMATION SUBMITTED BY PARTIES ON POSSIBLE CRITERIA FOR DIFFERENTIATION

Note by the secretariat

1. At the first part of its eighth session, the Ad Hoc Group on the Berlin Mandate (AGBM) requested Parties included in Annex I to the Convention to submit information on the indicators listed in Annex B of the revised text under negotiation (FCCC/CP/1997/2) for the time frames indicated in the Berlin Mandate, as well as for the year 1995 (see FCCC/AGBM/1997/8, para. 18).

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

3. Parties may wish to note that the lettering used to denote Annexes in the revised text under negotiation differs from that used in previous texts. Most of the references to such Annexes in these current submissions adheres to the original lettering.

4. This document has been prepared without prejudice to the eventual outcome of negotiations over the establishment of uniform or differentiated commitments.

FCCC/AGBM/1997/MISC.3
GE.97-

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

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PAPER NO. 1: BULGARIA

Year			**1990**	**1994**	
GDP, mln $			16662	9688	
Export, mln $			6113	3935	
Population, inhabitants			8669300	8427400	
Fossil fuel, 10^3 toe			24850	17399	
Renewable En.(Incl.Hydro), 10^3 toe			523	583	
Emission (Gg CO_2 eq.)					
		CO_2	84908	60385	
		N_2O	9472	5664	
		CH_4	34765	20239	
		HFGs , PFCs and SF6	*	*	
(a) CO_2 eq. emission per capita, kg CO_2 eq./capita					
		CO_2	9794.1	7165.3	
		N_2O	1092.6	672.1	
		CH_4	4010.1	2401.6	
(b) CO_2 eq. emission per GDP, kg CO_2 eq./1000$					
		CO_2	5095.9	3624.1	
		N_2O	568.5	339.9	
		CH_4	2086.5	1214.7	
(c)GDP per capita, $/capita			1922.0	1149.6	
(d)Average anual growth of GDP per capita, $/(capita year)			-	-193.09	
(e) *			*	*	
(f)Average anual population growth, inhabitant/year for the period			1990 -2010	-17400	
(g)Emission intensity of GDP, $/kg CO_2 eq					
		CO_2	0.20	0.16	
		N_2O	1.76	1.71	
		CH_4	0.48	0.48	
(h)Emission intensity of export, $/kg CO_2 eq.					
		CO_2	0.07	0.07	
		N_2O	0.65	0.69	
		CH_4	0.18	0.19	
(i)Fossil fuel intensity of exports, $/toe			246.0	226.2	
(j)Share of renewable energy in energy supply,%			1.77	2.62	

*) There are no data for point (e) and for gases HFGs , PFCs and SF6

PAPER NO. 2: CANADA

We are writing in response to the request, at the recently completed Bonn negotiations, for Annex I parties to provide, to the AGBM Secretariat, information on relevant indicators of their national circumstances as outlined in Annex C of the draft negotiating text on QUELROs (FCCC/AGBM/1997/CRP.3, dated 31 October 1997). The attachment to this letter provides tables containing the information, for Canada. We were able to compile the data for all indicators except for that described under item (e).

Canada supports differentiation in principle as one means to take into account countries' national circumstances. For Canada, these national circumstances are best represented by four elements - our expected population growth, the emissions intensity of our exports, the contribution of fossil fuel to our exports, and the role of renewables in our energy supply. The rationale for selecting these indicators is discussed below.

Canada's population is expected to grow at double the rate for Annex I parties as a group. Our population growth is among the highest for the industrialized countries, outpaced only by Australia. It is important to note that much of this growth stems from immigration.

With respect to the emissions intensity of our exports, we recognize the difficulty of measuring the carbon embodied in a country's exports. As a proxy for this measure, we have used the ratio of exports by energy intensive industries to total exports. The high emissions intensity of Canada's exports clearly suggests that the competitiveness of our economy will be more adversely affected than that of parties whose exports are less carbon intensive. The emissions intensity of exports is a particularly important criterion in a world in which all parties are not subject to carbon constraints.

By value, fossil fuels represent about 10 percent of Canada's exports, compared to the average for industrialized countries of 3 percent. This implies a relatively higher burden for Canada as a result of an Annex I wide carbon reduction scenario. A reduction in fossil fuel use by Annex I countries may mean lower returns to Canada's oil, natural gas and coal industries, with resulting economic impacts on regions heavily dependent upon those industries.

With its abundant hydropower resources and the use of biomass, the proportion of renewables in Canada's total energy supply is far higher than that for most Annex II parties. But this factor implies that Canada has, relative to other countries, less potential to expand its use of renewables.

You will note that we have not included emissions intensity, defined in either per capita or per GDP terms, in the above list of indicators defining Canada's national circumstances. Emissions intensity is omitted for two reasons. First, the emissions intensity of a country and the national circumstances which give rise to it, are already included in the historical data and in the business as usual projections. In developing policies to constrain emissions, the issue is not so much the level of emissions intensity, but rather the rate of reduction which can be achieved and the relative cost of doing so.

Second, the interpretation of carbon intensity is ambiguous. Does a high carbon intensity reflect the economic, structural and other factors of a country and suggest a greater than average difficulty in reducing emissions? Or, does it imply that the country is not using energy as efficiently as possible? There is, to our knowledge, no transparent, readily available data which distinguish between these two interpretations. Under these circumstances, we would recommend that national targets not be linked to carbon intensity.

We hope the above discussion of Canada's national circumstances as well as the attached supporting material are of assistance to the Secretariat in your analysis of the differentiation issue.

Table A - Greenhouse Gas Emissions per Capita - Canada

(Tonnes)

1990	20.4
1995	20.9
2000	19.7
2005	19.6
2010	19.8
2020	20.8

Source: Natural Resources Canada, Canada's Energy Outlook: 1996-2020, April 1997

Table B - Carbon Dioxide Equivalent Emissions per GDP - Canada

(Tonnes/$1000US)

	CO_2	**N_20**	**CH_4**	**Other***
1990	.816	.047	.114	.016
1995	.821	.053	.122	.015
2000	.732	.034	.109	.016
2005	.698	.031	.100	.016
2010	.649	.029	.092	.018
2020	.600	.026	.084	.021

Sources: Natural Resources Canada, Canada's Energy Outlook: 1996-2020, April 1997
Environment Canada

* Includes CF_4, C_2F_6, SF_6

Table C - Gross Domestic Product Per Capita

($1990 US)

	Canada	Annex II * average
1990	20441	21060
1995	20680	22180
2000	22022	24660
2005	23452	NA
2010	25062	29550
2020	28401	NA

Source: Natural Resources Canada, Canada's Energy Outlook: 1996-2020, April 1997

* Excludes Mexico, Turkey, Italy, Norway, Spain, and Sweden

Table D - Gross Domestic Product Per Capita Growth - Canada

(Average annual growth rate - percent)

1990/1995	0.23
1995/2000	1.3
2000/2010	1.3
2010/2020	1.3
1995/2010	1.3
Annex II * average - 1995/2010	2.0

Source: Natural Resources Canada, Canada's Energy Outlook: 1996-2020, April 1997

* Excludes Mexico, Turkey, Italy, Norway, Spain, and Sweden

Table F - Population - Canada

('000)

1990	27791
1995	29605
2000	31042
2005	32436
2010	33770
2020	36825
Average annual growth rate (%)	
1990/1995	1.27
1995/2000	0.95
2000/2010	0.85
2010/2020	0.87
1995/2010	0.88
Annex II * average - 1995/2010	0.48

Source: Natural Resources Canada, Canada's Energy Outlook: 1996-2020, April 1997

* Excludes Mexico, Turkey, Italy, Norway, Spain, and Sweden

Table G - Greenhouse Gas Emissions Per GDP- Canada

(Tonnes/$1000 US)

1990	1.0
1995	1.0
2000	0.9
2005	0.8
2010	0.8
2020	0.7

Sources: Natural Resources Canada, Canada's Energy Outlook: 1996-2020, April 1997

* Environment Canada

Table H - Emissions Intensity* of Exports

(Percent)

1990	33
1995	28
2000	NA
2005	NA
2010	NA
2020	NA
Annex II ** average -1994	24

Source: Natural Resources Canada, Canada's Energy Outlook: 1996-2020, April 1997

* Emissions intensity is defined as the ratio of the value of exports by energy intensive industries to total exports. Energy intensive industries include pulp and paper, chemicals, iron and steel, non-metalic, non-ferrous, and oil, natural gas and coal production.

** Excludes Mexico and Turkey

Table I - Fossil Fuel Intensity * of Exports

(Percent)

1990	10.5
1994	9.5
2000	8.6
2005	7.8
2010	7.1
2020	5.8
Annex II ** average- 1994	2.9

Sources: Natural Resources Canada, Canada's Energy Outlook: 1996-2020, April 1997
Informetrica Limited

* The share of the value of exports of oil, natural and coal relative to the value of total exports

** Excludes Mexico and Turkey

Table J - Renewables * Share of Total Energy Supply - Canada

(Percent)

1990	15.7
1995	16.7
2000	17.1
2005	17.2
2010	17.1
2020	17.4
Annex II ** average - 1995	6.0

Source: Natural Resources Canada, Canada's Energy Outlook: 1996-2020, April 1997

* Includes hydro, biomass, solar, wind and other renewables

** Excludes Mexico and Turkey

para. in Annex C	units	1995
1-a	CO_2 (t/cap)	11,94
	CH_4 (t/cap)	1,74
	N_2O (t/cap)	0,67
1-b	CO_2 (kg/US$)	1,13
	CH_4 (kg/US$)	0,16
	N_2O (kg/US$)	0.06
1-c	GDP/cap (US$)	10569
1-d	(%/yr)	5,9
1-e		N/A
1-f	(%)	-2.1
1-g	(kg CO_2/US$)	1,36
1-h	(kg CO_2/US$)	5,20
1-i	(MJ/US$)	60,1
1-j	(%)	3,5

GDP is given in purchasing power parity according to the calculation of the Czech Statistical Office.

Sources: Czech Hydrometeorological Institute (emission inventory), Czech Statistical Office (other data)

PAPER NO.4: ESTONIA

	1990	1995	2000	2005	2010
Carbon dioxide equivalent emissions per capita (Gg/per capita) CO2	0,025	0,014			
CH4	0,0026	0,0013			
N2O	0,00039	0,000234			
Carbon dioxide equivalent emissions per unit of GDP (US$) CO2	0,0053	0,0045			
CH4	0,00056	0,0004			
N2O	0,00008	0,00007			
GDP/per capita (US$)	4750	3225			
projected population growth (thousands)	1575	1484	1454	1447	1440
Share of renewable energy in energy supply (wood + renewables)		6.0%	6.7%	7.2%	7.2%

PAPER NO. 5: FINLAND

FINLAND'S COMMENTS ON ANNEX C

At the October AGBM 8 Meeting it was proposed that Annex I Parties should send detailed information of the differentiation criteria stated in Annex C of the consolidated negotiating text by the Chairman. As differentiation becomes an option in later stage the choice of criteria for implementation is naturally of crucial importance. Up to now no thoroughgoing discussion of the factors in Annex C has taken place. Moreover, we question how those factors would be balanced or taken into account in the differentiation process. At this stage there is no basis for dressing the factors in Annex C in quantitative format.

Cost-effectiveness of the mitigation measures should be the main argument for differentiation. The costs may vary considerably between Parties. Annex C of the consolidated negotiating text by the Chairman also contains factors which are related to the concept of ability to pay the costs of measures.

It is quite obvious that climate change abatement costs differ from country to country and are too difficult to estimate in practice. Therefore a set of factors reflecting abatement costs could be selected. We consider that those factors should measure the intensity of use of policies which are commonly regarded as important ones in climate change policy. The higher the use of measures the higher the abatement costs would be. <u>These factors might include</u>:

- Energy efficiency indicators (non-energy factors eliminated, e.g. degree-day corrections) which would describe specific energy consumption in different sectors. Low value of indicator shows the results of energy conservation policies. Indicators should be as disaggregated as possible and practicable because aggregated indicators mainly reflect climatic conditions and the structure of economy which has evolved during decades as a result of international division of labour.

- Share of renewable or bioenergy in energy supply.

- Share of cogeneration in electricity production.

However, if aggregative indicators are regarded as simple and practical ones, we prefer item (b) in Annex C. An alternative to that could be greenhouse gas emission per final energy use. These indicators may give some information of abatement possibilities and costs. We do not for example regard items (a), (d) and (e) in Annex C as informative or relevant factors in this respect.

Furthermore Finland considers that factors which take into account the structure of industrial and energy production in exports should be included in the list of factors. We therefore support items (h) and (i) presented in Annex C of the draft negotiating text.

In order to measure the ability to pay the abatement costs Finland proposes to add the following indicators:

- Gross domestic product per capita measured in PPP.

- Unemployment rate.

PAPER NO. 6: FRANCE

INFORMATION ON FACTORS
LISTED IN ANNEX C
FOR FRANCE

FRANCE	1990	1995
Emissions (*) per capita (t eqCO2/cap)	8.0	7.5
Emissions (*) per GDP (t eqCO2/million FF)	71.3	58.8
GDP per capita (FF/cap)	112 000	127 000
Share of renewables in primary energy consumption (%)	7	7.7 (1994)

(*) net emissions of CO2, CH4 and N2O aggregated using GWP 100 IPCC, 1995

Evolution for the 1995/2010 period:

- French population: + 0.42% / year
- French GDP: 2.3 to 2.6% / year

PAPER NO. 7: GERMANY

Basic data for Germany	actual data		projections			
	1990	**1995**	**2000**	**2005**	**2010**	**2020**
CO2 (w.m.) in Gg 1)	1014155	894500	894000	867000	854000	847000
CH4 (w.m.) in Gg 1)	5682	4788	3892	3004	2759	2505
N2O (w.m.) in Gg 1)	226	210	162	159	157	156
SF6 in Gg 1)	0.163	0.251	0.208	0.186	0.186	0.186
CF4 in Gg 1)	0.355	0.218	0.106	0.105	0.105	0.105
C2F6 in Gg 1)	0.042	0.027	0.012	0.011	0.011	0.011
HFC in Gg 1)4)	0.2	2.214	4.874	7.991	7.991	7.991
S all GHG/ CO2-Equivalents	1212477	1071034	1038603	998503	984584	973268
Population in Mill. 1)2)	79.4	81.8		82.8	85.5	81.5
GDP in Bill. (10^9) US$ 3)	1719.5	2046				

w.m. = with measures scenario

1) Second National Communication (1997)

2) World Population Prospects 1950-2050, UN 1996

3) Statistical Yearbook 1996

4) HFC equival. from research procekt (Öko-Recherche)

Data requested in Annex C

		actual data		projections			
		1990	**1995**	**2000**	**2005**	**2010**	**2020**
1a)	**CO2-Equiv / cap in t/cap**	15.3	13.1		12.1	11.5	11.9
1b)	**CO2-Equiv / GDP in t/1000 US$**	0.705	0.523				
1c)	**GDP / cap in 1000 US$/cap**	21656	25012				
1d)	**not available**						
1e)	**not available**						
1f)	**Population in Mill**	79.4	81.8		82.8	85.5	81.5
1g)	**see 1b)**						
1h)	**not available**						
1i)	**not available**						
1j)	**Share of renewable En. in %**	1.9	2.1				

GHG emissions and CO2 equivalents in Germany

in Gg

	1990	**Equiv.**	**in %**	**1995**	**Equiv.**	**in %**	**2000**	**Equiv.**	**in %**
CO2 (w.m.)	1014155	1014155	83.64	894500	894500	83.52	894000	894000	86.08
CH4 (w.m.)	5682	119322	9.84	4788	100548	9.39	3892	81732	7.87
N2O (w.m.)	226	70060	5.78	210	65100	6.08	162	50220	4.84
SF6	0.163	3895.7	0.32	0.251	5998.9	0.56	0.208	4971.2	0.48
CF4	0.355	2307.5	0.19	0.218	1417.0	0.13	0.106	689.0	0.07
C2F6	0.042	386.4	0.03	0.027	248.4	0.02	0.012	110.4	0.01
HFC*	0.2	2340.0	0.19	2.214	3200.0	0.30	4.874	6880.0	0.66
∑ FC **		8930	0.74		10864	1.01		12651	1.22
∑ all GHG/ CO2-Equiv.		1212477			1071034			1038603	

	2005	Equiv.	in %	2010	Equiv.	in %	2020	Equiv.	in %
CO2	867000	867000	86.83	854000	854000	86.74	847000	847000	87.03
CH4 (m.M.)	3004	63084	6.32	2759	57939	5.88	2505	52605	5.40
N2O (m.M.)	159	49290	4.94	157	48670	4.94	156	48360	4.97
SF6	0.186	4445.4	0.45	0.226	5401.4	0.55	0.292	6978.8	0.72
CF4	0.105	682.5	0.07	0.105	682.5	0.07	0.105	682.5	0.07
C2F6	0.011	101.2	0.01	0.011	101.2	0.01	0.011	101.2	0.01
HFC*	7.991	13900.0	1.39	9.699	17790.0	1.81	9.504	17540.0	1.80
∑ FC		19129.1	1.92		23975.1	2.44		25302.5	2.60
∑ all GHG/ CO2-Equiv.		998503.1			984584.1			973267.5	

GWP used:

CO2	1
CH4	21
N2O	310
SF6	23900
CF4	6500
C2F6	9200

* = HFC equival. from research project, Öko-Recherche
** = FC = Fluorinated Compounds (HFC + PFC + SF_6)

PAPER NO. 8: ICELAND

Total emissions of GHGs (CO2, CH4, N2O, PFC, HFC, SF6)
CO2 equivalent in 1000 tons:

		Projected			
1990	1995	2000	2005	2010	2020
2729.8	2640.1	3161.1	3292.4	3445.4	3675.0

Source: The Second Status Report for Iceland to the UNFCCC.

Emission intensity of Gross Domestic Product

	1990	1995
GHG emissions	2729.8	2640.1
GDP in millions of USD	6,249	6,972

Emission intensity of exports, CO2, equivalent in 1000 tons*:

	1990	1995
GHG emissions	1,472	1,440
Export of goods in millions of USD	1,304.6	1,642.3

*Includes only GHG emissions from industrial processing (excluding cement=) and the fishing sector (including fishmeal plants). Production in these secto= rs is for exports only.

Source: The Second Status Report for Iceland to the UNFCCC.

Fossil fuel intensity of exports

Iceland does not export any fossil fuels

Gross Domestic Product in millions of US dollars

1990	1995
6,249	6,972

Source: National Economic Institute

The growth of Gross Domestic Product

1990	1995	Total growth through 1990-1995=3.5%
1.2%	1.0%	

Source: National Economic Institute

Population growth

1990	1995
0.9%	0.4%

Source: National Economic Institute and Statistics Iceland

Population

		Projected			
1990	1995	2000	2005	2010	2020
254,788	267,380	279,908	289,423	297,593	311,862

Source: Statistics Iceland

Share of renewable energy in total primary energy supply

1990	1995
63.9%	66.7%

Source: National Energy Authority

Effective emissions in a given time period, defined as the increase in global mean surface temperature

Not available.

PAPER NO. 9: ITALY

SPECIFIC FACTORS FOR DIFFERENTIATION OF THE REDUCTION OBJECTIVE SCENARIO: BUSINESS AS USUAL

Basic indicators		**1990**	**1995**	**2000**	**2010**
population	millions	56,95	57,33	57,5	56,5
GDP	T lit '90	1311	1386	1530	1865
export of goods and services	T lit '90	243	344	450	n.a.
TPER	Mtep	163,5	172,6	180	192
Energy CO2 emissions	Gg	401964	411793	421272	470969
Total CO2 emissions (gross)	Gg	442518	449159	459038	509696
CH4 emissions	CO2 eq.	51952	52950	51848	55759
N20 emissions	CO2 eq.	53870	50146	51499	53080

		1990	**1995**	**2000**	**2010**
Carbon dioxide equivalent emissions per capita					
gross emissions, CO2 from energy only	t/capita	7,06	7,18	7,33	8,34
gross emissions, total CO2	t/capita	7,77	7,83	7,98	9,02
gross emissions,CO2+CH4+N20, weighted with 100 years GWPs	t/capita	9,63	9,63	9,78	10,95
Carbon dioxide equivalent emissions per unit of GDP					
gross emissions, CO2 from energy only	kg/10^6 lit	0,307	0,297	0,275	0,253
gross emissions, total CO2	kg/10^6 lit	0,338	0,324	0,300	0,273
gross emissions, CO2+CH4+N20, weighted with 100 years GWPs	kg/10^6 lit	0,418	0,398	0,368	0,332
Gross Domestic product per capita	10^6 lit/cap	23,02	24,18	26,61	33,01

		1990	1995	2000	2010
Projected population growth from 1990		-	0,7%	1,0%	-0.8%
Emission intensity of gross domestic product (protocol to be defined, data available above)					
Emission intensity of exports total emissions/export value	kg/10^6 lit	2,255	1,607	1,251	n.a
Fossil fuel intensity of exports fossil TPER/export value	tep/10^9 lit	0,603	0,448	0,356	n.a.
(conversion factors from national energy balance)					
Share of renewable energy in energy supply					
fraction of renewable energy of TPER	%	5,0%	5,5%	5,6%	5,2%
(conversion factors from national energy balance)					

PAPER NO. 10: JAPAN

DIFFERENTIATION DATA

The following are available data related to the differentiation factors in Annex C of FCCC/AGBM/1997/CRP.3, which were requested by the chairman of AGBM at the last AGBM meeting on 31 October 1997.

(a) CO2 equivalent emissions per capita (CO2-t/capita)

		1990	1994	2010
–	CO2, CH4, N20	9.63	10.22	11.17
–	All Gases	10.13	10.90	-

(b) CO2 equivalent emissions per unit of GDP

		1990	1994	2010	
–	CO2, CH4, N20	2.73	2.80	2.18	(CO2-t/ million yen)
–	All Gases	2.87	2.99	-	
–	CO2, CH4, N20	0.40	0.29	-	(CO2-t/ thousand US$)
–	All Gases	0.42	0.31	-	

* Calculated using the IMF foreign exchange rates.

(c) GDP per capita (thousand yen)

1990	1995	2010
3,527	3,719	5,117

(d) Annual GDP growth per capita (%)

1.06 (90-95) 2.15 (95-2010)

(f) Annual projected population growth (%)

0.31 (90-95) 0.11 (95-2010)

(g) Emission intensity of GDP: same with (b)

(j) Share of renewable energy (%) 5 (1995)

PAPER NO. 11: NORWAY

(a) Carbon dioxide equivalent emissions per capita of the greenhouse gases listed in Annex B:

Table 1 Emissions of greenhouse gases. Tonnes CO_2-equivalents per capita

	CO_2	CH_4	N_2O	*SUM3*	HFCs	PFCs	SF_6	Total
1990	8,4	2,1	1,1	*11,6*	0,0	0,6	0,5	12,7
1995	8,7	2,3	1,0	*12,0*	0,0	0,3	0,1	12,5

Sources: Norway's second national communication under the Framework Convention on Climate Change and UN World Population Prospects (The 1994 Revision, Medium variant)

(b) Carbon dioxide equivalent emissions per unit of gross domestic product of the greenhouse gases listed in Annex B:

Table 2 Emissions of greenhouse gases. Tonnes CO_2-equivalents per unit of GDP in million US$ at current prices and current PPPs.

	CO_2	CH_4	N_2O	*SUM3*	HFCs	PFCs	SF_6	Total
1990	478	123	65	666	0	34	30	728
1995	383	100	45	528	2	14	6	550

Sources: Norway's second national communication under the Framework Convention on Climate Change and OECD National Accounts (Edition 1997)

(c) Gross domestic product per capita:

Table 3 GDP per capita at current prices and current PPPs. 1000 US dollars

1990	17,5
1995	22,8

Sources: OECD National Accounts (Edition 1997) and UN World Population Prospects (The 1994 Revision, Medium variant)

(d) Gross domestic product per capita growth

Table 4 GDP per capita at 1990 price levels. 1000 NOK

1990	170
1995	198
Average percentage growth per year 1990-1995	3,1

Sources: OECD National Accounts (Edition 1997) and UN World Population Prospects (The 1994 Revision, Medium variant)

(f) Projected population growth

Table 5 Population. 1000 persons

1990	4241
1995	4337
2010	4556
Percentage growth 1990-1995	2,3
Percentage growth 1995-2010	7,4

Source: UN World Population Prospects (The 1994 Revision, Medium variant)

(g) Emmission intensity of gross domestic product

Cf. (b).

(j) Share of renewable energy in energy supply

Table 6 Share of renewable energy. Percent of total primary energy supply[1)]

1990	51
1995	50

Source: Energy Balances of OECD Countries 1989-1990 and 1994-1995. IEA Statistics.
1) Renewable energy as share of TPES minus net import of electricity.

PAPER NO. 12: SLOVAK REPUBLIC

(a) Carbon dioxide equivalent emissions per capita of the GHG listed in Annex B:

14t/cap in 1990

(b) Carbon dioxide equivalent emissions per unit of GDP of the GHG listed in Annex B:

8 t/1000 USD (GDP in current prices of 1990)

(c) GDP per capita:

2044 USD (in 1990 current prices)

(d) GDP per capita growth:

1990/91 decrease 14.6% (constant prices)
1990/93 decrease 25%

(f) Projected population growth:

0.46% in 1990, 0.16% in 1995, 0.0% in 2000

(j) Share of renewable energy in energy supply:

approx. 2% in 1990

1990

Carbon dioxide equivalent emissions of CO_2, CH_4 and N_2O: 301.4 Mton

Population: 38.9 million

GDP: 50, 145.2 billion pesetas

Emissions per capita: 7.75 ton

Emissions per million pesetas of GDP: 6 ton

GDP per capita: 1.3 million pesetas

Regarding the future evolution of these factors, we may be able to provide more precise information at COP 3.

It has to be understood that the estimated emissions for 2000 (336,9 Mton) and 2010 (362 Mton) that can be found in the second national communication are not projections of present conditions, but they incorporate the required additional action that the international strategy and legal obligations on climate change will impose.

PAPER NO. 14: SWEDEN

At the last AGBM meeting chairman Mr Raoul Estrada proposed that Parties could submit data according to "Annex C" in draft negotiating text.
Enclose please find data for selected indicators from Sweden. This is not intended to prejudge whether we will have a differentiated approach or a flat rate approach. As an EU country, Sweden favours a flat rate target for the year 2005 and 2010. After 2010 more sophisticated methods to allocate reduction targets should be implemented, eventually leading to convergence of emissions levels based on appropriate indicators.

Indicator	**1990**	**1995**
CO_2 equivalent/capita EU-proposal[1] (ton/cap)	**7,83**	**7,66**
CO_2 equivalent/capita US-proposal[2] (ton/cap)	**2,31**	**2,53**
CO_2 equivalent/GDP[3] EU-proposal (kg/USD)	**0,46**	**0,41**
CO_2 equivalent/GDP US-proposal (kg/USD)	**0,14**	**0,14**
GDP/cap (USD/cap)	**17004**	**18673**
GDP/cap growth (%/year)	**4,7**	**6,2**
Share of renewable energy[4] in energy supply (%)	**25**	**26**

Population growth	
1990-1995 (%/year)	**0,63**
1995-2000 (%/year)	**0,35**
2000-2005 (%/year)	**0,27**
2005-2010 (%/year)	**0,21**

[1] Includes CO_2, CH_4 and N_2O
[2] Includes CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and all anthropogenic sinks; net/net approach
[3] GDP expressed as purchasing power parities current prices
[4] Includes waste heat from heat pumps; UN/ECE-methods have been used to calculate energy supply from nuclear power plants

Additional information

The total area of Sweden is 450,000 km^2. Compared with other OECD countries, population density is low, on average 19 inhabitants per km^2 However, a large part of the population is concentrated in three major urban areas. Sweden has a long coastline and a very large number of lakes. Transport needs are high due to the low population density and the long distances.

Forest covers 62% of the total land area. The forest is one of Sweden's most important natural resources. Historically, the forest industry, together with the iron and steel industry, has been the backbone of the Swedish economy.

Energy-intensive industries play a large role in the Swedish economy. Sweden has large and growing surpluses in foreign trade and barter.

Sweden's climate is temperate, influenced by the Gulf Stream in the Atlantic Ocean. The annual average temperature is only +1.8°C, ranging from +7°C in the south to -2° in the north. The heating requirement for homes and other premises is considerable during the winter season.

Swedish energy demand has been more or less unchanged at 450 TWh/year during the past 25 years, according to the traditional Swedish way of calculating. The fossil fuel share of the total energy supply has fallen from 80% in 1970 to about 50% in 1995. During a normal year, nuclear and hydro power account for more than 90% of the total electricity generated.

From a level of about 100 million tonnes CO_2 per year by in 1970, emission of CO_2 have declined between 1980 and 1990 from about 82 to about 55 million tonnes per year.

A new energy agreement was launched in 1997. The deliberations were concluded on the 4th of February 1997 with an agreement between the Social Democrats, the Centre Party and the Left Party on guidelines for a national energy policy.

The energy agreement calls for shutdown of the two nuclear power reactors in Barsebäck, equivalent to 1200 MW. The Government Bill "A Sustainable Energy Supply"[5] states that negotiation shall be commenced with the owner to close one reactor prior to 1 July 1998 and the other reactor prior to 1 July 2001. The Bill was passed in Parliament in June 1997 and in addition, the Parliament will discuss in December this year a new law which specify the conditions to close reactors.

[5] Gov. Bill 1996/97:84