

6. Expenditure, Financing and Water Charges

In a country where the public often regards water as a limitless resource and a gift of nature, the notion that water is also an economic good with social and ecological functions is not yet readily accepted. Therefore, *water management often lacks an economic information and analytic base*. Many price signals are inappropriate and *subsidisation* is pervasive. There has been some progress with the use of metering and economic instruments. Overall, the three corresponding recommendations made in the previous OECD Environmental Performance Review of Canada can largely be made again.

6.1 Expenditure

Total public and private water-related *pollution abatement and control (PAC) expenditure* fluctuated only slightly in real terms in the 1990s, at an average of about CAD 3 billion per year (1995 prices). This figure amounts to roughly 0.4% of GDP, somewhat below the share spent in many other OECD countries.

Public water-related PAC expenditure in the second half of the 1990s was mostly incurred at the municipal level (about CAD 2.2 billion per year) and to a much lesser extent by the federal government (CAD 0.3 billion) and the provinces (CAD 0.2 billion). *Private water-related PAC investment expenditure* in industry (excluding agriculture, transport and services), which was dominated by the pulp and paper, crude petroleum and natural gas sectors, fell sharply in the second half of the 1990s, from CAD 804 million in 1995 to CAD 277 million in 1998. At the same time, expenditure also shifted from end-of-pipe processes towards more integrated cleaner production processes.

6.2 *Municipal water charges and financing*

Little progress has been made to date in implementing the user pays principle, although it features in various provincial policies and is the “headline” strategy in the 1987 Federal Water Policy. Municipal water prices are among the lowest in the OECD area. On average they are less than half those in most OECD countries and roughly cover half the costs of supplying water and treating waste water.

Price structures generally do little to encourage conservation. Domestic users pay a flat rate where water is not metered (43% of households with municipal water services in 1999); otherwise, a uniform volumetric charge is most common (36%), followed by decreasing block charges (12%) and, least common, increasing block or more complex charges (9%). Even households subject to uniform some volumetric charges must in some cases (3.4 million people in 1999) pay for a set minimum volume of water, so that they are effectively on a flat rate; when this group is taken into account, almost half of households pay flat rates. Sewer charges are most commonly flat rate and are integrated in water prices. Where industries receive water from public supplies, contracts are often negotiated at bulk rates.

As municipalities have the main responsibility for providing domestic water supply, sewerage and waste water treatment infrastructure and services, and as full-cost water pricing is rare, *most of the required funding has come from municipalities' general taxes* (e.g. property taxes) rather than from water users. Short-term federal and provincial programmes have also contributed from time to time.

Previous funding levels will not be adequate to satisfy Canada's considerable future water infrastructure needs. While there are no recent official estimates of its overall water supply and waste water treatment needs, estimates as high as CAD 90 billion over the next 20 years have been made. To promote greater investment, since 2000 the federal government has established some targeted funding programmes (through the Infrastructure Canada Programme and the Federation of Canadian Municipalities) with a combined ceiling of about CAD 5 billion over ten years; in addition, the federal budget allocates CAD 600 million over five years for construction of water infrastructure to serve First Nation and Inuit communities. While these and corresponding provincial programmes help, municipalities should review the full range of financing options, aiming at pricing services at levels ensuring cost recovery, and using in a transition period other funding sources including various subsidy programmes that require municipalities to establish full-cost accounting procedures and full-cost water pricing policies, as well as complementary funding mechanisms such as public-private partnerships (only four existed in 2003) if public concerns about maintaining ultimate community control can be resolved.

6.3 Economic instruments

Canada has not yet made much use of economic instruments in water management, although some provinces (e.g. British Columbia, Alberta and Quebec) impose charges on use of water for hydropower, based on the amount of kWh generated.

Irrigation water charges generally cover operation and maintenance but not capital costs (including those of major rehabilitation of schemes). Consistent with the policy of having producers pay more of the true cost of water services, significant changes to water service rates were implemented in the 1980s. By 2000 the price of water had increased from CAD 11/ha to CAD 31/ha, with the irrigators paying only approximately 60% of operation and maintenance costs.

In 2000 Quebec introduced a *pollution charge on discharges to water* (and emissions to air) from the pulp and paper industry, as part of a comprehensive package of measures aimed at reducing the environmental impact of the 62 pulp and paper mills in the province (the revenue from the pollution charge amounts to about CAD 600 000 annually). In 2002 Quebec worked out a similar package with the mining industry; it will enter into force once detailed arrangements have been agreed for every facility; other industry branches are to follow. In Ontario two *experiments in water quality trading* are taking place on a watershed basis (in the South Nation River and Lake Simcoe basins), which allows the trading of phosphorus credits among point and non-point sources in the catchment.

In some cases, creation of protected areas on public land must take into account Aboriginal land claims and private rights to exploit natural resources (e.g. minerals, timber, Pacific salmon). With the creation of Nunavut in 1999, three Arctic national parks were established through the first Inuit Impact and Benefits Agreement under the Nunavut Land Claim Agreement. The 2001 National Parks Act provides for a more expeditious process to establish and enlarge parks. *Co-operation with Aboriginal populations has therefore been strengthened* (Chapter 6). In 2001 the establishment of five of the seven new national parks involved agreements with Aboriginal people. The mining industry has contributed to the establishment of new protected areas in recent years by donating timber or mineral rights, exploration rights, oil and gas tenures and land holdings. Since 1995 private landowners donating land (in full ownership) or accepting restrictions on its long-term use or access (conservation easement, covenant or servitude) are eligible for a federal income tax credit of up to 29% of land value. In 2000 taxable capital gains associated with gifts were reduced from 75% to 50%. There have been 265 such "*ecological gifts*" (valued at CAD 40 million), totalling 21 000 hectares in eight provinces.

Parks Canada (under Canadian Heritage) manages the national park system. It became an operating agency in 1998. Since 2000 federal expenditure on national parks has been around CAD 35 million per year. In 2003 an additional CAD 45 million was allocated to create new parks and improve existing ones. Revenue from park visitors, leases and concessions is CAD 65 million per year.

Certification of sustainable forest management is voluntary. The *area of certified forest is increasing quickly* in response to market demand. In 2002 the Forest Products Association of Canada (which regroups companies that harvest timber on over 75% of working forests) required all member companies to undertake independent forest audits by 2006. By the end of 2002, 28 million hectares had been certified (a 64% increase over a year previously); by September 2003, forest certification involved 46 million hectares. It is expected that 90 million hectares will be certified by 2006 – equivalent to the area of Sweden, Norway and Finland combined. Three certification systems can be used: those of the Canadian Standards Association (51%), the Sustainable Forestry Initiative (45%) and the Forest Stewardship Council (4%). There has been some development of specific standards for private woodlot owners.

Stumpage fees (the price of timber as it stands, on the stump) are often set using rules of thumb that involve sharing of the revenue from expected sales to sawmills (based on market information) between the forest owner (the provincial government) and the logging company. Stumpage fees have important environmental implications insofar as they affect the intensity of use of forest resources: the lower the fee, the greater the harvest (within the AAC). This applies particularly to spruce, pine and fir, which dominate Canadian softwood lumber exports. Assessing whether (and to what extent) provinces subsidise harvests – and the lumber industry – by not charging the full economic rent and by depressing log market prices (ban on log exports) is complex. This issue has been at the centre of a long-standing trade conflict, first between four Canadian provinces (notably British Columbia, but also Alberta, Ontario and Quebec) and the US, and more recently between Canada and the US. Lumber producers in the US consider the administered fees (ranging from CAD 14 to CAD 28/m³ over the decade in British Columbia, weighted average for all species) to be below resource rent, i.e. de facto subsidies. In 1996-2001, under the first Canada-US Softwood Lumber Agreement (SLA), 34.7 million m³ of Canadian softwood lumber per year (worth CAD 10 billion) could be exported to the US without fees. In 2002, under a new Softwood Lumber Trade Agreement (SLTA), the US imposed an 18.8% countervailing duty (plus an anti-dumping duty of 8.4%) on Canadian exports. All Canadian lumber is currently subject to anti-dumping duties, and only the Atlantic provinces (New Brunswick, Newfoundland and Labrador, Nova Scotia, Prince Edward Island) are exempt from countervailing duties. According to a 2003 NAFTA decision, these duties (estimated to have cost Canadian lumber producers up to CAD 1.5 billion) were too

high and should be recalculated. In 2003 a WTO panel also concluded that the benefit from low stumpage fees did not justify current US duties. While there have been discussions concerning the establishment of a quota-based system to limit Canadian exports to the US market, no agreement has been reached. British Columbia has committed to buy back 20% of long-term tenure rights from forest companies, most of which (except a portion allocated to First Nations) will be sold in open auctions with the price used to set stumpage fees for remaining tenures.

On private land the *fiscal incentive* available for transfers of farm property was extended in 2001 to commercial farm woodlots operated under a prescribed forest management plan. Maintenance of tree cover on marginal farmland has mainly benefited from stewardship programmes.

Sectoral subsidies

Most direct federal subsidies to *fossil fuel industries* (upstream oil, gas and coal) have been reduced if not eliminated in recent years. Since the mid-1990s direct financial support has fallen sharply, reflecting the decision to cease funding petroleum mega-projects and, subsequently, to privatise the Cape Breton coal mining operations, which had received federal assistance for some time. While federal support totalled CAD 44 million, 78 million and 64.9 million in 1999, 2000 and 2001, the corporation concerned is no longer involved in coal mining. Subsidies to *nuclear energy* have also declined substantially. They now largely support safe operation of CANDU reactors and research on reactor-based medical isotopes.

Support to *agriculture* is shifting from *commodity-specific support* towards an income safety net approach (Box 5.2). Support to producers, measured as % PSE, is about half the OECD average; producer prices for most commodities, with the exception of milk, poultry, meat and eggs, are aligned with the world market. Producer support as a share of farm receipts fell from 34% in 1986-88 to 19% in 2000-02, one of the greatest decreases among OECD countries, though most of the decrease was in the mid-1990s, reflecting major agricultural policy reform. Support to the milk sector has remained above the OECD average. With CAD 8 billion (or 0.7% of GDP, down from 1.7% of GDP in 1986-88), total support to agriculture in Canada is about half the OECD average. Environmental and rural development programmes, which account for *less than 5% of total support* to agriculture, provide sector support through infrastructure improvement rather than direct support to farmers.

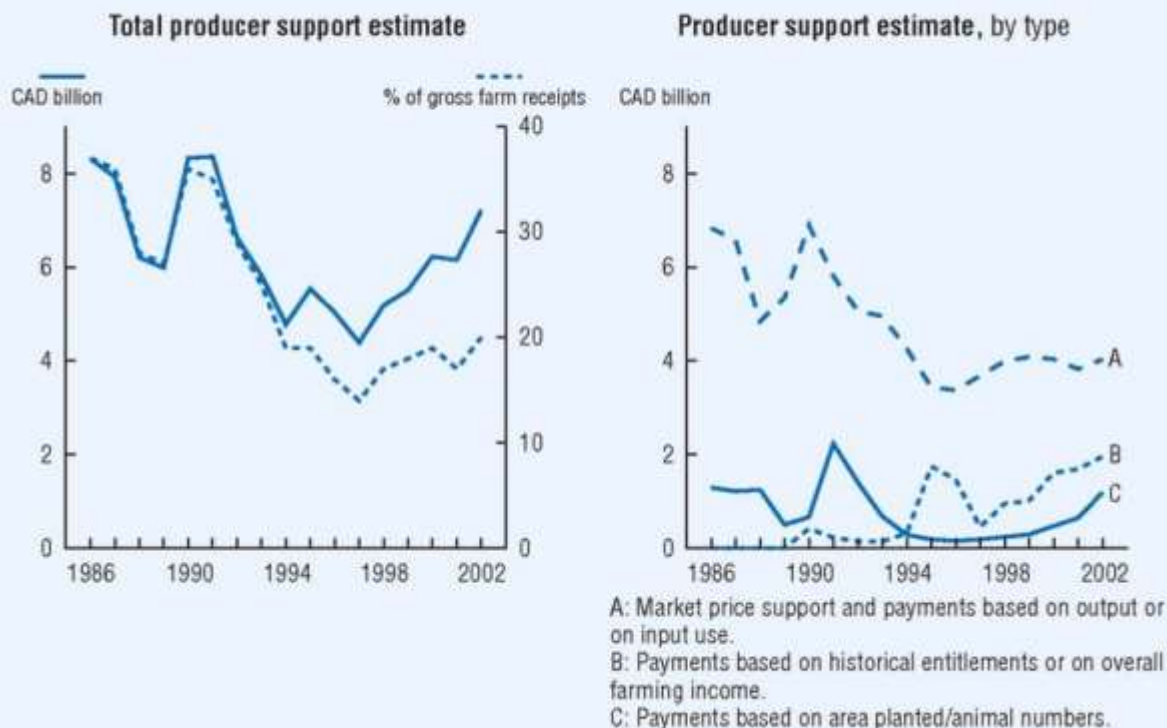
Box 5.2 New agri-environmental measures in Canada

Agricultural support as a share of farm receipts decreased from 36% in 1990 to 20% in 2002. Its composition has been shifting, from market price support towards types of payments that are potentially less environmentally harmful (Figure 5.2). The new federal agricultural budget for 2003-08 (CAD 5.2 billion) consists of the *Agricultural Policy Framework* (APF), accompanying measures and direct assistance. The APF (CAD 3.4 billion over five years) is a national initiative to help the Canadian agriculture sector “better respond to increasing consumer demands and global competition”. Direct assistance (CAD 1.2 billion over two years) is provided to producers to deal with short-term pressures (e.g. drought). Measures accompanying the APF (CAD 682 million) are in the areas of food safety, environmentally responsible production, science and innovation, renewal, and business risk management.

One of the key environmental measures accompanying the APF is implementation of voluntary (regional or farm-specific) *environmental farm plans* (EFPs). Cost-shared incentives (federal investment of CAD 100 million over four years) are targeted at producers with EFPs in high risk areas, in hopes that they will adopt beneficial practices or make infrastructure improvements. Several provinces (e.g. Ontario, Quebec and Prince Edward Island) already have EFP programmes. The types of practices eligible for EFP incentives relate almost exclusively to nutrient management in livestock farming (e.g. manure storage, farmyard runoff control). It is intended that EFPs, when well-established, can provide a single window for enforcement of federal environmental requirements (e.g. CEPA, Fisheries Act, SARA).

Incentives are also provided for conversion of environmentally sensitive land (with low productivity) to permanent cover. Under the *green cover programme of Canada* (CAD 110 million over five years) applicants must meet specific environmental criteria and enter into a ten-year land use agreement. They can produce (perennial) forage or plant forest trees. The *drought initiative* (CAD 80 million over five years) seeks to reduce the risk of water shortage (CAD 60 million) and support farmers in drought areas (tax deferrals, extended crop insurance). It consists essentially of irrigation development, particularly in Alberta and Saskatchewan, and is in addition to the ongoing CAD 5.5 million per year Rural Water Development Programme administered by the Prairie Farm Rehabilitation Administration (PFRA). The *pesticide programme* (CAD 55 million over six years) gives Canadian producers better access to minor use and reduced-risk pesticides. CAD 6 million has been allocated over five years to move gradually towards the long-term objective of *farm certification*. This will involve setting national performance standards (e.g. for farm effluent discharge) to meet environmental quality objectives (yet to be defined). Other agri-environmental programmes relate to research and technology, information and monitoring.

Figure 5.2 Trends in agricultural support, 1986-2002



Source: OECD.

Table 5.2 Fisheries federal adjustment programmes,^a 1992-2001
(CAD million)

Type of measure	NCARP ^b 1992-94	AGAP ^c 1993-94	TAGS ^d 1994-98	CFAR ^e 1998-2001	Total
Income support	484	129	1 750	315	2 678
Training and advisory services	333	164	497
Licence retirement	40	0	60	230	330
Economic development	..	57	50	100	207
Early retirement	31	15	28	85	159
Vessel compensation	15	19	12	..	46
Total	903	384	1 900	730	3 917

- a) Excluding the Pacific Salmon Revitalisation Strategy (PSRS).
 b) Northern Cod Adjustment and Recovery Programme.
 c) Atlantic Groundfish Adjustment Programme.
 d) Atlantic Groundfish Strategy.
 e) Canadian Fisheries Adjustment and Restructuring Programme.

Source: Fisheries and Oceans Canada.

Concerning *fisheries*, in recent years the federal government has phased out all transfers aimed at producer price support and vessel fleet renewal. Ongoing financial transfers to the industry have been designed to promote transition to responsible fisheries practices and to reduce economic dependence on fishery. Transfers have taken the form of licence retirement, fisheries adjustment and regional economic development initiatives (Table 5.2). To address permanent restructuring requirements, the Atlantic Groundfish Strategy (TAGS), the Pacific Salmon Revitalisation Strategy (PSRS) and the Canadian Fisheries Adjustment and Restructuring programme (CFAR) were put in place in the mid to late 1990s to permanently remove some fishermen from the industry. These initiatives have now ended. Canada should continue to implement measures aimed at reducing overcapacity in Atlantic fisheries. The federal government's 1999 decision to impose a moratorium on federal public investment support for projects that increase capacity in primary fish processing is another step in the right direction.

Overall *progress* has been made in reducing environmentally harmful subsidies in the energy (coal mining), agriculture and fishery sectors. Subsidies to the mining industry for exploration should also be phased out.

Environmentally related taxes on energy and transport

Fuel taxes remained stable in real terms in the period 1990-2001. In 1995 the federal gasoline tax was increased by CAD 0.015/litre to the current rate of CAD 0.10/litre for unleaded gasoline, but inflation (11% increase in the CPI in 1995-2001) offset most of the increase. Fuel taxes are higher than those in the United States, but significantly lower than those in most other OECD countries (Figure 5.3). Taxes on unleaded gasoline are higher than those on diesel. Efforts

should be made to internalise air pollution externalities (e.g. CO₂ emissions from gasoline, NO_x and PM₁₀ emissions from diesel). There is no recent quantitative study on cost recovery in Canada's transport sector, but it is generally recognised that the costs of externalities associated with road traffic exceed revenues from fuel taxes. Other taxes applying to transport activities include a federal excise tax on high energy-consuming motor vehicles and a graduated sales tax in Ontario based on fuel consumption. The effectiveness of these instruments is limited, as there has been no improvement in the average fuel efficiency of new light vehicles since 1992. In part this reflects the increased size of average vehicles sold (sales of mini-vans, sport utility vehicles and light trucks have grown faster than those of automobiles). Federal and provincial governments should *review existing environmentally related taxes* (e.g. transport taxes, taxes on energy products) with a view to restructuring them to be more environmentally friendly. This could be done in a neutral way in order not to increase the overall tax burden.

Taxation of resource-based activities

Resource-based sectors have benefited historically from *preferential tax treatment by the federal and provincial governments*. The incentives are particularly important in the *non-renewable sectors*, where effective rates on marginal investment are especially low; the rates for oil and gas, for example, are one-third those in the manufacturing sector and one-quarter those in most service activities. Tax incentives for investment in the forestry sector are lower than those for non-renewable resource sectors: they are near the range of incentives granted to manufacturing (when both large and small firms are considered). Grouped with agriculture, fisheries benefit from the same kind of tax treatment as the non-renewable sectors. Analyses indicate that variations in the tax treatment of non-renewable and renewable energy investments are not large or significantly biased in favour of one sector. There are some important exceptions, including oil sands and coal mines, nuclear technology, alternative fuels and certain energy efficiency investments.

With the exception of Quebec, provincial corporate income tax regimes generally reflect the federal system. Both levels of government provide *preferential tax treatment to mining and to oil and gas* through generous write-offs for exploration, development and capital expenses. In addition, exploration and development expenses can be associated with a *flow-through share* issue, a unique provision of the Canadian tax system that allows a company with insufficient taxable income to transfer unused deductions to investors. To the extent that particular incentives could result in over-exploitation, overuse of resources or harmful environmental consequences, they should be eliminated.

Since the early to mid-1990s there has been a tendency towards *improving the relative treatment of the renewable energy sector*. Accelerated capital cost allowance rates and flow-through share financing have been made available to a broader range of qualifying renewable energy projects, while eligibility rules for flow-through shares issued by the oil and gas sector have been tightened. Provisions were made in the 2003 federal budget to extend eligibility for accelerated depreciation to certain stationary fuel cells, equipment used to generate electricity from bio-oil, and some types of equipment used in greenhouse operations (e.g. ground source heat pumps). The excise exemption for ethanol content of blended gasoline was extended to ethanol or bio-diesel used in blended diesel fuel. The income taxation of the resource sector was changed in order to make non-renewable energy subject to the same statutory corporate income tax rate as other sectors. These measures, which will provide *more consistent tax treatment across non-renewable energy projects and between the non-renewable energy and other sectors*, are welcome.

1.4 Pollution abatement control and environmental expenditure

Since the 1995 OECD Environmental Performance Review, progress has been made in improving data on the interface between the economy and the environment, notably with the publication by Statistics Canada of “Econnections”. However, these data are not available for recent years. In 1998 *total expenditure on pollution abatement and control* (PAC) was estimated at CAD 9.91 billion or 1.1% of GDP (Table 5.3), compared with 1.2% of GDP in 1994-97.

PAC expenditure by the private sector (mostly manufacturing industries, notably pulp and paper, primary metals, and oil and gas extraction) represents 45% of this total. A relatively large share of private sector funding (some 60%) is for current expenditure.

PAC expenditure by the public sector in the second half of the 1990s remained in the order of CAD 5.5 billion, i.e. a decrease in real terms, but it increased to CAD 6.2 billion in 2000. The largest share (over 40%) is for waste water. Among the various government levels, local governments still represent the largest share, with over two-thirds of total public sector expenditure, while the remainder is expenditure by the federal and provincial/territorial governments (Table 5.4). Since 1993 the federal government has funded sewerage and waste water treatment activities in the northern territories. Its contribution to public PAC expenditure has progressively exceeded that of provincial/territorial governments. Over 60% of PAC expenditure by provincial/territorial and local governments is funded in Ontario and Quebec, or 85% if British Columbia and Alberta are included (Table 5.5). Annual expenditure ranges from CAD 279 per capita in the Northwest Territories to CAD 170 in Ontario,

CAD 145 in Quebec and CAD 108 in Newfoundland and Labrador. Environmental staff as a proportion of total provincial government employees ranges from 33% in British Columbia to 10% in Ontario, 8% in Quebec and 1% in Newfoundland and Labrador.

During the 1990s there were *large cuts in federal and provincial environmental budgets* as a result of fiscal consolidation efforts at both government levels. Environment Canada's budgets and staffing stopped increasing in 1994-95. Its budget had decreased by 20% in nominal terms by 1998-99 (compared to a 6% reduction in overall federal budgetary expenditure); the number of full-time equivalent staff fell by 1 226. The federal government has reduced transfers to provinces for "shared responsibility" in the environmental area. The provinces, too, have substantially reduced their environmental budgets in nominal terms – by up to 60% between 1994-95 and 1998-99, a period when overall provincial expenditure was roughly stable.* These cuts caused some problems in implementing environmental policy. Environment Canada's *budget and staffing has recovered since 1998-99*, with its budget increasing

Table 5.3 **Pollution abatement and control (PAC) expenditure, 1994-2000**

(CAD million)

	1994	1995	1996	1997	1998	1999	2000
Public sector (federal, provincial, municipal)	5 433	5 652	5 352	5 622	5 448	5 618	6 202
of which:							
Investment	1 453	1 769	1 695	1 639			
Current expenditure	3 980	3 883	3 657	3 983			
Business sector	3 475	4 278	4 606	4 475	4 469	..	5 163
of which:							
Investment	1 527	2 049	1 886	1 717	1 696		2 155
Current expenditure	1 948	2 229	2 721	2 757	2 773		3 008
Total	8 908	9 930	9 959	10 097	9 916		11 365
PAC expenditure (% GDP)	1.2	1.2	1.2	1.2	1.1

Source: OECD.

* Environment Canada's budget does not account for all federal environmental expenditure; in 1990-91 it accounted for slightly over half. More recent figures for overall federal environmental expenditure are not available. Federal environmental expenditure is small in relation to that of provincial and local governments (about 20% in 1990-91), but in the poorest provinces federally supported activities are relatively large.

Table 5.4 Public PAC expenditure
(CAD million)

Level of government ^a /Activity	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total^b													
Sewerage and waste water treatment	1 416	1 736	2 001	1 953	2 051	2 186	2 297	2 742	2 547	2 693	2 433	2 439	2 678
Waste collection and disposal	887	1 040	1 220	1 325	1 427	1 346	1 578	1 366	1 343	1 396	1 463	1 622	1 477
Other pollution control activities ^b	269	358	398	319	264	240	240	204	187	179	320	447	643
Other environmental services ^c	804	910	1 096	1 289	1 273	1 329	1 317	1 339	1 274	1 354	1 232	1 110	1 404
Total PAC	3 376	4 044	4 715	4 886	5 015	5 101	5 433	5 651	5 352	5 622	5 448	5 618	6 202
Federal													
Sewerage and waste water treatment	0	0	0	0	0	229	321	314	301	371	342	309	319
Waste	0	0	0	0	0	0	0	0	0	0	0	0	0
Other pollution control activities	70	113	118	20	4	11	15	14	6	5	4	155	315
Other environmental services	506	545	620	721	747	729	745	703	636	762	785	580	684
Total PAC	576	658	738	741	751	969	1 081	1 031	942	1 138	1 131	1 044	1 318
Provincial/territorial													
Sewerage and waste water treatment	76	72	75	101	98	91	133	256	187	181	131	91	70
Waste	81	120	132	164	177	121	296	71	30	28	66	70	45
Other pollution control activities	244	305	327	376	328	310	236	202	187	181	322	296	332
Other environmental services	254	312	443	535	467	517	531	564	531	495	327	439	434
Total PAC	654	810	978	1 176	1 070	1 039	1 195	1 094	936	885	846	896	882
Local													
Sewerage and waste water treatment	1 414	1 735	2 002	1 954	2 056	1 950	2 041	2 420	2 314	2 394	2 127	2 163	2 378
Waste	817	936	1 126	1 228	1 297	1 253	1 293	1 311	1 332	1 392	1 411	1 583	1 459
Other ^{a, c}	75	83	82	81	103	127	144	133	129	130	138	115	335
Total PAC	2 306	2 753	3 210	3 263	3 456	3 331	3 478	3 864	3 775	3 916	3 676	3 861	4 172

Notes: Fiscal year ending nearest to 31 March, except for local government expenditure (calendar year). Figures may not add up to totals due to rounding.

a) Expenditure presented for all levels of government do not equal the sum of federal, provincial/territorial and local expenditure. Data have been consolidated, which excludes inter-governmental transactions between the three levels of government and provides a more accurate account of total government revenues and expenditure.

b) Includes expenditure (such as clean-up and air pollution control).

c) Includes environmental assessments.

Source: Statistics Canada.

Table 5.5 Provincial and local governments' PAC expenditure, annual average 1999-2002

	Provincial and territorial governments (CAD thousand)	Local governments (CAD thousand)	Total (CAD thousand)	Per capita (CAD)	Per GDP (%)
Ontario	210 860	1 832 597	2 043 457	170	4.3
Quebec	202 288	885 763	1 088 051	145	4.5
British Columbia	101 674	633 216	734 890	177	5.4
Alberta	135 265	398 044	533 309	172	3.6
Nova Scotia	31 883	137 317	169 200	179	6.4
Manitoba	43 383	120 189	163 572	142	4.5
New Brunswick	56 484	103 234	159 718	211	7.7
Saskatchewan	57 743	87 618	145 361	143	4.2
Newfoundland and Labrador	22 954	34 478	57 432	108	3.5
Prince Edward Island	17 875	5 485	23 360	166	6.2
Nunavut	0	15 958	15 958	555	17.1
Northwest Territories	1 135	10 388	11 523	279	3.4
Yukon	1 819	4 055	5 874	196	4.9
Canada total	883 363	4 268 342	5 151 705	164	4.1

Source: Statistics Canada.

by 33% in nominal terms and number of full-time equivalent staff by 26%, or 1 173. Provincial environmental budgets have also increased. For example, in Ontario the environmental budget increased by 60% in nominal terms between 1999-2000 and 2003-04. The 2003 budget points towards an increase in the federal government's contribution to *expenditure on environment and sustainable development*. An additional CAD 3 billion has been allocated to climate change (CAD 2 billion), nature protection (CAD 400 million) and waste water collection and disposal (CAD 600 million).

2.4 Economic instruments

The Government of Canada has a *long-standing commitment to the polluter pays principle* and a commitment to examine the use of *economic instruments* (e.g. environmental charges, emissions trading) to achieve its environmental policy goals (Table 5.8). The government's regulatory policy requires regulatory authorities to examine alternatives to regulation. Under the 1999 CEPA, the Minister of the Environment has the authority to apply economic instruments to meet the goals of the Act. In practice, only a *limited number of economic instruments* have been introduced specifically for environmental policy purposes, mainly at the *provincial level*.

Table 5.8 Selected market-based instruments^a

Name	Description
TRADABLE PERMITS	
NO _x and VOC emissions Quotas for methyl bromide	Trading at local level by power plants and large industry. Allocation based on average imports in 1992-94. Overall cap is being lowered [1998 (75%), 2001 (50%), 2003 (30%) and 2005 (0%)]. Some 50 trades have taken place.
Transferable quotas for HCFCs for cooling sector (including refrigeration and air conditioning) and other use sectors	Allocation based on average consumption in 1993. Overall cap will be lowered according to a specific calendar [2004 (65%), 2010 (35%), 2015 (10%), 2020 (0.5%) and 2030 (0%)].
Individual transferable fishing quotas	Allocations based on previous involvement in fishing.
Maple grove permits	Traded price CAD 30 per hectare (1997).
Cap, credit and trading programme for NO and SO ₂ emissions from fossil fuel power plants and other major industries – Ontario.	New emissions caps for electricity sector took effect in 2002; by 2007 SO ₂ and NO _x emissions expected to be cut by 25% and 53% respectively.
Tradable hunting rights ^b – Alberta	Allocations auctioned. About 8 800 rights active. Cost around CAD 757 500.
DEPOSIT-REFUND SYSTEMS^c	
Deposit-refund scheme for beverage containers – British Columbia	Beverage containers – deposit rates: CAD 0.10 (beverages and beer), CAD 0.20 (spirits), refund 100% for refillables and 50% for recyclables. Return % – 75% beverages, 96% beer, 66% spirits.
Deposit-refund scheme for beverage containers – New Brunswick	Beverage containers – deposit rates CAD 0.05-0.3 depending on size, 100% refund. Return %: 98% beer, 85% others. Refund of non-refillable containers half the amount of the deposit, total amount of deposit for refillable containers. Similar system in Nova Scotia.
Deposit-refund scheme for beverage containers – Quebec	Beverage containers – deposit rates CAD 0.05-0.2 depending on size, refunds CAD 0.0365-0.1461 depending on size.

USER CHARGES AND PRICING^a

Pollution charges – Quebec	Charges for emissions to air or water by industry (CAD 170 to CAD 4 051 per 1 000 kg, depending on industrial pollutant type). So far only pulp and paper plants required to pay.
Licensing fees for air or water pollution – British Columbia	Fees paid for permits under the BC Waste Management Act. Fee varies with toxicity of licensed substances emitted.
Charge for forest management and research – Quebec	CAD 30 per cubic metre of wood.
Charge for sewage certificates – Quebec	CAD 2 per tonne, multiplied by weighting factor depending on pollutant type.
Water pollution surcharge	Used widely by municipalities throughout Canada to recover costs of treating high-strength discharges from commercial and industrial sewer users.
Advance disposal fees for tyres – several provinces	For example, new tyre sales in Manitoba are subject to a Waste Reduction and Prevention Levy of CAD 2.80 plus 7% PST, with all tyre levies transferred to the Tire Stewardship Corporation.
Municipal unit waste disposal charges	144 Canadian cities have implemented a unit waste fee (e.g. tags on garbage bags or garbage weight charges), mainly in BC, Ontario and the prairie provinces.

a) National unless otherwise specified.

b) Several provinces have fees for hunting licenses and charges for entry to exploitation zones and parks.

c) Nearly all provinces have deposit-refund schemes for beverage containers (Manitoba and Ontario tax non-refillable containers).

d) Most municipalities charge for water supply, but fees are not set to recover costs of water and waste water treatment and are not designed to ensure efficient water consumption level.

Source: Environment Canada; OECD.

Federal level

At the federal level the most notable initiative is a “cap and trade” scheme to phase out production, import and export of *methyl bromide and HCFCs*. Trading of methyl bromide allowances has made possible a smoother, less costly transition while the price of methyl bromide increased; revenues from sales of these allowances have been used to fund the introduction of methyl bromide alternatives. Tradable units systems are being introduced to reduce releases of *trichloroethylene (TCE) and tetrachloroethylene (PERC)*, two substances considered toxic under the 1999 CEPA, in the metal degreasing sector (Chapter 7).

The federal government is developing a policy to promote full-cost accounting and *full-cost pricing of water services* through eligibility criteria under Infrastructure Canada and the Federation of Canadian Municipalities’ Green Municipal Funds. These funding initiatives, established recently, cover a six-year period beginning in 2001.

The federal government promotes greater awareness of economic instruments through the National Round Table on the Economy and the Environment. It is carrying out analytical and design work on instruments such as trading of GHG, SO_x and NO_x emissions permits. *Emissions trading* of GHGs is a key element of Canada’s Climate Change Plan; details of the trading system for large industrial emitters are being developed. The relative cost-effectiveness of performance-based regulations, emissions trading, and taxes to reduce sulphur emissions from fuel oils are also being examined.

Provincial level

Notable provincial initiatives include Ontario's cap and trade system for NO and SO₂ emissions from power plants, and British Columbia's differentiated fees for industrial polluters. The Ontario scheme, which incorporates *trading with 12 US border states*, will reduce NO_x emissions by 53% and SO₂ emissions by 25% by 2007.

The provinces have implemented Extended Producer Responsibility programmes, with *user fees on products* such as tyres, batteries and motor oil and filters. In addition to deposit-refund schemes, provincial jurisdictions have implemented non-refundable fees designed to cover the costs associated with product disposal and/or recycling. Ontario is introducing a regulation, to be implemented by 2004, that allows municipalities to charge the full financial cost of water supply.

Assessment

Despite these initiatives, limited use has been made of economic instruments for environmental management at any level of government. A *number of constraints* affect greater uptake of economic instruments. *Industry* is concerned about day-to-day competitive pressures, especially in relation to cost competitiveness with the US. It has difficulty understanding how to implement new instruments such as trading. Within *governments*, economic agencies have supported economic instruments in principle, but resisted specific proposals for targeted incentives on allocative efficiency grounds. The *public* is wary of new fees and charges, and of the allocation of "rights to pollute". There is a general resistance to external pressure to change consumption patterns. Small but influential groups have blocked some proposals.

There is considerable scope to improve *efficiency of natural resource use* through market-based instruments. For example, increased use could be made of water metering, subsidies to irrigation water could be reduced, and water trading could be considered (Chapter 3). Further recovery of the costs of supplying environmental services such as water and sewerage would promote more efficient use of resources, but social impacts need to be taken into account.

There is inadequate recognition of the economic opportunities that arise for *green products and energy and resource efficient technologies* when prices move towards the full environmental costs of supply. These opportunities are being reinforced by increased demands for quality as consumer incomes rise. In the medium to long term this is a win-win situation, rather than a trade-off between the economy and the environment. In that context positive incentives from environmental charges and potential gains from trading have not been marketed effectively.

Increasing the use of economic instruments is a *matter of urgency* in view of the need for affordable solutions and appropriate cost sharing to reduce environmental degradation. The impacts of emissions trading schemes are complex and need to be understood, but design and analysis also need to be accelerated. The federal government could consider committing to move *from analysis to implementation* of viable options for air and water emissions trading within a specified time frame. Other measures that could be considered include charges on toxic emissions and effluent, nitrogenous fertilisers or waste, and advanced disposal fees for products containing toxic substances.

Several tools developed for economic analysis at federal level are being disseminated to provincial and territorial governments, enhancing their capacity to use *cost-benefit analysis*. The federal government should continue efforts to provide provincial and territorial governments with information and tools (models, available cost-benefit analysis of similar subjects) to encourage use of economic instruments.

2. Environment and Employment

Some environmental policies may negatively affect employment; others contribute to the creation of environmental jobs. *Net labour market effects of environmental policies* in Canada have not been systematically studied. The federal government estimates that implementation of the Climate Change Plan would result in slower employment growth in 2002-10 than under a business-as-usual scenario (representing foregone employment growth of 60 000 jobs, or 0.3% of total employment). However, new regulatory requirements, the introduction of new technology, and expanding international opportunities for the Canadian environmental industry offer potential for growth in environmental employment.

2.1 Environmental industry and environmental employment

Between 1995 and 2000 the number of companies making up *Canada's environmental industry* (i.e. suppliers of environmental goods and services) increased from about 4 500 to nearly 7 500. Their revenue from environment-related activities increased from CAD 11 billion to 14.4 billion; the number of jobs in the environmental industry increased from 150 000 to around 160 000 (Table 6.2). This was below an earlier estimate that the market would double in this period. In 2000, 44% of environmental revenue came from environmental services (e.g. waste services, consulting

engineering, water services and conservation), 43% from environmental goods (e.g. recyclable materials, water supply and treatment equipment, air filtration systems and scrubbers) and 13% from environment-related construction (e.g. water supply and treatment). Opportunities exist to further expand market segments for green energy and resource-efficient technologies and products. Ontario and Quebec accounted for 65% of environmental revenue in 2000. Small companies (under 100 employees) dominate this sector. At CAD 1.3 billion, exports accounted for 9% of environmental revenue in 2000, mostly for environmental goods (CAD 900 million). The US is the largest export market (CAD 900 million), followed by Europe (CAD 127 million) and Asia (CAD 78 million).

Total economy-wide direct environmental employment is estimated by the Canadian Council for Human Resources in the Environment Industry (CCHREI) at roughly 250 000. In 1998 (latest data available) there were 221 400 *direct environmental jobs* in Canada, corresponding to about 1.5% of total employment. Of these jobs, 72% were in the private sector (in the environmental industry itself and in other industries such as utilities, mining, chemicals, steel and transport, as well as NGOs and associations) and 28% were in the public sector (government, health and education).

Table 6.2 **Environmental industry**, employment and revenue, 2000

Province/territory	Companies (number)	Employment ^a (number)	Environmental revenues (CAD billion)				Total revenues ^b (CAD billion)
			Goods	Services	Construction	Total	
Newfoundland and Labrador	150	1 938	19	63	20	102	171
Prince Edward Island	43	1 172	..	12	..	51	126
Nova Scotia	365	5 679	103	168	39	310	576
New Brunswick	292	3 729	87	108	49	243	409
Quebec	1 735	30 041	1 626	1 098	440	3 164	5 199
Ontario	2 379	64 483	3 173	2 527	465	6 165	12 783
Manitoba	228	3 352	373	117	27	518	690
Saskatchewan	286	3 668	93	77	33	203	350
Alberta	905	24 797	334	1 063	480	1 876	3 101
British Columbia	1 050	20 088	409	1 010	282	1 701	2 705
Yukon, Northwest Territories and Nunavut	41	322	..	13	..	26	30
CANADA TOTAL	7 474	159 269	6 227	6 255	1 878	14 360	26 140

a) Total employment in these companies, including workers not directly involved in producing environmental goods and services.

b) Total revenue includes that not directly from environmental goods, services and construction.

Source: Statistics Canada.

2.2 Active environmental employment policies

The federal government has designated the environmental industry a strategic sector and has supported its technological and human resource development. In 1992 Human Resources Development Canada created the *Canadian Council for Human Resources in the Environment Industry* (CCHREI) to develop employment strategies. The CCHREI promotes the development of highly qualified environmental professionals to contribute to the competitiveness of the environmental industry.

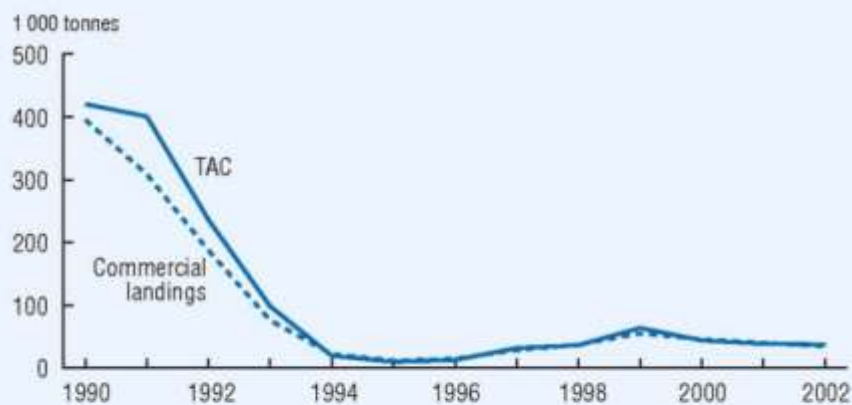
The CCHREI also supports *unemployed or underemployed young graduates* who wish to gain experience in national and international environmental projects (1 600 persons since its inception). In 2001, with the Aboriginal Human Resource Development Council of Canada, the CCHREI launched a programme to increase *Aboriginal employment* in the environment sector through career awareness, provision of training and employment resources, and recognition of environmental excellence in traditional knowledge.

Box 8.4 Collapse of the Atlantic cod fishery

In 1974 all the cod stocks in the Northwest Atlantic, particularly in Canadian waters, were placed under quota regulation. *Total allowable catch* (TAC) for each stock was (and is still to be) based on scientific advice presented to the Northwest Atlantic Fisheries Organisation (NAFO). In 1977, when Canada declared its 200-mile limit, Northwest Atlantic cod stocks were particularly low. Conservative management led to an increase in stocks until the mid-1980s, when they began to decrease again despite the policy measures in place. The rapid decline in this resource in the early 1990s resulted in a reduction of TACs, and eventually to a *moratorium on commercial fishing* (1992). The commercial fishery was reopened in 1999, though to a limited extent only (Figure 8.1). In April 2003 it was decided to again ban cod fishing in major stock areas (the Gulf of St. Lawrence and northeast Newfoundland and Labrador).

Despite a decade of drastic conservation measures and severely limited fishing, cod stocks in Canada's Northwest Atlantic show *no signs of imminent recovery*. The 1992 moratorium has already cost nearly CAD 4 billion in the form of aid programmes (Table 5.2). Government policy is to continue limiting cod fishing while assessing the impact of changing environmental variables, such as water temperature or natural predation (seals). In the context of NAFO, Canada will also continue trying to persuade the world's largest fishing countries to drastically reduce catch limits for cod stock harvested in the Northwest Atlantic outside Canada's territorial waters. The collapse of Atlantic cod (and other groundfish) fishery has been accompanied by an increase in that of Atlantic shellfish (crabs, lobsters and shrimps). The net result is that the total value of landings has actually increased since 1992.

Figure 8.1 Cod TACs and landings on Canada's Atlantic coast, 1990-2002



Source: Fisheries and Oceans Canada.

5. Trade and Environment

5.1 Integrating trade and environmental policies

Canada relies significantly on international trade for economic and social well-being. Exports account for 41% of GDP, and 75% of exports go to the US. Canada therefore has a strong interest in ensuring that *trade and environmental policies are fully integrated* at the international (global and regional) level. Its objectives in this area are threefold: i) maintain and expand markets by ensuring that its exports meet the highest environmental standards; ii) protect the Canadian environment and public health from dangerous or unsanitary foreign products; iii) ensure that Canadian industry and products are not at a disadvantage in the marketplace because other countries and firms have lower environmental standards.

In 2001 the Federal Minister of International Trade announced a new Framework for Conducting *Environmental Assessments* of Trade Negotiations. The goals are to help Canadian negotiators anticipate the adverse environmental impacts of proposed trade agreements, and to address public concerns by documenting how environmental factors are being considered. When free trade agreements are negotiated, Canada now seeks to *negotiate parallel environmental agreements* and to *include environmental considerations* in basic trade agreements. It has moved beyond the initial environmental side agreement to the North American Free Trade

Agreement to conclude other side agreements with Chile and Costa Rica; it is also negotiating side agreements with Singapore and the Central American Four (El Salvador, Guatemala, Nicaragua and Honduras) in the context of ongoing free trade negotiations.

5.2 Trade of specific items

Canada has accepted specific obligations to *ban or control export and import* of ozone-depleting substances, hazardous waste, certain chemicals and toxic substances, endangered species, and other items under international agreements. Regarding *hazardous waste*, it is in full compliance with OECD Council Decisions governing transboundary movements of such waste among its 30 member countries, as well as with the 1989 Basel Convention on Control of Transboundary Movements of Hazardous Wastes and Their Disposal. Since 1992, in conformance with the Basel Convention, no hazardous waste has been *exported by Canada to non-OECD countries*. In fact, Canada has exported hazardous waste only to the US under a bilateral agreement in conformance with the Basel Convention. It has not ratified a 1995 protocol (yet to come into force) to the Basel Convention due to its proposed ban on export of hazardous waste and hazardous recyclables from Annex VII countries (i.e. industrialised countries) to non-Annex VII countries. Canada is working within the OECD and Basel frameworks to build an international consensus on the definition of “environmentally sound management of wastes meant for disposal”, thus resolving uncertainties about Basel Convention implementation and helping to ensure a level playing field among countries and among enterprises. Recent federal regulations in support of a National Action Plan for the Environmentally Sound Management of Hazardous Wastes strengthen Canada’s compliance with its international obligations.

Canada gives high priority to controlling trade in *toxic and potentially toxic chemicals*. It supports a variety of international and regional chemicals management agreements and programmes (especially within UNEP and the OECD) with funding and technical expertise. In 2002 Canada acceded to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. Within the OECD it has fully met commitments associated with Council Decisions on chemicals testing, chemicals control, and

information and data exchange. Environment Canada and Health Canada are jointly responsible for *assessing the toxicity* of chemicals; under the 1999 CEPA they must review decisions by other OECD countries to prohibit or substantially restrict a substance for environmental or health reasons, and determine whether that substance meets CEPA toxicity criteria. The Domestic Substances List is an inventory of substances in commerce in Canada (i.e. chemicals, polymers and inanimate products of biotechnology) which cannot be imported without assessment and authorisation (Chapter 7).

The Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES, 1975) is the framework for Canadian efforts to *control trade in species of wild plants and animals* that are, or may be, threatened with extinction. Canada's Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (1996) tightened controls on illegal trade and prohibited trafficking in endangered species. It was amended in 2000 to improve implementation and enforcement and reduce the administrative burden on the public. Canada supports the CITES international data base in compliance with the Convention's requirements; it issued over 20 000 CITES permits and certificates per year from 1995 to 2000.

In 2001 Canada signed the Cartagena Protocol on Biosafety, an international agreement (entry into force, September 2003) under the 1992 *UN Convention on Biological Diversity*. This protocol protects importing parties' right to give prior informed consent to the exporting party before importing living organisms modified through biotechnology. Ratification by Canada is contingent on clarification of potential implications for trade and for the biotechnology sector, both areas of discussion in Canada.

The Canada-EU Agreement on International *Humane Trapping Standards* (1997) ended an eight-year dispute concerning a European trade ban on wild fur products which impacted heavily on the local economies of Canada's Aboriginal people. This agreement prohibits use of conventional steel-jawed traps in the case of 12 designated Canadian species. It also requires traps to meet specific performance standards related to animal welfare. A system has been put in place to certify the origin of Canadian fur and fur products destined for the European market.

5.3 Certification, export credits and guidelines for multinational enterprises

Canada has devoted broad efforts to *environmental certification*. The Environmental Choice Programme is managed by a private sector organisation, Terra Choice Environmental Services, on behalf of Environment Canada. Following an independent third-party accreditation process supported by Environment Canada, the eco-logo is granted to products and services that show leading environmental performance and benefits. *Forest certification* is a voluntary, market-based tool to promote sustainable forest management domestically. It is moving forward rapidly in Canada, in response to growing demand for certified forest products in the international marketplace (Chapter 4).

In 2001 Canada agreed to voluntarily implement the draft OECD Council Recommendation on Common Approaches on Environment and Officially Supported *Export Credits* (as have all other members of the OECD Export Credits Group). The Recommendation calls for environmental screening of projects to be financed by export credits if the repayment period is two years or more; benchmarking of each project against international environmental standards; and disclosure and exchange of information with relevant stakeholders and with other OECD members. Subsequently, an amendment to the Canadian Export Development Act has provided a statutory requirement for such reviews by the government's Export Development Corporation. Canada has made noteworthy efforts to ensure that EDC activities are transparent to the public. Projects that receive EDC support are not subject to the Canadian Environmental Assessment Act; the EDC has been exempted from "federal authority" under its enabling legislation.

In June 2000 Canada joined the other OECD countries and three non-OECD members in endorsing the revised OECD *Guidelines for Multinational Enterprises*. The Guidelines are non-binding recommendations from governments to MNEs on responsible business conduct, including environmental management.

6. Development Assistance

6.1 Total ODA

Until recently Canada's *total net ODA was declining significantly*, from USD 2 045 million (in 1997) to 1 744 million (in 2000) and 1 533 million (in 2001). Canada's ODA/GNI ratio declined from 0.45% in the early 1990s to 0.22% in 2001. In 2002 the government announced that it would *increase the international assistance budget by an average 8% per year over the decade*, with a view to doubling it by 2010. This announcement was made at the Monterrey Conference on Financing for Development and at the Kananaskis G8 Summit. There was an increase of 31.6% in real terms from 2001 to 2002, reaching 0.28% of GNI; this is below the OECD-DAC average country effort of 0.41% and the 0.7% UN target (Figure 8.4) and places Canada 12th among the 22 OECD-DAC donors.

6.2 Environmental ODA

In Canada's overarching foreign policy guidance, "Canada in the World" (1995), environment is one of six development assistance priorities. The Canadian International Development Agency (CIDA), which is responsible for most Official Development Assistance (ODA) disbursements, issued a *Sustainable Development Strategy* for 2001-03, "Agenda for Change", that serves as its business plan (and according to which environmental objectives are to be pursued through specific projects, and as a crosscutting issue).

CIDA places emphasis on *capacity-building* to assist developing countries and countries in transition to integrate more fully into the multilateral trading system, including with respect to the linkages between trade and the environment; to implement projects on GHG emissions reduction and carbon sequestration through the *Canada Climate Change Development Fund*; and to address global, regional and national environmental issues such as natural resource management, biodiversity, urban air and water pollution, and desertification. CIDA is in the process of improving its environmental assessment and trade-environment analysis capacity.

CAD 150 million (6% of ODA) was spent on *environmental projects* in 2000-01. This percentage was rather steady in the 1990s. However, Canada's ODA related to climate, desertification and biodiversity (areas of Canadian commitments for Agenda 21 follow-up) was below the average for OECD donor countries in 1998-2000. The scope of bilateral environmental assistance is suggested by recent projects on strengthening environmental management competency in Vietnam, biodiversity protection and community involvement in China, a debt conversion fund for environmental projects in Costa Rica, and the transfer of information and expertise concerning principles, protocols and benefits of environmental technology verification.

A large part of ODA environmental funding is dispersed through *multi-donor programmes*. This includes support for the *China Council for International Co-operation on Environment and Development*, which further strengthens co-operation and exchange between China and the international community in the field of environment and development; for the *Nile Basin Initiative*, which brings together the 10 Nile Basin countries to jointly manage the Basin's resources; and for the *Global Water Partnership* on water access and management under the G8 Plan of Action for Africa. Canada is especially active in the UN Desertification Programme. CIDA has created a unit to work on global environmental issues, including issues of concern to developing countries with respect to negotiation and implementation of multilateral agreements. About 13% of Canada's support for development goes to the World Bank and other international financial institutions, which collectively support numerous environmental management activities and projects.

6.3 *Other environmental assistance*

Canada has been one of the donor countries active in *debt cancellation* through the efforts of the federal government and Canadian NGOs. CAD 125 million in ODA has been forgiven through debt conversions in Latin America. These conversions yielded the local currency equivalent of CAD 65 million, which was spent on environmentally related projects. The International Development Research Center (IDRC) is a public Canadian corporation with a mandate to “help countries in the developing world find solutions to social, economic and environmental problems through research.” With an annual budget of CAD 135 million (67% from the Canadian Parliament), it has supported some 900 projects, mostly concerned with *research in the South* (Africa has received 41% of total disbursements).