

**Environmental and Natural Resource Accounting Project (Phase II):
Institutionalization of the Philippine Economic-Environmental and Natural
Resource Accounting (PEENRA) System**

Environmental Protection Services



Republic of the Philippines
PAMBANSANG LUPON SA UGNAYANG PANG-ESTADISTIKA
(NATIONAL STATISTICAL COORDINATION BOARD)

INTRODUCTION

ENVIRONMENTAL PROTECTION SERVICES (EPS)

The account compiled in this area of environmental statistics is part of the bigger account that tries to quantify the total expenditure that is earmarked for environmental protection (EP). EP consists not only of services but also of goods. The latter could account for a significant portion of environmental protection expenditure (EPE) considering the possibility that the existing trend in EP is more of ancillary or internal environmental protection. At the current stage of the awareness and acceptance of environmental concerns in the country, this could be the case. This situation can also explain why environmental protection services (EPS) as a separate industry is insignificant, based on the estimated share of EPS to total GDP. This is an indication of the urgency of externalizing EPE that are embedded in the total expenditure of the establishments. To externalize is an accounting parlance referring to the isolation of EP out of the total expenses of the establishments. This can also be achieved by classifying the expenditure of establishment by purpose. One of these purposes is that of protection of the environment, whether it is for avoiding degradation or for mitigating the degradation already effected by the conduct of the economic activity.

EPS account consists of government environmental protection services (GEPS) and that of private environmental protection (PEPS). These are compiled using the existing data. Since the estimation adopted is that of desegregating the government services sector account into those which are for environmental protection and those which are not, the most crucial step is to identify which of the activities or projects of the government are for this purpose. Data and methodology utilized to compile the conventional accounts are more or less the same as those used in the estimation of EPS

In the estimation of GEPS, there is slight deviation in the data used, since the demand for more details infringe on the conventional national accounts data, which are

actual expenditures. In this case, the data from the budget proposals of government agencies are utilized instead of the audited (actual) expenditures. GEPS consist mainly of the expenditures of the Department of Natural Resources and selected expenditures of other government agencies whose purpose or function are that of protecting the environment. Other government agencies with identifiable activities that are classified as environmental protection services are Department of Health (DOH), Department of Public Works and Highways (DPWH) and the Department of Agriculture (DA). For the PEPS, data from the CE/ASE classified under the PSIC 92001 (*Waste collection and disposal (including human waste) on a fee or contract basis*) and PSIC 92009 (*Sanitary and similar services, n.e.c.*) are used. No adjustment for undercoverage or undervaluation was done.

The total environmental protection services presented in the table below, refers to the environmental protection services that are provided to other establishments by the government and the private sector.

TABLE 1. GOVERNMENT ENVIRONMENTAL PROTECTION EXPENDITURES (GEPS) AND PRIVATE ENVIRONMENTAL PROTECTION EXPENDITURES (PEPS), 1988-1994, AT CURRENT PRICES, IN MILLION PESOS

	1988	1989	1990	1991	1992	1993	1994
Government Environmental Protection Expenditures							
Total Government Budget for Environment Protection	3,194	4,838	8,779	8,225	6,891	7,491	8,335
TOTAL OUTPUT	2,135	3,751	3,739	4,543	3,853	4,231	5,234
Intermediate Inputs (II)	916	1,715	1,477	2,412	1,410	1,900	2,723
Gross Value Added (GVA)	1,219	2,036	2,262	2,131	2,443	2,331	2,511
Depreciation (D)	112	51	365	102	302	305	250
Compensation of Employees (CE)	1,107	1,985	1,897	2,029	2,141	2,026	2,261
CAPITAL EXPENDITURES	1,059	1,087	5,040	3,682	3,038	3,260	3,101
Private Environmental Protection Expenditures							
TOTAL OUTPUT	48	66	93	39	100	79	95
Intermediate Inputs (II)	21	20	27	7	51	36	54
Gross Value Added (GVA)	27	45	67	32	49	43	41
Depreciation (D)	3	8	9	1	3	3	7
Net Value Added (NVA)	24	37	58	31	45	40	33
CAPITAL EXPENDITURES	0		1		6	0	3

* Zero less than 1 million

Based on the data presented in the table above, it can be gleaned that the government share in the total environmental protection services is huge compared to that of the private sector. The share of private environmental protection services (external services) is insignificant. There are however, a number of possible reasons why this is so. One is the lack of data on PEPS. In 1994, only 35 establishments are engaged in this type of activity. A possible explanation for this could be that establishment surveys are not the most efficient tools to monitor environmental protection services, though there are no data to confirm this notion. The industry itself may also be relatively new in the country that is why only a handful of establishments

are engaged in this type of activity. It is also possible that it is indeed a small industry, since most expenditures on environmental protection services are undertaken by establishments on their own. And thus, these are considered as ancillary activities.

What is worth noting though, is the value of environmental protection services (gross output) in 1994 provided by both the government and the private sector more than doubled the 1988 level. GEPS grew from 3194 million pesos 1988 to 8335 million pesos in 1994, while PEPS increased from 48 million pesos in 1988 to 94 million pesos in 1994. This is an encouraging trend since it is reminiscent of an increasing awareness in the importance of protecting the environment.

The combined value of GEPS and PEPS was a meager .15 % of the GDP in 1988. This share remains to be the same pretty stable up to 1994, which means that the industry on its own had been keeping pace with the growth in the economy.

In terms of the kind of environment protection activities, CEPA (3) waste management, CEPA (6) Protection of the species, and CEPA (9) Other environmental protection services are the three largest contributor to the GEPS. In 1994 CEPA (3), (6) and (9) accounted for 31%, 20% and 34%, respectively of the GEPS. The private sector (PEPS) is mainly engaged in the provision of waste management services at 87 % in 1994.

**Table 2. Environment Protection Services (EPS) by CEPA
1988-1994 at current prices, in million pesos**

CEPA		1988	1989	1990	1991	1992	1993	1994
GEPS (total)		2134.4	3751.0	3739.1	4542.4	3852.2	4231.0	5234.7
1	Protection of ambient air & climate		3.1	2.7	2.7	6.8	5.5	5.2
2	Waste-water management	.8	.3		18.9	201.8	151.8	131.4
3	Waste management	517.9	610.1	677.6	884.4	905.1	1232.0	1645.7
6	Protection of species	719.5	894.4	756.0	1300.7	901.0	831.5	1034.2
7	Protection against radiation	48.7	67.9	66.1	68.0	73.7	92.8	43.8
8	Research & development	152.5	294.2	371.9	438.8	351.0	314.6	326.5
9	Others	583.0	1830.0	1499.9	1726.9	1110.7	1297.8	1797.9
	Depreciation	112.0	51.0	365.0	102.0	302.0	305.0	250.0
PEPS (total)		48.1	65.5	93.3	41.2	99.5	78.7	94.4
2 & 3	Waste Collection and disposal on a fee or contract basis (PSIC 92001)	28.1	44.0	54.6	7.1	82.6	69.9	81.8
1, 4-9	Sanitary & similar services. N.e.c. (PSIC 92009)	20.0	21.4	38.8	32.1	16.9	8.8	12.7

GOVERNMENT ENVIRONMENTAL PROTECTION SERVICES (GEPS)

1. INTRODUCTION

The Philippine government is committed to pursue the principles of sustainable development as agreed upon in Agenda 21 of the Rio Conference. With this in mind, the basic thrust of the Government reflected in the goals of the Department of Environment and Natural Resources (DENR) is the promotion of the well being of Filipinos through effective management of the environment and natural resources. DENR's various programs are geared towards sustainable development of forest resources, the optimal utilization of land and minerals, the rehabilitation of degraded areas and the conservation of remaining resources.

In addition to DENR, other government agencies have projects/activities that are geared towards the management and protection of the environment and natural resources. This study aims to estimate the total cost to the government of the provision of environmental protection services.

2. Coverage and Limitation

As required in the SEEA framework which is being partially implemented in this study, relevant government transactions whether for current or capital purposes are estimated in this study. This includes gross output, intermediate inputs, value added and capital outlays of the general government.

General government consists of the national government departments and agencies as well as that of the local government. Government environmental protection expenditures is defined in this study to include the expenditures of DENR and the relevant expenditures of the Department of Public Works and Highways (DPWH); Department of Health (DOH); the Department of Agriculture (DA) and local government units. The decision to classify all expenditures of the DENR as

environmental expenditures was based on the recommendation put forth during the workshop held at Sulo Hotel.¹

3. SOURCES AND METHODS

3.1 Data Sources

The data to estimate the cost of environmental protection services was taken from the General Appropriations Act of the Department of Budget and Management. The information contained in this document are only budget allocations which may not necessarily be the actual expenditures. However, this set of information was nevertheless used in this study since it is the one which provide the details required to be able to adequately estimate government environment protection services (GEPS).

Whereas the total value of government services in the conventional national accounts (PSNA) were estimated from actual and audited government reports such as Annual Financial Reports of the National Government and Local Government Units from the Commission on Audit, and the Annual Financial Reports of the Social Security System and the Government Service Insurance System. These basic sources are too aggregated and are not sufficient to be able to evaluate the government's share in the total economy's environmental protection services.

3.2 Estimation Methodology

The first and most critical is the identification of the environmental protection activities/projects undertaken by government agencies. As mentioned above, all expenditures of DENR which is the department mandated to protect the environment directly and indirectly, are considered as government environment protection services

¹ Presentation of the Initial Results of Philippine System of Economic-Environmental Accounting (PSEEA), July 24-25, 1997, Sulo Hotel Quezon City, Philippines

(GEPS)_____

(GEPS). For other government agencies, a review of detailed activities/projects proposed by these agencies in their budget documents was undertaken. The result of this activity is contained in Annex A. *Classification of government environmental protection/control services by Classification of Environmental Protection Activities (CEPA)*

After identifying the agencies involved in environmental protection/control services, the accounts of these agencies are evaluated as to their adequacy in the context of the accounting requirements of SEEA. Government agencies/bureaus present their budget program either by function or by activity. For those agencies with budget by function, the data is presented in such a way that it already fits the requirements of the SEEA framework. For agencies with budget by activity, only total expenditure is given, so that indicators were used to disaggregate this into compensation, intermediate inputs and capital outlay.

In the absence of the data on depreciation, this was derived by applying the ratio of capital outlays of environmental protection agencies to total capital outlays of the government for the period, to the total depreciation of the government. It is assumed that the proportion of the capital outlays for environmental protection to total capital outlays acquired for the current period, is the same as the ratio of the respective stock of fixed assets. This will be refined when the required stock data becomes available.

4. RESULTS AND DISCUSSIONS

The Philippines has joined the current worldwide effort to modify the conventional national accounts in order that this may reflect environment as input to production and as sink to residuals on one hand and the subsequent cost for protection and rehabilitation on the other hand.

Government Environmental Protection Services
(GEPS)_____

Government current operating expenditures for environmental protection amounted to P2,135 billion in 1988 increasing on the average by 16.12% annually to P5,234 billion in 1994. See Table 1 below. In terms of its gross value added contribution, this only amounted a little more than P2 billion except in 1988 which was just a little over P1 billion.

(GEPS)_____

FIGURE 1. GOVERNMENT SERVICES: GEPS AND OTHER GENERAL GOVERNMENT EXPENDITURE, AT CURRENT PRICES 1988-1994

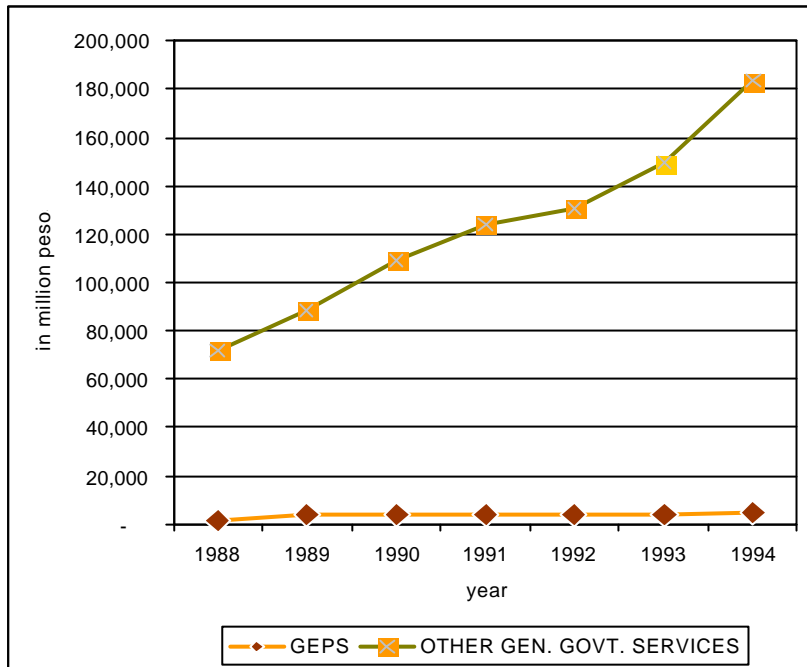
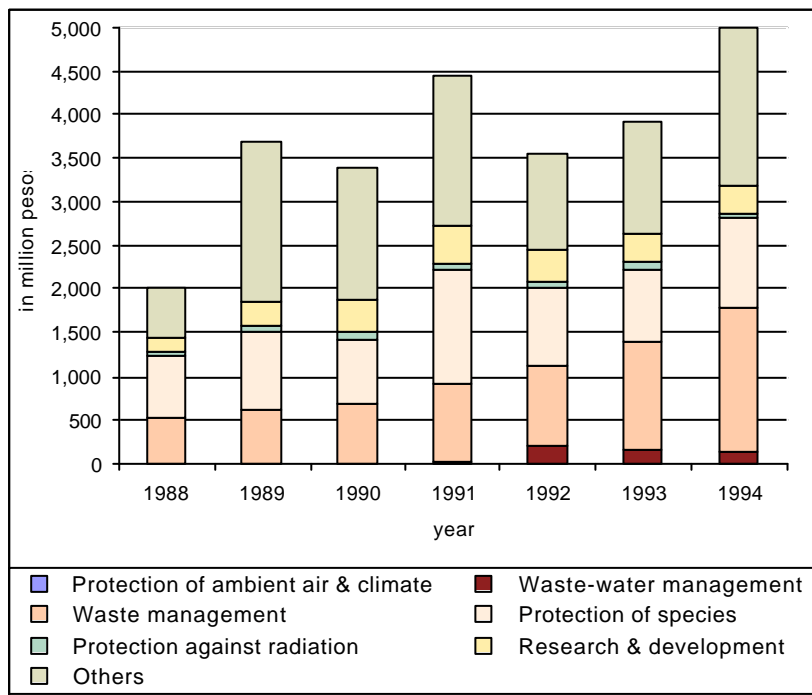


FIGURE 2. GOVERNMENT ENVIRONMENTAL PROTECTION SERVICES 1988-1994



(GEPS)_____

TABLE 1. GOVERNMENT ENVIRONMENTAL EXPENDITURES AND OTHER GENERAL GOVERNMENT EXPENDITURES, 1988-1994 AT CURRENT PRICES, IN MILLION PESOS

EXPENDITURES	1988	1989	1990	1991	1992	1993	1994
Total Government Budget for Environmental Protection	3,194	4,838	8,779	8,225	6,891	7,491	8,335
Total Output	2,135	3,751	3,739	4,543	3,853	4,231	5,234
Intermediate Input	916	1,715	1,477	2,412	1,410	1,900	2,723
Gross Value Added	1,219	2,036	2,262	2,131	2,443	2,331	2,511
Depreciation	112	51	365	102	302	305	250
Compensation of Employees	1,107	1,985	1,897	2,029	2,141	2,026	2,261
Capital Expenditures	1,059	1,087	5,040	3,682	3,038	3,260	3,101
General Government Expenditures							
Total Output	72,183	88,186	108,843	123,885	130,527	149,057	182,799
Intermediate Input	21,608	27,267	31,812	34,838	36,904	45,510	55,525
Gross Value Added	50,575	60,919	77,031	89,047	93,623	103,547	127,274
Depreciation	1,933	2,235	2,767	3,029	4,321	4,238	5,204
Compensation of Employees	48,638	58,674	74,254	86,006	89,290	99,297	122,058
Taxes less subsidies	4	10	10	12	12	12	12

As a percentage to total government budgetary expenditures, government environmental protection services averaged 1.53% during the seven-year period.

Government capital expenditures for environmental protection as compiled in this study amounted to a little over a billion pesos in 1988 (Table 1). The highest level of capital formation is recorded in 1990 at about 5 billion pesos. From 1991 to 1994, it was trimmed down to a level of 3 billion every year. Capital expenditures on environment protection activities is about 12.6 % of the total government capital outlays in 1990. During the period under review the main environmental protection services in which the government invested heavily is on waste management services (CEPA 3.0)(see Appendix Table B).

Table 2 below, provides a glimpse of the various environmental protection services provided by the government from 1988-1994. Throughout the period under review, government current expenditures on environment protection (GEPS) were

(GEPS)_____

largely contributed by waste management services (CEPA 3.0), protection of the species (CEPA 6.0) and other environment protection services (CEPA 9.0). An increasing trend of spending is reflected in the waste-water management (CEPA 2.0). Research and Development (CEPA 8.0) only accounted for roughly 8 % of the total GEPS. For more details of expenditures for each CEPA sectors, refer to Appendix Table A.

TABLE 2. GOVERNMENT ENVIRONMENT PROTECTION SERVICES (GEPS) BY CEPA, 1988-1994, AT CURRENT PRICES, IN MILLION PESOS

CEPA	1988	1989	1990	1991	1992	1993	1994
Grand Total	2,134.4	3,751.0	3,739.2	4,542.4	3,852.1	4,231.0	5,234.7
1.0 Protection of ambient air & climate		3.1	2.7	2.7	6.8	5.5	5.2
2.0 Waste-water management	0.8	0.3		18.9	201.8	151.8	131.4
3.0 Waste management	517.9	610.1	677.6	884.4	905.1	1,232.0	1,645.7
6.0 Protection of species	719.5	894.4	756.0	1,300.7	901.0	831.5	1,034.2
7.0 Protection against radiation	48.7	67.9	66.1	68.0	73.7	92.8	43.8
8.0 Research and development	152.5	294.2	371.9	438.8	351.0	314.6	326.5
9.0 Others	583.0	1,830.0	1,499.9	1,726.9	1,110.7	1,297.8	1,797.9
Depreciation	112.0	51.0	365.0	102.0	302.0	305.0	250.0

The gross value added for environmental protection is on the average about 2.56% of the GVA for Government Services and 0.18 % of the GDP, and this became smaller starting in 1990 to just 1.97 % and .15 % of Government Services, and GDP respectively, in 1994(see Table 3).

TABLE 3. GDP, GVA-GOVERNMENT SERVICES AND GVA-GOVERNMENT ENVIRONMENTAL PROTECTION SERVICES, 1988-1994 AT CURRENT PRICES, IN MILLION PESOS

	1988	1989	1990	1991	1992	1993	1994
Gross Domestic Product	799,182	925,444	1,077,237	1,248,011	1,351,559	1,474,457	1,693,278
GVA- General Government Services	50,575	60,919	77,031	89,047	93,623	103,547	127,274
GVA- Government Environment							
Protection Services	1,219	2,036	2,262	2,131	2,443	2,331	2,511
Percent to Government Services	2.41	3.34	2.94	2.39	2.61	2.25	1.97
Percent to GDP	0.15	0.22	0.21	0.17	0.18	0.16	0.15

Based on the data presented in this study, it is very obvious that environmental concerns are still to become priorities of the Government.

4. RECOMMENDATIONS

The only data that can be used for government environmental protection expenditures are from the General Appropriations Act. These are budget data and not actual expenditures. To get the actual expenditures on an accrual basis, there is a need for the compilers to be allowed access to the trial balances submitted by the agencies to the Commission on Audit or get directly from the identified agencies their actual expenditures for environmental protection.

Government Environmental Protection Services

(GEPS)_____

Appendix Table A
Government Current Expenditure on Environmental Protection Services
(In '000 pesos)

CEPA CODE	ENVIRONMENTAL PROTECTION/ CONTROL SERVICES	TOTAL CURRENT EXPENDITURES						
		1988	1989	1990	1991	1992	1993	1994
1.0	Protection of ambient air and climate		3,112	2,708	2,708	6,810	5,535	5,195
2.0	Waste-water management	826	333		18,951	201,805	151,772	131,369
3.0	Waste Management	517,889	610,135	677,555	884,361	905,126	1,232,025	1,645,650
4.0	Potection of soil and groundwater							
5.0	Noise and vibration abatement							
6.0	Protection of species	719,513	894,391	756,005	1,300,694	901,028	831,494	1,034,235
7.0	Protection against radiation	48,723	67,896	66,153	67,973	73,727	92,812	43,806
8.0	Research and Development	152,487	294,204	371,866	438,845	351,026	314,577	326,497
9.0	Other environmental protection activities	582,978	1,829,927	1,499,853	1,726,898	1,110,665	1,297,754	1,797,909
	Total	2,022,416	3,699,999	3,374,139	4,440,431	3,550,187	3,925,968	4,984,661
	Depreciation ^{1/}	112,000	51,000	365,000	102,000	302,000	305,000	250,000
	Grand total	2,134,416	3,750,999	3,739,139	4,542,431	3,852,187	4,230,968	5,234,661

1/ Depreciation for the above CEPA categories globally estimated

Appendix Table A-2
Government Current Expenditure on Environmental Protection Services, 1988-1994 at current prices
(In '000 pesos)

CEPA CODE	ENVIRONMENTAL PROTECTION/ CONTROL SERVICES	INTERMEDIATE INPUT						
		1988	1989	1990	1991	1992	1993	1994
1.0	Protection of ambient air and climate		1,570	1,459	1,459	5,561	2,837	2,644
2.0	Waste-water management	624	246		18,781	200,994	151,023	130,430
3.0	Waste Management	218,351	227,994	243,655	371,093	360,548	666,721	957,788
4.0	Potection of soil and groundwater							
5.0	Noise and vibration abatement							
6.0	Protection of species	204,456	292,385	265,150	681,309	231,103	249,397	265,805
7.0	Protection against radiation	30,061	36,566	35,795	38,509	35,437	87,653	37,876
8.0	Research and Development	60,425	122,098	149,413	162,748	111,947	118,853	133,576
9.0	Other environmental protection activities	401,806	1,034,049	781,813	1,137,979	464,004	623,600	1,195,362
	Total	915,723	1,714,908	1,477,285	2,411,877	1,409,594	1,900,085	2,723,481
	Depreciation ^{1/}							
	Grand total	915,723	1,714,908	1,477,285	2,411,877	1,409,594	1,900,085	2,723,481

1/ Depreciation for the above CEPA categories globally estimated

Appendix Table A-3
Government Current Expenditure on Environmental Protection Services, 1988-1994 at current prices
(In '000 pesos)

CEPA CODE	ENVIRONMENTAL PROTECTION/ CONTROL SERVICES	PERSONAL SERVICES						
		1988	1989	1990	1991	1992	1993	1994
1.0	Protection of ambient air and climate		1,542	1,249	1,249	1,249	2,698	2,551
2.0	Waste-water management	202	87		170	811	749	939
3.0	Waste Management	299,538	382,141	433,900	513,268	544,578	565,304	687,862
4.0	Potection of soil and groundwater							
5.0	Noise and vibration abatement							
6.0	Protection of species	515,057	602,006	490,855	619,386	669,925	582,096	768,430
7.0	Protection against radiation	18,662	31,330	30,358	29,464	38,290	5,159	5,930
8.0	Research and Development	92,061	172,106	222,452	276,097	239,079	195,723	192,921
9.0	Other environmental protection activities	181,173	795,878	718,040	588,920	646,661	674,154	602,547
	Total	1,106,693	1,985,091	1,896,854	2,028,554	2,140,593	2,025,883	2,261,180
	Depreciation ^{1/}	112,000	51,000	365,000	102,000	302,000	305,000	250,000
	Grand total	1,218,693	2,036,091	2,261,854	2,130,554	2,442,593	2,330,883	2,511,180

^{1/} Depreciation for the above CEPA categories estimated globally

Appendix Table B
Government Capital Outlay for Environmental Protection Services, 1988-1994 at current prices
(In '000 pesos)

CEPA CODE	ENVIRONMENTAL PROTECTION/ CONTROL SERVICES	CAPITAL OUTLAY						
		1988	1989	1990	1991	1992	1993	1994
1.0	Protection of ambient air and climate	2,000				6,701	2,500	47,768
2.0	Waste-water management	780,866	471,825	2,681,214	1,845,784	1,816,169	2,097,311	1,817,107
3.0	Waste Management	193,728	8,860	343,073	162,064	523,780	48,130	18,788
4.0	Potection of soil and groundwater							
5.0	Noise and vibration abatement							
6.0	Protection of species	20,000	7,570	131,255	1,080,949	208,593	561,195	235,845
7.0	Protection against radiation		286	15,257	10,311		3,262	29,679
8.0	Research and Development	22,520	29,871	62,928	56,612	27,952	10,236	57,189
9.0	Other environmental protection activities	39,500	568,791	1,806,328	525,933	454,430	537,104	894,454
	Total	1,058,614	1,087,203	5,040,056	3,681,653	3,037,625	3,259,739	3,100,830
	Depreciation ^{1/}							
	Grand total	1,058,614	1,087,203	5,040,056	3,681,653	3,037,625	3,259,739	3,100,830

^{1/} Depreciation for the above CEPA categories estimated globally.

PRIVATE ENVIRONMENTAL PROTECTION SERVICES (PEPS)

1. INTRODUCTION

Environmental Protection Services refer to economic activities that deal with the protection and enhancement of the environment. This include composting, conduit type sewage disposal, debris removal, dumping, garbage collection and disposal, incineration, *pozo negro*, sanitary landfill, septic tank cleaning, sewage treatment and sewerage system, air pollution control, drainage system operation (non-agricultural), street cleaning, tree planting and water pollution control. This excludes extermination and control jobs.

2. SCOPE AND COVERAGE

The study focused on environmental protection services undertaken by the private sector as a separate establishment activity. Given currently available data, the estimate is limited to what is only covered by the National Statistics Office (NSO's) establishment surveys. Private environmental services includes all establishments classified under Philippine Standard Industrial Classification (PSIC) 92001 **Waste collection disposal (including human waste) on a fee or contract basis** and PSIC 92009 **Sanitary and similar services, n.e.c.** For detailed description refer to Appendix A.

Although it is recognized that Sanitary and waste disposal services can be undertaken by other establishments not primarily concerned with environmental protection services, this was not covered in this study. It also excludes households and other small enterprises that are engaged in environmental protection services but are not considered as establishment in the Census of Establishments (CE)/Annual Survey of Establishments (ASE).

Other possible sources of data for this activity such as the Metropolitan Waterworks and Sewerage System (MWSS) and the Metro-Manila Development Authority (MMDA) and the National Library for special studies on the subject matter

were looked into. No additional information to expand the coverage of the study was gathered. However a list of operators who have contracts with MMDA with regards to providing environmental services is available and was used to determine possible duplication with the coverage of Government environmental protection expenditures. The latter is discussed in government services section of the study. Sanitary services and similar activity, nec (92009) do not have any small establishment as reflected in the CE/ASE. Small establishment are those with average total employment (ATE) of less than 10.

3. SOURCES AND METHODS

2.1. Sources of Data

The CE/ASE, conducted by the National Statistics Office (NSO), was the main source of data for this study. In the period under review, there were two CEs. One in 1988 and the other in 1994. In between the CEs, were the ASEs.

3.2. Estimation Procedure

3.2.1. Gross Value Added

Estimation procedure follows the production approach, that is:

GVA = GO - II

NVA = GVA - D

GO = Total Receipts

II = Intermediate inputs. This includes materials used, industrial and non-industrial services done by others, electricity and water, fuel used, and other expenses incurred in the course of operations

D = Consumption of Fixed Capital or Depreciation

NVA = Net Value Added

3.2.2. Produced Asset Account

The produced asset account only contained the changes in the level of fixed assets during the accounting period. The total stocks of produced fixed assets could not be estimated since this requires a data series collected from the same set of establishments, which is not the case with the CE/ASE. The samples that they cover may not necessarily be the same every year.

Estimate of capital formation on environmental protection as well as consumption of fixed capital were just lifted from the results of the CE/ASE. Capital formation is equated to the acquisition of new fixed assets and consumption of fixed capital is equal to the depreciation which is contained in these reports (Refer to Appendix Table B).

4. RESULTS

Establishments engaged in Environmental Protection Services as a principal or primary activity and whose services are sold to the market are very limited. A complete listing of establishments conducted every census year, showed that in 1988 there are only 37 of privately operated establishments in this type of activity. The 1994 listing showed a lower number of 35 establishments.

Table 1 shows in summary, how gross value added (GVA) on Private environmental protection services is derived. Detailed items in each broad categories such as intermediate inputs are shown in Appendix Table B.

Table 2 shows that for 1988 to 1993 the gross value added generated by this activity is very minimal. Its share to the total Gross Domestic Product is less than one percent for the period covered.

TABLE 1. PRODUCTION ACCOUNT OF PRIVATE ENVIRONMENTAL PROTECTION SERVICES, 1988-1994, IN THOUSAND PESOS

	CE 1988	ASE					CE 1994
		1989	1990	1991	1992	1993	
Number of Establishment	37	10	14	11	10	9	35
92001 large	10	5	7	3	5	6	5
92001 small	24	3	3	3	4	2	26
92009 large	3	2	4	5	1	1	4
Gross Output (GO)	48,094	65,461	93,348	39,180	99,538	78,664	94,484
92001 large	21,378	43,516	50,059	6,519	81,815	69,716	68,452
92001 small	6,721	519	4,500	600	800	210	13,371
92009 large	19,995	21,426	38,789	32,061	16,923	8,738	12,661
Intermediate Inputs (II)	20,679	20,367	26,820	7,022	51,014	36,163	53,482
92001 large	10,234	14,223	13,843	4,949	41,965	35,805	46,693
92001 small	3,181	274	380	260	75	148	4,677
92009 large	7,264	5,870	12,597	1,813	8,974	210	2,112
Gross Value Added (GVA)	27,415	45,094	66,528	32,158	48,524	42,501	41,002
92001 large	11,144	29,293	36,216	1,570	39,850	33,911	21,759
92001 small	3,540	245	4,120	340	725	62	8,694
92009 large	12,731	15,556	26,192	30,248	7,949	8,528	10,549
Depreciation (D)	3,299	7,671	8,663	1,309	3,064	2,654	8,098
92001 large	2,314	5,958	7,590	410	2,815	2,333	6,642
92001 small	611	475	91	97	178	36	1,042
92009 large	374	1,238	982	802	71	285	414
Net Value Added (NVA)	24,116	37,423	57,865	30,849	45,460	39,847	32,904
92001 large	8,830	23,335	28,626	1,160	37,035	31,578	15,117
92001 small	2,929	(230)	4,029	243	547	26	7,652
92009 large	12,357	14,318	25,210	29,446	7,878	8,243	10,135

Source : CE 1988 & 1994/ASE 1989-1993

Note : 92001 - Sanitary and Waste Disposal (includes disposal of human waste) on a fee or contract

92009 - Sanitary and similar services, nec.

TABLE 2. GROSS VALUE ADDED FOR PRIVATE ENVIRONMENTAL PROTECTION SERVICES: LEVELS AND AS A PERCENTAGE OF GROSS DOMESTIC PRODUCT AT CURRENT PRICES IN MILLION PESOS

	1988	1989	1990	1991	1992	1993	1994
GVA for EPS	27	45	67	34	48	43	42
Percent to GDP	0.0034	0.0049	0.0062	0.0027	0.0036	0.0029	0.0025
GDP	799,182	925,444	1,077,237	1,248,011	1,351,559	1,474,457	1,692,932

Table 3 shows that for the period covered, aggregate investment in fixed assets by these establishments, were only made every other year. But on a sub sectoral level, Sanitary and Waste Disposal Service establishments, only replace their machinery and transport equipment every four years. It is also noted that the annual rate at which the stock is depleted/worn out, as estimated by the consumption of fixed capital, is very much larger than capital expenditure. It could be inferred that establishments in this activity are only maintaining their old stock of equipment for them to continue to operate. It was only in 1992 that there was a positive net capital formation, specifically in machineries and equipment for Sanitary and Waste Disposal Services.

TABLE 3. CAPITAL FORMATION AND CONSUMPTION OF FIXED CAPITAL, BY TYPE, IN THOUSAND PESOS

	1988	1989	1990	1991	1992	1993	1994
Capital Formation	167		655		5512	317	2284
Machinery & Equipment	130		29		3577		320
Transport Equipment	37		626		1935	317	1964
Consumption of Fixed Capital	3299	7671	8663	1309	3064	2654	6458
Machinery & Equipment	560	1336	412	127	133	821	3869
Transport Equipment	2739	6335	8251	1182	2931	1833	2589
Net Capital Formation	-3132	-7671	-8008	-1309	2448	-2337	-4174
Machinery & Equipment	-430	-1336	-383	-127	3444	-821	-3549
Transport Equipment	-2702	-6335	-7625	-1182	-996	-1516	-625

4. RECOMMENDATION

As earlier stated in the scope and coverage, this study did not cover the unorganized component of the Sanitary and Waste Disposal Services, which could be much larger than those covered in the establishments surveys included in this report. This would be more of the garbage collection service provided by own account or unincorporated enterprises of the household sector, which definitely will not be covered in the establishment surveys. As mentioned above, the only

information available from the MMDA is the list of accredited dump truck operators, which upon comparison with the NSO frame only a small proportion is covered in their list of establishments for this activity. Some are covered under either transport or construction, with garbage collection as secondary activity. A large proportion of these garbage collectors are not covered in the establishment surveys, such that primary data collection will have to be conducted to collect the relevant information to estimate their contribution.

APPENDIX

COMPARISON OF CEPA WITH PSIC

The 1978 PSIC which was used in the CE's/ASE's covered in the study only provided two categories at 5-digit level, specifically enumerating the activities included under each category. The 1994 PSIC still provides two categories for the same purpose at 4-digit level, but without specifying the details included. Only explanatory notes are provided for the 3-digit classification.

While the (94) ninety-four categories provided for by the CEPA can be classified between the 2 PSIC categories provided for, a number of this, specially those pertaining to new and emerging environmental protection activities were not included in the explanatory notes in the old and new PSIC.

Given the above limitations in the PSIC there is a big chance that a number of these environmental protection activities may have been/ or will be missed in the listing operations and subsequently in the data collection. And probably this could be another reason for the very low levels in the estimate of the cost of private environmental protection services.

APPENDIX TABLE A. COMPARISON OF THE CEPA, AND THE 1978 AND THE 1994 PSIC

CEPA	1978 PSIC	1994 PSIC *
<u>2.0 & 3.0</u>	<u>92001</u> Waste collection and disposal (including human waste) on a fee or contract basis. Composting service Conduit type sewage disposal service Debris removal service Dumping service Garbage collecting & disposal service Inceneration service Poza negro maintenance Refuse collecting & disposal service Sanitary landfill service Septic tank service Sewage disposal service Sewage treatment & disposal plant Sewerage system	<u>9001</u> Waste collection and disposal (including human waste) on a fee or contract basis.
<u>1.0</u> + <u>4.0-9.0</u>	<u>92009</u> Sanitary and similar services, n.e.c. Air pollution control Drainage system operation.non-agri. Noise pollution control Street cleaning, contractual Water pollution control Other similar services, n.e.c.	<u>9009</u> Sanitary and similar services , n.e.c.

- ***In the 1994 PSIC, description of the activities is made at the group level (900 Sewage and refuse disposal, sanitation and similar activities which are as follows;***
 - *the collection of garbage, trash, rubbish and waste whether from households or from industrial or commercial units,*
 - *transportation and disposal of garbage by incineration or by other means.*
 - *removal, whether via drains, sewers, or by other means, of human waste products and their treatment and disposal,*
 - *waste reduction, ash collection, the collection of refuse in liter boxes in public places, the removal of building debris, dumping of refuse on land or in water, burial or plowing-under of refuse and storm sewerage,*
 - *emptying and cleaning of cesspools and septic tanks: servicing of chemical toilets, dilution, screening and filtering, sedimentation, chemical precipitation, activated sludge treatment and other processes for sewerage disposal and also the maintenance of sewers and drains;*
 - *outdoor sweeping and watering of streets, paths and parking lots, etc.*

APPENDIX TABLE B. DETAILED ITEMS USED IN THE COMPUTATION OF GROSS VALUE ADDED OF PRIVATE ENVIRONMENTAL PROTECTION SERVICES, 1988 AND 1994, IN THOUSAND PESOS

	1988	1994
Number of Establishments	37	35
GROSS OUTPUT (GO)	48,094	94,484
Less: INTERMEDIATE INPUTS (II)	20,679	53,482
Material Expenses	8,698	23,312
Material Purchases	8,609	23,514
Plus: Beginning Inventory	89	1,644
Minus: Ending Inventory	-	1,846
Fuel Expenses	3,536	2,608
Fuel Purchases	3,536	2,664
Plus: Beginning Inventory	-	-
Minus: Ending Inventory	-	56
Non-industrial services done by others	4,691	21,658
Industrial services done by others	3,026	2,879
Electricity and water	456	974
Others	272	2,051
GROSS VALUE ADDED	27,415	41,002
Consumption of Fixed Capital (Depreciation)	3,299	8,098
NET VALUE ADDED	24,116	32,904