

THE WEALTH OF NATIONS AND ENVIRONMENTAL CONCERN

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In a recently published series of articles, Dunlap and Mertig (1994, 1996; see also Dunlap, Gallup, & Gallup 1993) argue that concerns about the natural environment have spread throughout the world. In accordance with earlier work on the development of a "new ecological paradigm" (Dunlap & van Liere, 1978) they argue that environmental concerns are not confined to industrialized countries but are also an important issue in many Third World countries. In their view, concerns about the environment are not only a matter of elites in those countries but have spread to the general population as well. This is demonstrated by empirical evidence from the "Health-of-Planet" (HOP) Survey (Dunlap et al., 1993). Moreover, Dunlap and Mertig (1994,

1996) present results from further analysis of HOP data, showing that most environmental items of the survey are even negatively correlated with gross national product (GNP) per capita.

There is no controversy on the observation that environmental concerns have increased in Western industrialized nations until the beginning of the 1990s (e.g., European Commission, 1992). Also, the findings of the HOP survey demonstrate that remarkable attention is given to environmental problems by the general population in Third World countries. However, variations between countries can also be observed, and one factor explaining the differences in environmental awareness might be economic well-being.

Standard economic reasoning suggests that the restoration of a damaged environment is not only a collective good but also a "superior" good, that is, demand rises with income. If scarce resources are devoted to a better environment, one has to give up consumption of other goods. The choice is whether more scarce resources should be devoted to the environment. In the aggregate there should be a positive correlation between a country's wealth and its level of environmental responsibility.

This argument is supported by regional comparisons as well as by longitudinal data. For example, it can be shown for East Germany that the emphasis on environmental issues compared with other political goals was in 1990, the year of reunification, as high as in West Germany. Thereafter, this emphasis diminished rapidly, whereas concerns about economic problems increased (Schuster, 1992). A similar pattern was observed in Switzerland. In 1990, about 70% of the population gave priority to the environment and 20% gave priority to the problem of unemployment; in 1997, there was also a gap of 50%, but now the two issues have changed places (Thomann, 1998).

In this article, using data from the International Social Survey Program (ISSP), we focus on the relation between a nation's wealth and the public's degree of environmental concern. The ISSP supplies us with alternative data on environmental attitudes. We present the results of our analysis in the following section. Seemingly the evidence gained from the ISSP contradicts the HOP results, which we will discuss below. In the concluding section, we attempt to synthesize the opposing findings, arguing that both positions stress different dimensions of environmental attitudes.

RESULTS OF THE INTERNATIONAL SOCIAL SURVEY

The ISSP collects individual data in several countries in yearly intervals with rotating topics of interest. In 1993 the survey focused on environmental

issues. Data were collected in 21 countries using random population samples. In connection with a face-to-face or telephone interview, a written questionnaire was distributed containing ISSP items.

Table 1 displays information of countries participating in the survey, the number of cases, GNP per capita in U.S.\$ in 1993, and an index of environmental concerns. The index is the sum of responses to eight single items contained in Table 2. At the individual level, the reliability (Cronbach's alpha) for the index varies strongly between countries, ranging from .23 for the Philippines to .72 for West Germany.¹ However, at the aggregate level that is used here ($N = 21$), Cronbach's alpha has a value of .90.

For the correlational analysis of GNP per capita and responses to environmental items, we use the Spearman coefficient. Thus, the analysis is based on rank orders of variables. This procedure offers the advantage that we can accommodate possible nonlinearities in the data. In addition, the Pearson correlation coefficients with both GNP per capita and the logarithm of GNP per capita are also computed. Table 2 displays the results. Notably, all correlations are positive and 9 out of 11 Spearman coefficients are significant for $p \leq .05$. Also, the correlation between the index and GNP is highly positive and significant, its value being .85. Hence, the ISSP data clearly confirm the "affluence" hypothesis suggesting a positive relation between the standard of living and environmental awareness.

EVIDENCE FROM THE HOP SURVEY

The HOP survey includes 24 countries (Table 3) where data were gathered in 1992. For most items concerning the environment, Dunlap and Mertig (1994, 1996) report a negative correlation with GNP per capita. For instance, let us examine the question of how serious people consider the environmental problems in their nations. Comparing percentages of "very serious" responses, countries with relatively low GNP per capita like Poland, Mexico, and Russia rank among the top, whereas wealthy countries like the Netherlands, Denmark, and Finland rank lowest (see Table 3). The correlation with GNP per capita is negative, although not significant.

Now let us turn to the open question about the "most important problem facing our nation today." The percentage responding with one or another type of environmental problem is also displayed in Table 3. The rank order is very different. For example, whereas Poland is among the top in the former question, it is among the last with regard to the "importance" question. The Netherlands, on the other hand, moves from a low position to the top.² The rank

TABLE 1
Participating Countries in the 1993 International Social Survey Program (ISSP)

Country	Country Code	Mean of Environmental Concern; Index of 8 Items ^a	N ^b	GNP ^c in \$1,000 per Capita in 1993
Switzerland	CH	28.7	2,096	35.8
Canada	CDN	27.6	1,238	20.0
the Netherlands	NL	27.5	1,473	21.0
Norway	N	27.1	1,004	26.0
Japan	J	27.0	954	31.5
Germany-West	D-W	26.9	812	26.3
New Zealand	NZ	26.9	1,082	12.6
Italy	I	26.3	876	19.8
United States	USA	25.7	1,234	24.4
Great Britain	GB	25.2	957	18.1
Spain	E	24.8	944	13.6
Germany-East	D-E	24.7	818	8.1
Israel	IL	24.7	958	13.9
Northern Ireland	IRL-N	24.6	569	—
Slovenia	SLO	24.6	662	6.5
Ireland	IRL	23.6	863	13.0
Poland	PL	23.1	848	2.3
Russia	RUS	23.1	1,000	2.3
Czech Republic	CR	23.0	801	2.7
Philippines	RP	22.1	1,173	0.9
Hungary	H	21.5	989	3.4
Bulgaria	BG	21.1	660	1.1
Total population		25.0	22,011	14.6

a. The index for environmental awareness ranges from 8 to 40.

b. Reported are the valid cases. Cases that have at least one missing value in any item are excluded.

c. GNP = gross national product.

order correlation with GNP per capita is positive and significant for $p < .05$. Its value is .36.

Note that the ranking of nations with respect to environmental concerns as well as the direction of the correlation with GNP per capita is strongly dependent on the type of question asked.³

If two items are intended to measure the same concept, but the use of the two indicators leads to opposite results, this leaves us in an uncomfortable situation. We need to have an explanation why the correlation with GNP is negative with the former and positive with the latter question. Whereas the

TABLE 2
Environmental Awareness in International Comparison

	% Agreement/Disagreement		
	ϕ All Countries	ϕ OECD ^a Countries	ϕ Non-OECD
Modern science will solve our environmental problems with little change to our way of life. (disagreement)	47 (0.56) ^b	55	36
We worry too much about the future of the environment and not enough about prices and jobs today. (disagreement)	43 (0.63) ^b	48	37
People worry too much about human progress harming the environment. (disagreement)	41 (0.57) ^b	51	28
Economic growth always harms the environment. ^c (agreement)	37 (0.13)	32	40
Almost everything we do in modern life harms the environment. ^c (agreement)	46 (0.26)	47	45
In order to protect the environment, Switzerland (country) needs economic growth. (disagreement)	21 (0.75) ^b	28	11
How willing would you be to pay much higher prices in order to protect the environment? (Agreement)	46 (0.74) ^b	52	39
How willing would you be to pay much higher taxes in order to protect the environment? ^c (agreement)	34 (0.51) ^b	36	33
How willing would you be to accept cuts in your standard of living in order to protect the environment? (agreement)	35 (0.72) ^b	41	26
It is just too difficult for someone like me to do much for the environment. (disagreement)	46 (0.82) ^b	58	31
I do what is right for the environment, even when it costs more money or takes more time. (agreement)	51 (0.49) ^b	53	48

SOURCE: International Social Survey Program (ISSP) (1993).

a. OECD = Organization for Economic Cooperation and Development.

b. Spearman rank correlation coefficients with gross national product (GNP) per capita in 1993, which are significant at the 5% level. The Spearman rank correlation between the index of environmental concern and the 1993 GNP is .84; Pearson's correlation of .85 and Pearson's correlation coefficient with the log of GNP equals .89. Number of cases are the 21 countries for which data were available.

c. Items were added to an index that has a Cronbach's alpha coefficient of .90.

"how serious" question is a *rating* task for the respondents, the "how important" question is an (incomplete) *ranking* task. To answer the open question, one has to choose, from a list of problems coming to one's mind, the one

TABLE 3
Differences in a Country's Level of Environmental Consciousness Due to Closed (question 1) or Open (question 2) Question Wording

Question 1:		Question 2:	
I'm going to read a list of issues and problems currently facing many countries. For each one, please tell me how serious a problem you consider it to be in our nation—very serious, somewhat serious, not very serious, or not at all serious?		What do you think is the most important problem facing our nation today?	
<i>Rating</i>		<i>Ranking</i>	
% environment "very serious" issue in their nation		% environment "the most important" problem in their nation	
Germany	67	Ireland	39
South Korea	67	The Netherlands	39
Poland	66	Mexico	29
Mexico	66	Finland	28
Switzerland	63	Portugal	25
Russia	62	India	21
Turkey	61	Switzerland	20
Chile	56	Chile	20
Canada	53	Turkey	18
Hungary	52	Denmark	13
United States	51	Japan	12
Portugal	51	United States	11
India	51	Canada	10
Brazil	50	Germany	9
Nigeria	45	Russia	9
Uruguay	44	South Korea	9
Japan	42	Norway	7
Norway	40	Great Britain	3
Philippines	37	Uruguay	3
Great Britain	36	Brazil	2
Ireland	32	Philippines	2
the Netherlands	27	Poland	1
Denmark	26	Hungary	1
Finland	21	Nigeria	1

SOURCE: Dunlap, Gallup, and Gallup (1993).

problem that ranks first. The ranking task requires a comparison with other goals. This is a more economic decision as one cannot "vote" for the solution of all problems simultaneously, which is possible with the rating question.

We assume that rating and ranking are related to different dimensions of the concept of environmental consciousness. The rating question mainly measures the degree of concern for environmental problems. On the other hand, ranking measures the economic dimension of priority for scarce resources. Although priority for the environment is expected to be positively correlated with GNP, this does not necessarily hold for environmental concern. Table 4 displays the result of the correlational analysis with the HOP data (Dunlap & Mertig, 1996).

Dunlap and Mertig report correlations with GNP per capita for 14 items or indices. Of these items, 9 are negative, and 5 are positive. The positive correlations either refer to the economic dimension of priority for the environment or to global environmental problems. In opposition to this, the negative correlations refer to concern about local environmental problems and resulting health risks. Thus, the HOP items are at least two-dimensional.⁴ Now, compare this with our analysis of the ISSP data (Table 2). Most of the items are related to the economic dimension of environmental problems. In accordance with our reasoning, the correlations with GNP per capita are positive for the ISSP data but in the majority of cases negative for the HOP data.

CONCLUSION

Our analysis of the ISSP data from 21 countries reveals that all correlations of environmental attitudes with average income (GNP per capita) are positive and, moreover, 9 out of 11 correlations are significant ($p \leq .05$). Opposite results are reported by Dunlap and Mertig (1994, 1996) using data from the HOP survey that were collected in 24 countries including several countries from the Third World. Correlational analysis of items with GNP per capita leads to the result that nine items are negatively correlated with GNP, whereas there are positive correlations for five items.

Closer inspection of questions posed in the two surveys and inspection of two alternative question modes in the HOP survey (ranking versus rating) yield clear evidence that the seemingly contradictory findings can be reconciled if we reconsider our assumption that environmental concerns are to be measured one-dimensionally.

There is one dimension—we shall call this environmental concern—referring to an awareness of environmental problems mainly in one's community that are rated as more or less serious. The second dimension refers to the willingness and ability of people to give up something for the priority of environmental goals. The former dimension correlates negatively

TABLE 4
Environmental Concern and Gross National Product (GNP)
per Capita From the "Health-of-Planet" (HOP) Survey

Item	GNP per Capita	Log of GNP
Perceived seriousness of ecological problems in own country	-0.17	-0.12
Perceived importance of environment as compared to other national problems	0.70***	0.72***
Personal concern about environmental problems ^a	-0.50*	-0.48*
Perceived quality of national environment	-0.58**	-0.49*
Perceived quality of local environment	-0.63***	-0.57**
Perceived quality of global environment	0.47*	0.66***
Perceived consequences of environmental quality on present health condition	-0.70***	-0.66***
Perceived consequences of past environmental quality for present health condition	-0.29	-0.38
Perceived consequences of future environmental quality on future health conditions	-0.55**	-0.45*
Average perceived seriousness of six local environmental problems	-0.56**	-0.60**
Average perceived seriousness of seven global environmental problems	0.07	0.33
Average support for six policies to improve the environmental quality	-0.78***	-0.64***
Preferred priority between economic growth and environmental protection	0.55**	0.74***
Willingness to pay higher prices to protect the environment	0.54**	0.69***

SOURCE: Dunlap and Mertig (1996).

NOTE: Reported are the Pearson correlation coefficients.

a. Poland omitted.

* $p < .05$. ** $p < .01$. *** $p < .001$.

with GNP per capita, whereas the direction of the correlation of the latter dimension is positive (Figure 1).

Why is the correlation negative with regard to environmental concern but positive as far as the priority dimension is considered? Of course, in many poor countries, the environmental problems noticeable at the community level are much more severe than in rich countries. On the other hand, people in richer countries can afford to spend more resources to improve environmental quality. Dunlap and Mertig (1994, 1996) are right in saying that there is growing concern about the environment in the Third World, but they are wrong in rejecting the "affluence hypothesis." Our analysis of ISSP data as well as of the HOP data gives clear evidence that the tendency to give priority

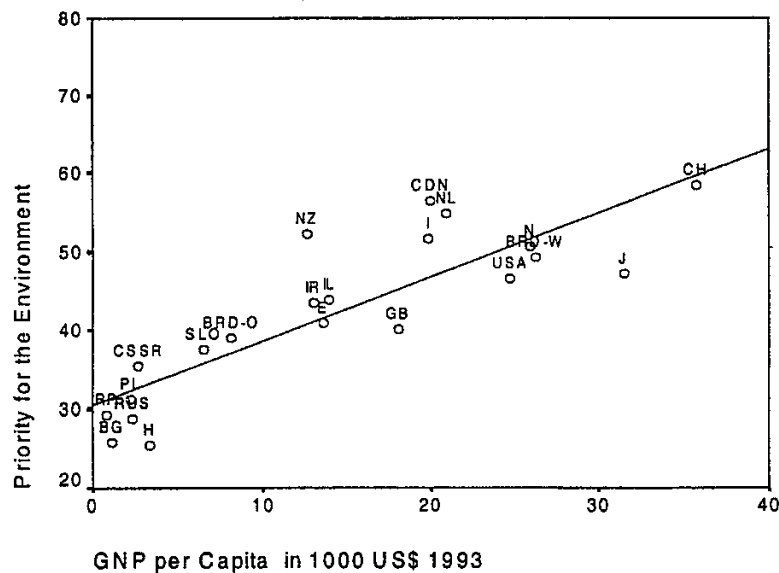


Figure 1: Priority of the Environment and the Wealth of Nations

NOTE: The priority-of-the-environment-index consists of the average agreement percentage of eight items listed in Table 2. The data source is the International Social Survey Program (ISSP). The Spearman correlation is .84.

to environmental goals is much stronger in wealthy countries than in poorer nations.

NOTES

1. The average Cronbach's alpha is .65 for the whole sample of the International Social Survey Program (ISSP) in 1993 (valid cases = 19,915). However, reliabilities are below .50 for the Philippines, Hungary, Bulgaria, and Russia.

2. The high percentage for Ireland was artificially produced by mentioning the environmental problem before asking the importance question (Dunlap, Gallup, & Gallup, 1993, p. 39).

3. Dunlap et al. (1993) are aware of this problem. They publish the results of both questions in their well-documented report. However, they in effect do not discuss the striking differences.

4. Our hypothesis could be further investigated by a factor analysis of the "Health-of-Planet" (HOP) data. Moreover, it may be the case that three dimensions can be identified: (a) concern for local environmental problems, (b) the economic dimension of priority for the environment, and (c) concern for global environmental problems. Countries with higher economic ranking and

countries successful in dealing with the local environment are expected to place more emphasis on global environmental problems. A further implication is that these countries would exhibit higher levels of commitment to their international treaty obligations. We owe a debt to an anonymous reviewer who outlined this argument.

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