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The Place of Environment-Related Values in the Value-System. A Cross-Country Analysis[1]

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Abstract. The purpose of this paper is the investigation of the strength of environmentalism and the place of environmental values within the value structure of different countries with a different economic history, geographical features and different environment-related problems. For the analysis the data from World Values Surveys were used. With the exception of China, people evaluate realistically the environmental problems of their country. Factor analysis revealed that the environment-related value is grouped with openness in China, with traditional values in India, Bulgaria, Turkey, Spain and Japan, and they are autonomous in Germany. In Germany there is a contradiction between the low level of environmentalism and the high level of pro-environmental acts.

Keywords: value system, environmental values, environment-friendly consumer behaviour

Introduction. Environmentalism and pro-environmental acts

"A growing body of evidence indicates that what people want out of life is changing. Throughout industrial society, people's basic values and goals are gradually shifting from giving top priority to economic growth and consumption, to placing increasing emphasis on the quality of life" (Inglehart 1995, 61). A historically unprecedented degree of economic security has led to this value shift, which now shows signs in the industrialising nations as well. The changing of values is measured and proved by systematic, longitudinal survey research (European and World Values Surveys – hereinafter WVS – from the 1970s until today), but it is also visible to the naked eye: new consumption patterns are emerging, new products or products of better quality are appearing, the work

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orientation is being reshaped, the organising of work is also different from what it was in the past, and so is the work environment; new types of free-time activities and countless spiritual movements are emerging. An important element of the change in basic values is the rise of environmental consciousness and a higher priority for environmental protection. The cause of the growing importance of environmentalism is not only the general change in values, but also the fact that since the early 1960s a number of problems have been recognised (e.g. ozone depletion, deforestation, excess waste, acid rain, etc.), which all derived from the impact of modern societies on the natural environment.

The purpose of this paper is the investigation of the strength of environmentalism and the place of environmental values within the value structure of different countries with a different economic history, geographical features and different environment-related problems.

For the analyses we used the data of World Values Survey (WVS) from 1995 and 2005, which allows us to undertake cross-country analysis. The World Values Survey is a global research project, which has been carried out since 1981 in almost 100 countries. It is based on representative national surveys. Country-specific data about GDP were obtained from the World Bank's world development indicators, our environment-related data is from http://epi.yale.edu/.

In the first part of the paper we define the concepts we use, show the methodology of measuring these phenomena and summarise the results of some empirical research related to them. Against this background the second section outlines our hypotheses, presents the variables we applied, and provides a short review of economic and environmental performance of the analysed countries, and describes the history of environmentalism in them. After the discussion of the data the final section draws together the issues and presents conclusions.

Definitions, measurement methods and earlier empirical results

Prior to 1992 the convention for explaining the emergence of environmentalism was wealth. It was argued – based upon Maslow's hierarchy of needs – that once a country (or an individual) has obtained a certain level of consumption and welfare, other values and goals become more important for them, such as quality of life, self-fulfilment, women's rights or the environment (Inglehart 1997). The emergence of the literature of new social movements and Inglehart's *postmaterialist value thesis* also reflect this idea (Brechin 1999). The Health of the Planet survey (conducted by the Gallup Institute and based on national probability sampling of citizens from both developed and developing countries) in 1992

clearly showed that citizens from poor as well as rich countries were extremely concerned about the environment. During the 1990s, a debate emerged over the utility of the postmaterialist values thesis in explaining global environmentalism and from this debate a new explanation emerged (Brechin 1999). There are two different sources of mass support for environmental protection: in the rich (or northern) countries it is a cultural factor, a value shift, and in the poor (or southern) countries it is pollution and other environment degradation (Inglehart 1995; Guha, Martinez and Alier 1997).

There is still no consensus on this question, e.g. Brechin stated that using an *objective problems plus subjective values* explanation fails to describe adequately the bases of southern and northern environmental concern, as global environmentalism is a complex social phenomenon consisting of multiple movements, driven by multiple agencies. Dieckmann and Franzen (1999) pointed to the so called *how serious/how important paradox*, according to which citizens of poorer countries are more concerned about environment when the seriousness of environmental problems is in question, but they are the ones who are the least willing to sacrifice income for the sake of good environmental quality.

In our opinion, both objective problems and subjective values contribute to environment concerns, but we cannot state that in rich countries it is the values while in poor countries the harms that are their source. Certain rich countries – or maybe all of them – suffered in the past from environmental disasters or at least experienced environmental pollution. And in some cultures – irrespective of the current economic situation – nature had higher values in the past as well.

How do researchers define and measure environmentalism, environmental concern? Environmental concern can be defined as the evaluation of or an attitude towards facts, one's own or others' behaviour with consequences for the environment (Fransson and Garling 1999). It can represent several things: a new way of thinking, called the *New Environmental Paradigm,* which is a belief in the limits to growth, a need to balance nature and economic growth (Dunlap and Van Liere 1978, Dunlap et al. 2000); according to the *anthropocentric altruism* theory people care about environment quality mainly because they believe that the degraded environment poses a threat to people's health (Fransson and Garling 1999); environmental concern can be the result of *self interest* (Baldassare and Katz 1992); environmentalism can be a function of some *deeper cause*, such as underlying religious beliefs or postmaterialist value orientation (Stern 1992).

There are quite a few measures of environment concern. Among these, more popular are *The Ecological Attitude Scale* and the *New Environmental Paradigm Scale*. *The Ecological Attitude Scale* consists of several sub-scales. *Verbal commitment* measures what a person states he is willing to do to protect the environment. Actual commitment measures are what a person actually does to protect the environment. *Affect* is a measure of the degree of emotionality

related to such issues. *Knowledge* is a measure of factual knowledge (abstract and concrete) related to ecological issues (Maloney and Ward 1973). The *New Environment Paradigm (NEP) Scale* consists of 12 items for measuring a pro-ecological world view through the degree of agreement with statements like "Plants and animals exist primarily to be used by humans" or "Humans must live in harmony with nature in order to survive", etc. (Dunlap and Van Liere 1978). Though Dunlap and Van Liere (1980) recommended that environmental concern should be measured in relation to more specific issues (recycling, energy conservation), their revised NEP scale consists of the similar general statements, though there are 15 of them (Van Liere et al. 2000).

According to numerous research studies, demographic variables have limited utility in explaining variation in environmental concern among people, which points to the widespread distribution of such concern in our society. Although environmentalism is somewhat stronger among the young, well educated and liberal segments of the society, it is not restricted to persons with such characteristics (Van Liere and Dunlap 1980).

Hypothesis, applied variables and the analysed countries

Hypothesis 1. Modification of the "objective problems-subjective evaluation" thesis

According to the "objective problems-subjective values thesis" there are two different sources of mass support for environmental protection: in the rich (or northern) countries it is a cultural factor, a value shift, and in the poor (or southern) countries it is pollution and other environmental degradation. The thesis poses the question whether people evaluate the seriousness of the environmental problems realistically or not. Brechin noted that citizens from poor countries are far more concerned about local environmental problems than citizens from wealthier countries. He found no statistically significant differences between the two groups concerning the more symbolic global environmental problems (Brechin 1999).

Our expectation is the same – people are aware of global problems wherever they are, while local problems are considered to be more serious in poor countries. But we have to admit that if these findings came true, that would mean that people evaluate their situation realistically, as in poorer countries there are more serious local environmental problems than in the richer ones. We expect furthermore that in poorer countries the proportion of those who cannot or do not answer the questions related to global problems is higher. We expect this because

poverty causes multiple deprivations: lack of money, bad health and housing conditions, low level of education and lack of information.

We assume furthermore that the objective problems-subjective values explanation works differently in different places. For example in a country with severe environmental problems, the importance of environmental protection can be overwritten by poverty and lack of knowledge in the minds of its citizens. In countries with good environmental conditions – especially if these conditions are the result of amelioration – environmentalism can be weak because people do not experience direct environmental threats, but it can also be strong if living in harmony with nature is a part of the dominant value structure of the country. We also assume that in wealthier countries the intention to make monetary sacrifices to protect the environment does not depend on threat perception, but it is affected by the value system: the intention is stronger in postmaterialist countries and in the eastern societies, where living in harmony with nature is part of the cultural tradition.

Regarding poor countries we assume, in line with the "how serious/how important paradox", that in poorer countries environment-friendly general attitudes do not go together with a strong intention to protect the environment, as poverty and its consequence, the dominance of survival values, overwrite the worry about environment. In this way the inclination to make monetary sacrifices to prevent pollution and to carry out actual environment-friendly acts is rare in these places.

Hypothesis 2. Place of environmental values within the value-structure

The place of pro-environmental attitudes (concern about the environment) within the system of values is still an open question. Inglehart found that in clean countries it pertains to postmodern values, while in polluted places it goes together with materialist values (Inglehart 1995). Inglehart's value test is a two-dimensional one (materialist–postmaterialist). According to Schwartz's theory (1992, 1994), values are guiding principles, motivational forces for one's life. Values represent three universal requirements of human existence: the needs of individuals as biological organisms; requisites of co-ordinated social interaction; and survival and welfare needs of groups. From these three universal requirements Schwartz identified ten value-types, which can be collated into larger sub-groups, such as openness to change: stimulation, self-direction and some hedonism; self-enhancement: achievement, power and some hedonism; conservation: security, tradition, conformity; self-transcendence: universalism and benevolence (Schwartz 1992, 1994).

In comparison with the Inglehart value test, the Schwartz value test gives more space for searching the place of environment-related values within the value structure and based on this test we can differentiate the countries better.

Our hypothesis is that we will find four types of countries, with four types of value structure: 1) in European countries with a democracy deficit in their past, with bigger poverty and pollution levels (Bulgaria, Spain and Turkey in our research) the environment-related value is diversified, it can go together with different other values (e.g. with security and stimulation); 2) in far-Eastern countries environmentalism is rooted in their cultural heritage, and that is why the environment-related value will go together with traditional values (India and Japan); 3) though China is also a far-Eastern country, here, due to the sharp and violent disruption with their ancient culture, environmentalism is now connected to achievement; 4) in Western and Northern Europe the environment-related value will form an autonomous factor together with the other altruistic value.

Variables

In order to measure the *general value-orientation* of the respondent, the WVS contains Inglehart's and Schwartz's value-tests. In Inglehart's value test the respondent has to choose in each group of four goals the two most important for them. There are three groups of goals: 1) high level of economic growth; making sure this country has strong defence force; *seeing that people have more say about how things are done at their jobs and in their communities; trying to make our cities and countryside more beautiful*; 2) maintaining order in the nation; *giving people more say in important government decisions*; fighting rising prices*; protecting freedom of speech*; 3) stable economy; *progress toward a less impersonal and more humane society; progress toward a society in which ideas count more than money*; fight against crime. The postmaterialism index shows the number of the chosen postmaterialist goals (in italics; there are five postmaterialist among the twelve aims).

The WVS uses a modified form of Schwartz's value test and asks the respondents to indicate for each description whether that person is very much like them (in this case the variable equals 1), like them, somewhat like them, not like them, not at all like them (the variable equals 6). The descriptions given are: 1) It is important to this person to think up new ideas, to be creative; to do things their own way; 2) It is important to this person to be rich; to have a lot of money and expensive things; 3) Living in secure surroundings is important to this person; to avoid anything that might be dangerous; 4) It is important to this person to have a good time; to "spoil" themselves; 5) It is important to this person to help the people nearby; to care for their well-being; 6) Being very successful is important to this person; to have people recognise their achievements; 7) Adventure and taking risks are important to this person; to have an exciting life; 8) It is important to this person to always behave properly; to avoid doing anything people would say is wrong; 9) Looking after the environment is important to this person; to

care for nature; 10) Tradition is important to this person; to follow the customs handed down by their religion or family.

To measure *pro-environmental attitudes*, we used the variable ENVI_VS_ECON from the WVS survey. ENVI_VS_ECON equals 0 if the individual claims that the statement "economic growth and creating jobs should be the top priority even if the environment suffers to some extent" is closer to their point of view, and it equals 1 if "protecting the environment should be given priority, even if it causes slower economic growth" is closer to their point of view.

Threat perception was measured in the WVS questionnaire with the question about the severity of different global environmental problems (pollution of rivers and lakes, loss of biodiversity, global warming) and local environmental problems (such as poor water quality, poor air quality, sanitation and sewage). After recoding the answers, the value of the given variables equals 1 if according to the respondent the given problem is not at all serious, 2 if it is not very serious, 3 if it is somewhat serious, 4 if it is very serious. We created the variable THREAT_PERCEPTION_GLOBAL/LOCAL, which values varied between 3 (the respondent considers all of the global/local problems as not at all serious) and 12 (if the respondent considers all of the global/local problems as very serious).

Intention to make monetary sacrifices to prevent environment pollution was measured using different questions. The stated willingness to pay more taxes if the extra money was used to prevent environmental pollution and the stated willingness to sacrifice income were inquired into. Responses were scored from 1 to 4, with 1=strongly disagree and 4=strongly agree. In 1990 and 2005 there was a question with which we can measure the honesty of the respondents: "The government should reduce environment pollution but it should not cost me any money." Those who agreed with this statement and also said that they would pay more taxes for environmental protection are "inconsistent" respondents. That is why we created a dummy variable INTENTION by which 1 referred to those respondents who would sacrifice income to protect the environment and who are not inconsistent, and 0 referred to the inconsistent respondents and those who would not sacrifice income for environment protection.

Regarding *environment-friendly behavior*, the WVS asked in 1995 the following question. Which, if any, of these things have you done in the last 12 months, out of concern for the environment? 1) You have chosen household products that you think are better for the environment; 2) You have decided for environmental reasons to reduce or recycle something rather than throw it away; 3) You have tried to reduce water consumption for environmental reasons. The values of the variable CONSUMER range between 0 and 3, where 0 means that the respondent has not done any of the environment-friendly consumer actions and 3 when they have done all of them.

The analysed countries

For our analyses we have chosen nine countries to examine. The point of our choice was that we tried to find very different countries from Europe and from Asia in terms of pollution, wealth (measured by GDP/capita), value system (measured by Schwartz's and Inglehart's value tests). Table 1 and 2 present the main characteristics of the chosen countries.

Table 1. Main characteristics of the chosen countries

	Postmaterialism index*	GDP/capita	EPI rank
Sweden	7.57	43654	4
Finland	0.39	44495	12
West Germany	0.1	40873	17
Spain	-0.68	31774	25
Japan	-5.56	39727	20
India	-6.49	1134	123
Turkey	-8.3	8248	77
China	-18.66	3744	121
Bulgaria	-20.07	6210	65

Source: Author's calculation from WVS (2005), EPI (Economic Performance Index) rank from http://epi.yale.edu/

*The percentage of those people within a country who have chosen 5 postmaterialist goals minus the percentage of those who have chosen none of them.

Sweden, in Northern Europe, is a rich, clean country with postmaterialist value orientation (Table 1, 2). Now Sweden is very close to being sustainable, though the country is not without environmental concerns (acidification, global warming and eutrophication are problems). Partly due to the awareness of the international dimension of pollution, Sweden has taken on the role of co-coordinator and driving-force in environmental work internationally (Roseveare 2001). Finland is neither a materialist, nor a postmaterialist country, with relatively good environment and economic performance (Table 1, 2). Pollution problems and also the fight against them appeared quite early in the country (at the beginning of the 20th century) (Laakkonen 1999). An extended use of economic instruments (including the world's first carbon tax), the use of the polluter-pays principle is a characteristic of the country's environmental policy (OECD Environmental Performance Reviews Finland 2009). West Germany, in Central Europe, is the strongest economy in the European Union. It has a mixed value structure and quite a good environment performance (Table 1, 2), though by the 1960s they had severe pollution problems, but they could resolve the majority of those (Kirkpatrik 2001). A burgeoning environmental movement and the world's first major Green party

meant that environment policy broadened and deepened in the 1990s. Germany has a strong and internationally active green industry (OECD Environmental Performance Reviews Germany 2001). Spain is poorer than the above-mentioned European countries, with a rather worse environmental performance. The country has been a democracy only since 1978; the society is neither a materialist nor a postmaterialist one (Table 1, 2). Since the 1980s, Spain has adopted a set of basic environmental laws and regulations in line with EU directives and strengthened its environment administration (OECD Environmental Performance Reviews Spain 1997). From among the Eastern European countries we have chosen Bulgaria, which shows similar patterns to its neighbours (Nistor 2010). Bulgarian citizens have a very materialistic value orientation (Table 1). The not too good environmental performance of the country (Table 1, 2) is rooted in its economic history before 1989. After the change of regime, a few important steps have been taken regarding environment protection, but far too few (OECD Environmental Performance Reviews Bulgaria 1996). Turkey, at the edge of Europe, is a materialist country characterised by weak civil society and similar environmental performance to Bulgaria (Table 1, 2). We can refer to these two countries as medium-polluted ones. In Turkey, besides a few projects, the environment has had relatively low priority for a long time. Now the EU harmonisation process has become a main driving force in a major national environmental reform (OECD Environmental Performance Reviews Turkey 2008).

What is common in our chosen Far Eastern countries? All of them have a materialist value orientation (in the case of China a very strong materialist orientation) and what is more important: the cultural climate of Asian countries in the past could be described totally differently from those of Europe. The attitude of people (parallel with the conceptions of their religions) was living with nature, while in Europe it was fighting against nature (Aoyagi et al. 2003). However, for the 20th century the situation has changed, especially in China, as we will see.

Japan in a certain way is more similar to the European countries than to the Asian ones. The income/capita is almost the same as in Germany, the value of postmaterialism index and the country's environment performance index is much higher here than in the other Asian countries. Since the beginning of industrialisation in the 19th century, Japan has faced serious pollution problems (toxic smoke hazards and river-water pollution) (Aoyagi et al. 2003). The anti-pollution movement started in the 1950s in rural areas by the victims of the pollution (Aoyagi et al. 2003). This country, like Germany, proved that environment policy and economic development can be mutually supportive and competitiveness benefited from environmental concerns (OECD Environmental Performance Reviews Japan 1994).

India is a poor country with slightly materialist value-orientation and very bad environment performance (Table 1, 2), with a serious environment catastrophe in the past (Bhopal). By now, India has a wide array of environmental laws,

an extensive network of central and state pollution-control boards, a dynamic and demanding civil society, and one of the most environmentally-sensitive judiciaries in the world (Rajamani 2007).

In China, the communist regimes tried to destroy their own cultural roots, which has its effect on the value-system and on the religious activity of its citizens. China now is a polluted country with materialistic value orientation. The country can be said to be poor but, along with India, has rapid economic growth (Table 1, 2). Numerous pollution incidents had occurred during the 1950s and 1960s, but the government paid attention to these problems after three major incidents in 1972. Since then, many environmental protection initiatives have come from the state (Child et al. 2007).

To sum up, we can say that every analysed country has experience of environmental problems. What is different between them is the source of the response to the environment-related challenges: in a few countries (in Finland, Sweden, Japan, Germany) the initiatives were and are coming from the civil society, in China the direction of it is top-down, while in the younger EU member countries (and in the EU candidate country) the main driving forces are the expectations and regulations of the Community.

Table 2. Objective environmental conditions and subjective evaluation of them in the chosen countries

	% says within the country that			EPI row- score*(% proximity to target)			
	poor water quality	poor air quality	poor sewage and sanitation	water (effects on human)	air pollution (effects on human)	water (effects on ecosystem) in brackets: water quality index	air pollution (effects on ecosystem)
	is somewhat or very serious problem						
Sweden	8.6	11.2	22.1	100	97.37	96.3 (96.17)	59.22
Finland	26.8	22.4	29	100	97.37	91.7 (87.58)	55.29
West Germany	28.5	25.7	37.5	100	97.37	72.4 (78)	40
Spain	-	-	-	100	85.31	69.83 (83)	32.97
Japan	50.2	29.5	49.8	100	87	82.64 (87)	34.72
India	73.3	66.4	62.7	50.11	37.55	68.35 (78.9)	37.08
Turkey	85.5	80.7	82.9	90.68	76.13	62.83 (57.87)	46.21
China	40.3	38.4	29.5	70.1	40.07	65.95 (67.9)	37.19
Bulgaria	80.7	78.1	79.5	98.58	63.26	68.68 (81)	41.33

Source: Author's calculation from WVS (2005) and http://epi.yale.edu/

*The 2010 Environmental Performance Index (EPI) ranks 163 countries on 25 performance indicators tracked across ten policy categories covering both environmental public health and ecosystem

vitality. These indicators provide a gauge at a national government level of how close countries are to established environmental policy goals. In the table we show the results of the certain countries within the policy categories of: water (effects on human), value targets are: 100% of the population having access to sanitation and water; air pollution (effects on human), target values are: 0% of the population is exposed to indoor pollution and 20 ug/m3 outdoor air pollution; water (effects on ecosystem), indicators of which are the water quality, scarcity and stress index, target values are: 0% territory under water stress, 0% water overuse and a score of 100 for water quality; air pollution (effects on ecosystem), value targets are: 0.01 Gg/sq km populated land area for Nitrogen Oxides Emissions, 3000.0 AOT40 for Ecosystem Ozone, 0.01 Gg/sq km populated land area for Sulfur Dioxide Emissions, 0.01 Gg/sq km populated land area for Non-Methane Volatile Organic Compound Emissions. (http://epi.yale.edu)

Analysis and discussion of our data

Modification of the "objective problems- subjective evaluation" thesis

Among global problems, WVS asks the opinion of the respondents about global warming, state of rivers and lakes and biodiversity. In most of the countries – which we examined – more than 80 or 90% of the people consider them as serious or very serious problems and the percentage of those who could not or did not answer these questions is also very low, but not in China and India. In both countries, one-third of the respondents could not or did not answer.

Concerning local problems, WVS asks the respondents' opinion about air pollution, water quality, sewage and sanitation. As we can see in Table 1, water problems related to humans can be found in China and India; furthermore Spain, Turkey and Bulgaria have problems related to the ecosystem. In 5 out of 8 countries the judgment of people over water quality is quite objective, but Chinese people see their situation much better than the real data would suggest, while the inhabitants of Japan and India consider it worse. In the case of India, we can explain this pessimistic evaluation by the fact that this country has a problem with water scarcity and as a consequence access to and overuse of water, and these factors together can raise consciousness of bad water quality.

Air pollution affecting the ecosystem occurs in every place (in Sweden to the least extent), while pollution harmful to humans is extreme in China, India and Bulgaria. Comparing the objective situation and the subjective judgment of people about air pollution we notice that Chinese respondents underestimate the seriousness of air pollution, while Turkish people seem more rigid than the inhabitants of other countries. In the case of Turkey, this can be explained by the fact that the smog in their big cities has been a serious problem for several decades.

The evaluation of sewage and sanitation is similar to the evaluation of water quality in most places, though in Sweden and Germany people consider it as somewhat more serious than the water quality, while in India and China it works the other way around.

In accordance with our hypothesis, we found that in poorer countries people are more concerned about local problems than in rich countries, but they are right, as they really do have local problems. Global environmental issues seem uniformly important for every country, though in the two poorest countries the proportion of those who could not answer the questions was quite high. What is an unexpected result of our analyses is that Chinese people seem to underestimate the local problems – relatively fewer people are concerned about them than in India, though the two countries have similar environmental pollution levels.

It is one question what people think about the state of the environment, how serious they believe the environmental problems are, but it is another if they are willing to do anything for the environment or not, if they consider environmental protection to be important even at the price of slower economic development. Table 3 shows how strong environmentalism is in our analysed countries. According to the item by which the relative importance of the environment protection was measured, India, Japan and Germany are the least, while Sweden and Finland are the most environmentalist countries. When we come to the question of willingness to make monetary sacrifices to prevent environment pollution, the picture is different. The respondents from Spain, Bulgaria and India are the least, and the citizens of Sweden and China are the most environmentalist in this sense.

Table 3. Environmentalism in the chosen countries

	% of those people who agreed with the statement		
Countries	Protecting the environment should be given priority, even if it causes slower economic growth (2005)	Protecting the environment should be given priority, even if it causes slower economic growth (1995)	Intention for making monetary sacrifices to reduce environment pollution (2005)
Sweden	62.9	59	50.1
Finland	64.7	40.9	32.1
West Germany	32	42.7	13.3
Spain	56.3	50.4	2.8
Japan	36.4	31.2	27.5
India	37.3	20.6	15.5
Turkey	52.7	52	22
China	49.5	51.3	39.2
Bulgaria	39.7	30.9	13.6

Source: Author's calculation from the database of World Values Surveys in 1995, 2005

The result of Japan, Germany, China and Spain is a puzzle. Japan, Germany and Spain, being rich countries – where the basic needs and security are guaranteed for the members of the society – could be more environmentalist, while China the other way around.

Examining the changes with passing of time, we can notice that environmentalism grew in Finland, Spain, Japan and India; it decreased in Germany; and it did not change or changed just a little in Sweden, Turkey and China (between 1995 and 2005). These results suggest that we cannot state that in places where the state of the environment has developed a lot, environment protection will lose its importance again. The case of Sweden and Finland is a counter example for it.

To solve the above-mentioned puzzles, we should examine the pro-environmental behaviour of the analysed societies (Table 4). The citizens of the wealthiest countries are the most active regarding environment-friendly consumer decisions – even German people, who seemed not so environmentalist based on the attitudinal questions. What could be the reason for this? Negative environmental consequences of the economic development of Germany appeared quite early: increasing air pollution, dying and damaged forests, outbreak of algae in the sea, deteriorating water quality and several accidents in the chemistry industry heightened public awareness after the 1960s (Kirkpatrik 2001). The opposition of industry lobbyists and labour unions hindered the inauguration of environmental initiatives, but the rising awareness of the population, the environmental movement with the world's first green party achieved a lot in regulation, giving subsidies, supporting of research and development, information, education and training, and the application of the best-available-technology principle (OECD Environmental Performance Reviews Germany 1993). As a result, the environmental indicators of the country were improved and a viable green industry was born. The German government spent and still spends a lot on these purposes, even in 1990, 1.65% of the GDP was spent on pollution abatement and control. This is the highest percentage among the analysed countries, e.g. Sweden spent 1.1% in 1993 and Spain 0.8% in 1990 on the same purposes (OECD Environmental Performance Reviews Spain 1994, Sweden 1993). These factors explain why German citizens do not want to pay more taxes for environmental purposes: they already pay a lot. The reason why they prefer economic development to environment protection could be that for them the two things are reconcilable.

Table 4. Environment-friendly behaviour in the chosen countries

	Consumers' decisions (1995)		
Countries	chose environment friendly products	recycled	reduced water consumption
Sweden	80.8	89.9	32.4
Finland	72.3	78.6	33.9
West Germany	88.1	82.3	67.6
Spain	52.7	59.3	74.1
Japan	51.9	66.2	43.1
India	17.7	15.4	28.8
Turkey	no data	no data	no data
China	38	41.3	53
Bulgaria	20.2	16.6	35.4

Source: Author's calculation from the database of World Values Surveys in 1995, 2005

The citizens of the poorest countries showed the less environment-friendly attitudes and acts – as we expected. Among them the exception is China, where the inclination to make monetary sacrifices is stronger and the environment-friendly consumer behaviour is more frequent than in the other newly-developed countries. What can lie behind this? While numerous pollution incidents had occurred during the 1950s and 1960s, the government did not pay attention to these problems until the three major incidents in 1972 (water pollution cases) because these had a greater impact on the health of the large population. First, law and policy making started in the country and the establishing of regulatory agencies. Afterwards, efforts were made to build a normative and cognitive system by running training courses, searching for technical solutions through R&D, launching a newspaper in 1984 (China Environmental News), an environmental yearbook from 1990 onward and a green technology award in 1993 (Yang 2006). The government not only welcomed environmental NGOs (in 2005 there were over 1000) but established organisations for green purposes, which are called GONGO-s (Turner and Chi 2006). These government-led measures have the impact that the Chinese society is relatively environmentalist compared with India or Bulgaria. However, there is still a lot to do for the country as the environmental conditions are very bad (as we could see in Table 1 and 2).

Place of environmental values within the value-structure

As Table 5 indicates, there is slight positive correlation between postmaterialist value orientation and the intention to make monetary sacrifices to prevent pollution – but only in the richer countries. Concerning threat perception, in the three Asian countries postmaterialist people tend to worry a little more about local

environmental threats than materialist people. Global environmental problems however show a different picture, as in the poorest countries postmaterialist respondents consider them less serious than the other respondents.

Table 5. Partial correlation between postmaterialism-index, local and global environmental threat perception and intention of making monetary sacrifices for environmental purposes in the chosen countries

	Partial correlation between		
Countries	pm & intention	pm & threat perception - local	pm & threat perception - global
Sweden	0.255**	-	-
Finland	0.17**	-	-
West Germany	0.116*	-	0.093*
Spain	0.074*	no data	-
Japan	0.106*	0.103*	-
India	-	0.123**	-0.063*
Turkey	-	-	-0.119**
China	-	0.177**	-
Bulgaria	-	-	-0.083*

Source: Author's calculation from the database of World Values Surveys in 2005

*correlation is significant at the 0.05 level

**correlation is significant at the 0.01 level

By using Schwartz's value items we applied factor analysis to categorise our analysed countries. In the nine countries we have got four types of value structures, for two countries we derived two factors and for the other ones we derived three factors with eigenvalues larger than 1 (Table 6).

Sweden, Finland and West Germany have similar value structures. Here Factor 1 can be labelled as egoistic, and also this factor contained the values of openness. Factor 2 can be labelled as traditional, and the environment related item with the other altruistic value formed a third, autonomous factor.

Turkey, India and Bulgaria showed a different value structure. Here we can find only two factors, the traditional and altruistic values form together one factor. The difference between these countries is the place of the openness values: the openness related items are grouped with the egoistic ones in Bulgaria, while with traditional-altruistic ones in India and it is diversified in Turkey.

The third group of countries (Japan and Spain) is similar to the second group in a way that the altruistic values go together with the traditional ones, but here openness is an autonomous factor, and so is egoistic value orientation.

China differs from all other countries as here the altruistic and openness items are grouped together, the other two factors are the egoistic and traditional ones.

The environment-related value is tightly connected with the other altruistic value (helping people) in every country, and in some places they together form part of an autonomous factor (in Northern and Western Europe), while elsewhere they are grouped with openness (in China) or with traditional values (Eastern and Southern Europe, Japan, India). These results partly confirmed our hypotheses.

China does differ from all the other countries, which shows the importance of the effects of drastic events, violent disruption with cultural traditions. Here the altruistic values are grouped with the openness ones.

The Western and Northern countries do form a special group where the altruistic values are autonomous. In all other countries the altruistic values form one factor with the traditional values. We expected this result only in the case of India and Japan. What is more interesting is that Spain and Japan show a similar value structure, while India, Bulgaria and Turkey together form a fourth type of countries. These results suggest that the wealth of the nation is a very important decisive factor in determining the value structure of the countries.

Table 6. Results of factor analysis of Schwartz's value items*

India	***loading***	***Turkey***	***loading***	***Bulgaria***	***loading***
Factor1= altruistic-traditional (openness)		**Factor 1= altruistic-traditional**		**Factor 2= altruistic-traditional**	
looking after environment	0.651	looking after environment	0.725	looking after environment	0.741
helping people	0.581	helping people	0.7	helping people	0.735
tradition	0.658	tradition	0.668	tradition	0.74
behave properly	0.732	behave properly	0.674	behave properly	0.734
success	0.666	success	0.617		
taking risks	0.518				
new ideas	0.448				
		secure surrounding	0.672	secure surrounding	0.523
Eigenvalue	2.688	Eigenvalue	2.79		2.619
Factor 2= egoistic		**Factor 2= egoistic**		**Factor 1= egoistic (openness)**	
having good time	0.807	having good time	0.726	having good time	0.783
rich	0.724	rich	0.682	rich	0.749
secure surrounding	0.602	taking risks	0.707	taking risks	0.714
				new ideas	0.635
				success	0.657
Eigenvalue	1.959	Eigenvalue	1.616	Eigenvalue	2.661
Total variance explained	46%	Total variance explained	49%	Total variance explained	53%

Sweden	***loading***	***Finland***	***loading***	***West Germany***	***loading***
Factor 1= egoistic (openness)		**Factor 1= egoistic (openness)**		**Factor 1= egoistic (openness)**	
rich	0.72	rich	0.625	rich	0.72
good time	0.627	good time	0.713	good time	0.627
success	0.69	success	0.705	success	0.69
taking risks	0.628	taking risks	0.757	taking risks	0.628
Eigenvalue	1.851	Eigenvalue	2.028	Eigenvalue	1.851
Factor 2= traditional		**Factor 2= traditional**		**Factor 2= traditional**	
secure surrounding	0.782	secure surrounding	0.772	secure surrounding	0.782
behave properly	0.694	behave properly	0.775	behave properly	0.694
tradition	0.568	tradition	0.514	tradition	0.568
Eigenvalue	1.691	Eigenvalue	1.739	Eigenvalue	1.691
Factor 3= altruistic		**Factor 3= altruistic**		**Factor 3= altruistic**	
helping people	0.659	helping people	0.772	helping people	0.659
looking after environment	0.748	looking after environment	0.727	looking after environment	0.748
Eigenvalue	1.321	Eigenvalue	1.562	Eigenvalue	1.321
Total variance explained	54%	Total variance explained	59%	Total variance explained	54%

China	***loading***	***Japan***	***loading***	***Spain***	***loading***
Factor 1= altruistic openness		**Factor 1= altruistic-traditional**		**Factor 1= altruistic-traditional**	
helping people	0.623	helping people	0.644	helping people	0.708
looking after environment	0.640	looking after environment	0.806	looking after environment	0.583
success	0.7	tradition	0.701	tradition	0.576
new ideas	0.751			behave properly	0.771
Eigenvalue	2.034	Eigenvalue	1.797	Eigenvalue	2.016
Factor 2= traditional		**Factor 2= openness**		**Factor 2= openness**	
secure surrounding	0.534	taking risks	0.797	taking risks	0.71
behave properly	0.779	new ideas	0.619	new ideas	0.715
tradition	0.673	success	0.69	good time	0.75
Eigenvalue	1.739	Eigenvalue	1.778	Eigenvalue	1.962
Factor 3= egoistic		**Factor 3= egoistic**		**Factor 3= egoistic**	
rich	0.827	rich	0.592	rich	0.789
having good time	0.791	having good time	0.768		
		secure surrounding	0.747	secure surrounding	0.71
Eigenvalue	1.562	Eigenvalue	1.606	Eigenvalue	1.292
Total variance explained	59%	Total variance explained	58%	Total variance explained	59%

Source: Author's calculation from the database of World Values Surveys in 2005
* We left out from the analyses the next items (as they sat on more than one factor): in Japan and Spain "successful", in China "taking risks", in Turkey, Sweden and Germany "new ideas".

Table 7. Place of environmental values within the value-structure in the analysed countries

	India, Turkey, Bulgaria	**Spain, Japan**	**China**	**Sweden, Germany, Finland**
factor A	egoistic	egoistic	egoistic	egoistic- openness
factor B	altruistic-traditional	altruistic-traditional	traditional	traditional
factor C	-	openness	openness-altruistic	altruistic

Source: Author's calculation from the database of World Values Surveys in 2005

So what matters in determining environmentalism and the extent of environmental activity? Culture and political culture matter, the wealth of the nation matters, the history of pollution and economic history also matter. And all these factors can be combined in different ways in different places, the result of which is that there are as many differences between similar countries as similarities regarding environmental issues (Table 7).

Conclusions

We found – in line with our expectations – that global environmental issues seem uniformly important for every country, though in the two poorest countries (India and China), the proportion of those who could not answer the questions, was quite high. In poorer countries people are more concerned about local problems than in the rich countries, but they are right, as they really have local problems. We found furthermore that in poorer countries the intention to make monetary sacrifices to prevent pollution and actual environment friendly acts are less frequent, despite a higher level of threat perception, which shows that poverty and its consequence, the dominance of survival values overwrite the worry about environment.

What is an unexpected result of our analyses is that Chinese people seem to underestimate the local environmental problems. China strongly differs from the other countries in many other aspects as well. This is the only place where the altruistic values (and so the importance of environmental protection) are grouped with the openness values, and here, despite their relative poverty, the frequency of pro-environmental consumer acts is not low.

The Western and Northern countries form together a special group where the altruistic values are autonomous, but they are not uniform. The Swedish

and Finnish situation concerning environmental protection and the state of environment is a result of an organic development. The main sectors work together for their common purposes; there is collective decision making and decentralised implementation, so these are mutually supporting processes.

The citizens of West Germany seem anti-environmentalist in their words, but at the same time they are the ones who do the most for the environment in their acts. They understood well the economic advantages of environmental protection and their example proves that strong feelings and values are not necessary for actions and results.

In all other countries the altruistic values form one factor with the traditional values. Within this group we can differentiate between two subgroups. Spain and Japan are similar to each other (with similar value structure and similar consumer behaviour patterns), while India, Bulgaria and Turkey together form a special type of countries with weak pro-environmental activity. These results suggest that the wealth of the nation is a very important decisive factor in determining the value structure of the countries.

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