

**Population and the Environment:
Population Pressures, Resource Consumption, Religions and Ethics**

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Chapter:

POPULATION AND ENVIRONMENT: THE HUMAN CONTEXT

**Anne Whyte
International Development Research Centre, Canada**

1. WHAT IS THE POPULATION-ENVIRONMENT PROBLEM?

Simply stated, human populations are the prime cause of environmental stress. The planet's capacity to meet human demands for natural resources, and equally, its ability to absorb the wastes produced by human activities, is under attack. In some parts of the world, the battle has been lost, at least temporarily, as natural systems break down. In many areas, there are signs of stress, as fish populations decline, deserts expand, groundwater becomes contaminated with agricultural chemicals, and forests do not regenerate. The signs of stress are evident locally, as soils become eroded and birds disappear. But more and more, local stress has escalated to become planetary stress, and **global change** has become part of our vocabulary. The sense of crisis has deepened, as the scale of environmental change has become apparent, and the understanding is growing that the causes are not easily "fixed" for they lie deep within human desires and the way that societies function. When we look at the "environmental crisis" we see our own human reflection; our lifestyles, the existence of great wealth and great poverty, and our ever increasing numbers.

Some key population-environment linkages

We have become lulled over the past few decades into believing that the earth's resources were not finite, but could be expanded to meet growing demands, through new resource discoveries and new technologies. For the past 50 years or so, this has been achieved. But the situation has largely changed in the last decade. Globally, food production is not increasing. The slow-down is occurring in some of the world's most productive land and most bountiful waters. Water shortages are increasingly constraining development; agricultural land is being lost more rapidly than new land is being brought under

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cultivation. It is estimated that current rates of extinction for plants and animals is approximately 1000 times more rapid than recent historical values. In other words, current development patterns are reaching the limits that the earth's natural systems can sustain. In some cases, limits are exceeded and irreversible environmental damage ensues.

The critical zones where population and environment are in a downward spiral are to be found in all parts of the globe: many, however, are in the south where poverty acts as an intervening negative force (table 1). Land resources are under pressure where poor families live on smaller and smaller farms. Data from 57 developing countries show that nearly half the farms are less than one hectare. In Kenya, the average size of farms has halved in the last 30 years, as the population has doubled. Smaller farms means more movement into marginal lands, whether they are the steeper, poorer slopes in highland areas, the drier zones in drylands, or the uncleared lands in forests. Population growth leading to in-migration is estimated to be responsible for 80% of recent deforestation in the tropics (UNFPA, 1991). Behind these alarming statistics are more depressing ones about social inequity: in Brazil, for example, 5% of farmers own 70% of the grazing land, while 70% of farmers cultivate 5% of the available arable land. At a time when we need to double the land under cultivation in order to feed the world's population in 2025, agricultural land is contracting rather than expanding.

Pressure on land means loss of soil: globally, this means a loss every year of some 26 billion tonnes of valuable top soil. In the words of Jean-Marie Sawadogo, a farmer in Burkino Faso who lost half his land to the desert;

"In my father's time, millet filled all the granaries and the soil was deeper than your body before you reached rock. Now we have to buy food in all but the wettest years, and the soil is no deeper than my hand." (Camp, 1989).

Water is another basic resource which is being strained at the limits by the demands of human populations. In 88 developing countries, representing 40% of the world's population, water deficits are already seriously constraining development. The available fresh water per capita has shrunk from 33,300 cubic metres in 1850 to 8,500 cubic metres in 1991. In countries with rapidly growing populations such as Kenya, water scarcity is reaching a critical point. Within 10-20 years from now, Kenya's water supply per capita will be half of what it is today; Nigeria's will decline by 42% and Egypt's supply will be down by 33% (UNESCO, 1992).

Table 1: SOME CRITICAL POPULATION-ENVIRONMENT LINKS

ENDANGERED ENVIRONMENTS	
FROM RESOURCE DEMAND	FROM WASTE PRODUCTION
<ul style="list-style-type: none"> • Tropical forests • Arid lands • Fragile highlands • Coastal lowlands • Fishing zones • Freshwater • Soils • Urban areas 	<ul style="list-style-type: none"> • Atmosphere • Coastal waters • Freshwater rivers, lakes • Boreal forests • Agricultural land
<ul style="list-style-type: none"> • Loss of biological diversity 	

MOST VULNERABLE GROUPS
<ul style="list-style-type: none"> • Environmental refugees • Poor households • Women and children • Landless rural households • Urban squatters • Small landowners (< 1 hectare) • Fishing communities

The planet's natural systems provide vital services to human populations: they are the source of basic human needs for food, water, energy and shelter. They maintain the necessary genetic biodiversity that sustains life and enables increasing productivity. They absorb wastes and provide basic recycling and renewal of nutrients, chemicals and natural resources. All of these "services" are now under stress. But we risk a further loss, if we continue to degrade our natural environment. These are the spiritual and cultural resources that the natural world provides to our societies. Already, fear of further loss of our natural world is impoverishing our spirituality, our hopes for the future and our view of ourselves.

A question of numbers: yesterday, today and tomorrow

For the first several million years of human development, the population of homo sapiens remained at less than 5 million people world-wide. Mexico City has more than 20 million inhabitants today. Between 8000 years B.P. and the birth of Christ, the world's population grew to some 250 million (about the present population of the U.S.A.) and there is evidence of local environmental stress occurring in places like Mesopotamia where salination of soils was caused by excessive irrigation. From that time until 1800, the world's population reached its first billion, and the rest, as they say, is history (table 2). Within 130 years (1800-1930) the first billion became two billion, with most of the growth taking place in Europe as it led the world in the Industrial Revolution. North America became a release valve for this population pressure, as the American "frontier" absorbed more than 15% of European population growth through migration, with consequent devastation for the American aboriginal peoples.

Today, the world's population is over five and a half billion with a predicted population within 10 years of some 7-8 billion. "Middle of the road" estimates see 11.6 billion population by 2150, before some levelling off occurs. We know that our present 5.6 billion population is causing environmental stress that is unprecedented in scale historically. It is difficult to countenance a near-future world with 10 billion people, even for those with the greatest faith in technological progress.

There are additional reasons to view present population growth with concern; the growth is unprecedented in other ways. More than 85% of current population growth is in the **world's poor countries** of Africa (3.0% annual population growth); Latin America (2.1%) and Asia (1.9%). The population of these countries are getting younger and thus are building in an even greater population "time-bomb" (UNFPA, 1993). In contrast, the populations of the industrialised countries of Europe, North America, Japan and Australia have an aging population and negative growth rates.

Table 2: GLOBAL POPULATION GROWTH

PAST		
•	First several million years	less than 5 million
•	8000 BC - 0 AD (8000 yrs)	250 million
•	0 AD - 1800 AD (1800 yrs)	1 billion
•	1800 - 1930 (130 yrs)	2 billion
•	1930 - 1960 (30 yrs)	3 billion
•	1961 - 1975 (14 yrs)	4 billion
•	1975 - 1987 (12 yrs)	5 billion
PRESENT		
•	August 10, 1993	5.578 billion
FUTURE		
•	2000	8.5 billion
•	2025	10 billion
•	2150	11.6 billion levelling off

Second, the current growth rates experienced in some countries of 3% per annum or greater, have **never been experienced before**. These growth rates are about twice that of Europe in the Industrial Revolution. Third, population growth (often combined with local resource depletion and poverty) has historically led to out-migration. For Europe in the last century, it was to North America. Today, the scale and diversity of human migrations is unprecedented, but the range of potential destinations to relieve this population pressure is limited as wealthier countries close their doors to immigrants and refugees from poor countries ever more securely.

Another new characteristic of today's population growth is that it is increasingly **concentrated in urban environmental "hot spots"**, as cities in developing countries attract the rural poor to add to their own rapid growth rates. In 1950, seven out of ten of the largest cities were in the north; today 8 out of ten are in the south. The scale of these "megacities" is also a new and alarming feature. In the 1950's the ten largest cities in the world were all less than 15 million inhabitants; today, they are all larger than 15 million. Megacities such as Mexico City (population 20-25 million) create environmental stresses of a new order of magnitude on their local ecosystems. Uneven population distribution even in a sparsely populated country such as Canada can cause locally severe

environmental problems: 90% of the 26.5 million Canadians are concentrated in 8.5% of the land area. Local population densities in southern Canada reach more than 1000 persons per square kilometre, compared to an average density of 2.6 persons per square kilometre averaged out over the whole country (Statistics Canada, 1991).

Beyond the numbers: a question of lifestyles

Enormous disparities between the developed countries and those in the developing world are seen in the lifestyles of their citizens. Between North and South, there lies a great "consumption divide". The epitome of the modern "consumer society" is North America. It has been estimated that, through resource consumption (especially energy), consumerism and recreation, each person in the U.S.A. exerts twice the environmental impact of their counterpart in the United Kingdom or in Australia; fifty times that of a citizen of India or China, and almost three hundred times that of a person in Uganda or Laos. This leads Norman Myers (1992) to ask "Can the world afford the U.S.A. and its population of 250 million people?"

Behind such anecdotal comparisons lie major differences in consumption patterns between developed and developing countries (table 3). Developing countries, with three-quarters of the world's population, consume only 19% of the electricity, 20% of the iron and steel, 36% of the meat and own only 8% of the world's cars. The developed countries, for their part, have less than a quarter of the world's population, and consume about 65% of the food calories. Similarly, industrial countries are major producers of waste through industrial production, agriculture, transportation, and consumer behaviour. The north creates more waste in total and per capita, and spreads its waste around the globe through the atmosphere, the waterways and oceans and in land fill sites and waste dumps within and beyond their own borders. Developed countries produce 70% of the carbon dioxide emissions which are responsible for climate change.

The high consuming lifestyles of rich countries also demand a wide variety of foodstuffs and products, which are available at any time of the year. Their wealth means that they can command a "shadow ecology" many times larger than their own food-producing areas by drawing in food and other resources from other countries (Myers, 1992). The production systems of poorer countries become drawn into this global economy in order to earn export dollars, and traditional sustainable agricultural systems providing nutritious, but unfashionable, staple foodcrops are transformed into unsustainable cash crops such as tobacco, cattle, and cotton.

Table 3: NORTH-SOUTH CONSUMPTION OF SELECTED ITEMS

Item	Share (per cent)	
	North	South
Meat	64	36
Cereals	48	52
Round wood	46	54
Paper, etc.	81	19
Fertilizers	60	40
Iron and steel	80	20
Cars	92	8
Electricity	81	19
CO ₂ emissions	70	30

Source:: Parikh, et al, 1991

The excessively wasteful consumption characteristic of the north is a relatively recent phenomenon. Solid waste in the U.S.A. has **doubled** within the last thirty years; and many of us can recall a time when consumer packaging was a fraction of the plastic "display-pak" of today's supermarkets. Annual global emissions of carbon dioxide have increased ten times this century, and those of sulphur dioxide (a major air pollutant) have increased nearly 450%. These are indicative of a significant increase in industrial activity on the planet (Speth, 1991).

One of the chief driving forces of these global changes is technological development. Nowhere is this clearer than in the case of synthetic chemicals. In the past 50 years, tens of thousands of new synthetic chemicals have been created by human ingenuity: everything from plastics, industrial chemicals, agricultural fertilizers and pesticides, detergents, food additives and pharmaceutical drugs. Of the 70,000 chemicals traded around the world today, as many as 35,000 are classified by the United States Environmental Protection Agency and by the OECD as definitely or potentially harmful to human health. Many of these will also be harmful to the environment.

These global statistics of increasing consumption and waste production conceal the major inequities that exist between the rich consumers, who are largely living in the north, and the poor who are largely living in the south. Per capita consumption of domestic water

and energy among the poor of developing countries is well below that needed to achieve minimal acceptable quality of life. There is a huge deficit in consumption patterns in many developing countries: essentially, they need to be granted resource-consumption "space" to enable their populations to catch-up. There are also major differences in per capita energy use between developing countries. All developing countries consume only 23% of commercial energy (whereas they account for 85% of biomass fuel in the form of wood and charcoal); but while China accounts for almost half of that 23%, the 50 countries of Africa consume under 3% (Kats, 1992).

Increasing use of natural resources, while necessary to raise the standard of living in developing countries will increase locally and globally the stress on the earth's natural systems. This stress is exacerbated, especially in the case of energy production, by the use of outdated "dirty" production technology together with poor pollution regulatory systems which are all that developing countries can afford, or are provided with through international assistance. It is thus in the interests of both north and south that developing countries are provided with special access to the best available technology. Increasingly, this problem is recognised in international agreements, such as the Convention on Climate Change (1992) and the Montreal Protocol on Substances that Deplete the Ozone Layer (1987,1990). The provision of financial resources to developing countries lags far behind the international recognition of the problems as ones which affect all countries, and are a shared responsibility.

Indeed, the 1992 United Nations Conference on Environment and Development (the **Earth Summit**) underscored the political recognition of the international agenda of **global environmental issues**. High on this agenda are climate change through greenhouse gas emissions, deforestation, ocean pollution and overfishing, desertification and the loss of biodiversity. Less talked about, but nonetheless key ingredients are poverty, population, social structure and global economic relations. What the Earth Summit did achieve was to gain political acceptance that global environmental change is real and urgent, and inextricable from social and economic development.

2. ENVIRONMENTAL PROBLEMS HAVE A HUMAN FACE

That the causes of global change lie largely in human activity which results in excessive waste production and pollution are clear, despite the prevarication of many governments and individuals. The "victims" of these environmental problems who become unemployed, ill, or die prematurely, are often "statistical" in that the links between cause and effect are understood in a general way with many intervening variables, rather than can be scientifically proved for specific cases. But in many developing countries, the human suffering caused by resource scarcity, population pressure and poverty has a

human face; we see it in environmental refugees, the landless rural poor, the urban squatters that make up an increasing proportion of third world cities, and the women and children of the poorest families everywhere.

There is consistent evidence that rapid population growth, and the related environmental degradation, can be reduced by four key interventions:

1. Income security and rising standard of living;
2. Reducing child deaths;
3. Narrowing the gender gap by improving the lot of women;
4. Having family planning choices available.

Any one of these interventions has some beneficial effect, but to achieve significant success, they need to occur, or be introduced, together.

As family incomes rise, and people adopt more urban lifestyles, including employment and education outside of the home, birth rates decline. This is observed in all parts of the world, and among immigrant populations as they adapt to their new social and economic environment. One key element in this transformation is that the value of children to parents changes. Children are treasured for the emotional joy that they bring to a family; they also assure the biological continuity of the parents - they are our stake in the future. In many cultures, children (especially sons) play a special role in performing rituals for the parents when they die. Without children, one's spiritual "afterlife" or "place in heaven" is at risk. Children also contribute to the labour resources of the traditional household; as they grow, they can take increasing responsibility for household tasks, or work on the farm or in the family business, and eventually can expect to take over from the parents the major role of family providers. Children thus contribute economically to the family from an early age on a sliding scale and eventually will give the parents security in their old age, when they are no longer able to work for themselves.

Children also incur costs for parents. Major costs include housing, food, energy, clothing, education, and childcare in sickness and in health. In poor rural societies, the economic contribution of children outweighs the direct costs. In modernising, urban societies, the cash costs of providing such things as childcare, education, and housing in raising children generally outweigh their direct economic contribution to the family. Expectations that children will provide for their parents in old age have also been eroded, as social mobility leads to dispersed and fragmented families, and the state has intervened with social support programs. Parents therefore desire fewer children.

The "need" to produce large numbers of children has also been dramatically altered where child mortality has been reduced. When child death rates are high, parents compensate by having more children than they might desire, as an insurance against the loss of some children through premature death. This insurance factor is compounded by gender preferences for sons or daughters. The emotional loss of a child also prompts parents to "replace" that loss by having another child, and this replacement is aided biologically by the sudden cessation of breast-feeding which no longer acts to suppress ovulation. No country has managed to reduce fertility without first reducing infant mortality.

Improving the lot of women has been shown to be the most consistent variable in reducing the number of children born, and in improving each one's chances of survival beyond infancy. In particular, the education of girls and women is probably one of the best ways out of the environment-population downward spiral. The survival chances of a child whose mother has four or more years of primary education is significantly greater than those of a child whose mother has never been to school (UNICEF, 1991). If women are confident that their children will survive, they will have fewer births. Education is a key component in the **social progress** of women. When women are educated, they are more likely to have higher status in the family and in society, and be empowered to make their own decisions. They also need access to economic resources and to health care, if the investment in their education is to be realised in a greater contribution to society.

The fourth key element in reducing unwanted births, is the availability of family planning education and services. While birth rates will eventually fall if child deaths are reduced, the time lag between the two is considerably shortened if family planning choices are known and are available. In the last 30 years contraceptive use has risen from 10% to 50% of families in developing countries, with China accounting for much of this gain. The availability of more reliable family planning today has meant that while it took the United States 58 years to reduce average family size from 6.5 to 3.5, it has taken Indonesia only 28 years, Colombia only 15 years, and China, with a more aggressive approach, only 7 years. This reduced time lag between infant death rates and birth rates has meant about 70 fewer million births per year in developing countries (Catley-Carson, 1993).

Better social policies are therefore better environmental policies. In developing countries, **greater confidence** is a key thread linking income security and better standard of living, especially for women, to fewer children being born, but each surviving longer, and consequently, smaller families. This means that even as per capita consumption increases, as it should for much of the developing world, the total burden of population on natural resources will be less. Fewer children among poor families also mean less

migration to cities and to wealthier countries. Today, with few employment opportunities for young women in rural areas, and increasingly cash-based economies, migration of young girls can be part of a household's strategy to survive. In central Mexico, for example, 52% of the daughters of large but landless families had migrated, compared to only 30% of those families with some land (UNFPA, 1993). These migrant daughters are important sources of income for poor families, and are more reliable than migrant sons.

In most countries, especially those in the south, current social investment significantly favours men (table 4). This is true for national investments in education and health care, as well as family disparities in access to resources and nutrition. Younger daughters are the least likely to eat well, to go to school, and to inherit wealth. Yet, we have seen that the gains in reducing child deaths and population pressure on the environment are greatest when families and societies invest more in their women. The human face that suffers most from environmental stress is female. Likewise, a key to solving the poverty-population-environment nexus is to raise the status of women.

3. RELIGIONS: PAST ROLES AND FUTURE RESPONSIBILITIES

Religion and science have much in common: one attribute that they share is that they each seek to provide explanatory frameworks for understanding the relationships between individual human beings and the larger community, and between people and the natural world. Commonly, the explanatory framework they provide for our relationship with the environment shares many features with the explanations they give for our relationship with society. It is these broad explanatory frameworks, be they called myths or theory; parables or models; "revealed truth" or "objective truth"; that provides their adherents with the basis for making judgements about the present, choices for the future, and rationalisations (and acceptance) of the past. Religion and science frame the way that we view the environment, and influence the ways that we act upon it. They also bear responsibility for our attitudes to one another; the rich and the poor, adults and children, men and women. These two sets of values are central to the relationships between poverty, population and environment.

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**Table 4: GENDER DISPARITIES IN THE HUMAN DEVELOPMENT INDEX,
SELECTED COUNTRIES, 1992**

Country	Women's HDI as a Share of Men's
	(percent)
Sweden	96
Finland	94
France	92
Paraguay	88
USA	86
Canada	85
United Kingdom	85
Italy	83
Portugal	83
Sri Lanka	79
Philippines	78
Japan	77
Ireland	74
Costa Rica	70
Swaziland	68
Korea	65
Kenya	58

Source: United Nations Development Programme, *Human Development Report 1992* (New York: Oxford University Press, 1992).

Given the centrality of religion, and more recently science, in guiding the relationship between population and environment, religious leaders have been generally reticent in examining it. Some aspects of religious influence on development, such as the special role played by Christian missionaries in the European colonisation of the countries of Africa, Asia and Latin America, have been almost "off-limits" for religious reflection. Yet there is evidence that these missionaries helped to destroy traditional sustainable production systems by undermining indigenous reverence for nature; by supporting concepts of individual ownership to replace long-standing common property regimes; by

denigrating traditional spirituality and indigenous environmental knowledge (Sihanya, 1991). By providing girls with different "lady-like" education and skills, missionaries also underscored the lower status of women (Carroll, 1983).

The influence of religion and science on the relationship between population and environment can be considered under six broad categories:

1. Values relating to population issues;
2. Values relating to the natural environment;
3. Teachings on justice and equity;
4. Attitudes towards the future;
5. Value for speaking out, for "**witness**";
6. Emphasis on individual responsibility.

There is often a difference between the original fundamental philosophy and inner truth of a religion, especially as taught by its early leaders, and its later codification in religious institutions, rituals and customs. Both influence the attitudes and behaviour of their followers, but especially powerful are religious customs and canons, which are interpreted as more relevant and are often more vigorously promoted by religious institutions than are the original spiritual truths.

Religious values relating to population issues that affect environmental stress include the status and role of women; the purpose and meaning of marriage, attitudes to sexual intercourse and procreation; attitudes to family planning generally and to abortion specifically; and the spiritual, biological, social and economic value placed on children and on the family. Another important set of "population" values are attitudes to health and disease, and the explanations that are offered by a faith for illness and premature death. It is instinctive to ask "Why him?" "Why me?" when faced with death or disaster. The explanation provided by religion whether in terms of moral retribution, individual responsibility, blind chance or fate, influences people's future behaviour and attitudes.

Religious values relating to the natural environment have profoundly influenced the course of the present crisis of global change. The degree to which religion affirms that people are inseparable from the natural world or can maintain a certain degree of independence and **difference** from the rest of creation is fundamental. Judaic-Christian theology has developed the concept of human "stewardship" of the natural world, which has been blamed for some of the more negative impacts of western development models on the environment. Another dimension of religious "environmental teaching" is the relative weight given to the **intrinsic** value of the natural world, especially other species, compared to the **utilitarian** value of natural and biological resources to human societies.

Our view of the natural world influences the degree to which we are prepared to transform it for our own ends, to engineer our own concrete habitats, to reverse the flow of rivers and to "make the desert bloom". A society's confidence in technology or fear of innovation has been often underwritten by religion. Technology and human organisation have wrought great changes on the face of the earth, and religions have influenced the progress of both.

Justice and equity issues are integral to the causes and solutions to the environmental crisis that faces us today. Population and environment problems cannot be dissociated from poverty and inequity at all levels; within the family, the community, between countries, between the north and the south, and between generations. The Brundtland Commission (1987) focussed attention on **intergenerational equity** as fundamental to sustainable development. Too many societies, especially the most advanced technologically are living not only off the interest of environmental resources, but are also eating into the capital that should be transferred, intact, to future generations. How religious teachings explain the great inequities seen in the world today, is relevant to how they can help to solve the problems of population and environment.

Attitudes towards the future profoundly affect human behaviour. Whether it is in the hope of future reward (either of a spiritual or economic nature) for present actions, or fear of retribution, the future plays a role in our present. For many, the environmental crisis, combined with global economic and social transformations in north and south, and continuing poverty for the majority of the world's population, has undermined their faith in the future. This is especially true for younger people who are aware of the global scale of environmental change, and who have seen the fragility of the planet as viewed from outer space. What does a religion teach about the future? Does it provide hope and reason for continued effort? Does it provide a coherent or fragmented explanation for what is happening? Does it even address the environmental crisis as a matter for religious attention?

The importance accorded "witness" or speaking out varies greatly between religions, especially on matters regarded as beyond the domain of religion. In western societies, some Christian demoninations appear to behave as though they exist in an intellectual and moral "ghetto" lacking confidence in their moral authority to "speak out" on major social issues, including environmental pollution and destruction. Scientists have suffered a similar reluctance to speak out against governments or organisations. Except for a few "whistle-blowers" most scientists think that their prior allegiance is to science rather than to society. Yet surely both religions and science share responsibility as key influences on human behaviour and have a moral obligation to bear witness against consumerism, profligate energy consumption, major schemes and policies which will damage the environment, and unfair practices between rich and poor countries.

The value placed on individual responsibility versus individualism by a religion also influences how people will behave in their use of the earth's resources. The teaching of individualism encourages a selfish approach to life, in which the desires of the individual come before the good of the community. As often as not, such attitudes are congruent with resource waste and consumerism. Individual responsibility for global change means that people must believe that personal change leads to system change; that changes in their own lifestyle can lead to bigger changes, and that they can be influences for good. Religious institutions and congregations have been somewhat remiss in looking to how they can make changes in themselves, and in their own use of the world's resources, in order "to make a difference" and to influence others with a stronger moral authority.

The Parliament of the World's Religions, held in Chicago in 1993, identified environmental issues as fundamentally spiritual in nature,; as the need "to discover who we humans are, how we are to relate to each other and to the whole community of life, and what we are to do, individually and collectively, here on Earth" (Barney, 1993). The Parliament asked a number of questions to spiritual leaders. They included:

- "What does your faith tradition teach about the proper relationship between the human species and all other species? Can the concepts of justice, unity and peace be extended beyond the human community to the whole community of life?"
- "How are the needs and wants of humans to be weighed relative to the survival of other forms of life?"
- "How do the fertility stories of your faith relate to its teachings on human procreation? What norms are to be applied to the stewardship of the gift of human fertility? What cultural practices and technologies are appropriate for individuals to employ in regulating their own fertility?"
- "What are the traditional teachings - and the range of other opinions - within your faith on the meaning of "progress" and how it is to be achieved? What dreams and hopes does your tradition inspire in young people? What does your faith tradition offer as a vision for the future of the Earth?"
- "What does your faith tradition have to say about consumerism, about the manipulation and stimulation of desire, about advertising?"

- "In your tradition, how long ago were the roles and rights, and responsibilities of men and women defined? What role did women have in the defining? What are the current teachings of your tradition about the role, rights and responsibilities of women and men?"
- "How does your tradition respond to the revelation from the past 1,500 years of meditation on Earth and its origins - a revelation we usually call "science"? How will the disciplines of religious and scientific inquiry relate to each other in the future? Can science provide new understanding of the primary, original source of religions insight - the universe itself?"

4. CHALLENGES FOR PUBLIC POLICY

Public policies for population and environment present two of the greatest challenges to governments. Many governments shy away from population issues, especially in policies that are directed to fertility reduction. International aid to population issues is less than 1.5% of total international assistance. Governments in both the north and south have been discouraged from being proactive in population policies because of lack of public support, and sometimes outright opposition from religious and other groups. Support for environmental policies, especially those which advocate less consumerism, can be equally polarised when jobs close at home appear to be at stake.

Population policies require governments to become involved in areas of decision-making which are usually regarded as private and individual: choices about having children; choices about where to live; choices about sexual and family relations. This perceived intrusion into private decision-making has led governments to shy away from any accusation of limiting individual freedom, by **promoting population policies as integral to economic development**. In this approach, the present governments of the south have only to point to the recent historical development of the north, where standards of living went up as fertility went down.

Economic development as the **solution** to the problem of over-population is an over-simplification. It ignores both the great human costs incurred in the north as fertility declined (including the separation of families through migration and large number of poor women entering the industrial work force), and the fact that the fertility decline took place over half a century or more - a timeframe which is not available today. Promotion of population control as a means of modernisation also holds the promise of western-style

consumerism as the reward. This approach also puts population policies in head-on collision with environmental policies.

The real challenge for public policy is to frame population policies within environmental, cultural and spiritual goals. This means that private choices must be brought into line with the public good. In other words, policies dealing with population and environment will succeed in so far as they are rooted in public education and public participation. They cannot be effectively imposed through regulation. People will support policies that require a change in their own lifestyles and personal choices **if, and only if**, they agree personally with the goals of the policies and can see equity and effectiveness in the way that they are applied. This is why sustainable development policies (which is essentially what we are discussing) are potentially revolutionary. **They demand a new covenant between governments and citizens.**

Sustainable development requires individual citizens, especially those that "have more" to voluntarily reduce their consumption of resources and adopt more modest lifestyles for the benefit of those that "have less". Any new covenant between people and democratically elected governments will only succeed towards sustainable development in so far as it can embody trust, goodwill and a sense of fairness between all parties, because ultimately private choices, even in the public interest, cannot be regulated except under the most severe regimes, but have to be voluntarily undertaken.

Another challenge for public policy-makers is **to go beyond the national interest**, as traditionally defined, and to champion policies that see the national interest as a component of the global interest. Nowhere is this need for a global perspective greater than in the areas of population growth, resource consumption and waste production; that is, population and environment. Parallel with this need for more global horizons is the need for better understanding of the interconnectedness of all policies. Transportation policy; education policy; agricultural policy, and especially energy policy, are not a discrete policy fields; they are all policies for **population and environment; for sustainable development**.

One of the disturbing trends of the last decade has been the more inward-looking political agendas in many industrialised, high consuming countries. The "peace dividend" is being used to shore up consumerism in the north. Political support for international assistance is waning, and consumer support to pay fairer prices for commodities purchased from developing countries is even further away. The call at the Earth Summit for new and innovative additional financing for sustainable development paths in the south has gone largely unheeded. Proposals for debt relief, new financing for "clean technology" transfers, or charges to be made for the use of the "global commons" such as the atmosphere and oceans, have not resulted in substantial initiatives (Holmberg,

1992). Aggregate net financial transfers to developing countries has declined from an average of 46 billion USD in 1980-82 to 3 billion USD in 1989 (OECD, 1990). In short, we are far from a **new covenant for sustainable development** in our own countries.

5. THE WAY AHEAD

One of the ways ahead which holds promise is to find common ground between religion, science, and public policy. For too long, these spheres of influence have talked within their own houses, as solitudes. There has been a recent resurgence of interest among some faiths about the Creation, and our present and future environment (Brooks, 1990, Vischer, 1991, Hallman, 1989, The Greenhouse Crisis Foundation, 1990, Presbyterian Eco-Justice Task Force, 1989). Congregations are considering their own environmental impact and are changing their individual and community habits.

One important initiative has been the **"Mission to Washington": the Joint Appeal by Religion and Science for the Environment**, which brought religious leaders representing 330,000 congregations in the U.S.A. and some 50 scientists together in the US Senate on May 12 1992 to find common cause in urging the US Government to better protect the global environment and to recognise the environmental impacts of consumerism and population growth (Congressional Record, May 13, 1992). The Declaration which was signed by leaders of many different faiths and by scientists (including myself) includes the following words:

"We are people of faith and of science who, for centuries, often have travelled different roads. In a time of environmental crisis, we find these roads converging. As this meeting symbolizes, our two ancient, sometimes antagonistic, traditions now reach out to one another in a common endeavour to preserve the home we share."

"We believe that science and religion, working together, have an essential contribution to make toward any significant mitigation and resolution of the world environmental crisis. What good are the most fervent moral imperatives if we do not understand the dangers and how to avoid them? What good is all the data in the world without a steadfast moral compass?"

"Differences of perspective remain among us. We do not have to agree on how the natural world was made to be willing to work together to preserve it."

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