



HOKKAIDO UNIVERSITY

Title	Environmental Economics and the Theory of Capabilities
Author(s)	Yoshida, Fumikazu
Relation	Lecture on Envireonmenal Economics, Chapter 3, pp.53-74
Issue Date	2012
Doc URL	https://hdl.handle.net/2115/53453
Type	book part
File Information	chapter-3.pdf



Chapter 3

**Environmental Economics and
the Theory of Capabilities**

Preface

So far, we have discussed modern capitalism and the mechanisms of environmental destruction, and we have observed that humanity's destructive effects on the Earth's environment differ significantly from country to country, even within a single country. In order to pursue justice and to reduce our despoiling of the environment, I wish now to draw particular attention to the "capabilities approach" of Amartya Sen, Asia's first Nobel laureate in economics. Sen's contribution to economics has been carried out mainly in terms of the theory of welfare economics and extends to the economic analysis of poverty and hunger while seeking to build a bridge between economics and ethics as complementary aspects of human well-being. The reasons for focusing on Sen's theory from the perspective of environmental economics are mainly the following: (Yoshida, 1997)

- [1] In order to reduce the burden on the environment while improving people's well-being, we need to clarify what is meant by "human welfare" and to resolve, if we can, the differing interpretations and understanding of such concepts as "well-being" itself and "the quality of life", as well as "per-capita GDP", and we have to consider all this in relationship to "the environmental impact".
- [2] We need now to look ahead and determine how we are to close the structural gap that separates people's production activities and their patterns of consumption from the environmental damage that they do to the Earth.
- [3] If we hope to build a sustainable society with responsibility for future generations, then we need to link environmental ethics and economics.

We start our discussion with a consideration of "well-being" as it reflects levels of income: this is a far more complex relationship than is commonly supposed. Although at present China and India have a lower per-capita GNP than South Africa and Brazil, the average life expectancy in China and India

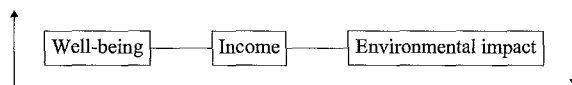


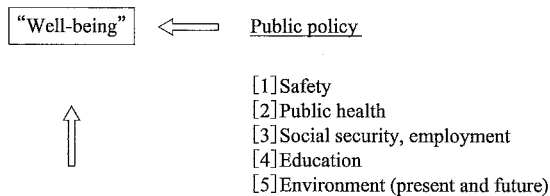
Figure 3-1 The relationship among "Well-being", "Income" and "Environmental impact".

is much higher than the average life expectancy in those two more prosperous countries. And while, in terms of income, an African-American male living in Harlem, New York, is much better off than people in developing countries, the life expectancy ratio of Harlem males over 40 years of age is even lower than that of men living in Bangladesh. It is thus clear that the indicators of income, per capita GNP and so on play a very limited role in a person's average life expectancy, in "quality of life", and a human life's overall sustainability.

One obvious reason, quite apart from questions of income, is the decisive role that public policy plays, particularly as it affects medical insurance, public health policies for the environment, security and social security (in a society where violence is rampant and accidental deaths are common), so that even where incomes are the same, each individual's situation is likely to differ (for example, people who are more likely to become sick will spend more on medical expenses). Since it seems clear that feelings of "well-being" are not only experienced under different conditions in different people's lives but also at different stages in a single person's life, any simplistic concept of "well-being" is an unreliable indicator (see Figure 3-2).

Sen has pointed out that while income relative to economic prosperity is indeed one means to the achievement of "well-being", people often mistake the means for the end. We have a very good example here in Japan: after World War II, Japan underwent a remarkable economic resurgence but experienced serious pollution problems along the way: the means of rapid economic growth had neglected its true end, human "well-being".

What, then, do we mean exactly by the term "well-being"? The key is to



Several conditions affect how income contributes to "Well-being"

- [1] the diverse nature of individuals
- [2] the diverse characteristics of the physical environment
- [3] the diverse qualities of the social environment
- [4] differences in social relationships
- [5] differences in intra-household distribution

Figure 3-2 The relationship between "Well-being", "Public policy" and "Income".

figure out what an individual person's capability may consist of. It will range from the ability to read and write and the ability to survive longer to such considerations as the value people give to life and the opportunity for fulfilling lifestyle choices and opportunities. The original meaning of the Chinese and Japanese characters for Economy "經濟" are "經世濟民", which means to govern the country and preserve people's lives. If a country's economic purpose is to preserve people's lives, then Sen's capability approach is exactly what we require as an explanatory description of "well-being".

The "Report by the Commission on the Measurement of Economic Performance and Social Progress" was a 'white paper' presented to the president of France, and Sen served on the commission as an adviser: he argued that we should shift the emphasis of our measurement system from measuring economic production GNP to measuring people's "well-being" and their "sustainability of means". "Well-being" must be looked at in multi-dimensional terms. It has these eight elements if not more: i, Material living standards (income, consumption and wealth); ii, Health; iii, Education; iv, Personal activities including work; v, a Political voice and a say in governance; vi, Social connections and relationships; vii, Environment (present and future conditions); viii, Insecurity of an economic as well as a physical nature. Both objective and subjective dimensions of "well-being" are important, as are, in particular, the dimensions of inequality.

1 The proposal of "Capabilities approach"

Amartya Sen's father was a University professor in Bengal, India. When Amartya was nine years old, he lived through the Bengal famine in which three million people perished. This led him as a student to study economics, and his academic achievements have had, in many ways, a significant impact on contributions to the continuing economic debate, principally through his proposal of the "Capabilities approach". The background to this approach is his study of poverty and hunger (Sen, 1981) and his exploration and comparative study of alternative indicators of the actual GNP; and Sen had first proposed, at his Turner memorial lecture of 1979, "What is equality?".

Sen is concerned, for instance, over the best way of meeting the needs of disabled people. What matters is not equality between properties and resources as sources of livelihood, nor the equality of utility as the satisfaction of results, but equality understood as a person's genuine ability to act in various valuable ways as a functioning human being. In this example of a person with disabilities, able only to do certain things, we should understand

that the issue is one of "substantive freedom".

In "A Theory of Justice", John Rawls argued for the concept of primary goods: these consist of rights, freedoms, employment, educational opportunities, income and wealth, no matter what kind of life is essential to all living things. Yet this list suffers from a ideological handicap in being concerned with good things in themselves rather than with what these things can do for human beings, while utility, on the other hand, which is indeed concerned with what these things can do for human beings, uses a metric that focuses not on the person's capabilities but on his mental responses.

The focus on basic capabilities can be seen as a natural extension of Rawls's concern with primary goods, shifting attention away from goods simply as goods to how goods may contribute to human life (Sen, 1982: 368). Because public policy has a responsibility for people's lives and complete self-independence is impossible, Rawls, in taking account of this factor, thought that there were certain necessary conditions and forms of assistance that should be given to individuals as a right. Sen, on the other hand, argued that it is not appropriate to define primary goods without considering each person's unique physical and economic conditions.

Subsequently, Sen introduced his "capabilities approach" (Sen, 1985: 10-14). He made a clear distinction between "functioning" and "having goods & utility". A person's "capability" is the status that people have reached, their personal evaluation of what it is within their power to do, and it defines the various combinations of functioning ('being') that a person can achieve.

We may take the example of 'hunger' and 'fasting' to suggest the difference between "functioning" and "capability". While these two terms may be used to refer equally to those who do not eat what the body requires in order to live and survive, fasting depends on the faster's own choice and it is a different aspect of freedom from "a set of capabilities". Consequently, the theory of "capabilities" is similar to the concept of personal freedom, a condition that combines independence and subjectivity (two elements of personality), and that can be understood as the combination of ability and personality (Ninomiya, 2008: 79-88).

The Utilitarian tradition held to the notion of subjective utility, a view that took for granted the theory that the human being's pursuit of happiness is to avoid pain. Such a theory, however, has serious disadvantages: it neglects the human being's "physical condition" and his or her own "valuation" (Sen, 1985: 23). Yet, on the other hand, while commodity command is certainly a "means" to the end of human "well-being (welfare)", it can scarcely be the end itself (Sen, 1985: 28).

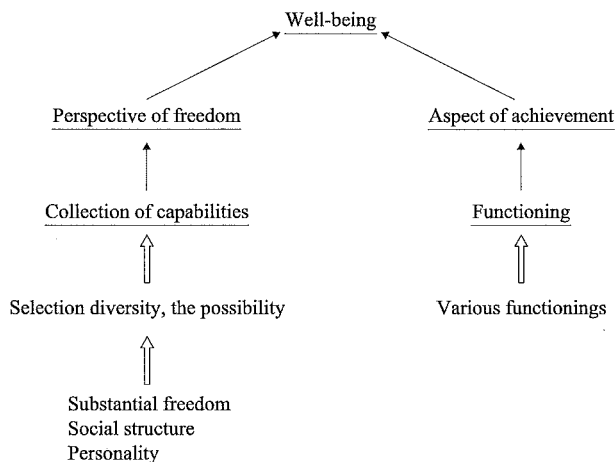


Figure 3-3 The capability and functioning.

Human economy does not simply consist of monetary economy evaluated by the size of a human being's income: it also includes commons economy (barter and reciprocity), and self-sufficiency economy (homes, gardens, or such leisure purists as fishing). If the commons and subsistence economies are sufficiently abundant, the role of monetary economy will be correspondingly smaller.

A variety of factors influence the conversion from commodity-characteristics to the personal achievement of human "functionings", (a word coined by Sen and not yet in the dictionaries to indicate an individual's access to a wide of range of functions that in turn assist the person in the performance of his or her own functions.). Other examples include the impact of the availability (or otherwise) of food on nutrition, something that is bound to vary within population groups, climatic conditions, age, sex, etc. (Sen, 1985: 25-26).

When faced with this apparent undermining of his account, Rawls conceded, "I agree with Sen that basic capabilities are of first importance and that the use of primary goods is always to be assessed in the light of assumptions about those capabilities" (Rawls, 1993: 183), and on this basis of this recognition, Rawls, in the final chapter of "Justice as Fairness: A Restatement", affirmed that the account of primary goods does take into account the notion of basic capabilities (Rawls, 2001: 169).

Although Sen has spoken highly of Rawls's focus on individual liberty

and on the resources needed for substantive freedom (Sen, 1999, 86), he has at the same time continued to criticize Rawls for focusing not on the range of freedoms but on the means to exercise freedom, such as the availability of primary goods.

2 The neo-classical theory of environmental economics: its problems

The neo-classical theory of environmental economics is based on the modern study of microeconomics: its elements and its fundamental analytical principles are utility, the Pareto principle, and compensation tests. According to Sen, these basic concepts raise the following questions (Sen, 1987).

2.1 Utilitarianism

The utility function is measured numerically by the degree of an individual's satisfaction as derived from the consumption of commodities. This type of analysis has limits, however: satisfaction is unequally distributed: the hopeless beggar, the precariously placed landless laborer, the subjugated housewife (who may have had an excellent education), the hardened unemployed or the exhausted coolie may all take pleasure in small mercies. The hopelessly deprived lack the courage to desire much, and their deprivations are muted and deadened in the scale of desire fulfillment.

It is therefore arguable that since the claim of utility as the only source of value rests allegedly on identifying utility with well-being, it can be criticized on two grounds:

- [1] that well-being is not the only thing that is valuable;
 - [2] that utility does not adequately represent well-being.
- (Sen, 1987: 45-47).

With regard to [1], we can say that since human action is based on commitment, then the commitment of each individual actor is an important factor in assessing well-being. With regard to [2] as, Reiko Goto has pointed out, "If, within the total value of social public welfare benefits, the utility of an individual may pass into the good of other individuals, then it cannot be denied that it is open to the possibility of being counterbalanced by effects produced by those other individuals." (Goto, 2002: 295).

2.2 The Pareto Principle

The Pareto Principle measures efficiency by judging whether a proposed policy change is desirable for the whole society. If nobody loses when the changes benefit the individual for whom they are designed, this is known as "Pareto-improvement". When, after repeated application of Pareto improvement, there is no further room for improvement in the desired state of affairs, if, that is, you do not reduce the satisfaction of other people in satisfying the individual concerned, then there are no ways to increase satisfaction regardless of the general state of affairs: this is known as "Pareto optimum". This principle might be applied as a means to prevent the deterioration of the environment and property around individuals up to the point in which it does not reduce the personal well-being of any person in that position.

Yet, and this is the problem, a state can be Pareto optimal with some people rolling in luxury while others are in extreme misery, where the miserable cannot be made better off without cutting into the luxuries of the rich (Sen, 1987: 32).

2.3 The compensation test

Like the Pareto Optimum, the compensation test is a principle that can be applied to decision making within a society. Some scholars have proposed that the chance whereby the gainers are able to overcompensate the losers may be seen as a social improvement (Kaldor, 1939; Hicks, 1939). Yet such criteria for social improvement lead to inconsistencies (Scitovsky, 1941; Samuelson, 1950; Gorman, 1950). Another more basic difficulty relates to the question as to why the mere possibility of compensating the loser should be adequate to establish a social improvement even if the compensation is not, in fact, to be paid. Losers are likely to include the worst off and the most miserably-situated members of society and it is little consolation for them to be told that it is possible to compensate them fully, but that no actual plan for doing so will be acted on. If, on the other hand, the losers are in fact compensated, then the overall outcome after compensation has been paid will be a Pareto improvement, and then there is no need for the compensation test as a supplement to the Pareto principle. This being so, the compensation criteria are either unconvincing or redundant (Sen, 1987: 33).

3 On the development of the capabilities approach

In his writings, Sen gives a complete account of capability and freedom, all the way from the basic theory to particular concrete problems, and after he

had won the Nobel Prize (1998) for his work in Welfare Economics, he further developed his ideas about respect for freedom and answered the criticism that he put too much emphasis upon it (Sen, 1999: unless otherwise stated, all reference are from the same source). An individual's capability is the combination of choices that a person has and that the person is capable of acting upon: "substantial freedom" is the achievement of this combination: a situation, that is, in which a person can choose between various lifestyles. It is possible to see in Sen's plan an attempt to overcome Isaiah Berlin's distinction between "Negative liberty", which is one's freedom from interference in the pursuit of one's legitimate desires, and "Positive freedom", which gives one the right to pursue one's aims actively, so that the claims of the more rational ego may be realized.

If we seek to define the relation between freedom and development, we shall note that not only is the main purpose of freedom to develop one's capabilities but also that freedom is the main means by which those same capabilities can be developed. If freedom is the purpose of development, it can be secured by such means as political freedom, freedom of economic and social opportunities, open security, protective security; these capabilities continually complement each other, for when people live in freedom their capabilities tend to contribute and reinforce one another. Hence, an individual's capability depends above all on the economic society and the political system in which he or she lives. Although Sen has been criticized (by Navarro, 2000: 661-74) for disregarding the question of power and the ownership relation, it ought to go without saying that a definition of economic society and the political system that provides for human capabilities will naturally and as a matter of course include the distribution of power and ownership relations (see Figure 3-3).

According to Sen, human capabilities are the substantial freedoms that persons can enjoy and that afford the kind of life that offers value wherever the person lives. Poverty is thus not only a state of low-income, but must be understood as deprivation of a person's basic capabilities. The main points of this proposition (Sen, 1999: 87-88) are

- [1] Poverty can be sensibly identified in terms of capability deprivation; the capability approach concentrates on deprivations that are intrinsically important,
- [2] There are influences on capability deprivation — and thus on real poverty — other than lowness of income,
- [3] The instrumental relation between low income and low capability is

variable between different communities, between families in a community, and even between individuals within a single family.

This analysis of poverty that looks at it from the viewpoint of capability concerns the issue of means and ends, while also embracing the freedom to meet those purposes; and it contributes to our understanding of the nature and causes of deprivation that deepen one's poverty (for example, a very high mortality rate, morbidity, malnutrition, etc.). In a state of poverty a person is deprived of capabilities, and, in this sense, such persons will find it impossible to take responsibility for their lives, for though it is usually said that freedom demands responsibility, responsibility correspondingly demands freedom.

Of course, while they are thus distinct, poverty of income and poverty of capability are nonetheless related. In recent years, two types of poverty have been highly visible in Japan: one is absolute poverty in which people cannot sustain themselves and their families; another is that state of poverty in which people are unable to obtain a place in the social arena and where even their basic essential needs cannot be met (Nishikawa, 2008: 5). Even if unemployment insurance compensates for loss of income, the chance of being denied employment leads psychologically to loss of desire, a lowering of skill, and social exclusion: people in such conditions have been deprived of their capability. We may note as well that although the income of African Americans is higher than the incomes of many living in other countries, their average life expectancy is relatively short owing to social problems arising from violence and the health insurance regime. There is thus a systemic diversity in the relationship between the amount of income and the nature of freedom, and if we hope to improve capabilities the role of public policies will be increasingly important. In Japan, the health insurance and public health policy instituted after World War II have greatly lengthened the average life expectancy, a factor that is very much emphasized by Hiroshi Yoshikawa (Yoshikawa, 1999: 180-186, see Box). It is in such places that we really need a pro-active public policy.

BOX 3-1 Average life expectancy of the Japanese and the role of public policy

Although at present the average rate of Japanese life expectancy is one of the highest in the world, its rise during the 100 years of 20th century was not smooth. Hiroshi Yoshikawa has collected and discussed the relevant data (1999: 180-186).

In 1900, the average life expectancy for Japanese men was 43 years.

This is almost the same as for the most prosperous men living in the UK at the time. From 1900 to 1945, average life expectancy in the UK and Italy grew at a stable rate, whereas before World War II the average Japanese life expectancy grew hardly at all (see Figure 3-4). After the implementation of a basic level of public health, the Japanese government focused on arms expenditure and ignored the infrastructure of sewers and health insurance. When writing about Japan, the U.S. demographers Johansson and Moske have stressed the limitations that during the pre-World War II period restricted the growth of average life expectancy. The effects of earthquakes and the impact of pandemic flu at the end of World War I, as well as the prevalence of other infectious diseases, also had a huge impact.

The post-war growth of Japan's average life expectancy contrasts strikingly with the pre-war record. Since the 1960s, the implementation of health insurance has led to a significant increase in the rate of medical examinations of the elderly, while over the 25 years from 1950 to 1975 the rate of child mortality rate declined by one sixth. Ogura and Suzuki (1993) found that as well as an increase in the numbers of childbirths in hospitals or clinics, improvement of the water and sewage system contributed very significantly to the reduction in infant mortality. While childbirths in such health facilities as maternity hospitals reflect the coverage rate of health insurance, they are also dependent on the mother's educational level and on the number of beds per capita of income.

Japan's national health insurance policy and an improved public health infrastructure have therefore greatly improved the conditions of those people who are relatively disadvantaged. Even more, it has, over the years, reduced the bias in the disparity of life expectancy and infant mortality, while average life expectancy has increased to its current levels (see figures published on 11th July, 2011). Herein lies the significance of public policy. Of every 1,000 babies born in the United States within one year, 6.5 die; in Japan, the comparable figure is 3.3. At the same time, according to modern Japan's "health unequal society" fact-finding research, those in need of care or those who are suffering from depression and similar clinical conditions are five times higher in number among the bottom ranks of society than amongst its upper echelons: this clearly indicates our urgent need of "a healthy social policy".

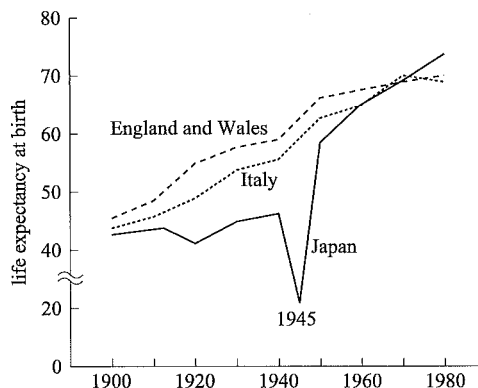


Figure 3-4 The changes in average life expectancy (male) in the three countries Japan, Britain and Italy (Johansson and Moske 1987: Figure 1).

Pollution, hunger, and the global financial crisis have placed the unnoticed, “those left behind (incompetent people, bad luck people)”, in severe difficulties. Consequently, the social safety net of a “protective security” system is an important means of securing their freedom. The Japanese “dispatch Village” (established at the end of 2008) for people who have no homes offers one very clear example of conditions where the safety-network is inadequate. One’s public rights and freedoms, political freedom and the rights of participation play decisive roles in ultimately securing one’s economic rights and a good quality of life. The role of enlightened public policy is as decisive for the elderly as it is for children, women and others in vulnerable social groups, especially over such intrinsic issues as hunger and pollution, health care, basic education, clean drinking water, and sanitary facilities (Drèze and Sen, 1989: 43–44). This is a field of public action, which means not only government initiatives and activities but also the work of many non-state agencies. Such work is also supported by NGOs and community organizations, newspapers and other media whose reports on famine can act as a warning to governments, etc. (Drèze and Sen, 1989: 19). In Japan, we have come to recognize the importance of public activities in the face of earthquakes and the huge damage that they may often cause.

Sen’s capabilities approach can be applied to specific occasions and has engaged the Japanese in discussion over its significance and the problems that it may be able to deal with. For example, Jyoji Asahi has indicated: [1] since capability can measure the real nature of observed goods and services, it is applicable to the determination of standards of living, poverty research and

other social problems, while avoiding a comparison between individuals in terms of utility, and it can directly compare individual well-being as a measure of capabilities; [2] capability can become an absolute scale, and we can compare individual capability even if in different places and at different times; [3] capability can be measured on individual terms as a unit; [4] nevertheless, while capability can provide a deep insight into the essence of usefulness beyond the mere comparison of goods, some problems remain; [i] choices among capabilities as a measure will, in any case, have an element of arbitrariness; [ii] we must distinguish between the importance of "essential capability" and "derivative capability"; [iii] while capability is a concept that combines goods with services, it has a tendency to work independently of them; [iv] in order to exclude "the arbitrariness of choice", society must be able to choose the capability option (Asahi, 1988: 8-9).

Since the concept of capability does not explicitly mark out the weight and linkage of capability, Jin Sato has stressed that the measurement of capabilities still raises the following as yet unanswered questions. [1], how are we to define the basic level of capability? [2], how are we to establish the total evaluation criteria? [3], how do we treat cases of trade-off in capability? (Sato, 1997: 12-21) In this regard, Sen himself has recently criticized the view that supports the existence of "a fixed list of capabilities" (Sen, 2005: 157-160). This is because, in the first place, we use capabilities for different purposes; secondly, that social conditions and priorities may vary; while, thirdly, even with given social conditions, public discussion and rational considerations can lead to a better understanding of the role and reach of each particular capability.

Moreover, studies have been undertaken to evaluate the existence of capabilities inherent in society, amongst individual groups and within the community (Foster and Handy, 2009), as well as the formation, development, and decline of capability. These topics have been at the forefront of recent debates concerning the development economics and environmental economics (Comim, Qizilbash and Alkire, 2008).

4 Capability theory and environmental economics

My own interest in Sen's capabilities approach came about as a result of my researches in environmental economics, and my focus has always centered on such issues as [1] how to enhance human well-being while reducing the impact of the various unfavorable manifestations of the current global environment, [2] how to treat the significant disparity of per capita resource consump-

tion and waste in countries around the world, as well as within countries themselves, and, [3], how to build a social system whereby people of the same and successive generations can take responsibility for the environment in order to achieve sustainable development.

The discussion carried out in the previous pages makes the first issue very clear: economic growth and economic development are not the same, and our main purpose here is economic development and the development of human capability. Economic growth is only a means to achieve this end, and if economic growth brings about environmental damage through the degradation and destruction of human capability, this cannot be called true economic development.

From Sen's point of view, we should also pay attention to the meaning of public policy as distinguished from personal income. As we have already said, the growth of average life expectancy in Japan has depended largely on public health provisions against infectious diseases and the existence of the national health insurance system. In such terms, environmental policy is an aspect of public health.

In the same spirit, the former Prime Minister of Norway Gro Harlem Brundtland (at one time head of the WHO Bureau) has put forward the concept of Sustainable Development in the report "World Commission on Environment and Development" (commonly known by its acronym as WCED), where she says "Health and environmental issues are coming together in a unified demand for sustainable development policies. The worst scenario is one of nightmare proportions. We could see the spread of HIV/AIDS, TB and malaria and the increase of antibiotic resistance to existing treatments. Climate change could lead to the spread of diseases such as malaria outside its tropical domain, and an increase in extreme weather and natural disasters would both kill and cause disease. We could also face increased food insecurity. Sadly, this is where we are headed today if we do not take immediate and meaningful action". (Brundtland, 2001).

As Chapter 1 confirmed, a committed ecological service affords the foundations for safety, the basic materials and the health of societies that will be conducive to human "well-being". This is the groundwork of freedom for human beings, the base, that is, of human capabilities, and it is for this reason that environmental deterioration and destruction cause the deterioration and the ultimate destruction of the very foundations of human capabilities. Sen, as the co-chair of the Report of the Commission on Human Security, has stressed that the relationship between human security and the environment is most pronounced in areas of human dependence on access to natural resources.

Environmental resources are a critical part of the livelihoods of many people, and when these resources are threatened because of environmental change, those people's human security is also threatened (The Report of the Commission on Human Security, 2003: 16–17). Moreover, atmospheric pollution caused by fossil fuels and the resultant global warming, desertification and other environmental crises would, in a variety of ways, seriously threaten “human security protection”. As a Japanese example, I would instance as proof of this claim the case of the Minamata disease (see page 70 below, and seq.).

In relation to notions of capability, Sen places emphasis on freedom of development and the importance of democracy from the viewpoint of “Development as freedom”. As for Japan, we have to point out that the interests of the citizen are often disregarded when development projects are planned; indeed, the planning process has often lacked adequate discussion, even in the National Diet, while the postwar unsupervised initiation of various, huge developments, especially of ill-thought out resorts, has caused various environmental disasters and led to the economic bubble and its bursting. While the difficulties faced by the claims of “Freedom and democracy in development” are not peculiar to developing countries, this is not to say that Japan's postwar comprehensive national land plan had no positive role to play (see Chapter 6).

If such consequences of global warming as rising sea levels and desertification underline the disparity structure of resource consumption and if the situation is going to become more serious for such “poor countries” as Bangladesh and the countries of Africa, and if we admit the asymmetric diversity of the damage and its causes, we shall be bound to assume that “the world's total production and per capita consumption” is a very poor and insufficient set indicator. In Bangladesh, for instance, the incidence of such natural disasters as floods appears to be on the increase, and one of the causes seems to be the melting of glaciers in the Himalayas because of global warming, while the rising of sea levels has also intensified (UNEP, 2001).

Sen is mapping out a plan to deal with the population problem, where, in the long term, the birthrate will be reduced through the improvement of individual capability and respect for individual liberty, and, in the short term, where conditions will be distinguished from the viewpoint of the individual's choices:

“With greater opportunities for education (especially female education), reduction of mortality rates (especially of children), improvement in economic security (especially in old age), and greater participation of women in employment and in political action, fast reductions in birth rates can be expected to

result through the decisions and actions of those whose lives depend on them" (Sen, 1994).

Sen's emphasis falls not only on the initiatives that need to be taken with regard to tax and subsidies, but also on the importance of the development of the social norms and ecological ethics that are devoted to the preservation of the environment. In comparison, let us say, with a society that exacts a penalty whenever garbage is thrown away, the society that, as a social norm, never needs to throw away garbage at all might be considered the more advanced society of the two.

It is in relation to Sen's third point that his idea of agency deserves our special attention. When Sen was elected the 1998 Nobel Prize laureate in economics, the Nobel Committee praised him for bringing an "ethical dimension" to economic science. Sen's intention is to offer logical proof that when human actions differ from those of the purely self-interested and self-centered, the ethically motivated actors are not being "rational fools". In addition, Sen is trying to place the idea of freedom and human rights within a system of ethically centered economics rather than within the economics of utility centered welfare. His main concept here is of human agency.

Although a person's well-being (her happiness, welfare and well-being) is an important criterion for evaluating that person's opportunity, and for fulfilling her social security and basic needs, a person's agency (along with the idea of a person's "well-being") is correspondingly important for evaluating what people can do, and for satisfying their sense of individual morality and responsibility. When we are brave enough to help others, our personal "well-being" may appear to be restricted, but our freedom of agency expands. Such a person has an aim and a value brought about by the sense of mission and a commitment to it, quite apart from his or her own feelings of "well-being".

President Dr. Yunus of the Grameen Bank, a Nobel Peace Prize Laureate, has said that to be human is not only to live out an existence that seeks for the maximization of self-interest, but is also one that holds "the desire to do something good for people and society". A human being is a multi-dimensional character who not only seeks private profit but also desires to benefit society.

A society's infra- and inter-generational responsibility for the environment is one of the items on the agenda that needs a more theoretical underpinning so as to ascertain the responsibility to others of all the agencies that must sustain it.

Sen himself has said "an environmental good can be seen in essentially the

same way as a normal private commodity that we purchase and consume" since the contribution of the individual expects it of the others' contribution for the Contingent Valuation Method (CVM) that measures the monetary value of the environment, but it will be criticized if the condition of independence of social choice is not guaranteed; at the same time, he emphasizes that people not only have an interest in their own situations but are also concerned for people in the future (Sen, 1995: 29, 30, 34).

Because future generations are unable to participate in transactions now, the neo-classical compensation tests are not applicable, and it is consequently difficult to formulate rules of compensation or fix responsibility upon a presumed individual. To resolve such a dilemma, we need collective human action as human beings living in the natural world while taking the evolutionary dimension into account at all times. That is why Sen has always stressed the evolutionary nature of the problems.

Moreover, Sen has asked, "What is to be sustained?" To establish sustainability, we cannot allow conditions of deprivation to remain unchallenged, and because those of us living now should be deeply concerned over the welfare of our human descendants, we must try to fix fair dealings between generations and within generations in terms of the most basic rights and demands of human beings (Anand and Sen, 2000: 2029–2049). If a baby of some future generation is to be regarded in terms of fair dealings between generations, we must think along a time axis of 80 years.

Furthermore, in thinking of a citizen as an agency, Sen introduced the idea of "sustainable freedom" along with that of "sustainable development", an idea that has attracted attention as a means to institute the role of environmentally conscious citizens. When asking what role, then, a citizenship should play in environmental policy, Sen makes four points. I quote:

"First, such a role must involve a person's ability to think, value and act, and this requires that we think of human beings as agents, rather than merely as patients. This, too, must take us towards acknowledging the ability of human beings to think and judge for themselves — an ability that we value now and a freedom that we would like to preserve for the future.

Second, among the opportunities that we have reason to value is the freedom to participate. If participatory deliberations were to be hindered or weakened, something of value would be lost.

Third, if environmental objectives are pursued by means of procedures that intrude into people's private lives, the consequent loss of freedom must count as an immediate loss. For example, even if it were to turn out that restricting reproductive freedom through coercive family planning (as with the

one-child policy in China) helps to sustain living standards, it must also be acknowledged that something of importance is sacrificed — rather than sustained — through these policies.

Fourth, the conventional focus on overall living standards is too aggregative to pay adequate attention to the importance of specific freedoms. There can be a loss of freedoms (and of corresponding human rights) even when there is no diminution in the overall standard of living. The point of this general ethical distinction, which has a very broad relevance to social choice, can be illustrated by a simple example. In the ecological context, consider a deteriorating environment in which future generations are denied the opportunity to breathe fresh air (because of especially nasty emissions), but where those future generations are so very rich and so well served by other amenities that their overall standard of living may well be sustained” (Sen, 2004: 189–192).

5 A capabilities analysis of damage caused by the Minamata disease

I should at this point like to use the approach and methods of Sen’s capacities model to analyze the actual environmental damage caused by the Minamata disease. Sen’s “deprivation of capability” was a concept originally created as a tool to examine the development of poverty, hunger and inequality. Why, as an environmental issue, is it applicable to the outbreak of the Minamata disease? It is so because, firstly, this incident took place during the period of post-war economic recovery and in the process of high economic growth. Secondly, most of the victims belonged to impoverished and vulnerable groups that were both socially and biologically deprived, and who, once damaged by the disease, became even more impoverished. Thirdly, for years afterwards the victims suffered social discrimination and unequal treatment, and were thus deprived of the right of a “normal human life”. Fourthly, the immediate victims were not alone in being affected by the catastrophe: not only did the incident give rise to political conflicts within the local society, it also led to social discrimination exerted by the outside world when it became “impossible to disclose that one was born in the Minamata area” (Yoshida and Yoshida, 2004). Michiko Ishimure’s fiction “Kukai Jyodo” (1972) drew the picture dramatically, where, in the case of patients seriously affected with Minamata disease, she describes how they became “bedridden”, afflicted with “blindness”, “speech difficulties” and “whole body convulsions”; how they felt “a lack of freedom of hands and feet”, and suffered terrible pain from the

destruction of the central nervous system; how their field of vision was restricted, their hearing was severely damaged, their limbs stiffened or became paralyzed: how they had been robbed of their basic functions and of their freedom and dignity as human beings.

During its initial stages, the disease was treated as an epidemic, and the patients were subjected to groundless discrimination, while within the same family sufferers were forced to care for their fellow sufferers. Various testimonies and investigations have clearly shown that such conditions destroyed family life and family relations.

Even if outward appearances gave little obvious sign of the disease, the majority of patients with chronic conditions had headaches, felt fatigue, had difficulty in distinguishing smells, suffered memory loss, had walking difficulties, so that there were several severe obstacles to their daily lives.

Therefore, from the point of view of "deprivation of capabilities", it is essential to analyze in what ways the Minamata disease deprived the individual of his and her concrete functionings and freedom, and in doing so consider the damage caused by the Minamata disease incident and how we may make provisions for dealing with it and its consequences.

We need to make clear just how changes in their basic functionings and degrees of freedom caused by the Minamata disease affected the sufferers: changes that were a result of mental illness, physical dysfunction and its various effects, as well as the social impact within the domains of employment opportunities, levels of income, opportunities for statutory education and further education, and, not least, family relations.

If we hope to evaluate individual diversity and devise policies to ameliorate suffering, it is indispensable to consider how the victims' specific functionings and freedoms have been damaged and whether they have any room for recovery. The recovery of lost functionings and freedoms cannot be effected by mere monetary compensation to the victim to cover simply the physical damage alone.

From January to March 2004, Tatsuo Sugiura carried out a capability approach investigation designed to inquire into and analyze the damage inflicted on the Minamata local area (Sugiura, 2005: 59–74). Sugiura's study listed the 37 items considered basic to the fundamental functioning of everyday life, such as "the ability to concentrate on work" and "opportunities to make contact with neighbors"; it divided the research between a fishing village and a mountain area, and asked by means of an interview survey whether the achievement of the 37 functionings were available at the three specified times denoted as "before the Minamata disease outbreak", "during the time of the

Minamata disease outbreak", and "at the present time".

When the statistical results of the survey and their principal ingredients were analyzed to confirm the basic destruction factor of the functionings, they showed the level of the influence of the damage and the element of bias for the fishing village. The classification afforded the following results.

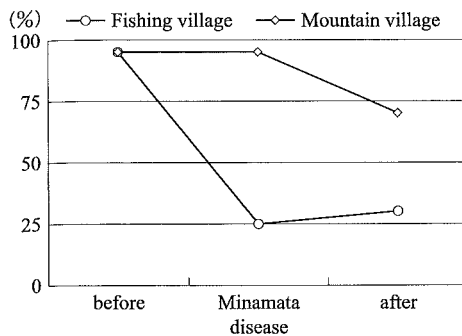
- [1] Since the time of the generation affected by the Minamata disease, functionings in the fishing village, as based on physical and mental criteria, have to an extent recovered, yet certain symptoms of the disease still remain.
- [2] Those functionings that were based on goods and income decreased in the neighborhood of the fishing village, but have now recovered.
- [3] For the generation affected by the Minamata disease, functionings based on social relationships decreased not only in the neighborhood of the fishing village but also in the mountain area, but these relationships have tended to recover (see Figure 3-5).

If we follow this path, we can analyze environmental damage concretely by evaluating the deterioration, destruction, and recovery of various personal functionings from the viewpoint of "the deprivation of capabilities".

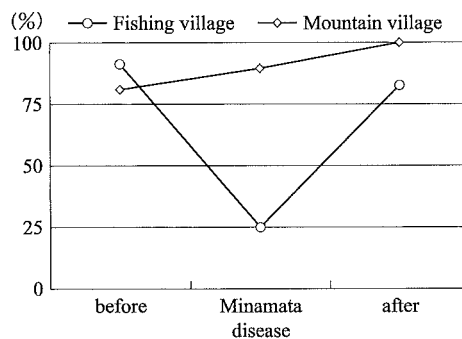
Finally, we must sort out the relationship between capabilities and rights, for if capability itself has value, why do rights become the problem?

First of all, it is very important to capture the relationship between "capabilities and freedom" as interactive relations within the social system (Sen, 1999). We recognize the role of individual liberty as the creator of value and the standards of the society simultaneously with courses of action ranging from public policy to individual capability. In order to clarify what we mean by non-justice and what we mean by a state of deprivation, public discussion will be indispensable if we are to decide what we mean by political rights, including freedom of expression. We can recall the environmental problems that post-war Japan had with the forces of the right wing, and that the effective progress of the legitimate regime was based on exposure to and the discussion of freedom, the independence of the judiciary and similar democratic conventions, under the new constitution's statement of political rights as the basis of the regime.

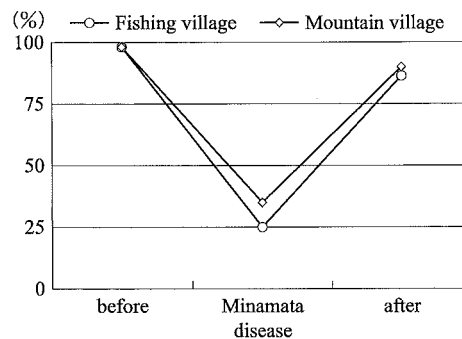
In earlier arguments (Sen, 1993), Sen had spoken of "positional objectivity", the view that there are some kinds of injustice that only the victim can understand (Wakamatsu, 2003), which is why the claims of the victims may not always be justified, but why rational agreements are more likely to be reached



Functioning affected by
physical and mental aspects



Functioning affected by income
and infrastructure



Functioning affected by natural
and regional environment

Figure 3-5 Changes of functioning at Minamata citizen (Sugiura Tatsuo).

through public discussion when the public listens to the victim's claims.

Minamata city itself has adopted the policy of "reconciliation" and "environmental restoration", so that through rational public discussion the citizens are able to reach agreement (see Chapter 7).

Summary

In seeking to measure what is entailed by environmental justice, we once again summarize Sen's methodology:

In its assessment of social disparities, the capability perspective does not isolate the central relevance of the inequality of capabilities, nor does it, on its own, propose any specific formula for polity decisions (Sen, 2009: 232). The capability perspective is inescapably concerned with the plurality of the different features of our lives and concerns (Sen, 2009: 233). The capabilities approach aims to seize on the person who has made use of "doing" and "being" to achieve his or her direct functionings, so as to demonstrate the diversity of choice of degrees of freedom (a collection of capabilities), and to provide an axis for environmental assessment.

At the same time as it excludes the means of self-purposive advancement, it reveals that one's true purpose in life is "well-being", while showing respect for the diversity of individuals and focusing on results as well as being process-oriented: the approach also admits the value of a sense of commitment and the "idea" that "well-being" can be measured by indicators of "agency" (Sugiura, 2004: 93-112).

Furthermore, Sen's methodology succeeds in viewing sustainable development while pointing out the road that will lead to real human security; and it is a path worth taking and developing as we follow in Sen's footsteps.

In addition, one aspect of capability deprivation concerns how deterioration of the environment by pollution destroys human capabilities. We may seek to counter this by another potentially effective aspect of capability formation, one that requires citizens to work together as an independent agency that is able to think, to evaluate, to participate, and, where necessary, to act.

What Sen can teach those of us who work in environmental economics is that we must adopt a flexible posture by taking from classics economics what works well while always keeping in mind the diversity and the real living conditions of those of our fellow citizens who are socially vulnerable; in harness with this, we must attempt to revise and develop political economy in its strained relationship with mainstream economics.