

Sustainability and Buddhism:

How do we measure quality of life and degree of happiness?

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1. Introduction

THE United Nations (UN) held the “United Nations Conference on the Human Environment” in Stockholm in 1972, and thereafter formed the United Nations Environment Program (UNEP) to address various environmental pollution issues that were coming to light in advanced nations at the time. In 1980, the UNEP published the “World Conservation Strategy”¹ together with the World Wide Fund for Nature (WWF), which is a nongovernmental environmental conservation group, and the International Union for Conservation of Nature and Natural Resources (IUCN). The now commonly used word, ‘sustainable development’, was first described and used in the World Conservation Strategy publication, and it was also the first time the concepts of ‘conservation’ and ‘development’ were recognized as mutually interdependent.

Three targets were demonstrated in this publication, (1) to preserve important ecosystems and systems of life maintenance, (2) to conserve genetic diversity, and (3) to utilize biological species and ecosystems through sustainable methods. The World Conservation Strategy publication was a milestone document with profound meaning at the time, and has since been used for settling issues and developing strategies relating to environmental preservation in 50 countries or more since 1980. In 1987, the World Commission on Environment and Development (WCED) published “Our Common Future: The Brundtland Committee Report”² which proposed that both global sustainability within the context of an interdependent relationship between humans and nature, and the economic equality between nations and environmental preservation, are necessary and indispensable associations. In 1991, the WWF, UNEP, and IUCN published “Caring for the Earth: A Strategy for Sustainable Living” (1991)³ to promote a new world conservation strategy”. In the new world conservation strategy, policy to achieve sustainable lifestyles was regarded as dependent on nine principles and 132 codes of conduct

that concretely clarify various environmental problems. The reality today is that it has been extremely difficult to implement and convince the world over of the critical importance of ‘sustainable development’ even after almost 40 years since the Stockholm conference. We are now faced with a grim ecological reality in which real fundamental change is necessary. Now, we must either follow-through with the recommendations from the past half century or completely change the basic concepts and approaches suggested. In this paper, we would like to examine the keyword and concept of *sustainability* from a context of ‘awareness’ of the roots of environmental problems, and examine the problems revolving around limited natural resources in the present and future. In this study we are particularly interested in the Buddhist perspectives and aspects relating to the ‘degree of happiness’ and ‘quality of life’.

2. What is ‘Sustainability’?

In “Our Common Future” (1987)⁴, the following four concepts can be summarized as prescriptions for achieving ‘sustainable development’.

1. Sustainable development is development which fulfills the desire of the present generation so that the capability for future generations to fulfill their desires is not reduced or compromised.
2. Sustainable development must not expose or take advantage of the natural system supporting life on Earth—atmosphere, water, soil and living things—to danger.
3. For sustainable development, we must control and minimize unfavorable influences to the atmosphere, water, and other natural systems, and aim to preserve the overall ecosystem.
4. Sustainable development means carrying out all development of natural resources, investments, technical development, and reform from the system in one direction, and the process which heightens the capability to fill desire and wish of the present and future human beings.

In summary, the concept of *sustainable development* proclaims reservation of consumption and profits for present and future generations, and protection of nature and ecosystems from threats. Doctor Karl-Herik Robert of Sweden has advocated the “Four System Conditions”⁵ as a logical process for the natural environment and human society to accomplish a ‘*sustainable system*’. The “Four System Conditions” as a contingency to sustainability are as follows.

1. Do not increase the concentration of unearthed or extracted substances from the Earth's crust.
2. Do not increase the concentration of artificial substances from human society in nature.
3. Do not degrade nature by physical means.
4. Do not create situations which systematically limit the action and capacity of people to fill their fundamental needs.

Furthermore, economist Herman E. Daly has proposed three principles or pillars called "Daly's Three Principles"⁶ relating to the use of resources and discharge of waste in society. "Daly's Three Principles" are considered broad criteria for ecological sustainability of resource use and discharge of waste in society as follows.

1. The sustainable use rate of 'renewable resources' such as soil, water, forest and fish, should not exceed the rate of regeneration.
2. The sustainable use rate of 'non-renewable resources' should not exceed the rate of development of renewable substitutes.
3. Waste generation should not exceed the assimilative capacity of the environment.

The 'Four System Conditions' and 'Daly's Three Principles' describe the foundational framework and basic principles for realizing a true sustainable society. However, these guidelines and concepts remain a description of an ideal relationship between the natural system and human societies, where the essential need to improve the 'quality of life' is not directly considered. There are, however, two indirect or subtle expressions considering human quality of life found in the Brundtland committee report as follows, "... the development which fulfills desire of the present generation so that capability for the future generation to fulfill their desires is not decreased" and "... the process which heightens the capability to fulfill desires and wishes of the present and future human being".

The new world conservation strategy provided nine principles and 132 codes of conduct to address various environmental problems, and clarified the targets of how to take action⁷. The first of the nine principles states (not in order), (1) "respecting and caring for the community of life" and was established as an ethical baseline for the other eight principles towards a sustainable society. The next (2)—(5) principles were provided as criteria that must be fulfilled; (2) "improving the quality of human life", (3) "conserving the Earth's vitality and diversity", (4)

“minimize the depletion of non-renewable resources”, and (5) “keeping within the Earth’s carrying capacity”. Among these four principles, (3) “conserving the Earth’s vitality and diversity” requires us to conserve the life-support system of the planet, conserve biodiversity, and ensure that uses of renewable resources are sustainable. In addition to these five, the following principles address specific behavior for each individual, region, nation, and the international scale as follows, (6) “changing personal attitudes and practices”, (7) “enabling communities to care for their own environments”, (8) “providing a national framework for integrating development and conservation”, and (9) “creating a global alliance”.

These ethical tenets of the new world conservation strategy clearly address improving the overall ‘quality of life’ as one of the general targets. However, creating and realizing a sustainable society is an extremely difficult process with several hurdles. Let us reflect on the present situation by examining how these principles are currently measured using various indices that have been promoted thus far.

3. Present Conditions Viewed from Indices

The fourth principle, “to minimize the depletion of non-renewable resources” should first be applied to the current state of non-renewable resources. According to “Limits to Growth: The 30-Year Update” (2005)⁸, oil consumption has reached 7.27 times, natural gas consumption has reached 14.54 times, coal consumption has reached 3.64 times, and power generation capacity has reached 21.04 times while the world population has increased 2.47 times in the 50 years between 1950 to 2000. The expansion rates of production yields for iron, corn, and wood have also far exceeded the population growth rate. When we consider the exponential growth of global resource consumption, we now know that the ‘wealthier’ life-styles of advanced countries have spread to many emerging countries during the second half of the 20th century. According to the OECD (Organization for Economic Co-operation Development) and IEA (International Energy Agency), primary energy consumption in the world has doubled in the past 30 years, *i.e.*, 5,536 million TOE (TOE: Ton of Oil Exchange) in 1971 became 10,345 million TOE in 2002⁹. Furthermore, it is predicted that this figure will rise to 16,487 million TOE in 20 years around 2030, which is about 1.6 times that of the calculated rate in 2002. When this phenomenal consumption rate is attained, we can expect most primary energy needs and demands will be unrealistic and unattainable.

According to the quantity of oil production calculated from oil producing countries in the world, the ‘peak-oil’ theory is already near¹⁰. The theory suggests that the quantity of oil production/consumption will reach a maximum peak, and that the quantity of oil production will decrease thereafter. There are some conflicting views about the timeline of the actual peak. For example, geologist Colin J. Campbell is presupposing that main oil producing countries other than OPEC (Organization Petroleum Exporting Countries) have already reached a peak. He further suggests that the quantity of total oil production in the world will reach a peak around 2010. On the other hand, there are more optimistic views. Some specialists suggest that the oil peak will occur between 2026–2047, when considering, calculating and combining the amount of petroleum resources estimated by the U.S. Geological Survey and the annual increasing rate of oil demand from the U.S. Information Agency. In either scenario, the oil peak will be achieved at the beginning to the middle of this century, and it is predicted that oil resources will decrease quickly thereafter. Therefore, there is no doubt that we will reach a depletion period within this century, and that it will be impossible to continue consumption of non-renewable resources, particularly oil.

The second principle advocating ‘the improvement of the quality of life’ can be measured using the HDI (Human Development Index), although there is some argument to the validity of this index. The HDI was first announced after 1990 by the UNDP (United Nations Development Program) in the “Human Development Report”¹¹. This index is a broader definition of the *quality of life* when compared to the GDP (Gross Domestic Product) index, and combines three aspects of human development in order to measure the wealth of life. The three aspects are, (1) life expectancy at birth, (2) the adult literacy rate and total school attendance rate of primary, secondary and higher education, and (3) the Purchasing Power Parity (PPP) which is computed and based on the GDP per capita. These three indices reflect the health and longevity of people, what level of education people receive, and what living standards are obtained, respectively.

The HDI is evaluated on a scale between 0 and 1.0. Recent countries with a score over 0.9 HDI values are part of Asia/Oceania including Japan, Hong Kong, South Korea, Singapore, Australia and New Zealand (not including western countries). On the other hand, the score for most developing countries or emerging economies in Africa and Southeast Asia are 0.6 or less. Since the HDI is an index which indicates the *quality of lives* and the scope of development, such as educational levels and purchasing power of the people of a country, it is not unusual for most

emerging countries to fall under a relatively higher HDI score. In the past 30 years, while the HDI is increasing amongst countries with remarkable economic growth, such as Brazil, China, and India, the index is also decreasing in some countries. The HDI of 16 countries located on the African continent south of the Sahara Desert are actually falling compared to levels from 1990. In particular, the three countries of the Democratic Republic of Congo, Zambia and Zimbabwe have fallen significantly since HDI values of 1975. Although the HDI was developed as an index to compensate for the misguiding of the conventional GDP per capita index, it has been reported that the index does not necessarily correlate with the ‘degree of happiness’ which people feel¹². For example, although the GDP per capita or the HDI of Tanzania and Nigeria belong to the lower index countries, the degrees of happiness for them are indexed quite high at the 10th and the 11th level, respectively. On the contrary, the *degree of happiness* of many developed countries such as Japan, Germany, Italy, England and other industrialized or advanced economies are relatively low when compared to GDP per capita ranking or the HDI. Therefore, this shows that material and economical wealth is not a necessary criterion for a higher *degree of happiness* of the people.

In order to evaluate the third index, “conserving the Earth’s vitality and diversity” we can refer to the LPI (Living Planet Index). The LPI which reflects the degree of ecosystem health of the Earth has been reported by the WWF since 1998. The WWF published the “Living Planet Report” (2008)¹³ as the latest version in conjunction with the Zoological Society of London (ZSL) and the Global Footprint Network (GFN). The Living Planet Index is an indicator designed to monitor the state of the world’s biodiversity. The LPI is based on trends of nearly 5,000 populations of 1,686 species of mammals, birds, reptiles, amphibians and fish from around the globe. The changes in the population of each species are then averaged and shown relative to levels from 1970, which is given a value of 1.0¹⁴. In general, the index calculates tropical and temperate latitudes separately, and also considers terrestrial, marine and freshwater biodiversity separately. In 2006, the index calculated the mean based on ecosystem type, *i.e.* terrestrial, marine or freshwater ecosystem. However, the most recent mean is calculated based on latitudinal difference between ecosystems, *i.e.* tropical versus temperate. The separation of habitat based on latitude was introduced to reflect the realities of biodiversity in temperate and tropical regions more specifically.

The global LPI index shows an overall decline from 1970 to 2005 of nearly 30%. More specifically, temperate area LPI shows a +6% average

trend between 1970 and 2005, while the tropical LPI shows a -51% overall trend. The decrease of 51% in the tropics is thought to be dramatic due to the influences of deforestation in tropical forests and the overall changes in the way land is used in these regions. The index shows how the natural ecosystem of the planet Earth has been decimated by unprecedented and relentless growth during the history of the modern industrialized civilization.

In the “Living Planet Report” by the WWF, the “Ecological Footprint (EF)” is proposed as an additional index to the LPI¹⁵. The EF indicator which is an indicator of humans’ demand of natural resources corresponds to the fifth principle of “keeping within the Earth’s carrying capacity” in the new world conservation strategy. The EF measures humanity’s demand on the biosphere in terms of the area of biologically productive land and sea required to provide the resources we use, and rely on to absorb our generated waste. The EF value is a quantitative expression in global hectare (gha) units which accounts for the world average of resource production/consumption versus the planet’s ability to absorb waste *vis-a-vis* human management capacity in carbon units. More specifically, the index considers the area utilized for crops, grazing, forests, and fishing grounds required to produce food, fiber and timber, and also reflects absorbed CO₂ waste emitted when energy is used and provisions for space needed to support infrastructure¹⁶. In other words, the EF replaces and expresses the increase in discharge of CO₂ and the consumption by human society to the area of available land on Earth.

Since 2005 the global EF¹⁷ was 2.7 gha per person and on the supply side, the total productive area, or bio-capacity of Earth was 2.1 gha per person. Obviously there is a discrepancy of 0.6 gha. In 2003, the global Ecological Footprint was 2.2 gha per person, and the total productive area of the Earth was 1.8 gha per person¹⁸. Therefore, although the total productive area of Earth has increased by efficient land utilization and the increase in the productive capacity of living organisms, the insufficiency has also increased to 0.6 from 0.4 in only two years time. Insufficiency in this context refers to land use by human beings that has already exceeded the productive capacity of the planet. In other words, we have exceeded the *sustainable* use of land. The EF value of 0.6 suggests that we would require an additional 0.6 Earth’s to sustain our current production demands. This result suggests that the natural productive capacity for future generations to utilize will decrease. Further, the amount of CO₂ discharge is 1.41 gha, or 52% of the total EF of 2.7 gha, and is the highest factor amongst all of the measurable EF values. In

1961, the amount of CO₂ discharge was about 10% of the EF in the world, and has since increased rapidly by 9 times or half of the entire EF value in 2005. Thus, reducing CO₂ is now being suggested as the biggest factor of all EF values for human beings to consider.

The ecological footprint of consumption for the country of Japan is a total of 580×10^6 gha, of which 346×10^6 gha is from land and 235×10^6 gha is from the ocean and fresh water resources, and corresponds to 15.4 times the area of the country (Wada, 1999)¹⁹. In other words, the Japanese people live by using 15.4 times the land and aquatic ecosystems of the country's capacity. Other developed countries, e.g., the United States, Germany, France, Britain, and Italy, etc. retain similar values where the EF exceeds the biological productivity capacity of the respective home countries. China and India are also exceeding their capacities. America's ecological footprint is particularly high at around 9.6 gha per person, which is a value greater than twice that of Japan (4.4 gha) and six times that of China (1.6 gha)²⁰. If people around the world consumed the same amount and lived similar lives to those in America, we would need 4.5 times the current capacity of the planet Earth!

4. Redefining Sustainability

Using the various above-mentioned indices, we can understand the difficulty of realizing a truly *sustainable* society. Currently, the economical differences between emerging and advanced economies have increased even more. At this rate sustainability of the planet Earth will inevitably fail. What are we as humanity to do? We should first examine and redefine the meaning of sustainability.

Firstly, for whom and by what method is a sustainable society attained? In the report "Our Common Future" mentioned earlier, the future generation, present generation, and natural ecosystem are clearly identified as key components for consideration. That is, it is necessary to eliminate the discrepancy between the rich and poor in the present world, reduce threat for future generations and recognize the capacity of the biosphere. Furthermore, it is critical to recognize that there are limits to a society's economic growth where infinite advancement cannot be realistically maintained due to real spatial-temporal ecological limitations. On the basis of these recognitions, the protocols for enabling sustainability are, (1) respecting and caring for the community of life, (2) improving the quality of human life, (3) conserving the Earth's vitality and diversity, (4) minimizing the depletion of non-renewable resources, and (5) keeping within the Earth's carrying capacity. In order to attain

sustainability, we should further consider the balance between individual human beings and nature by summarizing the above five points into two concentrated categories of improvement to the *quality of life* and securing *sustainability of the ecosystems*.

(1) Improvement to the ‘Quality of Life’

Improving the *quality of life* in many cases and for a vast majority of people has thus far meant to become materially and economically rich. However, it is questionable and highly relative whether becoming materially wealthy truly leads to an improvement to the *quality of life*. There is an interesting survey result from the United States and Japan which shows the relationship between personal income and the degree of happiness²¹. According to Frey and Stutzer (2002)²², although the average income per capita had increased from US\$11,000 to US\$27,000 in the United States from 1946 to 1996, the number of people surveyed who were happy had not increased significantly during the same period. Similar results were found in Japan where although the average income had steadily increased to five or more times from 1958 to 1991, the *degrees of happiness* did not change²³.

(2) Securing ‘Sustainability of the Ecosystems’

The principles of (3), (4), and (5) in the new world conservation strategy are standards which evaluate the ecological capacity of Earth. It is important here to clarify how the planet's ecosystem responds to human activities from a linear ‘input’ versus ‘output’ system. In this context, the inputs (entrance or consumption) refer to human activities that utilize natural resources whereas output (exit or discharge) refers to waste or discharge after human consumption or utilization. Thus, the inputs represent natural resources that are consumed and directly drained resulting in a degraded ecosystem with loss of biodiversity, while the outputs indicate potential climate change from excess CO₂ discharged where the ecosystem is less adaptable to changing climate conditions and most importantly loss of life due to anthropogenic contamination. Whether you account or measure the linear system from the inputs or outputs is actually irrelevant because in the end the most important factor is the human activity (rate and volume) that prompts increases or decreases in the system.

Much emphasis for control and concern has been placed on the ‘output’ portion of this system where society attempts to define environmental problems based on pollution; in this simplified example, the ‘input’ portion of natural resource is of secondary concern. The reason the input

portion of the system receives little or less attention is due to the tight economical significance of consumption. In other words, if emphasis were placed on the consumption rate and volume of natural resources, there could be significant undesirable economical impacts and delays to the efforts of decreasing poverty. In this context, sustainability must preserve the ecosystem of Earth without lowering resource allocation and dependency, or human desires.

On the other hand, by focusing on the ‘output’ portion of the problem, we can develop new technologies and industry to further stimulate economical growth. In other words, the amount of ‘output’ to the environment can be solved through technological advancements. And, by controlling the rate and quality of the output to the environment we can reduce pollution without having to adjust the human desire factor. This idea allows ‘sustainability’ to focus on the reduction of waste by controlling the rate to which the planet can sustainably absorb human consumption. However, continuous efforts to reduce the output load to the planet have failed and we continue to see Earth’s capacity on both ends of the system in miserable conditions. As a matter of fact, trying to control human desire has proved to be difficult. In effect, this is like trying to control economical development and activities. Our modern socio-economic system doesn’t allow for economical development without consumption and utilization of natural resources in some profitable way. The only way to solve this puzzle is to develop a new vantage on the linear system which evaluates ‘inputs’ more specifically, as well as the human desire factor and less on the ‘output’.

5. Buddhism and Sustainability

In the future, realization of economic growth in the poorest of countries will be critical in order to achieve any form of global-scale *sustainable development*. However, if global economic development including the growth of the poorest nations causes any increase in input-output load, we cannot achieve a sustainable society based on mutual ecosystem and resources management. This is the dilemma of sustainable development. Realistically, the dilemma cannot be overcome using the current linear development methods. In other words, the current proposed solutions to our problems show no viable improvement. Since this is the case, humanity requires a fundamental change in thinking and process.

One of the most fundamental requirements is to control rampant desire and consumption (input), and another is to re-evaluate the economically based *quality of life* and change it to a scale based on a *degree*

of happiness. In other words, one requirement is to maintain modest human desire and another is to change the evaluation of *quality of life* from an economically based perspective to a *quality of life* that is based on a *degree of happiness*. Both the *quality of life* and the *degree of happiness* should be based on the qualitative aspects of the human heart and spirit, which are difficult to measure and have thus been avoided in modern society as a source of change.

In prior studies²⁴ we have considered environmental problems from Buddhist concepts such as “the three realms of existence (*san-seken*)” in the three thousand realms of one life (*ichinen-sanzen*) by T’ien-t’ai (*Tendai Chi-gi*), “the origination of dependency (*engi*)” and “the middle way (*chu-do*)”. The three realms of existence consist of “the realm of the five aggregates (mind and body of a subject; *go-un-seken*)”, “the realm of sentient beings (human society; *shujo-seken*)”, and “the realm of non-sentient beings (natural environment; *kokudo-seken*)”. In other words, the three realms of existence are subject, society, and the natural environment, respectively.

If the Buddhist viewpoint of “the origination in dependence” is subsequently considered, any environmental problem will in turn become a problem relating to that of the “human’s mind and body”, a problem for the “relationship between fellow humans”, and a problem for the “relationship between humans and the natural environment”. Furthermore, if we consider the concept of “the middle way”, we must also put into perspective the overall balance between all concepts and entities. Thus, whenever we consider the impact of any environmental problem we must always keep in mind that harmony between the three concepts is critical.

From a Buddhist perspective, the HDI among the prior mentioned indices is an applicable index for human society and is relevant to “the relationship between human beings”. Moreover, the LPI and EF indices are suitable indexes applicable to “the relationship between humans and nature”. However, we still lack an index that is applicable to the human mind and body (or heart). Obviously, many of problems relating to the human mind and body are subjective problems where objective or quantitative numerical values are difficult to express. However, in order to realize *sustainability* between human beings and nature, we must consider human happiness and way of life as integral matters to the human heart.

Recently, a new index is being evaluated called the Gross National Happiness (GNH) in Bhutan²⁵. This particular index is attracting worldwide interest since it was utilized as an indicator of human happiness

independent of material wealth. Rather than base ‘development’ on economical growth, Bhutan decided to gauge development on happiness of the people. As a matter of fact, when the people of Bhutan were surveyed for happiness, 96.7% replied that they were either “very happy” or “happy” even though the country is not economically rich²⁶⁻²⁷.

The GNH index is a new philosophical approach for development in the Bhutanese country and not a so-called economical index. This index is an attempt to evaluate the national power and advancement not only based on “production” or “development”, but also by “happiness”. In other words, the index evaluates not only “material richness” but also considers “mental richness”²⁸. The HDI utilized by the United Nations consists of three items which can be expressed numerically, (1) life expectancy, (2) literacy rate and total school attendance rate, and (3) purchasing power. On the other hand, the GNH includes items that are elusive to numerical expression, *i.e.* (1) impartial economic development and general development, (2) maintenance of a rich natural environment and sustainable use, (3) the protection of cultural heritage, succession and promotion of the traditional culture, and (4) good governance. These four items are considered necessary elements to gauge happiness in Bhutan. Currently, a Bhutanese research group is working to develop a quantitative expression of the GHN index where the four items of “happiness” are further divided into nine fields of measure. These nine fields are, (1) basic living standard, (2) difference and diversity of culture, (3) richness of emotion and feelings, (4) mental and physical health, (5) education and cultural accomplishments, (6) time management and life planning, (7) the natural environment and ecology, (8) activity (or will to work with others) within a regional community, and (9) good governance. Thus, this new improved GNH index addresses the afore mentioned four items of basic living standards and adds more specific items to quantify. In other words, the index considers the fundamental elements of evaluating “happiness”, and recognizes that people are concerned with these elements. The philosophy towards development includes human happiness in parallel with economic growth and social development.

Moreover, the index considers the fundamental Buddhist concepts of “the origination in dependence” and “the middle way”, which suggest that the happiness of people is fundamentally linked to the harmonic balance between the natural environment, traditional culture, and politics for the people. Furthermore, the nine categories also relate to the Buddhist concept of the “three realms of existence” where three of the nine items of richness of emotion and feelings, mental and physical

health, and time management and life planning are applicable to the relationship between the human's mind and body (the realm of the five aggregates). The new GNH index which includes the nine measurable items finds its origin in Buddhist philosophy, and reflects the relationship between human beings (the realm of sentient beings) and the relationship between humans and the natural environment (the realm of non-sentient beings). Thus, we could conclude that the quantifiable index is based on a Buddhist philosophical approach.

Ueda (2008)²⁹ mentions four interesting points from her experience while staying in Bhutan. She mentions that the Bhutan politicians are particular about the clear and balanced approach towards good moral quality, happiness and economic growth, where each individual is recognized as an individual in the society, people value each human relationship, and people have the emotional capacity to sympathize with others. Looking deeper into her observations, we find that Bhutan has a long political tradition of concerning for the happiness of the people. Therefore, the quality in the leadership is clearly an important metric for evaluation. Here it is important to consider the historical aspects of the relationship between politics, human activities and nature in Bhutan. As a matter of fact, a large majority of the people believe in Buddhism and the third King Asoka (268–232 B.C.E.) of the Maurya Dynasty protected Buddhism and performed good politics during 100–200 years after Gautama Buddha's death.

The people of Bhutan believe that economic growth is not a good measure of human happiness because “there are no limits in the desire of materials” and it is hardly interesting to have much material. The people of Bhutan are literally living and practicing the Buddhist concepts of “giving charity or compassion (*kasha*)”, “offering or giving (*fuse*)”, and “owning no possessions (*mu-shoyuu*)” all advocated by Mahatma Gandhi of India³⁰. This is what Buddhist practitioners refer to as the practice of “knowing fulfillment” and “controlling the desires of material things”³¹. The people of Bhutan truly value the concept of ‘relationships’ whether it be relationships between people or the relationships between people and nature; they believe that the source of happiness is from *relationships*. Further, advancing in life, success in life or reaching a mature age is based upon ‘maturation of the heart and spirit’ rather than collection of various material goods or economic stature. This humanistic life-endeavor allows the people or population to have the charitable capacity not only for themselves, but also the compassionate capacity for the well being of others. These perspectives of life and benevolence are very Buddhist. In particular, happiness bearing from

relationships closely resembles living in the world of “the origination in dependence” in Buddhism. Thus, the people are able to validate happiness or quantify the *degree of happiness* based on various relationships.

6. Conclusions

The indices used today such as the HDI, EF and LPI are based on quantitative methods of scientific reductionism evaluating the partial extracts from human or natural activities. Factors that are often difficult to evaluate, those justifying happiness or *quality of life*, are often removed or not included. On the other hand, the GNH metric evaluates the *degree of happiness* from an angle which is useful. It is certainly true that the categories of “difference and diversity of culture”, “richness of emotion and feelings” and “how to use time and life plan” are items difficult to quantify. Therefore, the GNH index used in Bhutan could be difficult to implement in a modern society which almost exclusively relies on scientific inquiry and economy based scales. However, there is no loss in holding high expectations for the interesting research conducted by the Bhutan research institute, and this is yet another example of how Buddhist philosophy can and should be applied to modern society.

Notes

¹ IUCN: International Union for Conservation of Nature and Natural Resources, UNEP: United Nations Environment Program, WWF: World Wide Fund for Nature, “*How to save the world: strategy for world conservation*”, by Allen, Robert W., Barnes & Noble Imports, 1980.

² WCED: World Commission on Environment and Development, “*Our Common Future: the Brundtland Report*”, Oxford; New York: Oxford University Press, 1987.

³ IUCN: International Union for Conservation of Nature and Natural Resources, UNEP: United Nations Environment Program, WWF: World Wide Fund for Nature, “*Caring for the earth : a strategy for sustainable living*”, Earthscan Pubns Ltd., 1991.

⁴ *ibid.* “*Our Common Future*”, pp. 66–70.

⁵ Natural Step International, <http://www.tnsij.org/index.html>

⁶ Donella H. Meadows, Jorgen Randers and Dennis L. Meadows, “*Beyond the Limits*”, Chelsea Green, 1992, p. 56.

⁷ *ibid.* “*Caring for the earth*”, pp. 18–25.

⁸ Donella Meadows, Jorgen Randers and Dennis Meadows, “*Limits to Growth—The 30-Year Update*”, Chelsea Green, 2004. p. 9 (in Japanese edition).

⁹ Ministry of Economy, Trade and Industry, “*White book of Energy 2005 ed.—Security of Energy and Earth Environment*”, 2005. 1-1-1-2. (in Japanese)

¹⁰ The research project about the scientific foundation of sustainability, “*The research about the scientific foundation of sustainability 2006*”, RSBS, 2006. (in Japanese)

¹¹ UNDP, “*Human Development Report: HDR 2007/2008*”, Tokyo Office, 2008. (in Japanese)

- ¹² DENTSU INC. Japan Research Center, “*The Sense of Value, Data book of the world—60 nations*”, Doyu-kan, 2004. (in Japanese)
- ¹³ WWF: World Wildlife Fund, “*Living Planet Report 2008*”; WWF: World Wildlife Fund, “*Living Planet Report 2006*”. (in Japanese)
- ¹⁴ *ibid.* “*Living Planet Report 2008*”, p. 6.
- ¹⁵ *ibid.* “*Living Planet Report 2008*”, p. 14.
- ¹⁶ Wada Y. (2002) Ecological footprint and sustainable economy, Waste Management Research C&C, vol. 6 separated volume, pp. 40–43.
- ¹⁷ *ibid.* “*Living Planet Report 2008*”, p. 15.
- ¹⁸ *ibid.* “*Living Planet Report 2006*”, p. 14.
- ¹⁹ Wada, Y. (1999), The Myth of “Sustainable Development: The Ecological Footprint of Japanese Consumption. Ph. D. dissertation. The University of British Columbia School of Community and Regional Planning, 1999.
- ²⁰ *ibid.* “*Human Development Report: HDR 2007/2008.*”
- ²¹ Christopher Flavin, “State of the World 2004–05”, Worldwatch Institute; Frey, B.S. and Stutzer, A. (2002), What can economists learn from happiness research?, *Journal of Economic Literature*, vol. 40, No. 2, pp. 402–435.; Kenny, C. (1999) “Does growth cause happiness, or does happiness cause growth?”, *KYLOS*, vol. 52, pp. 3–26.
- ²² *ibid.* Frey B.S. and Stutzer, A. (2002), p. 413; Frey B.S. and Stutzer, A. (2002) “What can economists learn from happiness research?”, *Journal of Economic Literature*, vol. 40, No. 2, pp. 402–435.
- ²³ *ibid.* *KYLOS*, vol. 52, pp. 3–26.
- ²⁴ Yamamoto S. (1998) Contribution of Buddhism to Environmental thoughts, *The Journal of Oriental Studies*, 8, pp. 144–173.; Yamamoto S. (2002) The significance of keeping precepts and wisdom, *The Journal of Oriental Studies*, 12, pp. 137–155.; Yamamoto S. and Kuwahara V.S. (2008) The Middle-Way of Buddhism and Environmental Problems, *The Journal of Oriental Studies*, 18, pp. 89–101.
- ²⁵ Ueda A. (2008) Buhtan ni Manabu Kokumin no Siawase toha (What is the happiness for the people from Buhtan), *Kikan-Keiei Kenkyu* (Quarterly Management Research), vol. 1, pp. 5–17. (in Japanese); Umetani Y. (2007) Kokumin Sou-Koufukudo (GNH) to Simin no Koufuku-ron—Gainen zu wo enyou sita Koufuku-ritsuikyuu no Kokoromi (The total degree of happiness in a nation (GNH) and happiness theories for a citizen—attempt of happy pursuit with using concept chart—), *Yuugou Bunka Kenkyu* (The Researches of Uniting Culture), vol. 10, pp. 62–73.
- ²⁶ *ibid.* *Kikan-Keiei Kenkyu* (Quarterly Management Research), vol. 1, pp. 5–17.
- ²⁷ *ibid.* “*White book of Energy 2005*”, 1-1-1-2.
- ²⁸ *ibid.* *Yuugou Bunka Kenkyu* (The Researches of Uniting Culture), vol. 10, pp. 62–73.
- ²⁹ *ibid.* *Kikan-Keiei Kenkyu* (Quarterly Management Research), vol. 1, pp. 5–17.
- ³⁰ Gandhi M. (1924) Discussion with Ramachandran G., (1924 October 21 and 22), *The Collected Works of Mahatoma Gandhi*, Publications Division: New Delhi, 1966, vol. XXV, p 251; Translated by Morimoto T. “Waga Hi-bouryoku no Tatakai (My Battle of Nonviolence), *Daisan-Bunmeisha*, Tokyo, 2001.
- ³¹ Yamamoto S. (2009) How does Buddhism Contribute to the Environmental Problems?, *The Journal of Oriental Studies*, vol. 19, pp. 71–80.