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SUSTAINABLE ENVIRONMENT FOR SUSTAINABLE DEVELOPMENT

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ABSTRAK

Sustainable development is a famous concept and strategy to balance the state between human anthropogenic activity and environmental conservation. It is conceptualized mainly, to address the challenge of ensuring continual human civilization under the limitedly available natural resources. There is no dispute to value ecosystem services to be included into the idea of sustainable development. However, since sustainable development is defined as it is affected by many vested interests, the precise ecosystem and environmental aspects that are regarded as critical for sustainable development are also under debate. Essentially, the emerging debates deal with criticism towards giving value on particular environmental properties and, deal with the judgement of whether they are considered as critical or less critical for the sustainability of particular developmental activities. Hence, this paper is aimed to provide ideas to bridge the presence polemics by presenting the two important ideas in combination, sustainable environment and socio ecological sustainability as a considerable ideas to achieve sustainable development.

To have the research's goal the criteria of millennium ecosystem assessment and the socio ecological indicator proposed are is scrutinized. Indeed, human activity is considered as sustainable if it is put in position with socio ecological indicators. In addition to this, extending human's moral standing to the environment will be importantly underpin the achievement of sustainable environment and therefore, the sustainable development.

Kata kunci : Sustainable environment, Sustainable development

PENDAHULUAN

Sustainable development

Sustainability is a relatively newly accepted term emerged from many activities relying on the importance of efforts ensuring particular activities to be in a state of 'unlimitedly exist'. Sustainability issue arises whenever the valuable system, object, process or attribute is under threat in term of that the *existence* of such valuable system, object, process or attribute is threatened or its *quality* is threatened with a serious decline. In other words there is a sustainability issue whenever there is something that make the existence of particular valuable factor faces the risk of not being maintained (Sutton, 2004).

Sustainability is popularly known in the area of environmental management and development since the negative externalities of injudicious pattern of human activities on the environment is challenged. It was popularized after the widespread dissemination of Brundtlandt report "*Our Common Future*" and, especially after the publication of UN Conference on the Environment and Development (UNCED) held in Rio de Janeiro 1992 (Azar *et al*, 1996). The UN then, has attempted to realize the idea of sustainability by proposing a real-four section of plan, the Agenda 21, by which, the UN agendas to promote sustainable development for the next century becomes the major priority towards sustainable planet (UN, 1992). By this, the concept of sustainability in the environment and development has grown into not only local or national issue but moreover, is considered as become one of the important international issues. Since this, planners, decision makers and politicians has been challenged to create efforts to meet with its criteria. Nowadays, sustainability has forced many nations worldwide to address it into their policies and strategies as it was accepted and ratified as an international agreement during the World Summit on Sustainable Development held in Johannesburg on September 2002 (Awiati, 2003).

Despite its popularity however, the exact operational definition of sustainable development is still disputable and hence, needs to be more operationally defined. To be clear about the concept of sustainable development, first, the lexical meaning of sustainability can be given. Sustainable has the root word "sustain". It is derived from the Latin word *sustinere; sus-* from below and *-tenere* to hold. Referring to that lexical meaning, sustainable can be interpreted as to handle something to keep it exist for the unlimited of time. This word implies efforts to keep something to exist or to be maintained and, implies the long-term support and uses of for the society (Gold, 1999). According to the Webster's II New Riverside Dictionary sustainability mean:

Keeping in existence: maintaining; enduring; withstanding.

In an Anthropogenic sense thus, sustainable development can be best defined as a kind of human development activities that place higher value on its long term existence.

Besides the above lexical meaning however, sustainable development has been defined variously. It has been defined from many perspectives of thinking and has been influenced by the economic and political interest (Fernandes, 2004). According to Rigby and Caceres (2001), sustainability within the concept of sustainable development has at least 386 definitions since its popularization. For instance, sustainability can be defined as it is based on the longevity of production system or activity to be continuously exist (Ikerd, 1993). Here, sustainability is achieved when production system or activity is always available and is capable to maintain its function productive for the long period of time. Indeed, no one would deny that sustainable development deals with efforts to meet human beings with their need in perpetuity. It means that sustainability should address both, the intergenerational justice and the intra-generational justice as well (Rigby *et al*, 2000). And this, will be activities that are considered as environmentally sound, resources conserving, economically viable and socially supportive. That is, criteria such as ecological steadily, economic viability, humane and socially just, often proposed to become basic criteria to examine the achievement of sustainable development (Reinjtjes *et al*, 2003).

Sustainable environment

From the above writing, it can be concluded that environmental aspect plays importantly in achieving sustainable development. Since humans depend on the environment in a countless ways preserving them directly contributes to the sustaining of people and human societies, and hence, to social sustainability. And since many economic activities are considered as resources-based activity so economic viability and sustainability is clearly depends on environmental sustainability. Thus, sustainable development is more likely unrealistic without sustainable environment. Sustainable environment becomes prerequisite for the existence of any human civilization and, its continuous availability will consequently assure the indefinitely human security and survival.

It has been discussed that the idea of sustainable development seemed to be impossibly achieved unless certain support of particular good quality of environmental properties are continuously available. And, maintaining those the aforementioned environmental properties can be considered as one of critical prerequisites to achieve sustainable development. Particular state at which the critical ecological and environmental properties are sustainably maintained is called sustainable environment. This is the simplest and most fundamental definition to express the concept. But people can specify or elaborate this definition further to add extra meaning or to apply the concept to more specialized context. The state of sustainable environment is achieved when human activities are put in line with the conservation of the available environmental properties.

It is absolutely true that humankind benefits from a multitude of resources and processes that are supplied by the nature. Collectively, these benefits are collectively known as ecosystem services. Ecosystem services can be defined as all of ecosystem constituent and processes or functions that have value to human individuals or in the society. Ecosystem services are also defined as the ecosystem processes or functions that have value to individuals or society. Ecosystem services of all sorts, can be considered on all scales from the micro to the local, global and even larger scale. As sustainable environment is related to the environmental properties the concept of ecosystem services becomes important. Ecosystem services include all tangible and intangible services provided by nature. Ecosystem services is the heart of sustainable environment and therefore sustainable development. Millennium Ecosystem Assessment has described five major categories of ecosystem services: *provisioning,* such as the production of food and water; *regulating,* such as the control of climate and disease; *supporting,* such as nutrient cycles and crop pollination; *cultural,* such as spiritual and recreational benefits; and *preserving,* such as the maintenance of diversity (Millennium Ecosystem Assessment, 2005). Examples of the major categories of ecosystem services and information about their status is presented in the table 1.

. The concept of ecosystem services stands along with polemics about the precise environmental properties to be included as important items representing sustainable environment. Indeed, it is a contradiction that in addition to the common sense that sustainable environment would not be achieved until decisions and actions are put in line with the concept of environmental sustainability, the kind of environmental properties that are considered as importantly build sustainable environment is still far from

being conceptualized. Here in this paper, some environmental indicators indicating sustainable environment are proposed. Such indicators are laid on the environmental indicators as according to the millennium ecosystem assessment and are combined with the socio-ecological indicators proposed by Azar *et al* (1996).,

Table 1. Examples of the major categories of ecosystem services and information about their status

Service	Subcategory	Status	Notes
Provisioning services			
Food	Crops	↑	Substantial production increase
	Livestock	↑	Substantial production increase
	Capture fisheries	↓	Declining production due to overharvest
	Aquaculture	↑	Substantial production increase
	Wild foods	↓	Declining production
Fiber	Timber	+/–	Forest loss in some regions, growth in others
	Cotton, hemp, silk	+/–	Declining production of some fibers, growth in others
	Wood fuel	↓	Declining production
Genetic resources		↓	Lost through extinction and crop genetic resource loss
Biochemicals, natural medicines, pharmaceuticals		↓	Lost through extinction, overharvest
Fresh water		↓	Unsustainable use for drinking, industry, and irrigation; amount of hydro energy unchanged, but dams increase ability to use that energy
Regulating services			
Air quality regulation		↓	Decline in ability of atmosphere to cleanse itself
Climate regulation	Global	↑	Globally, ecosystems have been a net sink for carbon since mid-century
	Regional and local	↓	Preponderance of negative impacts (for example, changes in land cover can affect local temperature and precipitation)
Water regulation		+/–	Varies depending on ecosystem change and location
Erosion regulation		↓	Increased soil degradation
Water purification and waste treatment		↓	Declining water quality
Disease regulation		+/–	Varies depending on ecosystem change
Pest regulation		↓	Natural control degraded through pesticide use
Pollination		↓	Apparent global decline in abundance of pollinators
Natural hazard regulation		↓	Loss of natural buffers (wetlands, mangroves)
Cultural services			
Spiritual and religious values		↓	Rapid decline in sacred groves and species
Aesthetic values		↓	Decline in quantity and quality of natural lands
Recreation and ecotourism		+/–	More areas accessible but many degraded

Source: Millennium Ecosystem Assessment 2005.

Sustainable environment for sustainable development

Few would disagree that today's degree of the ecosystem services are clearly decreased in a dramatic way. Factually, these services are considered as under threat since the gravity of the environmental degradation becomes one of the 'still unsolved' important environmental issues nowadays. Indeed, human activities are considered as having a significant and escalating impacts on the world's ecosystem by reducing both its resilience and capacity. World's leading environmental scientist have synthesized the acceptable 24 constructs of ecosystem services and stated that only four of it have shown improvement over the last 50 years whereas the rests are in serious decline in some part of the world (Millennium Ecosystem Assessment, 2005). It may also true that dramatic resources depletion and environmental degradation are considered as two main problems causing the decrease of the ecosystem services and many consecutive problems. These two bad factual phenomena must be addressed since these can be regarded as a threat towards sustainable development and human security. That is, the *Human Development Report*, disseminated by the United Nations Development Program (UNDP) at 1994 has highly motivated to draw the environmental dimension into the seven distinct dimensions of human security along with economic, food, health, personal, community and politic. Indeed, the term 'human security' is most commonly associated with these well defined term (Nef and Dwivedi, 2010). In addition, the UN also has facilitated many green plans

to realize the idea of sustainable planet through for instance, the implementation of Brundtlandt Report, realization of UN Agenda 21 and promotion of the Millennium Development Goals. All of these plans have been performed due to address mainly, the challenge of ecosystem services' sustainability that lately, has been realized as importantly underpins all efforts in the achievement of sustainable development.

Indeed, achieving the state of sustainable environment becomes critical to realize the state of sustainable development and hence, sustainable human civilization. One that should be emphasized is about to make deal with particular environmental properties that are considered as 'key' for sustainable environment. Ecological indicators have been proposed as the most applied indicators for environmental sustainability along with the implementation of the Environmental Impact Assessment (EIA). Here, ecological indicator is defined as a measure or a collection of measures that describe the condition of an ecosystem or one of its critical components. Ecological indicators within this green program is always developed and focused on addressing some question namely: Which are the fundamental ideas of ecosystem theory to indicate ecosystem or landscape states?, which community features can serve as objects of ecological indication?, How can theoretical ideas be used to represent the impacts of specific disturbances?, Which approaches can be used to indicate landscape states?, How can we use indicators for a better environmental management? (Muller and Lenz, 2006). These question are followed by more applicable question related to the condition of the valued ecosystem, the state (getting better or worse) of such ecosystem, the worst condition of particular valued ecosystem and the stressor associated with the observed condition (Jackson et al, 2000). These applicable questions cover biological, physical and chemical dimension of the environment and are measured through particular metric measurement, method and assessment. Criticism upon the ecological indicator approach is about the arguable argument to explain question deal with 'can a holistic thing represented by only few representative indicators?'.

Another approach to ascertain which ecological properties are considered as important has been prepared and proposed by many prominent environmental experts namely the Millennium Impact Assessment. This assessment is designed to meet needs of decision makers among government, business and civil society. This assessment is regarded as more detail than the aforementioned ecological indicator as a additional judgment of experts is applied to the existing knowledge to provide scientifically credible answer to policy relevant questions. According to the Millennium Impact Assessment, giving attention to the maintaining of the ecosystem services is the undeniable key for the achievement of the global goal, the sustainable development (http://www.millenniumassessment.org/en/article.aspx?id=58 accessed 5th August 2011). Millennium Ecosystem Assessment has described five major categories of ecosystem services: *provisioning,* such as the production of food and water; *regulating,* such as the control of climate and disease; *supporting,* such as nutrient cycles and crop pollination; *cultural,* such as spiritual and recreational benefits; and *preserving,* such as the maintenance of diversity. The Millennium Ecosystem Assessment examines how changes in ecosystem services influence human well-being in term of their need towards *basic material for a good life*, *health, good social relations*, *security* and *freedom of choice and action* (Millennium Ecosystem Assessment, 2005). The Millennium Ecosystem Assessment has synthesized the acceptable 24 constructs of ecosystem services that are considered as importantly underpin sustainable development.

Both the ecological indicator and the Millennium Impact Assessment are still emphasized on the ecological indicator. This type of indicator may give 'too late' signal for the presence of environmental degradation. Azar et al (1996) proposed a systematic framework of indicators for sustainability. In this approach societal activities that affect nature and on the internal societal resource use are emphasized as opposed to environmental quality indicators. In this way the indicators may give an early warning signal to particular unsustainable use of resources since it works in the chain from causes in societal activities to environmental effects. Four main principles i.e. the substances that are extracted from the lithosphere must not systematically accumulate in the ecosphere, the society-produced substances must not systematically accumulate in the ecosphere, the physical conditions for production and diversity within the ecosphere must not become systematically deteriorated, and the use of resources must be efficient and just with respect to meeting human needs become four main principle by which socio-ecological indicators are constructed so that they reflect to what extent (a certain aspect of) a societal activity violates the corresponding principle.

The above socio-ecological indicator proposed by Azar et al (1996) looks like more sensitive to the moral sense as people and society as moral agent must think the moral duty towards the environment as

moral standing for being the part of nature. Even anthropogenic view still dominates this idea at least, thinking of for not to harm the environment would bring into a positive impact into the environment, because this will lead to the environmentally friendly behavior.. Indeed, according to the theory of planned behavior, a theory about linkage between attitude and behaviour (Ajzen, 2001) such positive thinking will lead to the judicious people behavior that will prevent or reduce the environmental degradation.

From those the above three approaches to realize sustainable environment, conclusion can be drawn that particular ecological properties may give significant effect in affecting sustainable environment and therefore, sustainable development. It can also be stated those three approaches are still considered as still standing on the anthropocentric view. But from those three, the latest two can be regarded as better to be applied since both involving deeper analysis to formulate strategy and, bear better attitude towards the environment. The ecological indicator provided by the EIA often lack better prediction in predicting what are really happen if particular human activities are performed. This, because the using of the reductionist paradigm by which the proposed representative indicators often fail to represent the whole ecosystem. Despite the goodness of the latest two, to promote sustainable environment needs particular change in behavior. Indeed, to this, another types of behavior are also needed such as our behavior to limit our ecological footprint and sustaining human security by balancing basic human need and environmental quality. Sustainability requires human actions to limit ecological footprints rather than belated technical solutions that might simply reduce some specific harm or symptom to the environment. While technology has been and should prove to be helpful, the main culprit is the culture of possessive individualism: greed and the unquenchable appetite for material goods and demand for related services. Indeed human activity is considered as sustainable if it is put in position with socio ecological indicators. In addition to this, extending human's moral standing to the environment will be importantly underpin the achievement of sustainable environment and therefore, the sustainable development

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