# Questioning sustainable development for the Mediterranean region

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*in*

Camarda D. (ed.), Grassini L. (ed.).
Interdependency between agriculture and urbanization: Conflicts on sustainable use of soil and water

Bari : CIHEAM
Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 44

2001
pages 337-354



# QUESTIONING SUSTAINABLE DEVELOPMENT FOR THE MEDITERRANEAN REGION

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## Planet earth and man

Planet Earth is 4600 million years old. If we condense this inconceivable time-span into an understandable concept, we can liken Earth to a person of 46 years of age. Nothing is known about the first seven years of this person's life, and whilst only scattered information exists about the middle span. We know that only at the age of 42 did the earth begin to flower. Dinosaurs and other great reptiles did not appear until one year ago, when the planet was 45. Mammals arrived only eight months ago; in the middle of last week man-like apes evolved into ape-like man, and at the weekend the last ice age enveloped the Earth. Modern man has been around for four hours. During the last hour, man discovered agriculture. The industrial revolution began a minute ago. During those sixty seconds of biological time, modern man has made a rubbish tip of paradise. He has multiplied his numbers to plague proportions, caused the extinction of 500 species of animals, ransacked the planet for fuels and now stands like a brutish infant, gloating over his meteoric rise to ascendancy, on the brink of a war to end all wars and effectively destroying this oasis of life in the solar system (Anonymous, 1994).

Reading carefully above given short story of existence of human on the Earth, we can clearly see that it is too early to talk about sustainability in known terms. Because as a specimen human hasn't proven any success of sustainable survival yet. It seems that we only developed and sustained total ignorance and a very narrow man based perspective. We need now an intellectual revolution, another enlightenment era, which differs from the previous ones taking the life itself as the key of sustainability. This new revolutionary approach has to stop fighting against nature and must focus on the fact of living in peace and also benefiting from the nature instead of fighting and losing.

## A discussion on some aspects of sustainability and sustainable development

People, and the organizations that we belong to, are most successful when our development and behaviour are aligned consistently with our core vision, values, and purpose (our social DNA). Like DNA in life, this social DNA affects how we live,

the value we create, and how we organize, grow, and evolve. Identifying our social DNA (and aligning our work and personal lives with it) builds an inner core of community, continuity, and resiliency essential factors for growth, innovation, and longevity. This self-knowledge and alignment is essential to understanding, healing, and transforming ourselves, our organizations and our world (Abe, 1998).

To achieve the goal of sustainability we need to develop a different approach. This approach must include knowledge and practice of success principles; alignment of work, personal life and core identity; well being; viability; stakeholder relationships; niche definition and development. We need to widen our perspective of survival and success and become more sensitive and responsive to our environment. We need to understand who we are, and recognize our five fundamental needs: physical, financial, emotional, mental, and spiritual. When we fulfil and integrate these needs in our work and daily lives, we can start talking about sustainability and sustainable development. We, as individuals and organizations, selectively develop vital flows and relationships to meet our needs and aspirations. Money, energy, materials, information and ideas, products and services, people and other organisms, air, food, and water are vital flows that meet our physical, mental, and financial needs. Love, creativity, fun, laughter, and companionship meet our spiritual and emotional needs. We develop these vital flows through relationships with various individuals and organizations (such as our families, friends, employers, utilities, customers, civic communities, government agencies, banks, retailers, and manufacturers) and the environment in which we live. We have much to learn from the natural world. As spiritual beings, we must recognize our interdependence with all other forms of life. There is no post-environment economy. Our future will depend on our ability to emulate natural systems design and cultural wisdom into every dimension of our lives and at all scales of our existence. When we do so, we will work and live in harmony with the world that sustains us, understand more fully the origin of wealth, and move closer to whom we are. Through this natural perspective, we can discover life's self-organizing elegance**,** life cycles, vital flows and relationships, and how we uniquely contribute value to the greater whole of creation. With this knowledge and wisdom, we can learn to survive, adapt, and thrive in our changing world. Success and survival are one and the same (Abe, 1998).

Remembering that steady growth can give astronomically large numbers in a modest period of time, understanding of exponential arithmetic is a prerequisite to an understanding of the problems of achieving sustainability (Bartlett, 1997). To explain sustainability widely accepted definition for sustainable development must be reviewed: sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs as indicated by UNCED Report (Nath et all, 1993).

This statement is far from explaining sustainability and sustainable development. And, ever since it is invented it has been used as a new decoration for old unsustainable solutions, uses and even environmentally hazardous projects and development programs.

According to Bartlett (1997) sustainability has to mean, '…for a time period long compared to a human life. And, exponential arithmetic shows that steady growth of numbers of things for long periods of time is impossible'. These two facts may then indicate that under these conditions sustainable growth or development is just an oxymoron.

Global population is continuously growing. Parallel to this growth, demands are increasing and life supporting resources decreasing. That means despite all efforts we are moving away from the goal of sustainability.

All over the world political leaders, local authorities, administrators and other relevant personalities keep talking about sustainability knowing not much about the meaning and the content of the term. These decision makers' lack of understanding of sustainability is a major problem.

To achieve sustainability we need to refresh and renew our knowledge of natural and basic sciences and also try to understand the natural processes. Remaining ignorant to the mechanisms on which natural processes operate very often results in disasters. All we need is the simple rules that help us to protect environment and natural processes in order to protect present and future generations and also improve the quality of life. This is a very clear explanation of sustainability. To achieve this goal continuous operation of all natural processes must be ensured. And, not to interrupt the development process, this input must be taken into consideration as a basis. To formulate these, no new technique and sophisticated scientific solutions are needed. All we have to do is to identify natural processes and interactions between them and then determine their degree of tolerance (and /or suitability) and limitation for certain uses. But very often, traditional economical approach considers the nature and environment as a uniform commodity and describes it in terms of distance and time, development costs and area per capita. But the nature is not uniform. On the contrary it has a great diversity as a function of geological, climatic, physiographical, pedological, historical features in addition to flora, fauna, other real values and land use patterns. Lakes, rivers, oceans, mountains are not located where economists want them to be. Their places are determined by natural processes (McHarg, 1966).

All the problems that are questioned on the basis of sustainability are caused by population growth. And, none of them can be solved if population growth thus consumption rate continues. Mankind may soon face the reality of survival. And, compared to survival, any other concept including sustainable development would not mean much. We live in a world that worships growth by all means and keeps talking enthusiastically about sustainable development and/or growth, which is

impossible. Now at the beginning of the new millennium we have come to a stage where we force the limits of our planet. At this stage, we need to think critically and strategically to avoid conflicts and destruction.

Bartlett (1997), points out the fact with a number of very interesting examples:

When discussing about the tools and means of sustainable development very often we hear politicians talking about the necessity of creating new jobs. If the unemployment rate is, for example 5%, when the new jobs are created within a community, it might drop to %3 level first. But then new people might move into the community to take the jobs and restore the unemployment rate back to 5%. But this percentage is related to a larger population that means the number of unemployed people has increased.

Similarly more people and more factories are attracted in order to get more municipal tax revenue. This attraction may result in more tax. But also result more infrastructure demands on the tax revenue.

- The demands always grow faster than the revenue.

Even with more people paying taxes, each individual's taxes have to go up to pay for growth. A recent study indicated that every new home built in Oregon (USA) generates a public cost of about $26.000.

- Population growth never pays for itself.

Very often two lane highways are upgraded to multi-lane freeways for easy flow of traffic and to reduce air pollution. Of course a given distance is driven nonstop, the pollution generated is less than the same distance driven stop and go. But the new multi-lane freeway generates enormous new volumes of traffic, not previously present, whose added pollution overhelms the small reduction in pollution per each vehicle generates per unit of distance driven. Ultimately the large freeways are congested and drivers experience much larger traffic jams than they had on the earlier two-lane roads.

- If building freeways reduced air pollution, large cities such as Los Angeles would have clean air.

Transport policy of governments encourages the relevant sectors for bigger and heavier trucks to increase efficiency and reduce costs. But the result is quite different. The highway damage per kilometer as a function of the mass of the vehicle goes up as something like the 3$^{rd}$ or higher power of the mass of the vehicle. Allowing heavier trucks may be cost efficient solution for the trucking companies, but simultaneously it generates enormous cost increases for the taxpayers who must pay for the repair of the damaged highways and for the damage to cars that have been hurt by being driven on the damaged highways.

- Allowing heavier trucks reduces the truckers' costs by shifting these costs to the public.

Improved design (so called sustainable design) that is often called ‘smart growth’ for new settlements is considered environment friendly, thus help to save the environment. But this is not the case. Building new settlements on open land destroys the environment of that area, whether they are well designed, or poorly designed. The well-designed ones may consume less land per person than the poorly designed ones. But in either case, the new settlement destroys the environment. The rate of destruction with ‘smart growth’ is less than the rate with ‘dumb growth’. So ‘smart growth’ is better than ‘dumb growth’, but it is like buying a ticket on the Titanic.

- We can be smart and go first class or we can be dumb and go steerage but the end result is the same.

## Unsustainable solutions cannot help achieving sustainability

So far materialistic and egocentric attitudes fed by scientific and technological innovations seem to fail to achieve the goal of sustainability. Because these innovations encourage urban settlements. As population grows urban areas expand eating away the city fringe in other words destroying semi-urban and rural resources and values. In the case of Mediterranean most of these semi-urban and rural areas are unique with their non-renewable resources as well as their life style, culture and food preparation traditions (Sözen, 1995).

Whenever the word development (either sustainable or not) is pronounced we immediately think of intensive human involvement in shaping the land and the coast. As a matter of fact, in common sense, development would mean making plans for natural and rural areas for economical purposes, which are then followed by heavy constructions and ever increasing uses. And, inevitable product of these efforts is the profound change in the landscape. This is very often not the one we really want both in developed and developing countries. Global response to these egocentric so-called development activities might be destructive and irreversible. Right at that point because of being terrified we start talking about planning and management problems.

As cities expand supply and distribution of services and utilities create difficulty. These problems are solved superficially with the help of engineering and technology. Inevitable problem of waste disposal and/or treatment is solved by developing sewers, treatment facilities and other new tools. When urban settlements become over populated multi-storey buildings replacing the previous smaller buildings accommodate more people, which result in developing new less dense sub-urban areas on the country and of course new transportation solutions to carry the people. That means networks of roads, bridges and other engineering structures would be needed. All these would unfortunately occupy the rural and agricultural land. As a result, the cities become more dependent on petrol based transportation for food. And, chain markets replace city bazaars (which is a kind of symbiosis between urban and rural populations) of human scale.

- Technology encourages population increase in urban areas and in the countryside. And this increased population is further encouraged to consume more of the resources.

Although we keep relating every effort to sustainable development, above given statement clearly indicates the balance is upset more than ever in favor of unsustainable development.

Indigenous communities that are aware of the concepts such as thresholds and carrying capacities succeeded sustaining their existence, whereas the unsuccessful ones disappeared in the course of history and became historical or archeological remainders of the past. Giant urban developments not only destroy the natural resources, but also the gained knowledge and experience of indigenous communities to cope with such problems. And, these self-sufficient indigenous communities become highly dependent on central governments or on other communities, as they do along the Mediterranean coasts. Today, despite all the evidences of failure we still follow the behavior of the unsustainable communities of the past ignoring the danger created by exploiting non-renewable resources which are essential for sustaining the life on our planet.

## Changing approaches towards nature and environment (awakening!)

From Stockholm 1972 to Rio 1992 we kept discussing about environment and related problems. But in reality it is hard to talk about any solid action and reliable solution. And, as from Earth Summit 1992 on, we have been talking on globalization, sustainable development, biological diversity, global climatic change etc. But at the same time, we also talk about decentralization in administration and decision making policies. And yet we keep insisting on the distinction between the developing and developed countries. Either we are not sincere or making a very big mistake by not seeing the contradiction. Definition of sustainability and/or sustainable development is different for the developed and the developing countries and it is almost impossible to set common parameters. In other words, totally different criteria may be valid for these two different groups. And even within the same group, different criteria may apply due to diverse nature of the countries and/or regions especially within the Mediterranean Basin.

In a more general sense for the rich and the poor, sustainability and/or sustainable development may cover totally different issues, which mean we are to negotiate on a very difficult and heterogeneous platform (Anonymous, 1992).

On the other hand, according to 1992 Rio Summit and Agenda 21 targets, the measure of development is no more explained in terms of consumption per capita, but in parameters that indicate the new concept, quality of life (Anonymous, 1992**)**. This may again differ for various groups.

Bartlett (1997) underlines some of the facts that point to the urgency of thinking seriously about sustainability as follows:

Global warming**:** There is a growing scientific consensus that human activities are now having observable effects on the global climate. Average annual temperatures on the Antarctic Peninsula have climbed 5 and average midwinter temperatures 9 degrees Fahrenheit over the last 50 years, 10 times faster than the global rate. The cause could be natural climate fluctuations. Or it could be global warming induced by the heat-trapping greenhouse gases emitted into the atmosphere.

The ozone hole: The depletion of ozone in the high atmosphere allows more ultra-violet light to reach the surface of the earth where it can have serious biological effects.

Food: The World Watch Institute reports that annual global per capita production of the grain has dropped from 346 kilograms in 1984 to 313 kilograms in 1996 (9.5% in 8 years). In the industrialized countries up to three units of fossil fuel energy are needed to produce one unit of food energy (FAO, 1992).

Fresh water: A report in January 1997 from Stockholm indicated that by the year 2025, two-thirds of the world's peoples would suffer from water shortages. The rate of growth of the use of fresh water is twice the rate of growth of world population.

Petroleum: Analysis based on geological estimates of the total world resource of petroleum, suggests that world petroleum production will peak around the year 2004 and thereafter will start its inevitable decline.

If we are serious about sustainable development we must understand that it could only be achieved through a radical revolution on the global basis, which can be called environmental revolution.

Agricultural revolution, which can be explained in terms of farming, cultivation and product surplus, started 10.000 years ago. Industrial revolution, which was based on transforming the energy of coal into mechanical energy to increase the amount of raw material and the production, became possible only 200 years ago. Achieving sustainable development can only be possible through environmental revolution that considers the quality of life as the main objective. To achieve this goal we don't have thousands or hundreds of years. It has to be realized in a few decades (Sözen, 1998).

The terrifying dimensions of environmental problems and decreasing agricultural production despite all efforts are the clear evidences of failure of the two vital revolutions in the history of mankind. We can't afford any other failure and we must understand and accept the simple fact that our well-being depends on our planet's well-being.

Until 1970's environmental problems stayed away from the attention. And, especially after Stockholm Conference (1972) efforts have been intensified on:

- Understanding, identifying, cooperation and communication
- Cleaning the environment
- Making required legal arrangements
- Control and managerial issues and conflicts such as accepting, trusting, denying, refusing etc.

During 1980's economy and market instruments such as preventions, reforms, taxes, permissions, pricing policies, mass media, consumer demands, data gathering and evaluating had been related to environmental matters and gained priority in the agenda.

Within the context of 1992 Earth Summit-Rio, 1990's can be described by the following concepts, approaches and attempts, but also failures:

- Globalization
- Standards, parameters and indicators of the quality of life
- Agenda 21
- Legal and economical arrangements
- Reduced consumption
- Risk management
- Life cycle analysis
- Holistic (or integrated) approach
- Strategical impact assessment
- Strategical planning
- EU action plans and frameworks
- Non-government organizations (NGOs)
- Sustainable development
- Local authorities
- Cooperation and collaboration
- Dialogue and transparency

Now, at the beginning of the 21$^{st}$ Century, in other words the Third Millennium, the efforts seem to concentrate on long term strategical planning and changing the focus from human centered (anthropocentric) attitude to life centered (biocentric) approach and the related instruments. In every field serious attempts are expected to change the quantity-based attitude towards quality.

Despite intensive efforts and spendings nothing much has been achieved on the name of sustainable development during the last three decades. Developed countries developed more on the basis of consuming more resources and producing more

wastes. And, less developed, developing or underdeveloped countries maintained or sustained their positions and some of them even got worse. Due to geopolitical reasons, for some of them sustainable development meant nothing while trying to sustain their lives and basic needs.

As for the rest of the world, talking about sustainable development for the entire Mediterranean region is not easy because of the double standards applied on the name of globalization. The gap of sustainable development between the developed and the developing is deepening more than ever. In the Mediterranean region these two groups of countries have different attitudes.

Developed countries:

- Using the advantages of the information and communication era and scientific methods and techniques identify the problems properly (Anonymous, 1991).
- Establish operational and efficient relations between the economical and ecological systems to handle production, raw material, emissions, impacts, recycling, recovering, rehabilitating, developing environment friendly products and technologies (Anonymous, 1991).
- Defining and determining the changing meaning, contents and dimensions of environment related problems as well as their enlarging impact areas they develop research, training and implementation policies, make legal arrangements, take necessary measures. For example: to keep carbon dioxide emissions at the level of 1989-90 they make radical changes in industry, heating, transportation and construction sectors (Anonymous, 1991 and 1992).
- They prepare implement efficient 5R (**R**eduction, **R**eplacement, **R**ecovery, **R**euse, **R**ecycle) programs to cope with greenhouse gases, ozone depletion substances, acidification, eutrophication, heavy metals, wastewater, municipal and industrial wastes (Walter et all, 1993).
- They define resource, environment and socio-economic indicators of sustainability, which can immediately be used in physical planning.

Developing countries:

- Try to produce environmental and sustainable development policies.
- Spend efforts to integrate environmental and sustainable development policies with reform processes (such as privatization, rural reforms, economical instruments, financing environmental instruments).
- Try to understand their responsibilities resulting from international cooperation and agreements.
- Despite their efforts legal arrangements are likely to remain on paper. Because, either they are too weak and/or too sophisticated to be implemented, or used for political purposes. Due to lack of proper action plans, solid steps are not taken.

- Central and local authorities are mostly unaware and/or ignorant. Very often they harm environment on the name of sustainable development.
- Although quite a number of NGOs exist, a great majority of them don't have the required professional infrastructure and deal with limited superficial activities. Sometimes they make important mistakes, which may result in environmental degradation. Although some attempts have been made, in the developing world civil initiative hasn't properly developed yet.
- Environmental awareness programs don't take place in formal training.
- There are no or very weak attempts for integrated environmental infrastructure and management programs.
- Despite collaboration efforts the gap between the disciplines is growing bigger and some disciplines tend to create monopolies.
- While some scientists suffer from lack of scientific data and other relevant information, the others or some institutions hold them and may never use.
- Collaboration and cooperation efforts between physical planning/design professions, natural sciences and social sciences are not sufficient.
- Physical planning and design professions as well as research institutions even if they keep criticizing, in practice with their works very often whiten the improper and wrong decisions of politicians and authorities. And, sometimes even mislead them.
- Politicians, bureaucrats, administrators, researchers and mass media remain ignorant to the rising level of public awareness.

If sustainable development in the Mediterranean Basin is the issue, a balance must be established between the developed and the developing countries. Because, the Mediterranean culture is a universal concept and has a great attraction power at global scale. In other words, it is a life style due to favorable climate, traditions, vernacular architecture, food, nature and remains of the past cultures (Sözen, 1995).

Mediterranean culture being unique and giving birth to many civilizations, is a global heritage. For this reason, in the Mediterranean region sustainable development must be evaluated on different sets of criteria and through a more delicate approach.

Mediterranean region inhabits a large population consisting of both developed and developing countries. As we, the Mediterranean people are living around the same water body and benefiting from the same unique resources, trying to classify the countries as developed and developing is a useless attempt. Because the system is a single one and it operates on its own realities.

## Can sustainability be achieved?

The achievement of sustainability by an economic system cannot be obtained immediately and effortlessly. It requires strategies for abandoning current destructive

growth and development processes and adopting a totally new economical approach for sustainability (Nicoletti, 1994).

First of all we have to decide whether sustainability is our real goal. Or, do we really mean the rate of consumption per capita, thus wealth, when we talk about sustainability. We seem to forget that a highly populated communities whose consumption rates are high, can hardly be transformed into sustainable mode. Because sustainability requires that the size of the population be less than or equal to the carrying capacity of the ecosystem for the desired standard of living (Bartlett, 1997).

The most vital task in sustainable development is sustainable agriculture especially in the case of Mediterranean. Because agriculture is the only area where we can talk about real production. The population of the world depends on agricultural production for survival. And, sustainable agriculture depends on the sustainability of the environmental resources as well as natural processes. Thus agricultural land and supportive ecological features must be preserved, rehabilitated and improved. Mediterranean Region regardless the national boundaries exhibits very interesting but also sad examples of unique agricultural areas being replaced by heavy tourist facilities, holiday homes, industry and related infrastructures. These unique and irreplaceable sources have been disappearing all around the Mediterranean.

Remarkable progress achieved in the medical sciences and technology contributed to the overpopulation problem and attracted more population both to the cities and rural areas and this ever-growing population has been encouraged to consume more of the resources just to sustain the prevailing economic system, neither the development nor the life itself. But this phenomenon very often interpreted or accepted as sustainable development or improved life quality. Egocentric human attitude enjoys the benefits of technological progress but remains unaware of his responsibilities that are indispensable parts of these benefits. The first condition for achieving sustainability is to have a stable global population that can balance benefits and responsibilities so that present and future inhabitants of our planet can enjoy better life and higher qualities.

Contemporary education system needs to be reviewed, because it has lost the necessary philosophical basis and reasoning procedures over the centuries. Learning has to go together with thinking and understanding. Perhaps a new philosophy based on sustainability of life for education is required.

Demands on the earth resources especially on non-renewable resources and consumption rates differ among the communities. To the ones who suffer lack of sufficient sources, sustainability wouldn't mean much. If achieving global sustainability is the ultimate goal, a balance regarding consumption rate must be established. And, the heavy pressure exerted on the earth resources must be relieved.

The academic efforts spent on learning, studying and understanding sustainability don't mean much if they cannot be expressed in terms of action. In other words these *efforts don't make communities sustainable.*

Primary significance of the value of life as a basis for sustainability must be well understood and appreciated.

If we try to feel and sense, wisdom of the new millennium might show us that most of resources and processes are irreversible. This must be kept in mind when discussing various aspects of sustainability. Because, if some values are lost due to some human centered approaches, dealing with sustainability is useless by all means.

## Recent efforts for achieving sustainability

At the beginning of the new millennium we finally seem to realize the facts contained by the terms sustainability and sustainable development. As summarized below, efforts seem to intensify recently for taking solid steps and actions needed to develop a different attitude towards values and review our understanding of sustainability and sustainable development.

Business ecology's systemic approach may provide a powerful framework for identifying hidden assets and liabilities, forging strategic alliances, and creating new business opportunities. According to Abe (1998), the benefits of business ecology can be summarized as follows:

- lower operating costs and liabilities
- create market synergies
- incubate new businesses
- strengthen community relations
- improve employee morale and productivity
- increase resource use efficiency
- prevent and/or reduce pollution
- revitalize communities and regions

Below given comparison of industrial and ecological economies clearly indicates the necessity of changing existing values opinions and behavior:

| *Industrial Economy* | *Ecological Economy* |
|---|---|
| *Less of this* | *More of this* |
| Linear Production | Cyclical Systems |
| Win-Lose | Win-Win |
| Extraction/Exploitation | Symbiosis/Harmony |
| Technology Controlling People/Nature | Nature/People-Designed Technology |
| Mechanistic | Organic |
| Mass Produced/Large Inventories | Just in Time/Just in Place Quality |
| Consumer | Customer |
| Market-Driven, Legalistic | Values-Driven |
| Remote | Community/Context-Oriented |
| Uniformity | Celebrate Diversity |
| Control/Manipulative | Nurture Creativity/Feedback |
| Economy of Scale | Ecology of Scale |
| Job | Purposeful Work/Right Livelihood |
| Compartmentalized | Systemic |
| Rigid/Resist Change | Flexible/Adaptive |
| Cash Flow | Life Flows |
| Profit as End | Profit as Means |
| Growth | Development |
| Amoral/Unethical | Moral/Ethical |
| Materialism/Products | Sustainability/Service |
| Competition/Predatory | Balance of Competition/Cooperation |
| Colonial/Dependency Creating | Empowering/Nurturing |
| Hierarchical | Self-Organizing |
| Fast-paced/Hurried | Rhythms of Life/Spiritually Centered |
| Accountability to Shareholders | Accountability to Stakeholders |
| Ego-Centered Leadership | Service-Oriented Leadership |
| Bottom-Line Accounting | Integrated, Full-Cost Accounting |
| Limitless Resources | Limited Resources |
| Near-Term Focus | Future/Time Cognizant |

(Source: Abe, 1998)

The table above compares the industrial economy with the emergent ecological economy. It is important to note that this table presents information in a black-and-white, linear fashion to illustrate a shift in thinking as we move toward the twenty-first century. In life, there are many grey areas and different ways of seeing. There are items listed in the left column, for example, that in many instances make sense for people and nature. Some degree of hierarchy, uniformity, and focus, for example, is often necessary to get things done. This table also conveys the importance of broader or different perspectives. For instance, cash flow is really a surrogate for energy, material, and other life flows (Abe, 1998).

Biointensive collaborators in geographic regions throughout the United States and programs in Mexico, Kenya, India, the Philippines, Russia, plus individuals and

projects in over 100 other countries globally in an attempt to strengthen and expand sustainable Biointensive mini-farming programs to:

- expands and strengthens an already effective and unique training program by increasing the number of skilled teachers,
- furthers its research goal of complete economic, nutritional, resource, environmental and soil sustainability by strengthening the programs researching, developing, teaching and using these techniques,
- increases the number of highly productive, resource-conserving, low-capital-input, cost-effective small farms using diverse cropping patterns.

Accordingly a 200-400 % increase in caloric production per unit of area, a 67-88 % reduction in water consumption per unit of production, a 100 + % increase in soil fertility while productivity increases and resource use decreases, a 50 + % reduction in the amount of purchased fertilizer required per unit of production, a 99 % reduction in the amount of energy used per unit of production, a 100 + % increase in income per unit of area can be expected (Anonymous, 1998).

This program is cooperating with Ohio University, the University of Arizona and Stanford University to develop an urban project and a rural community project to serve as models for cities and communities to establish sustainable Biointensive mini-farming demonstration centers.

GLOBE is a hope giving International parliamentary organization founded by legislators from the European Union, Japan, the Russian Federation and the United States in order to focus on the responsibility of the legislators. It was founded in 1989 to enhance international co-operation between parliamentarians on global environmental issues. The organization has over 700 members, in more than 100 countries, and regional affiliates in Brussels (GLOBE Europe and GLOBE European Union), Cape Town (GLOBE Southern Africa), Moscow (GLOBE Russia), Tokyo (GLOBE Japan) and Washington D.C. (GLOBE USA).

GLOBE International provides a unique forum in which parliamentary leaders from different countries work together to forge balanced, informed policy responses to pressing global environmental challenges. GLOBE highlights environmental problems, urging effective action by international organisations, governments, and private sector leaders, and suggests alternative and sustainable approaches, through the legislative process and other means. To this end, GLOBE members exchange opinions and information, and attempt to build consensus, (GLOBE 1999).

Below given websites and relevant information are very clear evidences of growing awareness and action based approach especially in the USA.

Livable Communities Website
( http://www.livablecommunities.gov ).

The website offers information, tools, and resources on programs to ensure a high quality of life and strong, sustainable economic growth.

Energy Efficiency and Renewable Energy Network (EREN)

( http://www.eren.doe.gov ).

The site, which is searchable by keyword, provides links to information on the whole spectrum of energy-efficiency and renewable energy topics.

The Local Government Commission (http://www.lgc.org).

Major program areas include Pedestrian and Transit Oriented Land Use Planning, Waste Prevention and Resource Conservation, Resource Efficient Land Use, and the Center for Livable Communities.

Green Communities Assistance Kit
( http://www.epa.gov/region03/greenkit/index.html ).

Developed by the U.S. Environmental Protection Agency as a step-by-step guide for identifying and resolving community needs, and planning and implementing sustainable actions. Also identifies useful tools, case studies, and other resources.

Sustainable Communities Network (SCN)
( http://www.sustainable.org ).

A wide range of issues related to community sustainability including: creating communities, smart growth, growing a sustainable economy, protecting natural resources, living sustainably, and governing community.

Chattanooga Sustainability Page
( http://new.chattanooga.net/sustain )

Through this site, Chattanooga reports on its progress and shares information on sustainable development to encourage the long-term use of natural resources.

Sustainable Seattle
( http://www.scn.org/sustainable/susthome.html )

Sustainable Seattle is a volunteer network and civic forum concerned with promoting sustainable development on the local level in Seattle, Washington. Particularly useful among this site's features is Indicators of Sustainability, which discusses Seattle's efforts at developing ways to measure progress toward, or away from, sustainability.

Sustainable Communities Resource Package (SRCP)

( http://www.web.net/ortee/scrp )

Developed by the Ontario (Canada) Round Table on Environment and Economy, SCRP offers ideas, principles, approaches, and actions that any community can use to get started toward a sustainable future.

Tahoe Center for a Sustainable Future (TCSF)

( http://www.ceres.ca.gov/tcsf/indexpage.html )

TCSF facilitates information, resources, education and strategies to achieve a sustainable future.

Tools for a Sustainable Community, ICLEI's One-Stop Guide for Local Government
( http://www.iclei.otg/la21/onestop.htm )

The International Center for Local Environmental Initiatives (ICLEI) is a nonprofit organization established through the partnership of the United Nations Environment Programme,

Urban Ecology
( http://www.urbanecology.org )

Through its worldwide membership, nonprofit Urban Ecology supports and participates in the development of ecologically healthy and socially vital cities and towns. At this Web site information about projects such as Blueprint for a Sustainable Bay Area can be found.

International Institute for Sustainable Development (IISD)
( http://iisd1.iisd.ca )

IISD, a Canadian non-government organization, believes that sustainable development occurs where environmental integrity, economic efficiency, and the well being of people meet.

Institute for Local Self-Reliance (ILSR)
( http://www.ilsr.org )

ILSR is a nonprofit education and research organization that provides information and assistance on topics related to sustainable development.

Greenbuilder
( http://www.greenbuilder.com/general/BuildingSources.html )

Part of the Austin City Connection page in Austin, Texas, this site provides useful information on resources related to sustainable building practices, products, and techniques.

Resource Renewal Institute (RRI)
( http://www.rri.org )

RRI, a nonprofit organization, promotes the use of Green Plans to achieve a sustainable environment and economy. Green Plans are “dynamic programs by which all elements of society agree on long-term environmental goals and take responsibility for achieving them.” Access the Environmental Atlas for information on which communities across the world are implementing Green Plans and how they’re doing it.

Center for Renewable Energy & Sustainable Technology (CREST)
( http://solstice.crest.org )

CREST is a nonprofit organization dedicated to promoting an ecologically sustainable economy that relies on renewable energy, resource- and energy-efficient technologies, and benign designs.

Florida Internet Center for Understanding Sustainability (FICUS)
( http://www.ficus.usf.edu )

A joint effort between the Florida Center for Community Design and the University of South Florida's School of Architecture and Community Design, this comprehensive resource offers a large amount of high-quality information on sustainable communities. (Center of Excellence for Sustainable Development, 2000)

## Conclusion

There is no single definition for sustainability and sustainable development. The existing highly complex, confusing and unclear concepts may be interpreted differently by different groups. They may have different meaning for various countries, regions, communities and individuals. Even for the same group the meaning, the content and even the concept may change. In other words, the conditions and/or situation that are accepted as sustainable at present might not be sustainable in the future. That means, sustainability in terms of social and economic development is not a sustainable concept. Thus we conclude sustainability is valid and applies for the life itself only as a unified system. And, taking the biological existence, continuity and diversity as the main references the sustainability indicators and/or criteria must necessarily be based on global sustainability of life and relevant supporting systems and/or processes.

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