

Paper1 Week1

SUSTAINABILITY: HISTORICAL BEGINNINGS

The simple definition of “sustainability” is the ability to sustain, which means continue or uphold (Macquarie University NSW, 1982). However, depending on the noun, the context of the verb “sustain” projects very different meanings. For instance, to sustain the rate of growth in a commodity is very different to sustaining the capacity of a piece of infrastructure to carry out its intended function. Sustainability, as it is most commonly used today has become one of those words which is widely used: we know it to be a worthy societal goal, but no one is too sure of its precise meaning.

Therefore, to gain a better understanding of the concept so that we may later advance various metrics of “sustainability”, we need to go back to literature from the 20th century. By the late 1960’s, humanity had begun to realise the impact that urbanisation and development in the post World War Two economic boom was beginning to have on the environment. The world was experiencing population growth, consumerism and ever greater consumer demand, rapid industrialisation and urbanisation. Together with the realisation of vulnerability from the threat of a global nuclear war, this contributed to doubts about the apparent unlimited capacity of the earth’s environment e.g. debate stimulated by the Club of Rome (Meadows, 1972). Increasingly the economic growth and associated infrastructure works were occurring on an unprecedented large scale. For the first time the earth’s resources did not appear to be as unlimited as it previously seemed, leading to the concept of “spaceship earth” (Ellyard, 2007). Many communities began to debate the appropriateness of specific developments and even questioned the tenet of perpetual economic growth. In 1972, a landmark declaration was made by the United Nations at a conference on the Human Environment, held in Stockholm (<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=97&ArticleID=1503&l=en>, Jan 2008). The purpose of the declaration was to inspire, and guide the

global communities in the preservation and enhancement of the human environment.

Some of the pivotal discussions were:

A point has been reached in history when we must shape our actions throughout the world with a more prudent care for their environmental consequences. Through ignorance or indifference we can do massive and irreversible harm to the earthly environment on which our life and well being depend.(p. 1, point 6)

To defend and improve the human environment for present and future generations has become an imperative goal for mankind-a goal to be pursued together with, and in harmony with, the established and fundamental goals of peace and of worldwide economic and social development.(p. 1, point 6)

(Annex 1 of Report Of The United Nations Conference On The Human Environment Stockholm 1972)

(<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=97&ArticleID=1501&l=en>, Jan 2008)

Some of the principles espoused in the declaration relate directly to the quest for a sustainable civilisation.

Principle 1: Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations. (p. 1)

Principle 2: The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate. (p. 1)

Principle 15: Planning must be applied to human settlements and urbanisation with a view to avoiding adverse effects on the environment and obtaining maximum social, economic and environmental benefits for all. (p. 1)

(Declaration of the Report of the United Nations Conference on the Human Environment, Stockholm, 1972)

(<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=97&ArticleID=1503&l=en>, Jan 2008)

The late 1970's and early 1980's saw a continuation of public concern over the social and environmental impacts of development and an increasing emotive response amongst not only the so-called "greenies" but also the general community. Influential Australian examples of this were the "green bans" by the Builders Labourers Federation (Sandercock, 1977) and the Tasmanian Dams issue, which galvanised not only local, but international attention.

One outcome of these issues was concern about over simplification or even misrepresentation by development agencies when impacts were being discussed with the public. This triggered the formation of organisations such as the Society for Social Responsibility in Engineering in Australia, and the Engineers for Social Responsibility in New Zealand (The Society for Social Responsibility in Engineering, 1984). These organisations fostered open and scientifically accurate public debate on not only the technical, but also on the economic, environmental and social impacts. The effect was quite dramatic, bringing out into the open the differences in professional views and values and the realisation by engineering development proponents, that “smoke and mirror” explanations by governments were unacceptable to increasingly well informed and educated communities of a democratic society (see Harding, 1998). A contrast was made between sustainability and the unfettered growth in production and consumption occurring in 1985 as the application of social responsibility or lack of it (Jack Munday’s opening address, The Society for Social Responsibility in Engineering, 1986, pp. 8 -9)

In the wider global context of increasing community awareness, came the World Commission on Environment and Development in 1983 known as the Brundtland Commission. This Commission published the Brundtland Report “Our Common Future” in 1987 which made it clear that the world’s current pattern of economic growth was not sustainable on ecological grounds and that a new type of development paradigm was required to meet the foreseeable human needs (World Commission on Environment and Development, 1987). Paraphrasing the content, present development was often a pattern of rapid depletion of available resources, rapid use of the ecological capacity and an increasing gap in share of the development benefits between the developed and undeveloped world. The Report observed that poverty was a major cause and effect of environmental degradation and that it is therefore futile to attempt to deal with environmental problems without a broader perspective that includes the factors underlying world poverty and international inequality.

One of the findings was that growth based on policies that sustain and expand the environmental resource base is absolutely essential to relieve the great poverty that is deepening throughout much of the developing world. The Report introduced the concept of sustainable development, defining it as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (clause 27, p. 27).

The concept of continued economic growth as an underpinning of the sustainability has been a contentious issue over the years. The 1985 conference on “Technology and Social Responsibility” (The Society for Social Responsibility in Engineering, 1986, pp84, 85) held in Sydney, Australia, questioned the capability to continue the developed world growth into the undeveloped world and whether the whole premise of the growth and profit based economy does provide the quality of life outcomes that increase social value. This is also discussed by Lacey (1989) and continues to be a key question today.

Two decades ago, the way forward as proposed by the Brundtland Commission, was to acknowledge the need to adjust existing developed world systems to be sustainable as well as setting about to bring appropriate development to the undeveloped world as a matter of equity for the world’s communities.

The 1972 Stockholm Conference and the 1987 Brundtland Commission work were reaffirmed in 1992 at the Rio de Janeiro United Nations Conference on Environment and Development which drew a linkage between the 1972 concerns and the concept of sustainable development in declaring that “Human beings are at the centre of concerns for sustainable development”. The Conference agreed that the protection of the environment and social and economic development are fundamental to sustainable development. The Rio Conference was a significant milestone that formulated and set a firm direction for sustainable development known as Agenda 21 (http://www.sidsnet.org/docshare/other/Agenda21_UNCED.pdf, Jan 2008). Its essence is reflected in this extract.

In order to meet the challenges of environment and development, States have decided to establish a new global partnership. This partnership commits all States to engage in a continuous and constructive dialogue, inspired by the need to achieve a more efficient and equitable world economy, keeping in view the increasing interdependence of the community of nations and that sustainable development should become a priority item on the agenda of the international community. It is recognized that, for the success of this new partnership, it is important to overcome confrontation and to foster a climate of genuine cooperation and solidarity. It is equally important to strengthen national and international policies and multinational cooperation to adapt to the new realities.

(clause 2.1, p. 4)

By 1995, at the World Summit on Social Development, in Copenhagen (<http://www.un.org/esa/socdev/wssd/agreements/decparti.htm>, Jan 2008), the inter-

relationship between the economic, social and environmental components of sustainable development were being thoughtfully discussed, coming to the conclusion in the following extract.

We are deeply convinced that economic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development, which is the framework for our efforts to achieve a higher quality of life for all people. Equitable social development that recognizes empowering the poor to utilize environmental resources sustainably is a necessary foundation for sustainable development. We also recognize that broad-based and sustained economic growth in the context of sustainable development is necessary to sustain social development and social justice.

(Introduction, clause 6)

In 2000, the General Assembly of the United Nations made the United Nations Millennium Declaration (<http://www.un.org/millennium/declaration/ares552e.htm>, Jan 2008) which lead to the Millenium Development Goals (<http://www.un.org/millenniumgoals>, Jan 2008), embracing the Agenda 21 principles of sustainable development. In this declaration a shift from simply environment protection to include stewardship is noticeable in the environmental sustainability wording ‘adopt in all our environmental actions a new ethic of conservation and stewardship’ (clause 23).

Three interdependent and mutually reinforcing components: economic development, equitable social development and environmental protection (stewardship) became known as the so-called "three E's" of environment, economy and equity. These became the interdependent and mutually reinforcing pillars of sustainable development at the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg (United Nations, 2002), where Agenda 21 was reaffirmed by member countries. (<http://www.un.org/jsummit/html/documents/documents.html>, Jan 2008). The United Nations World Summit for Social Development held at Copenhagen in 1995 (<http://www.un.org/esa/socdev/wssd/agreements/decparti.htm>, Jan 2008), identified that the notion of physical sustainability implies a concern for social equity between generations, a concern that must logically be extended to equity within each generation (Part B, clause 26b and Chapter 4, clause 66). The Summit stated that ‘broad-based and sustained economic growth in the context of sustainable development is necessary to sustain social development and social justice’ (Introduction, clause 6).

The United Nations 1994 International Conference on Population and Development (ICPD) Cairo, set a Programme of Action (http://www.unfpa.org/icpd/icpd_poa.htm,

Jan 2008) providing a more detailed understanding of various pillars in sustainable development.

Principle 2: Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature. People are the most important and valuable resource of any nation. Countries should ensure that all individuals are given the opportunity to make the most of their potential. They have the right to an adequate standard of living for themselves and their families, including adequate food, clothing, housing, water and sanitation.

Principle 6: Sustainable development as a means to ensure human well-being, equitably shared by all people today and in the future, requires that the interrelationships between population, resources, the environment and development should be fully recognized, properly managed and brought into harmonious, dynamic balance. To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate policies, including population-related policies, in order to meet the needs of current generations without compromising the ability of future generations to meet their own needs.

Principle 7: All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world. The special situation and needs of developing countries, particularly the least developed, shall be given special priority. Countries with economies in transition, as well as all other countries, need to be fully integrated into the world economy.

Principle 15: Sustained economic growth, in the context of sustainable development, and social progress require that growth be broadly based, offering equal opportunities to all people. All countries should recognize their common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development, and should continue to improve their efforts to promote sustained economic growth and to narrow imbalances in a manner that can benefit all countries, particularly the developing countries.

(ChapterII, p. 1)

The Rio de Janeiro Agenda 21 identified a number of implementation mechanisms, including development and dissemination of information, strengthening of institutions to deal with integration issues between population and sustainable development (http://www.sidsnet.org/docshare/other/Agenda21_UNCED.pdf, Jan 2008).

Each programme was seen to be applicable at national, and local levels and a framework of action to guide national and local governments and organizations was suggested. Initiation however was dependent on the host nation, region or local

community seeking assistance, for training or involving national and regional scientific institutions through the United Nations.

The capacity of the relevant United Nations organs, organizations and bodies, international and regional intergovernmental bodies, non-governmental organizations and local communities should, as appropriate, be enhanced to help countries develop sustainable development policies on request and, as appropriate, provide assistance to environmental migrants and displaced people

(clause 5.39, p. 27)

An effective consultative process should be established and implemented with concerned groups of society where the formulation and decision-making of all components of the programmes are based on a nationwide consultative process drawing on community meetings, regional workshops and national seminars, as appropriate.

(clause 5.45, p. 28)

The Johannesburg Plan of Implementation agreed the international framework begun in Agenda 21, in the 1992 Rio Conference. Supportive roles by the United Nations General Assembly, and United Nations agencies to facilitate sustainable development were put in place. However, much of the effectiveness depends on the actions of national governments, who have the prime responsibilities and were encouraged to lead and set up institutional arrangements that facilitated sustainable development in their own countries. (see Annex to Resolution 2, Chapters X and XI). (<http://www.un.org/jsummit/html/documents/documents.html>, Jan 2008).

The Implementation Plan, nominated a particular role and function for the United Nations Commission on Sustainable Development as a forum for consideration of issues related to integration of the three dimensions of sustainable development. The need for this was highlighted in the Johannesburg Conference report (United Nations, 2002) where it was pointed out that an integrated approach to assess the three pillars of sustainability (environmental stewardship, social equity and economic efficiency) needs further development. (clause 15, p. 125).

The 2005 World Summit of the United Nations General Assembly (clause 10) reaffirmed with urgency (http://www.unfpa.org/icpd/docs/2005summit_eng.pdf, Jan 2008) the goal of sustainable development, including the implementation of the Rio de Janeiro Agenda 21 (http://www.sidsnet.org/docshare/other/Agenda21_UNCED.pdf, Jan 2008) and the Johannesburg Plan of Implementation (United Nations, 2002).

In Australia, the declarations of the 1987 “Our Common Future” report provided some of the impetus for the Australian Government to prepare a 1990 discussion paper on Ecologically Sustainable Development (ESD) and to hold extensive public participation. This led to the adoption by the Council of Australian Governments in December 1992 of a National Strategy for Ecologically Sustainable Development. (<http://www.environment.gov.au/esd/national/nsesd/strategy/intro.html#WIESD>, Jan 2008).

The definition adopted by the Australian Government for ESD was ‘using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased’ (Part 1, p. 1).

The National Strategy for Ecologically Sustainable Development commits all Australian governments to the following three core objectives:

to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations; to provide for equity within and between generations; and to protect biological diversity and maintain essential ecological processes and life-support systems.

(Part1, p. 1)

The interrelationships between the three pillars of environment, economy and equity in society stimulated various debates in Australia about the relative importance for these pillars and which was the more important pillar. (see Figure 2.1).

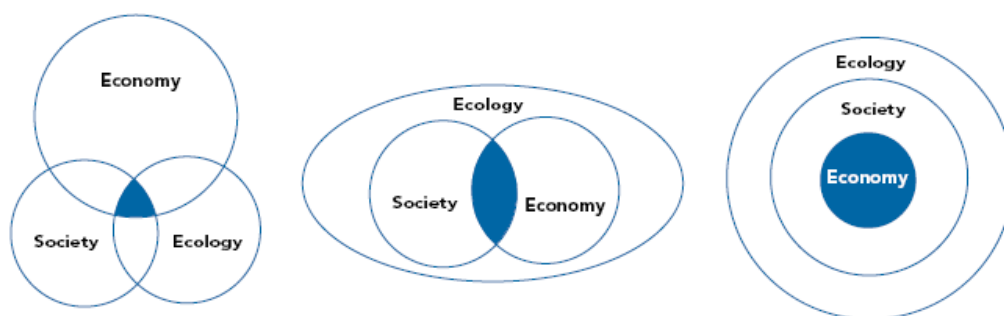


Figure 2.1 Relationship alternatives in sustainable development

(Newton, *et al.*, 1998, p. 12)

These figures represent some of the variations in thinking on the equivalence of each of the pillars. For example whether some pillars are more important than others or whether while each pillar is of equal importance, the ecological pillar has absolute constraints providing the framework in which the other pillars need to fit. Resilience thinking and complexity theory have introduced further depth into the dynamic nature of natural and social systems. Often these systems are assumed to be in equilibrium, with ample capacity to absorb shocks. (<http://www.sciencealert.com.au/features/20082304-17227.html>, Nov 2008). However, in practice accumulated changes can result in a vulnerable system where additional change can shift the system into instability. Resilience in a system instead can provide the system with capability to recover from shocks rather than be brought to a point of vulnerability. Researchers such as Walker and Salt (2006) are endeavouring to understand the existing resilience in natural and social systems. By identifying means by which this can be either enhanced or worked with, our resource use can be better suited to changes in these systems.

The European perspective on sustainable development is very much founded on the United Nations principles discussed earlier. In 1996, the European Commission Expert Group on Urban Environment endorsed the following well-accepted definitions of sustainable development as set out in the Brundtland Report (World Commission on Environment and Development, 1987): ‘Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (Clause 27, p. 24).

The following definition by the World Conservation Union, United Nations Environment Programme and World Wide Fund for Nature (1991) was regarded as complementary: ‘Sustainable Development means improving the quality of life while living within the carrying capacity of supporting ecosystems (World Conservation Union, *et al.*, 1991)’ (cited in Expert Group on the Urban Environment, 1996, p. 21). (<http://ec.europa.eu/environment/urban/pdf/rport-en.pdf>, Jan 2008).

The Expert Group unpacks this definition by stating that sustainable development is a much broader concept than environmental protection. It implies a concern for future generations, and for the long-term health and integrity of the environment. It embraces concerns for the quality of life (not just income growth), for equity between people in the present (including the prevention of poverty), for inter-generational equity (people

in the future deserve an environment which is at least as good as the one we currently enjoy, if not better), and for the social and ethical dimensions of human welfare. It also implies that further development should only take place as long as it is within the carrying capacity of natural systems.

The Economic Commission for Europe regional ministerial meeting for the World Summit on Sustainable Development Johannesburg 2002 recognised that different levels of economic development in countries of the region may require the application of different approaches and mechanisms to implement Agenda 21. In order to address the three pillars of sustainable development in a mutually reinforcing way, the region identified its priority actions for sustainable development for the Economic Commission for Europe region in its Ministerial Statement to the Summit. The Fifth Ministerial Conference “Environment for Europe” took place in Kiev in 2003.

It concluded with the adoption of a ministerial declaration (United Nations Economic Commission for Europe (UNECE) - Human Settlements Division, 2003) ([http://www.unece.org/env/proceedings/files.pdf/Item%2014\\$15/14&15Documents/ece.cep.94.rev.1.e.pdf](http://www.unece.org/env/proceedings/files.pdf/Item%2014$15/14&15Documents/ece.cep.94.rev.1.e.pdf), Jan 2008) which underlined the importance of the “Environment for Europe” process as a tool to promote environmental protection and sustainable development in the region, contributing to wider peace and security.

We welcome the decisions taken at the World Summit on Sustainable Development (WSSD) (Johannesburg, South Africa, 2002) and we commit ourselves to implementing these decisions to strengthen the environmental pillar of sustainable development at the global, regional, subregional and national levels taking into account the social and economic dimensions of sustainable development, recognizing that the three pillars are mutually reinforcing and interdependent, and to promote partnerships in support of the goals of the Johannesburg Declaration on Sustainable Development and the Plan of Implementation as well as of the Ministerial Statement of the UNECE Regional Preparatory Meeting for WSSD Geneva, 2001.

(clause 5, p. 2)

Environment Ministers and Heads of delegation from 51 countries in the United Nations Economic Commission for Europe region and the Representative of the European Commission emphasised their common goals for the environment and highlighted their common dedication to cooperating in achieving high standards of environmental protection. Governments of all seven countries of the Carpathian region adopted a

Convention on Environment Protection and Sustainable Development of the Carpathians, signed by Czech Republic, Hungary, Romania, Serbia and Montenegro, Slovakia and Ukraine.

The Kiev Conference adopted a groundbreaking environment strategy for countries of Eastern Europe, Caucasus and Central Asia and applauded the efforts of the Central Asian States to develop the Central Asian Initiative on Environment, Water and Security, “Invitation to Partnership.” Ministers and heads of delegation reaffirmed their support to the Environmental Performance Review Programme of the United Nations Economic Commission for Europe and decided that the programme should continue in order to provide measures and reporting to support the push towards sustainable development, seen in this extract from the declaration.

We recognize that the UNECE programme of environmental performance reviews, also initiated at Lucerne, as well as other analytical and advisory work of partners in the Environment for Europe process, have made it possible to assess the effectiveness of the efforts of countries with economies in transition to manage the environment, and to offer the Governments concerned tailor-made recommendations on improving environmental management to reduce pollution loads, to better integrate environmental policies into sectoral policies and to strengthen cooperation with the international community.

(clause 8, p. 2)

The United Nations Environmental Programme for Europe defines Environmental Sustainable Transport in the following manner. Basic characteristics for transport to be seen as sustainable are when it provides for safe, economically viable and socially acceptable access to people, places, goods and services while meeting generally accepted objectives for health and environmental quality, protecting ecosystems and minimizing adverse impact on global phenomena such as climate change, stratospheric ozone depletion and the spread of persistent organic pollutants. Further more, transport is environmentally sustainable if it is characterised by not endangering public health or ecosystems and meets mobility needs while using non-renewable resources below the rates of development of renewable substitutes and renewable resources below their rates of regeneration (http://esteast.unep.ch/default.asp?community=est-east&page_id=9F063324-9BB8-4FDA-8B16-3D1EABF0BAA7).

It is notable that the Kiev Conference declaration (United Nations Economic Commission for Europe (UNECE) - Human Settlements Division, 2003) recognised that

sustainable development ‘should delink economic growth from environmental degradation so as to promote both economic growth and environmental protection. Care of the environment and proper management of natural resources must not be peripheral to, or in competition with, socio-economic development.’ (clause 17, p. 5) ([http://www.unece.org/env/proceedings/files.pdf/Item%2014\\$15/14&15Documents/ece.cep.94.rev.1.e.pdf](http://www.unece.org/env/proceedings/files.pdf/Item%2014$15/14&15Documents/ece.cep.94.rev.1.e.pdf), Jan 2008).

In a joint statement in 2005 by the European Council and the Representatives of the Governments of the Member States meeting within the Council, the European Parliament and The European Commission, titled the ‘The European Consensus on Development’ it was stated that

‘never before have poverty eradication and sustainable development been more important. The context within which poverty eradication is pursued is an increasingly globalised and interdependent world; this situation has created new opportunities but also new challenges. Combating global poverty is not only a moral obligation; it will also help to build a more stable, peaceful, prosperous and equitable world, reflecting the interdependency of its richer and poorer countries’ (European Parliament Council Commission, 2005, p. 1)

(http://ec.europa.eu/development/icenter/repository/european_consensus_2005_en.pdf, Jan 2008)

The European consensus affirmed that development is a central goal in alleviating poverty and that sustainable development includes good governance, human rights, political, economic, social & environmental aspects.

In June 2006, a renewed Sustainable Development Strategy (http://eur-lex.europa.eu/LexUriServ/site/en/com/2005/com2005_0658en01.pdf, Jan 2008; http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/90111.pdf, Jan 2008) was adopted by the European Council. It addressed seven main challenges: climate change and clean energy; sustainable transport; sustainable consumption and production; conservation and management of natural resources; public health; social inclusion, demography and migration and global poverty. An outcome of the renewed strategy was on policy integration with the need to ‘promote integration of economic, social and environmental considerations so that they are coherent and mutually reinforce each other by making full use of instruments for better regulation, such as balanced impact assessment and stakeholder consultations’ (p. 24). The first Sustainable Development Report

(http://ec.europa.eu/sustainable/docs/com_2007_642_en.pdf , Jan 2008) concludes that both the European Union and Member States have succeeded in putting in place many of the right policy frameworks. Systematic assessment of economic, social and environmental impacts is seen as a requirement for achieving coherence across policy areas.

The above reviews have shown how community concern throughout the developed world over the past thirty five years has lead to the elevation of these concerns to national and international levels. The concept of sustainability has gained popularity through the course of these events and come to be defined in terms of sustainable development, with clear goals of environmental stewardship, social equity and economic efficiency.

A need for a holistic, integrated approach to the assessment of the three pillars of sustainability (environmental stewardship, social equity and economic efficiency) is recognised as a challenge that continues today.