

The Contribution of Education to Sustainable Development in Light of Countries' Experiences

Abeer Mohamed Ali, Abd Elkhalek

Associate Professor of Economics, College of Management & Technology

Arab Academy for Science, Technology and Maritime Transport, Egypt

Corresponding Author; Abeer Mohamed Ali

Abstract: *Education plays an important role in achieving sustainable development for both of developing and developed countries. The purpose of this study is to assess this role in accordance to sustainable development goals and analyze how can the educational policies be more oriented to support the main dimensions of sustainable development. This paper goes beyond a study focusing solely on the importance of education in achieving sustainable development as it seeks to explore the links and the connections between education system and sustainable development dimensions and it provides findings may serve as a main support for decision makers at the national level in formulating appropriate educational policies to maximise the contribution of educational institutions to sustainable development all over the world and specifically in developing countries.*

Keywords: *Sustainable Development (SD), Sustainable Development Goals (SDGs), Education for Sustainable Development (ESD), UN Decade of Education for Sustainable Development (UNDESD).*

Date of Submission: 02-12-2019

Date of acceptance: 18-12-2019

I. Introduction

Sustainable development is the one that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development requires meeting the basic needs of all and extending to all the opportunity to fulfil their aspirations for a better life (Brundtland, 1987).

So, countries must join efforts to strike a balance between improving the quality of human life and protecting the environment for the sake of future generations. All countries face challenges in gathering sustainability in socio-economic development. A key part of these challenges is the preparation of citizens empowered with the knowledge, skills, values and attitudes to realise sustainable development which may be done through introducing the principles of sustainability in all aspects of the formal, non-formal and informal education systems in those countries. Within that context, education is a key factor in countries development as it is proven to be effective in fighting poverty, creating more opportunities for labour market participation, increasing economic growth rate, using resources within the common environmental contests and ultimately achieving sustainable socio-economic development.

The most substantial step on the way to sustainable development was the publication of an international report titled "Our Common Future" by World Commission on Environment (WCED) in 1987. The report defined sustainable development as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs". According to this report, the major objective of development is to ensure the satisfaction of human needs and aspirations. It highlighted the fact that the process of utilization of resources may force human societies to compromise their ability to meet the essential needs of their people in future. Settled agriculture, the diversion of watercourses, the extraction of minerals, the emission of heat and noxious gases into the atmosphere, commercial forests, and genetic manipulation, were all mentioned in the report as examples of human intervention in natural system during the course of development. It called upon all countries to adopt the objective of sustainable development as the overriding goal and test of national policy and international cooperation (Brundtland, 1987).

The UN Conference on Environment and Development in 1992, the Earth Summit, gave high priority in its Agenda 21 to the role of education in pursuing the kind of development that would respect and nurture the natural environment. In its 57th meeting in December 2002, the United Nations General Assembly proclaimed the period 2005- 2014 as the Decade of Education for Sustainable Development (DESD) emphasizing that education is an crucial element for achieving sustainable development. The declaration of the United Nations Decade of Education for Sustainable Development (UNDESD) was a result of a series of steps that increasingly recognized the role of education as a driver for change. The Summit proposed the decade of education for sustainable development as a way of indicating that education and learning lie at the heart of approaches to sustainable development (UNESCO, 2006).

II. Literature Review

Today, sustainable development has become the guiding principles with which human development is weighed upon at least for some developed nations and for others it has become the ideal “word” for development that is not feasible (Keiner, 2005). The Sustainable development (SD) initiative is the result of deep reflections of the existential problems of humankind which also is a consequence of issues such as the overexploitation of natural resources and the promotion of economic development at the expense of environmental and ecological quality (Fien & Maclean, 2000 & Fien & Wilson, 2005).

Sustainable development as a concept was articulated in "Our Common Future", the major outcome document of the 1987 World Commission on Environment and Development (WCED), as development which "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Report, 1987).

The first principal of the Rio Declaration on Environment and Development proclaimed that “Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature”. The document reinforced the message that developmental and environmental needs should be considered as integral components of the process of development. Therefore it represents the turning point from separating development and environment to its representation as sustainable development: “In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it” (UN 1992a)

As John Foster (2002) has argued, Sustainable development is a process of making the emergent future ecologically sound and humanly habitable as it emerges through the continuous responsive learning which is the human species’ most characteristic endowment, a social learning process of improving the human condition and a process which can be continued indefinitely without undermining itself.

Education is a means of helping individuals to make better personal choices in their own judgment and give intelligent consent to collective behaviour (Gough & Scott, 2007).

Education is a life-long process for the betterment of human well-being. Education for sustainable development (ESD) is fundamentally about the links between the awareness of the human as a whole in the nature and its supporting social systems and the health of the planet which we inhabit with responsibilities of present and future world. As such then, education is the key to any sustainable development program: “Education ... should be recognised as a process by which human beings and societies can reach their fullest potential. Education is critical for promoting sustainable development and improving the capacity of the people to address the environment and development issues" (UN,1992; Agenda 21).

The United Nations Decade of Education for Sustainable Development (DESD, 2005-2014) is a global movement which seeks to transform education policy, investment and practice. Spanning 2005 to 2014, the ultimate goal of the DESD is to engage people and communities in meaningful lifelong learning processes which examine how societies can live in more sustainable ways (UNESCO, 2004).

Official DESD documents have consistently outlined a vision for a world where everyone has the opportunity to benefit from education and learn the values and lifestyle changes required for a sustainable future (UNESCO, 2005).

Education for Sustainable Development (ESD) is simply good quality education which is about what and how people learn and its relevance to today's world and its global, environmental and social challenges. ESD has spread across all levels and areas of education, in all regions of the world, and is widely considered key in supporting sustainable development. International and national strategies dealing with the economic, social and environmental dimensions of sustainable development are beginning to reflect ESD as a crucial component. According to Nambiar (2014), educating for sustainability involves radical change at many levels among individuals, the community and the organization and involves a complex democratic process of societal understanding, interpretation and negotiation before it can be achieved.

The causal relationship between economic growth and education is also the subject of many econometric analyses. It is considered that the progress of mankind, especially in the last two hundred years, is largely due to education (Stevens & Weale, 2004), and economic growth is directly influenced by both qualitative and quantitative elements of education levels (Schlottmann, 2010).

Many studies highlighted the economic effects of the education system, with help of indicators that express its main characteristic aspects. A common approach used by professionals is based on a simple correlation between an educational activity index and an index of economic activity (Bowen, 1968).

1. Methodology of the Study

To achieve the main objective of this study, the methodology used is descriptive in nature because it mostly explores the relation between education and every dimension of sustainable development (economic, social and environmental dimension) at two levels of analysis:

1. Analyses of the relation between education and sustainable development in light of last studies in the field of research which proved how education is connected with the different dimensions of sustainable development.
2. Using applied study to explore the proven relation between education and sustainable development in light of countries' experiences with more focus on the countries which succeeded in orienting education policies toward achieving sustainable development goals.

The empirical study depends on a combination of inductive and deductive approach to draw a complete picture about how can policy makers improve educational strategies to contribute effectively to the process of sustainable development.

III. Analysis and Discussion

3.1 The Relation Between Education and Dimensions of Sustainable Development

As was shown earlier in this study, sustainable development means "development that meets the needs of the present without compromising the ability of future generation to meet their needs" (WCED, 1987).

Sustainable development is a balance struck among eco-system health, economics and improved social wellbeing and justice to prevent the exhaustion of the resources necessary for the continuation of life on Planet Earth. It is about achieving and maintaining ecological balance through an understanding of how the environmental, economic, social, cultural and political factors interact (M. Mahruf, C. Shohel and Andrew J. Howes, 2011).

Taking into account that "human beings are at the centre of concern for sustainable development" (UN, 1992: Principle1), then education contributes to sustainable development by developing human potential as well as social growth (Dewey 1899). It also has been seen as a basic human right and as an integral part of access to political power and participation for men and women (Haq 1997, Torres 1990) and can therefore be considered as an act of socialising individuals for social competences. Education should be contributing to the competence of individuals to participate in and construct a sustainable way of life (Journal of Education for Sustainable Development, 2011).

A comprehensive set of Sustainable Development Goals (SDGs) were adopted at the UN General Assembly in September 2015 following a complex and global multi-stakeholder consultation process. It is now incumbent on ESD communities to look specifically at each goal and determine how education can play an effective role and act as catalyst to help in achieving them. Increasingly, the emphasis has moved away from a solely economic view of development to a larger view that includes the three pillars of sustainability: economic, social and environmental pillar. With this new emphasis comes also the recognition that policy instruments or technological solutions are not going to be enough and that behavioural change is critical to achieve sustainable development. But the proposed SDGs apply to the world as a whole, thus the role of education in its broadest sense – including training and capacity building, communication and creating public awareness, scientific research, sharing and access to information and networking, and partnerships – becomes a key strategy for achieving the SDGs (UNESCO, 2016).

Education and Economic Dimension of Sustainable Development

A study by Afzalet et al. (2012), analysed the relationship between education and economic growth and demonstrated that nations can't be developed without investing in education perceived as a multidimensional process as education reduces poverty by increasing productivity and hence, the study proves strong linkages between poverty and education, and education and economic growth in turn.

According to UNESCO (1997), the relationship between education and poverty is quite clear. Educated people have higher earning potential and are better able to improve the quality of their lives. So, many literatures argued that education is the first step in the path of the development process. It plays a very crucial role in the building of human capabilities and enhancing economic growth in which investors also like to invest due to a stock of human capital as education is the vital part of human power and competency (Sen, 1999 and Kim & Terada Hagiwara, 2010). Elaborated the importance of well-educated labour force in the diffusion and adoption of new technology and new methods of production as found to have played a crucial role in developing countries like Pakistan that have a shortage of physical and human capital (HDR, 2001 & Adawo 2011).

Wolff & Gittleman (1993), examined the relation of higher education level with labour productivity index. They have found a high correlation between university enrolment ratio and labour productivity growth. In the case of science and technology education, the study has a finding that the more the scientists and engineers are produced by the universities, the more is the economic growth. In the same context, Bloom, Hartley & Rosovsky (2006), emphasized on the financial returns generated through tax and paid by individuals, their study has estimated positive impacts of research and innovation through higher education on economic activity, but emphasized more on financial returns and less on educational returns. But, no such research or study seems to have been undertaken to examine the situation in the poor or developing countries.

Using time series data for Pakistan from 1960 to 2003, Abbas & Peck (2007) have estimated the correlation between human capital and economic growth using OLS technique. They viewed that human capital has been accounted for about 40 percent increase in GDP with an increase of one percent human capital. Therefore, they have suggested that only low/no investment in education may be one of the reasons of low economic growth stemming from low investment in human capital. Thus, it has been concluded that the higher the level of education of the population the lesser will be the number of poor individuals because education impacts knowledge and skills which are supportive in higher wages (Tilak, 1994). In the developing countries, the social returns of primary education are much higher as compared to that of tertiary education and thus, it is found to be linking millennium development goals also. Many researchers argue that Millennium Development Goals can't be achieved by only universalizing primary education. Similarly, Njong (2010) have found that the provision of primary education without giving right consideration to secondary and higher education constrains development through the absence of up-to-date curriculum, lack of skills in administrative posts and in management and he has notably shown a linear relationship between education and earnings as education increases the probability of being employed as better-educated individuals earn considerably more than less-educated in employment as higher levels of education are accompanied by higher wages, lower unemployment probabilities, and higher labour force participation rates. Most of the work has been done on the link between schooling and wages. This is because the resulting wage increase is the most important economic consequence of higher levels of formal education. Moreover, wages are often seen as reflecting marginal labour productivity which implies that the link between formal schooling and wages can be used to analyse the productivity effects of formal schooling. Economic growth is necessary, even if not sufficient, for poverty reduction. Education generates productivity gains that fuel economic growth. An increase in the average educational attainment of a country's population by one year increases annual per capita GDP growth from 2% to 2.5%. This is equivalent to increasing per capita income by 26% over a 45-year period, roughly the working lifetime of an individual. These estimates take into account factors such as the level of income at the beginning of the period, the share of the public sector in the economy and the degree of openness to trade. Differences in initial education levels can help explain some of the differences in the pace of economic growth between regions. In 1965, the average level of schooling was 2.7 years higher in East Asia and the Pacific than Sub-Saharan Africa. Over the following 45-year period, average annual growth in income per capita was 3.4% in East Asia and the Pacific.

By contrast, it was only 0.8% in sub-Saharan Africa. The difference in initial education levels could help explain about half of the difference in growth rates. Differences in progress made in education attainment can also help explain some of the differences in the pace of economic growth within regions. In Latin America and the Caribbean, the average number of years of schooling for adults rose from 3.6 in 1965 to 7.5 in 2005. This is estimated to have contributed two-thirds of the average annual growth rate in GDP per capita of 2.8% between 2005 and 2010 (W. Riddell, 2006).

Another research also suggested that the quality of education may be just as important for productivity as its quantity. Theoretical models of human capital and growth suggested that some of the benefits of a more educated labour force will typically "leak out" and generate macroeconomic benefits that can't be appropriated in the form of higher earnings by those who undertake the relevant investment. These leakages are often called externalities, and they provide an important rationale for education subsidies and for other policies aimed at increasing human capital investment above its "free market" value. A key finding supporting this view is that macro econometric estimates of the individual returns to schooling tend to be significantly larger than their micro econometric counterparts (when the latter are corrected in a way that makes the two variables directly comparable). Since of such gains that can be directly appropriated by the individual undertaking the investment, the difference between macroeconomic estimates will capture all the induced output gains and microeconomic estimates only the part these two figures can be interpreted as a measure of the size of the externalities arising from human capital. The most probable sources of these externalities are the link between human capital and the rate of technological change that has already been mentioned, and the indirect effect of education on productivity and employment through the quality of institutions that may be considered a component of social capital (Temple, J, 2002)

Education and Social Dimension of Sustainable Development

In general, there is a need to educate people to have a sustainable mind-set. Within that contest, and according to Gough & Scott (2007), scientific research can provide evidence for what necessary knowledge is needed to have sustainable development. Following the research within sustainable development, a specific type of knowledge, and therefore also a specific curriculum has come to be the primary target of learning, and thus has made its mark on curriculum and assessment activities in educational process based on scientific knowledge about the causes and solutions to the issue of sustainable development. On the other hand, the educational institutions should be able to promise that students are actually acquiring abilities that are potentially relevant for a professional practice that has sustainable development as the objective. Education can be part of a social trans-

formation process involving men, women, boys and girls towards developing a more gender justice society. Education can empower women to overcome forms of gender discrimination, so they can make more informed choices about their lives. Such empowerment benefits women but also benefits the living conditions of their children and strengthens society. In many countries, education has already been a key factor in the transition process from high rates of birth and mortality to lower rates. For instance, around 70% of the fertility decline in Brazil during the 1960s and 1970s can be explained by improvements in schooling. The same could happen in sub-Saharan Africa. Women with no education in the region have 6.7 births-on average- compared with 5.8 for those with primary education, and 3.9 for those with secondary education. If all women had secondary education, births would fall by 37%, from 31 to 19 million. With respect to justice in income distribution as a social aspect of sustainable development, the income distribution starts initially from a broadly equal basis, since all people are relatively poor. Inequality increases as the country develops and people move into non-agricultural sectors that pay higher wages. This process of increasing inequality gradually begins to reverse when a sufficiently large section of the population completes the transition out of agriculture. Education plays a major role in this process as it facilitates the structural transformation of the economy and encourages educated workers to make the transition into the non-agricultural sector. A review of 64 studies confirmed that a more equitable distribution of education opportunities reduces income inequality. Expanding education, in particular ensuring that most people have completed secondary schooling, is an essential condition to reducing inequality within countries. Across several countries, income inequality fell when those with secondary education took over from those with primary education as the largest educational group in the population. In France, Malaysia and Brazil, income inequality, as captured by the Gini coefficient, fell by about seven percentage points over two decades as the share of population with secondary education grew. In Malaysia, the share of adults with secondary education increased from 20% in 1980 to 48% in 2000; during this period, the Gini coefficient fell from 0.51 to 0.44. While expanding access to and completion of secondary education is necessary for reducing income inequality within countries, it is not sufficient. The result also depends on the available labour market opportunities. Between 1990 and 2010, income inequality increased not only in high income but also in middle income countries, notably China and India, where demand for skills outpaced supply and those with the highest levels of education benefitted relatively more. Expanding post primary schooling opportunities would have helped prevent inequality from growing. Education helps change behaviour by making citizens more engaged. People with more education tend not only to be more concerned about the environment, but also to engage in activism that promotes and supports political decisions that protect the environment. Such pressure is a vital way of pushing governments towards the type of binding agreement that is needed to control emission levels. In almost all countries participating in the 2010 International Social Survey Program, respondents with more education were more likely to have signed a petition, given money or taken part in a protest or demonstration, in relation to the environment, over the last years. In Germany, while 12% of respondents with less than secondary education had taken such political action, the share rose to 26% of those with secondary education and 46% of those with tertiary education (Robert Laurie & Others, 2016).

Education and Environmental Dimension of Sustainable Development

The developed countries use excessive resources to produce surplus goods for exports while poor countries exploit their existing resources to feed their growing population and end poverty level. This race of resources exploitation has created a dangerous situation all over the world and has made the lives of people and animals in danger. It is more than proven that judicious use of environmental resources is a vital need for sustainable economic development. There is a strong relation between environment and sustainable development. The world conservative strategy initiated by the United Nations Environment Program (UNEP), the world wide Fund for Nature (WWF) and international Union for Conservation of Nature (IUCN), provided the platform for international debate on sustainability. Three Earth Summits were held under the auspicious of United Nations Conference on Environment and Development in 1992, 1997 and 2002. Over 170 countries participated in these Summits renewed their commitment to sustainable development aiming at "giving special attention to the worldwide conditions that pose severe threats to the sustainable development of the people, which include: chronic hunger; malnutrition; foreign occupation; armed conflict; illicit drug problems; corruption; natural disasters, communicable diseases. Environmental pollution is the major facing by every country. Natural resources are exhausting rapidly, creating scarcity problem for the next generation. A large number of population particularly poor segments of societies are suffering badly as every country is trying to increase economic growth to alleviate living standard of their people and on the other hand while environmental problems are becoming complicated due to excessive use of resources. There is a strong and growing global consensus among all countries that there is a need to take account of environmental issues in their policy making. Hence, many countries, of the Asian and European continent have already evolved complex and erudite procedures to accomplish this. Having said this, it is clear that environmental degradation is still accelerating across many different environmental dimensions in many parts of the world (Ekins, 2003).

As Gough and Scott (2007) point out, the phrase "save the environment" relates to the desire to conserve certain aspects of particular environments that have meaning or value for specific people, and it also defines what kind of knowledge is necessary. There are things about this environment that specific people value, or attach certain meanings to. It is these values and meanings that they wish to express and preserve through attempts at environmental protection. For humans the term the environment labels a space in which artefacts of nature interact with artefacts of societies to create sets of understandings

Many studies (Sivapalan, 2016; Sleurs, 2008; Zolkifli, Kamin, Azlan & Yahya Z., 2016) have shown that a sustainable conscious citizenry would be able to live sustainable lifestyles and be cautious in their relationship with nature and this collective responsibility and practices can be consolidated to reduce the negative impact humans have had on environmental and ecological systems. To develop a citizenry that is capable of living in harmony with nature and that does not impose unbearable and unsustainable burdens on nature (the ecosystem), it is important to empower people with the knowledge, skills, values, dispositions and capabilities required to do so. Leaders world over have agreed that it takes education to develop these knowledge, skills, values and dispositions required for Sustainable Development. Hence, education becomes important and crucial to attaining the SD goal of raising a sustainable literate and conscious citizenry. Consequently, the (UNESCO, 2005) explained that education should be considered a major influencer in achieving the SD goals as education for sustainable development is a transformative learning process that equips students, teachers, and school systems with new knowledge and ways of thinking needed to achieve economic prosperity and responsible citizenship while restoring the health of the living systems upon which lives depend on. So, education can empower people to develop their knowledge, skills and attributes to work and live in a way that maintains environmental, societal and economic well-being, both for present and future generations. According to the UN Conference on the Human Environment in Stockholm (1972), Improvement of the environment for present and future generations was introduced as an important aspect of people's and governments' duty. Rational planning and contribution of science and technology were highlighted as essential tools for "reconciling any conflict between the needs of development and the need to protect and improve the environment" (UN 1972, principle 14). Underdevelopment of developing countries and industrialisation and technological development of the industrialised countries were seen as the reasons for the environmental problems. The links between education and sustainable use of water and energy resources have not been studied in great detail and vary according to context. There has been instead a tendency to focus on the constraints that lack of access to water and energy places on children's opportunities to access to school and to learn. However, education can have an impact on how people make use of these resources, especially in areas of resource scarcity. In semi-arid areas of China, for example, educated farmers were more likely to use rainwater harvesting and supplementary irrigation technology to alleviate water shortages. Educated households are also more likely to use different methods of water purification through filtering or boiling. In urban India, the probability of purification increased by 9% when the most educated adult had completed primary education and by 22% when the most educated adult had completed secondary education, even once household wealth is accounted for. By increasing awareness and concern, education can encourage people to reduce their impact on the environment by taking action such as using energy and water more efficiently. Such behaviour becomes increasingly important as people in high income countries are called upon to modify their consumption and take other measures that limit environmental harm. In the Netherlands, people with a higher level of education tend to use less energy in the home, even taking account of income.

A study of households in 10 OECD countries found that those with more education tended to save water, and there have been similar findings in Spain. However, education can have an impact on how people make use of these resources, especially in areas of resource scarcity. In semi-arid areas of China, for example, educated farmers were more likely to use rainwater harvesting and supplementary irrigation technology to alleviate water shortages. An analysis of the Global Warming Citizen Survey in the United States also showed that the higher the education level of respondents, the greater their activism in terms of policy support, environmental political participation and environment-friendly behaviour. Education also helps people adapt to the consequences of climate change. The need for adaptation is becoming increasingly urgent for many populations confronted with increasing temperatures, rising sea levels and more frequent extreme weather events. Adaptation is especially important for poorer countries, where the capacity of governments to act is more limited and threats to livelihoods will be felt most strongly. Farmers in low income countries are especially vulnerable to climate change, as they depend heavily on rain-fed agriculture. A survey of farmers in Burkina Faso, Cameroon, Egypt, Ethiopia, Ghana, Kenya, Niger, Senegal, South Africa and Zambia showed that those with education were more likely to make at least one adaptation: a year of education reduced the probability of no adaptation by 1.6%.. While evidence is difficult to bring to bear, education helps build resilience and reduce vulnerability in the face of climate change impacts. In that respect, strategies to mitigate natural and other forms of disaster must include education as a way to improving people's understanding of the risks, of the need to adapt and of measures that could reduce its impact on livelihoods (J. O'Flaherty & M. Liddy, 2018).

3.2 Education and sustainable development in light of countries' experiences

Policy makers in both developed and developing countries seek to answer a main question: How can education play a role in promoting sustainable development? To answer this question, one of the following three points of view is used: education about sustainable development, education for sustainable development and education towards sustainable development. In summary, the first point of view, education "about" sustainable development, provides awareness which generates changes in attitude and then in behaviour. The second view, education "for" sustainable development, focuses on actions which change attitudes and build awareness for life and then so develop lifelong practice. The third view, education "towards" sustainable development, emphasises generating knowledge through critical action, and the development of active and critical citizenship. (M. Mahruf C. Shohel and Andrew J. Howes, 2011). The overall goal here is to integrate the values inherent in sustainable development into all aspects of learning to encourage changes in behaviour that allow for a more sustainable and just society for all. (UNESCO, 2005a). The relation between education and sustainable development is complex which means that countries must connect education to other targets of sustainable development goals.

UNESCO (2016) summarised the links between education and SDGs as follow:

- Education is critical to lifting people out of poverty.
- Education plays a key role in helping people move towards more sustainable farming methods, and in understanding nutrition.
- Education can make a critical difference to a range of health issues, including early mortality, reproductive health, spread of disease, healthy lifestyles and well-being.
- Education for women and girls is particularly important to achieve basic literacy, improve participative skills and abilities, and improve life chances.
- Education and training increase skills and the capacity to use natural resources more sustainably.
- Educational programs, particularly non-formal and informal, can promote better energy conservation and uptake of renewable energy sources.
- There is a direct link among such areas as economic vitality, entrepreneurship, job market skills and levels of education.
- Education is necessary to develop the skills required to build more resilient infrastructure and more sustainable industrialization.
- Where equally accessible, education makes a proven difference to social and economic inequality.
- Education can give people the skills to participate in shaping and maintaining more sustainable cities, and to achieve resilience in disaster situations.
- Education can make a critical difference to production patterns (e.g. with regard to the circular economy) and to consumer understanding of more sustainably produced goods and prevention of waste.
- Education is key to mass understanding of the impact of climate change and to adaptation and mitigation, particularly at the local level.
- Education is important in developing awareness of the marine environment and building proactive consensus regarding wise and sustainable use.
- Education and training increase skills and capacity to underpin sustainable livelihoods and to conserve natural resources and biodiversity, particularly in threatened environments.
- Social learning is vital to facilitate and ensure participative, inclusive and just societies, as well as social coherence.
- Lifelong learning builds capacity to understand and promote sustainable development policies and practices.

The 2002 Johannesburg World Summit on Sustainable Development (WSSD) suggested that sustainable development concepts, actions and principles should be integrated into all levels of education, in order to promote education as a key agent for change (United Nations, 2002). Now, the role of education in achieving sustainable development goals will be shown depending on some case studies:

The Case of India

Indian experience illustrates how education can and does play a key role in successful implementation with clear implications for local and global efforts towards the achievement of all sustainable development goals. Indian policy makers built a comprehensive strategy depending on many educational programs focus on not only nurturing awakening processes but on anticipating and providing ongoing support to individuals or groups, who are already vulnerable, during their transformational phase. This calls for continued presence or handholding by educators and trainers in order to allow for consolidation of learning processes and confidence levels that complete the capacity building process. Thus, strong and ongoing institutional support is a cornerstone of non-formal and informal education which is possible only when these are dedicated and tailored to the requirements of the community. In that strategy, learning takes place not only within the community but also

within the educational institutions and the educators as they fine tune their approaches and curriculum based directly upon their experience with the community. In that manner, we can say that "Education for Sustainable Development" seeks to transform and resolve issues through democratic engagement where skills and resources are pooled and people learn from each other. Often the creation of a facility that directly addresses the problem at hand in an effective way is seen to constitute a live educational resource around which learning can be successfully structured. Indian case study proved that education must be a key driver for sustainable development goals through identifying effective learning methodologies that can drive change towards sustainability and can be successfully used in formal, non-formal and informal settings and across a range of sectors. To achieve that, alongside policy, technology, introduction of new systems, financial mechanisms and better implementation and monitoring are urgently needed (Karthikeya V. Sarabhai, 2016).

The Case of Costa Rica

In 2006, Costa Rica approved the National Commitment on the "Decade of Education for Sustainable Development", agreeing to consider education as an indispensable aspect for generating cultural change towards sustainable development, and to promote the incorporation of environmental education into trans-disciplinary subjects. A study conducted by Tsuneki Hori (2013), on the impact of the more recent policy C-neutral 2021, which aims at making Costa Rica the first carbon neutral country, concludes that C-neutral 2021 has been a significant corner stone in the educational sector of Costa Rica, upgrading from already existing environmental education policy approach to recent ESD. The most recent comprehensive national policy instrument on climate change, the National Strategy on Climate Change includes capacity-building and public awareness, education and cultural change, with the aim of increasing environmental literacy. The example of Costa Rica shows how sustainable development policies that include ESD can help to reinforce and drive changes in education systems.

The Case of Kenya

Kenya's ESD Implementation Strategy, adopted in 2008, acknowledges that in order to have quality education and training for development, education should promote the development of productive and socially responsible individuals. This ESD strategy aimed at promoting teaching and learning that inculcates appropriate values, behaviour and lifestyles for good governance and sustainability among other focuses. More recently, Kenya formulated a national ESD Policy Framework in 2012 through the Kenya Institute of Curriculum Development with the goal of enhancing sustainable development through transformative curriculum support materials. ESD has also been entrenched in the National Education Sector Program to be implemented over five years (2013–2018), and is captured in Vision 2030, Kenya's roadmap to the realization of sustainable development, showing the importance of alignment with national sustainable development objectives (UNESCO, 2014a).

In many other countries, successful implementation of policies contributed to developing student's abilities and confidence as students learn to adapt to evolving complex situations (Finland, Latvia, the Netherlands, Mongolia, Scotland, Korea, Sweden) and develop better systems thinking skills (Finland, Japan, Mongolia, Sweden, USA), problem-solving skills (Australia, China, England, Estonia, Finland, Korea, Sweden) and values for sustainable development (Taiwan), while understanding that sustainability is not just about the environment but primarily about the reconciliation between environmental sustainability and human development (Peru). ESD helps students develop competencies (knowledge, skills and attitudes) through constant interaction and involvement (Germany, Sweden). ESD also helps students recognize interrelations and interconnections in ESD issues and positions, and to incorporate such perspective when solving problems and addressing issues (Australia, Belgium, England, Finland, Germany, Japan, Latvia, Peru, Scotland, Sweden, USA). Students who follow ESD curricula become attentive to global issues (Korea), learn to act as responsible citizens locally and globally with respect to ESD issues (England, Germany, Latvia, Peru, Scotland, Sweden), build an empathetic outlook and commitment (Peru) and participate in democratic decision making (Mongolia). ESD also inspires students to create solutions for the future (Australia, Belgium, Latvia, Korea, the Netherlands, Sweden); to become future leaders and managers (England), and to foster a sense of hope, appreciation and respect for humans and nature (the Netherlands, Sweden). Mongolia reports that curriculum and textbook analyses show that ESD has led to an increased emphasis on skills and competencies (Robert Laurie, 2016).

IV. Results and Conclusion

Our findings showed that there is a significant and crucial role of education in sustainable development. Education at all levels is a key to sustainable development. Educating people for sustainable development means not just adding environmental protection to the curriculum, but also promoting a balance among economic goals, social needs and ecological responsibility. Education should provide students with the skills, perspectives, values, and knowledge to live sustainably in their communities. It should be interdisciplinary, integrating concepts and analytical tools from a variety of disciplines (UNESCO, 2002).

These results clearly give the message to the developing countries there is a high contribution of education to sustainable socio-economic development as it develops the knowledge, skills, values and world views necessary for people to act in ways that contribute to more sustainable patterns of living and enables individuals and communities to reflect on ways of interpreting and engaging with the world. Education has a fundamental role to play for providing the new generation with a vision of education that seeks to empower them to assume responsibility for creating a sustainable future (Kanbar, 2012).

Education develops and strengthens the capacity of individuals, groups, communities, organizations and countries to make judgements and choices in favour of sustainable development (UN, 2005).

Education can accelerate progress towards the achievement of each of the proposed sustainable development goals for 2015 and beyond in a multiplicity of ways. Education enables individuals, especially women, to live and aspire to healthy, meaningful, creative and resilient lives, strengthens their voices in community, national and global affairs and opens up new work opportunities and sources of social mobility. In short, the political and financial commitments to education by countries and donors need to be secured and renewed and there is a pressing need for closer collaboration across sectors to enable these synergies to take place (United Nations Educational, Scientific and Cultural Organization, 2014).

It has been emphasised that education plays a critical role in sustainable development. Education is a lifelong process that enacts the betterment and quality of human well-being can be fundamentally used to reshape the relationship humans have with nature for the purpose of promoting the health and wellbeing of people and sustenance of the planet.

Policy Recommendations

Based on the above research results, this paper makes the following policy recommendations:

1. Achieving sustainable development requires a profound transformation of how individuals think and act. To create a more sustainable world and to engage with sustainability-related issues as described in the SDGs, individuals must become sustainability change-makers. They require the knowledge, skills, values and attitudes that empower them to contribute to sustainable development.
2. Developing countries governments should put education in high priority in public policies. School dropout rates in Primary, secondary and tertiary level in developing countries is the chronic problem which means that government, political parties, civil society and social workers should think what procedure can be used to stop dropout rates. Developing countries should revise their policies regarding education especially in the public sector.
3. Education that promotes economic growth alone may well also lead to an increase in unsustainable consumption patterns. So, policy makers must support the approach of Education for Sustainable Development (ESD) which empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society for present and future generations as ESD aims at developing competencies that empower individuals to reflect on their own actions, taking into account their current and future social, cultural, economic and environmental impacts from a local and a global perspective. Individuals should also be empowered to act in complex situations in a sustainable manner, which may require them to strike out in new directions and to participate in socio-political processes, moving their societies towards sustainable development.
4. Educational institutions- from pre-school to tertiary education and in non-formal and informal education- can and should consider it their responsibility to deal intensively with matters of sustainable development and to foster the development of sustainability competencies.
5. Integrating the principle of education for sustainable development in all formal, and informal learning settings requires relevant and coherent policies to facilitate a change of the education systems to ensure that education systems are prepared for, and responsive to, existing and emerging sustainability challenges. This includes, among others, integrating ESD into curricula and national quality standards, and developing relevant indicator frameworks that establish standards for learning outcomes in order to ensure the process of reorienting education policies towards sustainable development will succeed.
6. Policies must be designed by governments in cooperation with the private sector, local communities, academics and civil society to integrate ESD into sub-national, national, sub-regional, regional and international policy frameworks, plans, strategies, programs and processes related to education and to sustainable development (UNESCO, 2014b).
7. Schools and universities should see themselves as places of learning and experience for sustainable development and should therefore orient all their processes towards principles of sustainability. For ESD to be more effective, the educational institution as a whole has to be transformed. It involves rethinking the curriculum, campus operations, organizational culture, student participation, leadership and management, community relationships and research (UNESCO, 2014a).

8. Developing cross-cutting sustainability competencies that are needed to deal with many different sustainability challenges and to relate the different SDGs to each other. All educational institutions must consider their responsibility to deal intensively with sustainable development issues, to foster the development of sustainability competencies and to develop the specific learning outcomes related to all SDGs. Therefore it is vital not only to include SDG-related contents in the curricula, but also to use action-oriented transformative pedagogy.
9. Education officials, policy makers, educators, curriculum developers and others are called upon to rethink education in order to contribute to the achievement of the SDGs within their timeframe between now and 2030. This guidance provides an orientation to the sustainability competencies and specific cognitive, socio-emotional and behavioural learning outcomes that are relevant to this goal, and it outlines what is needed to implement learning for the SDGs through ESD.
10. Full policy consistency between the education sector and the sustainable development sector has to be ensured. The alignment of local and national sustainable development goals and strategies with education policy can drive the reorientation of education systems towards sustainable development. ESD has to be integrated coherently across relevant sectorial or sub sectorial policies.

V. Limitations & Direction for Future Studies

To successfully activate the contribution of education to sustainable development, more future studies are needed to design an integrated strategy for the goal to be reached with more focusing on the role of each element of the society: government, private sector, civil society and every human being across the country. Further studies are also needed to explore effective mechanisms for Improving educational outcomes in the context of sustainability.

References

- [1]. Adawo, M. A. (2011), Has Education Contributed to the Economic Growth of Nigeria?, *Journal of Economics and International Finance*, 1(3).
- [2]. Adiq, K. (2011), Role of University Education in Poverty Alleviation in Pakistan, *Interdisciplinary, Journal of Research in Business* (7).
- [3]. Afzal, M., Malik, M.E., Begum, I., Sarwar, K. and Fatima, H. (2012), Relationship among Education, Poverty and Economic Growth in Pakistan: An Econometric Analysis. *Journal of Elementary Education*, 22, 2.
- [4]. Abu, Peter B. and Jonathan E. Ogehenekohwo (2010). Higher Education Research and the Economics of Scale of Sustainable Development in Africa, *European Journal of Scientific Research*, 45 (1).
- [5]. Brundtland, G. (1987). *Our Common Future: Report of the 1987, World Commission on Environment and Development*, United Nations.
- [6]. Cheung Y.-K. A.(1997), *The Concept of Sustainable Development: An Environmental Assessment Approach for Hong Kong and the Pearl River Delta: Principles and Practices*, PhD Thesis, The University of Hong Kong.
- [7]. Camelia Burja & Vasile Burja (2013), Education's Contribution to Sustainable Economic Growth in Romania, *Journal of Social and Behavioural Sciences*, 81.
- [8]. Ekins, P. (2003), Identifying Critical Natural Capital. *Ecological Economics*, 44(2).
- [9]. Fien, J., & Maclean, R. (2000), Teacher Education for Sustainability, Two Teacher Education Projects from Asia and the Pacific, *Journal of Science Education and Technology*, 9(1).
- [10]. Fien, J., Maclean, R., & Park, M.-G. (2008), *Work, Learning and Sustainable Development: Opportunities and Challenges*, Vol. 8: Springer Science & Business.
- [11]. Fien, J., & Wilson, D. (2005), Promoting Sustainable Development, the Bonn Declaration Prospects, 35(3). Gough, S., & Scott, W. (2007), *Higher Education and Sustainable Development: Paradox and Possibility*. New York: Routledge.
- [12]. Gerd Michelsen and Peter J. Wells (2017), *Education for Sustainable Development: Reflections from the UNESCO Chairs Program*.
- [13]. Hofman, M. (2015), What is an Education for Sustainable Development Supposed to Achieve; A Question of What, How and Why, *Journal of Education for Sustainable Development*, 9(2).
- [14]. Hofmann, C., & Strietska-Ilina, O. (2013). *Skills for Green Jobs: Gearing up Education and Training for Green Growth*, Paris: Organization for Economic Cooperation and Development (OECD).
- [15]. Hawkes, D. and Ugur, M. (2012), Evidence on the Relationship Between Education, Skills and Economic growth in low-income countries: A systematic Review. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.
- [16]. J. O'Flaherty & M. Liddy (2018), The Impact of Development Education and Education for Sustainable Development Interventions: A Synthesis of the Research, *Environmental Education Research*, 24:7.
- [17]. James, Foreman-Peck; Qaisar, Abbas & James, Foreman (2007), *The Mincer Human Capital Model in Pakistan: Implications for Education Policy*, Cardiff Economics Working Paper No. 24.
- [18]. Johnston, Andy (2007). Higher Education for Sustainable Development, Final Report of International Action Research Project. Based on Research Carried out by Andy Johnston, Seconded to the OECD from Forum for the Future, October 2006 – March 2007.
- [19]. Kim, Yong Jin; Terada-Hagiwara, Akiko (2010), A Survey on the Relationship Between Education and Growth with Implications for Developing Asia, Asian Development Bank.
- [20]. Kartikeya V. Sarabhai (2016), Education as a Key Driver for Sustainable Development Goals: Case Studies from India, *Global Education Monitoring Report*, UNESCO 2016.
- [21]. Leal Filho W (2010a), Teaching Sustainable Development at University Level: Current Trends and Future Needs, *Journal of Baltic Sea Education* 9(4).
- [22]. M. Mahruf C. Shohel and Andrew J. Howes (2011), Models of Education for Sustainable Development and Nonformula Education: A Bangladeshi Perspective, *Journal of Education for Sustainable Development*, 5(1).

- [23]. Mankiw, N.G., Romer, D., Weil, D.N., (1992), A contribution to the Empirics of Economic Growth. *Quarterly Journal of Economics* 107.
- [24]. Mochizuki, Y., & Fadeeva, Z. (2010), Competences for Sustainable Development and Sustainability, *International Journal of Sustainability in Higher Education*, 11(4).
- [25]. Njong, A. M. (2010), The effects of Educational Attainment on Poverty Education in Cameroon, *Journal of Education Administration and Policy Studies* 2 (1).
- [26]. Paul Vare and William Scott (2007), Learning for a Change: Exploring the Relationship Between Education and Sustainable Development, *Journal of Education for Sustainable Development* 1(2).
- [27]. Pankaj Kumar Paul and Chitralkha Mehera (2016), Impacts of Education on Sustainable Development: A Micro Study in Burdwan District of West Bengal, India, *American Journal of Educational Research*, Vol. 4(7).
- [28]. Robert Laurie, Yuko Nonoyama . & Rosalyn McKeown (2016), Contributions of Education for Sustainable Development, (ESD) to Quality Education, A Synthesis of Research, *Journal of Education for Sustainable Development* 10,(2)
- [29]. Schlottmann, A. (2010), Education and State Economic Growth: the Fundamental Linkage, White Paper 2.
- [30]. Stevens Ph., Weale M. (2004), Education and Economic Growth, in *International Handbook on the Economics of Education*, Edward Elgar Publishing, UK.
- [31]. Shohel, Muhammad M C and Andrew J Howes (2006), Non-formal Education for Sustainable Development: A Bangladeshi Perspective, The 10th UNESCO-APEID International Conference, Bangkok, Thailand.
- [32]. Scott, W. & Gough, S. (2003), *Sustainable Development and Learning: Framing the Issues*, London, Routledge Flamer.
- [33]. Schults, T. (2009), The Gender and General Consensus of the Demographic Transition and Population Policy: An Assessment of the Micro and Macro Linkage, Working paper No.71, Yale University.
- [34]. Sen, Amartya (1999), *Development as Freedom*. Oxford: Oxford University Press.
- [35]. Sinnathurai V. (2013), An Empirical Study on the Nexus of Poverty, GDP Growth, Dependency Ratio and Employment in Developing Countries. *Journal of Competitiveness*, Vol. 5, Issue 2.
- [36]. Temple, J. (2002), Growth Effects of Education and Social Capital in the OECD Countries, *OECD Economic Studies*, Vol. 33.
- [37]. Tsuneki Hori (2013), Enhancing Local Disaster Risk Management Capacity in the Context of Increasing Climate-related Hazards in Cartago, Costa Rica.
- [38]. Tilak, Jandhyala B. G (1994), *Education for Development in Asia*. New Delhi: Sage Publications.
- [39]. Tilbury, D. (2003), Emerging Issues in Education for Sustainable Development: Education for Sustainable Development in Nepal; Views and Visions, *International Institute for Global Environmental Strategies (IGES)*.
- [40]. Tilak, J. (2006), Trends in Public Expenditure on Education: A Contrast Between two Educationally Backward States: Andhra Pradesh and Rajasthan, *Journal of Indian School of Political Economy*.
- [41]. UN (1992a), Rio Declaration on Environment and Development, Presented at the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, Brazil.
- [42]. UN (1992b), Promoting Education, Public Awareness and Training of AGENDA 21. Report of the United Nations Conference on Development, Rio de Janeiro, Brazil.
- [43]. United Nations Educational Scientific and Cultural Organization (2005), *Contributing to a More Sustainable Future: Quality Education, Life Skills, and Education for Sustainable Development*.
- [44]. UNESCO (1997), *Educating for a Sustainable Future: A Transdisciplinary Vision for Concerted Action*.
- [45]. UNESCO (2002), *Ubuntu Declaration on Education and Science and Technology for Sustainable Development*, Paris.
- [46]. UNESCO (2006a), *Framework for the DESD International Implementation Scheme*. Paris: UNESCO Education Sector.
- [47]. UNESCO (2006b), *Orienting Technical and Vocational Education and Training for Sustainable Development: a Discussion Paper*, United Nations Decade of Education for Sustainable Development.
- [49]. UNESCO (2012), *Education for Sustainable Development Country Guidelines for Changing the Climate of Teacher Education to Address Sustainability: Putting Transformative Education into Practice*, M. Y. Choi (Ed.), Indonesia.
- [51]. UNESCO (2012a), *Shaping the Education of Tomorrow. Report on the UN Decade of Education for Sustainable Development*, Paris.
- [52]. UNESCO (2012b), *Exploring Sustainable Development: A Multiple-Perspective Approach*, Paris.
- [53]. World Commission on Environment and Development (WCED), 1987, *Our Common Future*, Oxford: Oxford University Press, Bangladesh, *Visual Studies*, 22(1).
- [54]. Wolff, E. & Gittleman, M. (1993), The Role of Education in Productivity Convergence: Does Higher Education Matter, in A. Szirmai, B. van Ark and D. Pilat, ed., *Explaining Economic Growth*, Elsevier Science Publishers, Amsterdam.
- [55]. Wals, A. J., & Jickling, B. (2002), Sustainability in Higher Education: From Doublethink and Newspeak to Critical Thinking and Meaningful Learning, *International Journal of Sustainability in Higher Education*, 3(3).
- [57]. Wedgwood, R. (2005), *Education and Poverty Reduction in Tanzania*, UKFIET Oxford Conference on Education and Development. University of Edinburgh.
- [58]. W. Craig Riddell (2006), *The Impact of Education on Economic and Social Outcomes: An Overview of Recent Advances in Economics*, University of British Columbia.

Abeer Mohamed Ali "The Contribution of Education to Sustainable Development in Light of Countries' Experiences" *IOSR Journal of Economics and Finance (IOSR-JEF)* , vol. 10, no. 6, 2019, pp. 18-28.