African Journal of Environmental Research
Vol 1, No. 1, 2018

MILLENNIUM DEVELOPMENT GOALS: A REVIEW OF ACHIEVEMENT OF ENSURING ENVIRONMENTAL SUSTAINABILITY

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Abstract

The Millennium Development Goals (MDGs) are a set of 8 time-bound goals for tackling poverty as an environmental problem of human societies across the globe, particularly in developing countries. The aim of Millennium Development Goal No. 7 is to ensure environmental sustainability. A review of the achievement of this goal and the main barriers that impede its progress in developing countries was conducted by analyzing the quality of past studies on it from 2000-2015. Environmental, health and socio-economic databases were searched and 15 empirical quantitative studies (ecological, cross-sectional and descriptive) on MDGs, identified, out of which 5 studies that reported reasonable serious impediments in the progress of MDG No. 7 in developing countries were selected. The results of the review revealed the main barriers to MDG No. 7 as environmental injustice directed to the poor, socio-economic inequalities, HIV/AIDS, lack of political will at the local areas, inadequate data to track progress and corruption. On the strength of the fact that the MDG No. 7 is over (except for its target 11 with 2020 deadline) given the 2015 deadline for all MDGs, the major recommendation is that the experiences of the programme be integrated into the Sustainable Development Goals (SDGs) which have replaced the MDGs.

Keywords: *Barriers, Environmental Sustainability, Millennium Development Goals, Review, Sustainable Development Goals.*

INTRODUCTION

At the United Nations Summit in 2000, 189 world governments agreed in the commitment to achieve a set of 8 time-bound goals tagged Millennium Development Goals (MDGs) aimed at improving the lives of the planet earth's poorest by 2015, mainly in developing countries of Africa with the highest number of the poor. It constitutes a significant international arrangement for a global strategy to achieve the basic conditions for development, health and welfare (United Nations, 2000a, b). Ensure Environmental Sustainability is Goal No. 7 with 3 targets and 8 indicators (Table 1).

Table 1: MDG No. 7: Global Targets and Indicators

TARGETS	INDICATORS
9. Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	**25.** Proportion of land area covered by forests **26.** Ratio of area protected to maintain biological diversity to surface area **27.** Energy use per GDP **28.** Carbon dioxide emissions (per capita) and consumption of

	ozone depleting chlorofluorocarbons **29.** Proportion of population using solid fuels
10. Halve by 2015, the proportion of people without sustainable access to safe drinking water and sanitation	**30**. Proportion of population with sustainable access to an improved water source, urban and rural poor **31**. Proportion of population with access to improved sanitation
11. Have achieved, by 2002, a significant improvement in the lives of at least 100 million slum dwellers.	**32.** Proportion of households with access to secure tenure

Source: (UNDP, 2006)

The targets were set to track global progress in terms of environmental sustainability, but individual country needs, circumstances and priorities differ significantly, and tailoring the targets to country conditions is essential to worldwide progress (UNDP, 2006). According to it, indicators are used to measure global progress towards achieving the goal. It also stated that both the targets and indicators are illustrative of key global environmental issues and commitment. It further opined that because they are global in nature, they require responses from both developed and developing countries, with common but differentiated responsibilities. The framework, according to it, assumed that improvements at the national level would impact regional and global trends through meeting the targets by 2015.

Mainstreaming the environment in all human developments to achieve the MDGs is very important because it is the environment that provides the resource base upon which man entirely depends for survival. Natural resources utilized by him such as air to breathe, water for drinking and land for agriculture that supplies food to eat are all components of the environment system. Yet, man destroys the environment and does so to himself. This underscores the need to introduce sustainability into the environment system. Environmental sustainability deals with natural resources---exhaustible and renewable as well as ecosystem services and the reproducibility of global ecosystem services and ecological resources (Jahan and Umana, 2003). According to them, it emphasizes the proper uses of natural resources and regeneration of the ecosystem so that future generations have at least exactly the same opportunities as the present ones.

Environmental sustainability is the heartbeat of other 7 MDGs because it influences them directly as they must occur in the environment. For example, in the MDGs strategy, the indication of hunger, the indication of infant mortality and the improvement of maternal health and the fight against infectious diseases are directly influenced by environmental sustainability (Anyangwe, Mtonga and Chirwa, 2006; Varis, 2007) cited in Jahan (2003). Then, ensuring environmental sustainability is the pivot upon which the achievement of other MDGs depends. What then is the extent of achievement of ensuring environmental sustainability across MDG countries? This study is set to evaluate this with a view to making recommendations on exploring the unfinished business from the MDG No.7 to provide information for future development agendas as regards the Sustainable Development Goals (SDGs) already in place to replace the MDGs from 2015.

CONCEPTUAL FRAMEWORK

This study is rooted in the concept of environmental sustainability according to Jahan and Umana (2003) who in their opinion stated that environmental sustainability deals with natural resources---exhaustible and renewable and ecosystems services and the reproducibility of global ecosystems services and ecological resources. According to them, the overuse of natural resources and the environmental degradation at present shrink the opportunities of future generations. They concluded that environmental sustainability emphasizes the proper uses of natural resources and regeneration of the ecosystem so that future generations have at least exactly the same opportunities as the present ones.

The environment matters to everyone and particularly to the poor who depend on it as their source of livelihoods in terms of agriculture (cropping and range farming), harvesting of forest products (snails, medicinal herbs and firewood) and water for sale at local markets. The poor bear the brunt of environmental degradation. They die from water and air pollution more than the rich. They live very proximal to poor sanitary conditions (solid waste dumpsites and industrial effluent). It is the poor who are more affected by gullies, floods, storms, and the global climate change that has reduced agricultural harvests. No doubt, if the current trend of environmental degradation continues unabated, the poor will be increasingly at risk more than the rich.

The central role of environmental sustainability in the sustainable development of the poor who are targeted in the MDGs cannot be over-emphasized. Except environmental sustainability is ensured, the poor cannot benefit adequately from the MDGs. Ensuring this environmental sustainability should be taken to the local areas where the poor live in local environments that are often damaged without governments directing appropriate environmental management strategies due to injustice existing in the provision of essential environmental and social services between rich and poor neighborhoods, where the rich are favoured. Has this been done to pave way for true achievement of other MDGs? This study sets out to review available studies conducted on ensure environmental sustainability (MDG No. 7) to determine the level of achievement of the goal as a pivot upon which other MDGs revolve.

MATERIALS AND METHODS

This study made a systematic literature review of empirical studies that primarily: (1) described the achievements of the MDG No. 7 or any of its targets; and (2) assessed the factors impeding their progress. All empirical quantitative studies like case study, ecological and cross-sectional which described the situation of achievements of the MDG No.7 or any of its targets in any country or region were carefully chosen. Empirical quantitative studies whose designs were ecological, case study; cross-sectional that identified and assessed potential challenges (political, population bomb, social, environmental) which impede the achievement of MDG No. 7 or any of its targets were also included. Studies which addressed environmental issues without any specific reference to any of 8 MDGs were not included because our principal objective was to examine the progress so far made in the achievement of Goal No.7 in the MDGs.

A search of multidisciplinary, scientific, environmental, health and socio-economic databases was made for materials of any type from any country available in English and published on the Millennium Development Goals from 2000 to 2015. The decision to begin the search from year 2000

was because that was the year the MDGs deal was reached. A search was also made in the reference sections of the studies chosen so as to explore all possible sources of information relevant to our study. Grey literature from the websites of well-known nongovernmental organizations (e.g. Greenpeace, 2009) was searched for as well. Finally, information from international organizations such as United Nations Millennium Development Goals Report, 2009 and United Nations Environment Development Programme Report, 2009 was made use of in this study. In order to critically review the published research works, criteria adapted from published systematic reviews (Castello, Gil-Gonzalez, Diaz & Hernandez, Aguado, 2009), electronic tools like the STROBE Statement (STROBE, 2009) and a proposed checklist for the critical analysis of cross-sectional studies by Castello *et al.,* (2009) adapted from Berra, Elorza-Ricat, Estrada, and Sanches (2008) were used. This is shown in Table 2.

Table 2: Critical Appraisal Criteria

1	Was the study carried out in a representative sample of the population?
2	Were appropriate statistical texts used?
3	Were any limitations identified?
4	Were conclusions made in line with the findings?

Source: (Castello *et al.,* 2009)

A total of 15 studies were selected for possible inclusion in this study. However, 10 were excluded and 5 (Jahan, 2003; Ruhfuss, 2006; UNDP Ghana, 2010; Adeagbo, 2013; UN Malaysia, 2015) were included. Table 3 depicts the main characterizatics of the papers. With respect to the study design, there were two descriptive studies (Jahan, 2003; Adeagbo, 2013), one ecological study (Ruhfuss *et al.,* 2006) and two reports (UNDP Ghana, 2010; UN Malaysia, 2015). The data sources used for analysis were international in one study (Ruhfuss *et al.,* 2006), regional in one study (Jahan, 2003) and national in three studies (UNDP Ghana, 2010; Adeagbo, 2013; UN Malaysia, 2015).

RESULTS AND DISCUSSION

Target 9: Integrate the principle of sustainable development into country policies and programmes and reverse the loss of environmental resources was the most studied MDG No. 7. It appears as one of the targets in all the five studies. Target 10: Halve by 2015, the proportion of people without sustainable access to safe drinking water and sanitation was studied in Jahan (2003), UNDP Ghana (2010), Adeagbo (2013) and UN Malaysia (2015), while target 11: Have achieved, by 2020, a significant improvement in the lives of at least 100 million slum dwellers was studied in UNDP Gahan (2010) and UN Malaysia (2015). The main findings, conclusions and recommendations of the studies were analyzed as follows:

i. Analysis of Target 9

The ecological study of Ruhfuss *et al.,* (2016) that assessed household solid fuel use in WHO regions revealed that 52% of the world's population still makes use of solid fuels. According to them, the Sub-Saharan Africa makes use of solid fuels most (77%), whle in developed countries, the use was under 5% of the population.

ii. Analysis of Target 10

Jahan's (2003) descriptive study which investigated how the principles of sustainable development have been used to achieve the MDG No. 7 in Southern Africa showed that progress has been made. For example, Tanzania has doubled access to drinking water from 28% in 1990 to 57% in 2000. Similarly, Adeagbo (2013), whose study analyzed the progress, challenges and prospects in the achievement of MDG No. 7 in Nigeria, showed that the proportion of the population using improved drinking water increased from 54% in 1990 to 58.9% in 2009.

iii. Analysis of Target 11

The reports of UNDP Ghana (2010) and UN Malaysia (2015) on the achievement of MDG No. 7 in Ghana and Malaysia respectively showed progress made on this target. In Ghana, the proportion of population of slum dwellers with secure housing increased from 11.0% in 2000 to 13.5 % in 2010, while in Malaysia squatter households declined by 33% from 2004 to 2014.

Table 3: Characteristics of the Studies with a Systematic Analysis and Description of Progress of MDG No. 7 or Identification of Barriers to its Achievement

Author(s)	**Country**	**Objective of Study**	**Type of Study**	**Data Source**	**Target(s) Studied**	**Results**	**Conclusions (Barriers and Future Recommendations**
Jahan (2003)	Southern African region	To assess how the principles of s ustainable development have been used to achieve the MDGs, particularly MDG No. 7	Descripti ve study	Regional	Targets 9 and 10	Southern African region has made progress in achieving the MDG No. 7 (e.g. Zimbabwe has used 1kg of oil to produce $3 worth of GDP in 2000 compared to 2.5 worth in 1990, Tanzania has doubled access to drinking water from 28% in 1990 to 57% in 2000)	Southern African countries face some general structural and policy constraints towards achieving MDG No. 7
Ruhfuss *et al.,* (2006)	WHO regions	An investigation of household use of solid fuel on the basis of country-by-country and implications for achieving	Ecologic al study	Internati onal	Target 9	52% of planet earth's population uses solid fuels	Except for Sub-Saharan Africa, the proportion of the world's population using solid fuel is decreasing. Efforts should be made to include this indicator 29 in political agenda of governments

		MDGs generally					
UNDP, Ghana (2010)	Ghana	To capture Ghana's progress towards the attainment of the MDGs, including MDG No. 7	Report	National	Target 9, 10 and 11	1.96% of forests were lost between 1999-2010, proportion of population using improved drinking water increased from 56% in 1990 to 84% in 2008, while population with secure housing increased from 11.0% in 2000 to 13.5% in	Ghana has made appreciable progress in achieving MDG No.7. However, efforts should be directed towards afforestation programme to increase forest cover
						2010, proportion living in slums declined from 80.4% to 20.0% in 2010	
Adeagbo (2013)	Nigeria	To investigate the progress, challenges and prospects in the achievement of MDG No. 7	Descriptive study	National	Target 9,10	Proportion of population using improved drinking water increased from 54% in 1990 to 58.9% in 2009, while proportion of population with improved sanitation rose from 39% in 1990 to51.6% in 2009 No significant commitment has been made in improving the lives of at least 100m slum dwellers	Nigeria should right the wrong in policy formulation and implementation process as well as in the area of project and programme implementation to achieve the targets of MDG No. 7

UN Malaysia (2015)	Malaysia	A report to capture Malaysia's performance on the MDG No. 7 at the end of the MDG's timeline in 2015	Report	National	Target 9, 10, 11	Malaysia had achieved most targets of MDG No.7. For example, over 90% of her people have access to sustainable water and sanitation facilities, proportion of land area covered by forest has increased from 66.1% in 1990 to 80.5% in 2012. Squatter households declined by 33% from 2004 to 2014.	Malaysia has made significant efforts to achieve MDG No.7. However, efforts should be made to reverse the loss of environmental resources and biodiversity.

Source: (Castello *et al.,* 2009)

Critical Evaluation Results

Table 4 shows the results of the critical evaluation. Four out of the five studies were deemed to have a representative sample. One study (Adeagbo 2013) was considered to have no sample as it was a descriptive study based on Nigeria's MDGs 2006 Report. All the studies made use of appropriate statistical texts. One of them (Ruhfuss, 2006) used linear regression, while the rest made use of descriptive analysis ranging from trend analysis to percentages.

Except UN Malaysia (2015) which reported that Malaysia had started pursuing MDGs plus agendas with a target to become a developed country in 2020, some potential limitations were identified in other studies. For example, Jahan (2003) identified questionable indicators on poverty measurement by $1 a day in many Southern African countries which was dramatically different from incidence of poverty measured in terms of national poverty lines. Ruhfuss *et al.,* (2006) opined that limitations existed in relation to data extraction and estimation methods in their study. In the view of Adeagbo (2013), there were no data on slum dwellers in Nigeria's report of MDGs in 2006 which was an indication that the country did nothing by then in achieving a significant improvement in the lives of at least 100 million slum dwellers. Non availability of more recent data beyond 2008 was identified as a big limitation by UNDP Ghana (2010) in its report. Conclusions of all the 5 studies were drawn from the results.

Table 4: A Critical Evaluation of Studies and Reports that describe the Progress of the MDG No. 7 or made Analysis of Barriers hindering its Achievement

S/N	Study	Was the study carried out in a representation sample of the population?	Were appropriate statistical texts used?	Were any limitations identified?	Were conclusions made in line with the findings?
1	Jahan (2003)	Yes. 12 countries from Southern African region	Yes. Descriptive analysis and percentages	Yes. Questionable indicators on poverty measurement	Yes. Conclusion was based on the findings.
2	Ruhfuss (2006)	Yes. 181 nations from WHO regions	Yes. Linear regression	Yes. Data availability and method of estimation	Yes. Conclusion reflected the findings.
3	UNDP Ghana (2010)	Yes. Report was based on 3 key documents on MDGs in Ghana	Yes. Descriptive analysis percentages and trend analysis	Yes. Non-availability of more recent data beyond 2008	Yes. Conclusion was based on the findings
4	Adeagbo (2013)	No. He based his descriptive study on Nigeria's MDGs 2006 Report.	Yes. Descriptive analysis percentages and line graphs showing trends	Yes. Data availability on slum dwellers	Yes. Conclusion was drawn from the findings
5	UN Malaysia, 2015	Yes. Report was based on 16 states	Yes. Descriptive analysis and percentages	No. Malaysia has started to pursue MDGs plus agendas with a target to become a developed country in 2020	Yes. Conclusion reflected the findings.

Source: (Castello *et al.,* 2009)

CONCLUSION AND RECOMMENDATIONS

Past major international agreements on environmental management such as the Rio de Janeiro (UN, 1992) declaration on environment and development and the Kyoto Protocol (UNFCCC, 1997) for the reduction of greenhouse gases that cause climate change failed to achieve the targets set out. From our review, the MDG No. 7 and indeed other MDGs (Castello *et al.,* 2009) have gone the same way because the targets set out have not been achieved after the 2015 deadline in developing democracies. This accounts for the reason why it has now been replaced with the Sustainable Development Goals (SDGs) with the same rhetoric of improving the conditions of the poor who bear the brunt of environmental degradation.

In our review, we identified a number of barriers such as environmental injustice directed to the poor, socio-economic inequalities, HIV/AIDS, lack of political will at the local level, inadequate and unreliable data to track progress and achievement of MDG No.7. This information becomes necessary for political actions ranging from national to the local level so as to make good policies that will avoid obstacles in the achievement of the SDGs which have now replaced the MDGs.

Poverty in developing nations is a major development challenge. Reducing poverty should start with ensuring environmental sustainability. This is because the poor need the environment more than the rich for their livelihoods in terms of agriculture, collection of firewood, drinking water for sale at local markets and harvest of forest products such as medicinal herbs and snails. Except environmental sustainability is guaranteed, the poor cannot contribute meaningfully to the development of their countries and any programmes directed towards improving their conditions will remain a mirage. Efforts should be made by governments at all levels to manage, in a sustainable manner, all environmental resources upon which the poor depend at the local level for their survival.

Provision of environmental services should be done on equitable basis, where the poor receive a fair share of the package. For example waste collection services should be regular in poor neighbourhoods as it is in areas inhabited by the rich. Location of waste management facilities ought not to be in areas where the poor live as this worsens their sanitation problems in all developing countries. Cleansing operations become necessary wherever waste dumpsites are sited in poor communities as they are sources of pathogens which are causes of diseases.

Political will by governments on poverty reduction for the poor requires the involvement and participation of the poor in all stages of the development process. This is the only way the poor can see the development projects as their own as developments are inseparable from the people. Poverty alleviation programmes for the poor should evolve from interaction with them on their felt-needs. This bottom-top approach affords them the opportunity of deciding which of the programmes that they need most rather than just anyone.

Another strategy is the fight against HIV/AIDS pandemic which has remained a minus to achievement of MDG No.7 particularly in Southern Africa (Jahan, 2003), where it creates a lot of orphans and children with single parents. No environmental sustainability can ever be ensured in any society where HIV/AIDS is creating more poor people whose livelihoods depend on exhaustible environmental resources such as forests and topsoil which takes many years to be created if lost through soil erosion occasioned by overuse of forest resources by the poor. Efforts directed towards managing its spread are important in achieving MDG No. 7. One of such management techniques is creation of awareness that HIV/AIDS is real.

Human capital development of the poor is very important in improving their conditions. This is necessary to equip them with educational / training so as to empower them both academically and professionally. The education and training of the poor should go beyond the normal town hall meeting organized by nongovernmental organizations or consultants paid by governments. Children of the poor should have access to all levels of education like those of the rich through scholarship. This puts them at par with the children of the rich in a competitive world for employment and businesses.

Finally and most importantly, there is a need to integrate the experiences of MDG No.7 and indeed other MDGs into development strategies of developing countries while pursuing the current SDGs. This becomes necessary to avoid any mistakes made in the implementation of the MDGs in the SDGs which are also meant to address poverty in human societies, mainly in developing democracies.

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