



Cost Effectiveness Study on Disaster Risk Reduction in the Health and Education Sector in the Horn of Africa (selected case studies)



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Main Contributors	UNISDR Africa African Centre for Disaster Studies
Author(s)	Dewald van Niekerk Christo Coetzee Christiaan Becker Elrista Annandale Michael Murphree Leandri Hildebrandt Kristel Fourie Bradley Shoroma Elza Snyman
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Executive summary

Disaster risk reduction on the African continent has come a long way over the past decade. Member states, many starting from a position of naught, has increased their activities and spending in disaster risk reduction. Some significant strides has been made in the establishment of national platforms, promulgating and approving disaster risk reduction laws, policies and plans. However, despite the development of policies, plans and legislation, direct investments in disaster risk reduction in Africa remain low. Most African countries have limited resources to invest in disaster risk reduction and minimal fiscal space to fund relief and recovery efforts after a major disaster. Governments often lack the capacity to disaggregate specific budgetary allocations to disaster risk reduction.

While African countries have experienced large scale disasters, such as the 2011 drought in the Horn of Africa, most disaster impacts related to smaller, recurrent events with potentially high localised effects, such as recurring wild fires, floods and issues associated with compounding vulnerability. Urbanisation in Africa is also on the rise. With a much weaker urban planning culture, many African cities face unprecedented urban risk. A direct implication of the above is the need to address the underlying risk drivers of poverty, rapid urbanisation, desertification and environmental degradation in Africa.

By far, the greatest spending on disaster risk reduction issues from humanitarian budgets. Sixty-eight percent (68%) of all disaster risk reduction funding stems from humanitarian aid. Since 2000 US\$3,7 billion worth of disaster risk reduction investment has been made from all aid (development and humanitarian) to the top 40 recipients of humanitarian aid (most of these countries are African). However, the average percentage of disaster risk reduction allocation in development aid remains below 2%. By 2009, funding for prevention and preparedness reached US\$455 million of total humanitarian expenditure globally. This represents a 4.2% share of total humanitarian aid and a 0.3% of overall Official Disaster Assistance. In the period 2007-2011, Africa received in total US\$471 million in disaster prevention and preparedness funding. This figure excludes funding associated with climate related mitigation projects of which Africa received approximately US\$1,5 billion. However, regional distribution of climate finance spending does not mirror the traditional distribution of development or humanitarian aid globally. Climate finance tends to be concentrated in a small

number or large countries. Such spending is an alarming indicator of the lack of connectedness between climate change adaptation-related and disaster risk reduction investments.

The Declaration of the Second African Ministerial Conference on Disaster Risk Reduction held in Nairobi, Kenya, from 14 to 16 April 2010 emphasised the need for national governments to invest in disaster risk reduction. However, a return on investment is necessary for disaster risk reduction project to remain being funded. The nature and longitudinal benefits of disaster risk reduction makes arguments for cost-benefit and cost effectiveness problematic. However, donors and funders of disaster risk reduction projects require tangible benefits and many do not have a long-term vision on the return of their investments.

The overall research aim is to provide insight into disaster risk reduction investment and its benefits within the Horn of Africa region with specific reference to the health and education sectors. The project make use of a qualitative research design. The application of the research tools were limited to the richness in data which was obtained from the UNISDR, partner organisations and other sources such as Internet searches. To achieve the above objectives, a robust methodology had to be developed which would provide some insights to the effectiveness of disaster risk reduction interventions in the health and education sectors. The data (case studies) were analysed by applying a qualitative design. The analysis of the case studies further assisted to answer some of the research questions. A quantitative design based on a backward-looking cost-benefit analysis was initially decided on. This design and method was however later revised due to inability to conduct field research as a result of the short timeframe and the lack of detailed information needed to conduct a backward-looking cost-benefit analysis. Instead it was decided to use a a qualitative design, which according to the literature is an acceptable alternative if quantitative monetary information is lacking. A number of case studies were assessed to determine their benefits in terms of monetary outlay.

The research can thus make the following findings and recommendations:

- Projects focused on children and women, show greater numbers of involvement and annual growth than when projects solely focuses on men.
- Interventions which integrated into development and thus brings wider gains tend to be more cost effective due to their multiplying factor and sustainability though generations.

- Projects which address multiple issues (cross cutting), are integrated to an extent, and also have “hidden” benefits and beneficiaries, tend to be more cost effective.
- Projects enjoy greater degrees of success when multiple role players (i.e governments, NGOs, UN Agencies, communities) are involved in project roll out.
- When planning interventions it is crucial to design the project to fit the envisioned outcome.
- Community driven projects can become sustainable only if sufficient skills transfer and capacity development occurs and when ownership of the projects are ensured from the start.
- Projects aimed at preventive measures are less costly than those focussed on response and reconstruction.
- Long term support to projects can reap significant benefits.
- “Soft” resilience (e.g. education/training, improved drought forecasting) measures are often more cost effective and more robust in relation to uncertainties than “hard” resilience measures (e.g. flood walls).
- Projects that include a pilot phase as part of its roll-out seems to be more cost effective, as small problems can be identified and rectified before they become bigger issues, and thus more costly problems later in a project.
- Projects which has a much more holistic view, although they might be narrowly implemented, tend to be more cost effective because they address a small problem within the greater whole, but is thus aligned with the greater whole.
- Although most projects addressed vulnerability, and reduced risk to some degree, many still failed to address the root causes of the vulnerability. Thus projects, remained more expensive than they should be (i.e. it remains cheaper to address root causes).
- More regional mechanism should be established to pool funds for disaster risk reduction and response. Where risk pools exist between states, the financial burden of disaster response is significantly reduced on individual states.
- Quality rather than quantity in “soft resilience” projects is more beneficial to communities although they can be very difficult to measure and quantify.

1. Introduction

Disaster risk reduction on the African continent has come a long way over the past decade. “African communities have always been resourceful when adapting to their environment and today’s threats are forcing them to become ever more resilient. Development issues are high among their concerns. A vicious cycle of poverty and ill health are the reality for many African countries. The continent shoulders a disproportionate burden of the world’s communicable diseases, including the highest number of people living with HIV (22.5 million in sub-Saharan Africa) and the highest rates of HIV-TB co-infection. Africa is the home of 60 per cent of the world’s malaria-sufferers and witnesses 90 per cent of the world’s malaria deaths (IFRC, 2011).

Member states, many starting from a position of naught, has increased their activities and spending in disaster risk reduction. Some significant strides has been made in the establishment of national platforms, promulgating and approving disaster risk reduction laws, policies and plans. The decentralisation of disaster risk management activities has also enjoyed attention in many member states. Even on regional scale multilateral agreements and policies for disaster risk reduction has been developed. However, although the direct institutionalisation of disaster risk reduction in governments has been high on the agendas of many African countries there is still a severe lack in budgetary commitments for the integration of disaster risk reduction measures in typical government line functions and ministries (e.g. development, education, health etc). There seems to remain an over reliance on the “humanitarian aid”, “development aid”, “disaster management”, “civil protection”, or “disaster risk management” components of governments to shoulder the burden of reducing risks to natural and anthropogenic hazards.

While African countries have experienced large scale disasters, such as the 2011 drought in the Horn of Africa, most disaster impacts related to smaller, recurrent events with potentially high localised affects, such as recurring wild fires, floods and issues associated with compounding vulnerability. Urbanisation in Africa is also on the rise. With a much weaker urban planning culture, many African cities face unprecedented urban risk. A direct implication of the above is the need to address the underlying risk drivers of poverty, rapid urbanisation, desertification and environmental degradation in Africa. This need to happen by ensuring that basic and

integrated development, urban and land-use planning, and infrastructure are in place. Critical to the above is a culture of maintenance and upkeep in urban centres. However, most of the African population's livelihoods effected by droughts remain rural dwellers, and those responsible for the food chains to urban centres.

Approaching the Third African Ministerial Conference on Disaster Risk Reduction (to be held in February 2013) a retrospective assessment of successful and cost-benefit investment in disaster risk reduction must be made. The following report aims to provide a snapshot of the health and education

sectors as a microcosm pursuant of cost effective spending in disaster risk reduction on the African continent. In particular the study will focus on the Horn of Africa. Due to the multi-sectoral and transdisciplinary nature of disaster risk reduction, investment in disaster risk reduction is not always overtly known or communicated. Significant investments in disaster risk reduction is not always labelled as such and therefore accurate reporting on disaster risk reduction investments by government and IOs is not always possible.

This report focuses on disaster risk reduction efforts within the Horn of Africa in the health and education sectors. It asks questions about the cost effectiveness of projects though applying a qualitative assessment. Through this analysis, the multi-sectoral and transdisciplinary nature of disaster risk reduction is highlighted, reminding us of the complexities in understanding and managing disaster risks in Africa.

Drought in the Horn of Africa - 2011

The food crisis in the Horn of Africa is considered one of the worst in living memory. In 2011, more than 13 million people in East Africa were in need of food aid in Somalia, Kenya, Ethiopia, Djibouti and Tanzania. The dramatic shortage of food and water in the affected countries was caused by several ongoing trends, including population growth and changes to the traditional lifestyle of the pastoralist community. If this serious drought could have been predicted with weather data, more energy and funds could have been invested to prepare communities and governments for the upcoming food shortage. Before a crisis erupts, states can take measures to ensure that international aid, such as food aid, will make its way as quickly, efficiently and as cheaply as possible to the affected population.

(IFRC 2011)

2. Impetus to the report

The Declaration of the Second African Ministerial Conference on Disaster Risk Reduction held in Nairobi, Kenya, from 14 to 16 April 2010 emphasised the need for national governments to invest in disaster risk reduction. Recommendation 7 and 8 of the Ministerial Declaration states:

7. *“To strongly urge Member States to increase their investments in disaster risk reduction through the allocation of a certain percentage of their national budgets and other revenue dedicated to disaster risk reduction and report to the next Ministerial Conference, considering other related African Ministerial resolutions;*
8. *To call upon development and humanitarian partners to ensure that disbursement of one percent (1%) of development assistance and ten percent (10%) of humanitarian assistance, in line with the Chair’s Summary of the Second Session of the Global Platform, supports disaster risk reduction, preparedness and recovery, including from violent conflicts and/or severe economic difficulties;“*

The problem and value of integration

Disaster risk reduction per definition requires an integrated and multi-sector approach. Therefore to determine the direct investment in disaster risk reduction remains a daunting task. Many disaster risk reduction related projects have as their main focus, sector specific outcomes in mind. For example, an investment in school feeding schemes at the end of the day might avert a famine, or an infrastructure project of building a dam might be aimed at sustainable agriculture but could also mitigate future floods. One should therefore be mindful of the fact that a significant portion of disaster risk reduction investment is masked under other projects. An accurate assessment of all disaster risk reduction investments is almost impossible.

3. Methodology

The overall research aim is to provide insight into disaster risk reduction investment and its benefits within the Horn of Africa region with specific reference to the health and education sectors. The project makes use of a qualitative research design. The application of the research tools were limited to the richness in data which was obtained from the UNISDR, partner organisations and other sources such as Internet searches. To achieve the above objectives, a

robust methodology had to be developed which would provide some insights to the effectiveness of disaster risk reduction interventions in the health and education sectors.

According to Mechler, (2005) a cost-benefit analysis provides a common yardstick by which the desirability of a project can be measured. For this reason it is utilised by decision makers in varying contexts. Mechler (2005) further contends that its main strength is that of an explicit and rigorous accounting framework for systematic cost-efficiency decision making. However it does have its limitations of which our research team experienced first hand. It is extremely reliant on monetary quantitative information to draw conclusions on various projects. Practically this poses a problem for many researcher wishing to conduct a cost-benefit analysis (Venton, 2010). This problem is exacerbated in the disaster reduction field due to the limited information on detailed project costs and complete monetary assessments of previous damages as a result of disasters, especially in the Horn of Africa (Mechler, 2005).

3.1 Research objectives

The objectives of the research were to:

- Provide a general overview of disaster risk reduction investment through a thorough but concise literature study;
- Develop an analytical framework which will be applied to various case studies in the Horn of Africa;
- Analyse the current state of disaster risk reduction investment in the Horn of Africa with specific emphasis on the health and education sectors;
- Document challenges in tracking disaster risk reduction investments; and
- Provide conclusions and recommendations to be discussed at the Third Ministerial Conference on Disaster Risk Reduction.

3.2 Literature study

All research projects fall within scientific boundaries and have to be placed within some theoretical framework. Furthermore, a wide variety of sources of information can thus be utilised by the researcher as part of the in-depth literature review. Within this context, a review of literature is aimed at contribution towards a clear understanding of the nature and meaning

of disaster risk reduction investment. The literature review in the case of this study refers to a scrutiny of all relevant sources of information pertaining to disaster risk reduction investment in the health and education sector with special emphasis on the Horn of Africa. Furthermore, the report will provide a list of key terms and concepts as an annexure which will aid in understanding the underlying terminologies.

3.3 Data collection

With the assistance of the UNISDR, various case studies from the Horn of Africa in disaster risk reduction investment in the health and education sector was obtained. These case studies were sourced from NGOs, CBOs, IOs and government institutions. A fair representation of the Horn of Africa were sought. Where necessary to supplement the information received, Internet search were used, as well as scrutinising various reports and scientific literature on the subject.

3.4 Data analysis

The data (case studies) were analysed by applying a qualitative design. The analysis of the case studies further assisted to answer some of the research questions. A quantitative design based on a backward-looking cost-benefit analysis was initially decided on. This design and method was however later revised due to inability to conduct field research as a result of the short timeframe and the lack of detailed information needed to conduct a backward-looking cost-benefit analysis. Instead it was decided to use a qualitative design, which according to the literature is an acceptable alternative if quantitative monetary information is lacking (Venton, 2010). Various researchers identified case studies in relation to disaster risk reduction in the designated countries of the project, received from partner organisations and other sources. The researchers used their discretion to identify benefits of the project, indicating the cost effectiveness of the project.

3.5 Limitations of the research

The non-availability of complete information made a true cost-benefit analysis impossible. A cost effectiveness methodology were thus followed with allowed for the qualitative interpretation of the case studies, rather than a quantitative analysis as would be employed with a true cost-benefit analysis. The research team thus relied heavily on the available sources

on the various case studies, being mindful that all the available information might not be readily obtainable.

3.6 Evaluating cost effectiveness

The health sector, in the 1980s, was limited in the use of cost effectiveness studies (Anon, 2001). Today the concept is more widely applied, and because the education and health sector is subject to similar constraints, there has been an increased use of cost-effectiveness techniques in decision-making in both sectors. The term ‘cost-effectiveness analysis’ refer to an evaluation tool that is designed in such a way that it assists in choosing among different alternatives or policies when resources are limited (Levin, 2012). Phillips (2009) states that this term has become synonymous with the evaluation of the health and education sectors, and is a term that have been used and misused to portray the extent to which interventions measure up to what can be considered as a representation of “value for money”.

Every economic evaluation of effectiveness should seek to ask four questions:

- How much did the particular intervention cost?
- What did the use of resources actually achieve?
- Did the benefits from that use of resources exceed the costs?; and
- Would alternative use of resources have achieved either a large number or a higher quality of outcomes? (Anon, 2001).

These four questions contains the essence of how cost-effectiveness should be evaluated. Cost-effectiveness evaluation consists mainly of four interrelated, but also separated components. They are:

- The analysis of the cost-effectiveness of an implementation;
- The analysis of the cost-effectiveness of an impact;
- Cost-benefit analysis of an impact; and
- Support for local evaluators on cost-effectiveness issues.

Phillips (2009) proposed a method for evaluating cost-effectiveness with independent programmes which requires that CERs (Cost-Effectiveness Ratios) be calculated for each programme and placed in a ranking order. Cost-effectiveness thus evaluates the intermediate outcomes over a short term and is an easy method to use when an intervention is aimed to

produce only one outcome. Within the application of a cost effectiveness methodology the quantity vs the quality of the information associated with the case study needs to be understood.

3.7 Quantity vs Quality

Although the discussion on the types of vulnerabilities and the associated activities that are relevant to the context of disaster risk reduction is useful in giving some guidance on whether investments are disaster risk reduction related, it cannot be used as a be all and end all analysis tool. The reason for this is that it only focuses on one dimension of analysing projects. The danger of this is that all humanitarian aid or development projects, if analysed by the discussions provided above, will to some degree address vulnerability, and thus the assumption will be made that all humanitarian aid or development projects also address disaster risk equally well. This we know is not the case in the African context where development and humanitarian aid has been in some areas for over 30 years (i.e. Horn Africa), yet catastrophic disasters still occur in spite of these interventions being present.

It is clear then another level of measurement is also needed to explain vulnerability on a much deeper level, and thus also understand disaster risk reduction investments. In this regard The Pressure and Release Model (PAR), created by Blaikie et al. (1994) explain that disaster is the intersection of two opposing processes, one generating vulnerability and the other natural hazards (Wisner et al. 2004). A crucial aspect of the model is its explanation of vulnerability. Accordingly the model stipulates that vulnerability is made up of three factors:

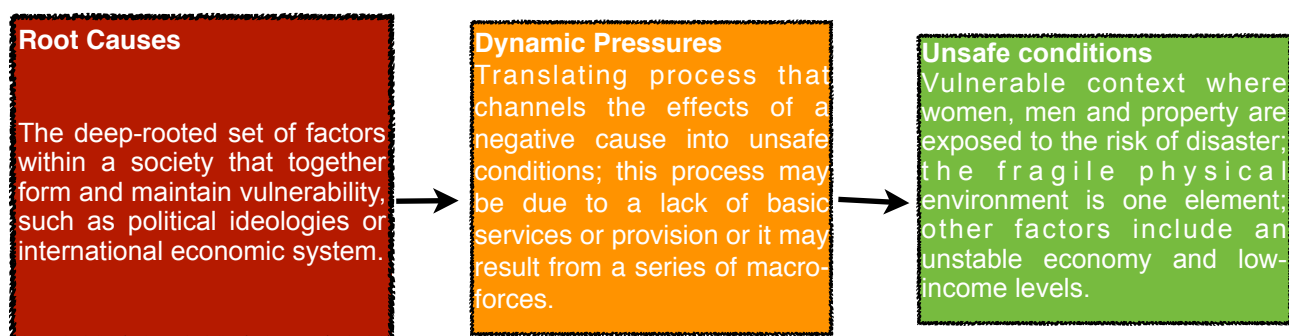


Figure 1: Progression of vulnerability

Source: (Wisner et al. 2004)

The crucial aspect to understand about the PAR's explanation about vulnerability is that the further one moves away from addressing the root causes of vulnerability the less effective a

risk reduction intervention becomes, and the more such interventions are needed on a year to year basis. This does not imply that an intervention that address, for example, unsafe conditions such as low levels of food security, can not save lives and livelihoods. However, often when a situation gets to the level of unsafe conditions, interventions only focus on addressing the symptoms of a much bigger problem (Dlamini 2011). This is therefore not completely in line with the purpose of disaster risk reduction which for the most part should concentrate on reducing or eliminating the root causes or underlying factors that lead to the vulnerability and disaster (Dlamini 2011). A focus on root cause vs. unsafe conditions also has cost implications. If one looks at the type of issues considered as root causes by Blaikie et al. (1994), they include: limited access to power, structures and resources as well as ideological constraints such as political and economic systems. If compared to issues that arise at the stage of unsafe conditions such as people building in dangerous locations, prevalence of endemic diseases and livelihoods at risk (to name but a few), one quickly realises that to solve the problem at the stage of root causes more political will is needed, and only moderate economic investment. This however changes when the stage of unsafe conditions is reached, where economic investment need to address the problem will be substantially more, whilst the political will need will also increase (Blaikie et al. 1994).

What should be clear from this discussion on vulnerability is that whilst it is a complicated part of our understanding of disaster risk and risk reduction, it also provides us with a tool to analyse current endeavours towards disaster risk reduction.

4. Investing in disaster risk reduction

Countries and regional organisations have made significant strides in addressing disaster risk reduction on the African continent. However, despite the development of policies, plans and legislation, direct investments in disaster risk reduction in Africa remain low. Most African countries have limited resources to invest in disaster risk reduction and minimal fiscal space to fund relief and recovery efforts after a major disaster. Governments often lack the capacity to disaggregate specific budgetary allocations to disaster risk reduction.

By far, the greatest spending on disaster risk reduction issues from humanitarian budgets. Sixty-eight percent (68%) of all disaster risk reduction funding stems from humanitarian aid. Since 2000 US\$3,7 billion worth of disaster risk reduction investment has been made from all

aid (development and humanitarian) to the top 40 recipients of humanitarian aid (most of these countries are African). However, the average percentage of disaster risk reduction allocation in development aid remains below 2%. By 2009, funding for prevention and preparedness reached US\$455 million of total humanitarian expenditure globally. This represents a 4.2% share of total humanitarian aid and a 0.3% of overall Official Disaster Assistance. In the period 2007-2011, Africa received in total US\$471 million in disaster prevention and preparedness funding. This figure excludes funding associated with climate related mitigation projects of which Africa received approximately US\$1,5 billion. However, regional distribution of climate finance spending does not mirror the traditional distribution of development or humanitarian aid globally. Climate finance tends to be concentrated in a small number or large countries. Such spending is an alarming indicator of the lack of connectedness between climate change adaptation-related and disaster risk reduction investments.

According to Hall (2008) and Schipper and Pelling (2006) disaster risk reduction should be considered as an essential part of any countries investment in sustainable development. The need for increased disaster risk reduction, investment has come forth due to increased impact of disaster on human lives and livelihoods since the 1960s (Schipper and Pelling, 2006). This increase has been particularly dramatic since the 1990s with millions of people affected by the impacts of disasters (see Figure 2).

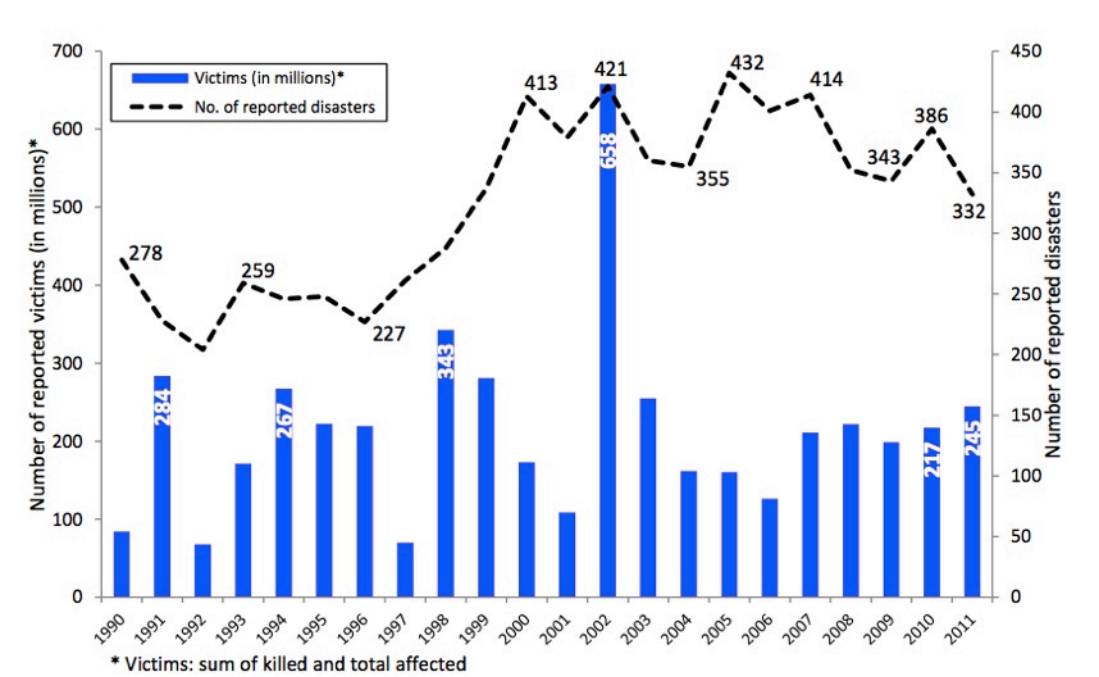


Figure 2: Disaster instances and Impacts 1990-2011

(Guha-Sapir et al, 2012)

The increase in disaster impacts and losses have been particularly severe in the African context. According to Vordzorgbe (2006) the increase in hazard frequency underlies this increase in Africa's disaster statistics. Specifically, the increases were ascribed to epidemics, mainly vector-borne (particularly malaria) and communicable diseases (mainly HIV/AIDS). Additionally, the OFDA/CRED International Disaster Database shows that from 1975 to 2002, epidemic accounted for 32% of the disaster occurrences in Africa, followed by floods (27%), droughts (21%) and windstorms (9%). The period 2002-2012 is not much different in terms of the major hazards and their impacts.

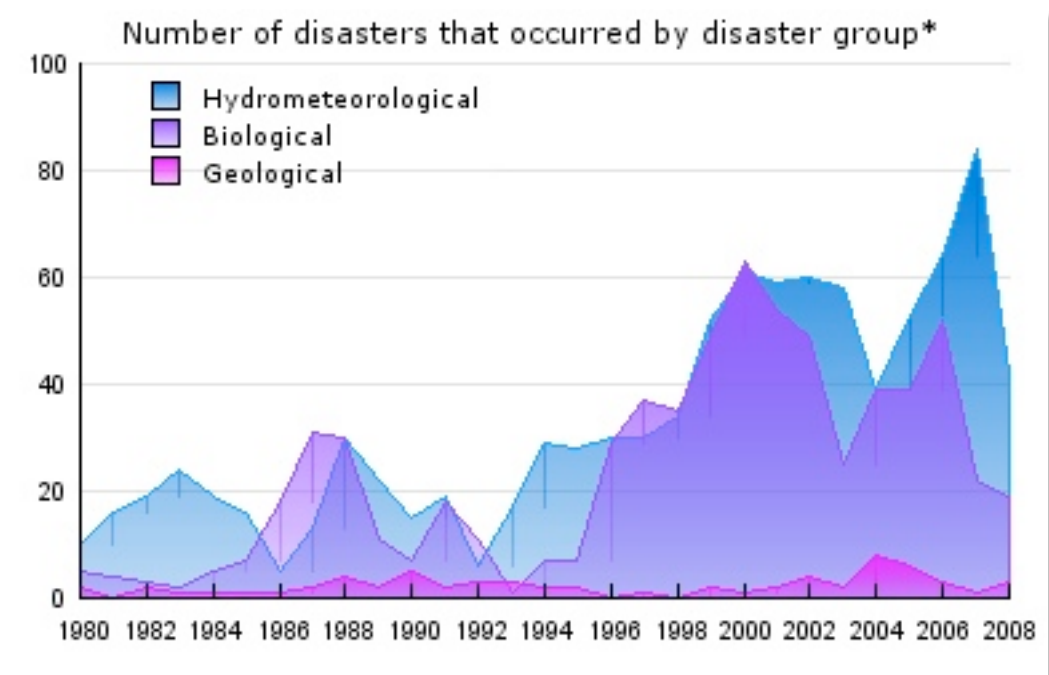


Figure 3: Disaster per disaster group in Africa (1980-2008)

(at <http://www.preventionweb.net/english/countries/africa/>)

These increased impacts have placed a heightened responsibility on African governments to protect their citizens and their national assets by reducing losses from disasters” (Hall, 2008; White et al, 2004). Unfortunately many states on the continent, have been frustrated in their endeavours to improve the integration of disaster risk reduction into developmental policies and projects due issues such as lacking governance and institutional frameworks accompanied by financial, human resource, skills and competency constraints (Van Niekerk and Coetzee, 2012).

A perusal of the available literature indicates that in 2008, the global development aid budget were in the region of US\$129 billion (OSSA, 2010). Over the past four decades, aid to Africa has quadrupled from around US\$11 billion to US\$44 billion (in 2010), with a net increase of almost US\$10 billion during the period 2005-2008 alone (Van Niekerk and Coetzee, 2012). Although this represents a significant investment towards humanitarian issues on the continent, in terms of disaster risk reduction, the funding was primarily focused on responding to disaster events rather than managing future risks. This response orientation to disaster management funding creates a problem seeing as spending on reconstruction and relief efforts are significantly more expensive and unsustainable in the long run (AU/NEPAD, 2004; Ahrens & Rudolph, 2006; UNISDR, 2007). The implication of this is that governments and other organisations have to change their orientations from response to preparedness and mitigations, and make ‘investment decisions’, based on choosing which pro-active disaster risk reduction activities to invest in, when, and in what sequence. This is where cost effectiveness assessment can better guide government, NGOs and IOs for future disaster risk reduction investments.

Specifically in terms of financial constraints, low investment in disaster risk reduction interventions in Africa can be ascribed to issues such as: inadequate knowledge of disaster risk reduction measures, weak institutional frameworks and incentives for disaster risk reduction, low evidence of the cost-effectiveness of disaster risk reduction measures, low capacity for cost-benefit analysis (CBA) of disaster risk reduction interventions, and, inadequate consideration of the role of non-efficiency factors in investing in disaster risk reduction (Holloway, 2003; AU/NEPAD, 2004; IGAD, 2002; Visser and Van Niekerk, 2011). The low levels of investment is confirmed by the UNISDR (2011c), in an analysis conducted on the implementation of the HFA in Africa. In this regard it was found that of the 29 African countries reporting their progress just over half have reported some form of resources dedicated to the implementation of disaster risk reduction. Although this is a step in the right direction, more still needs to be done to fund disaster risk reduction.

In instances in Africa where steps have been taken to adequately finance disaster risk reduction projects, it has been found that initiatives not only contribute to strengthening communities’ resilience but also make economic sense (UNISDR, 2011c). This is exemplified through investments in activities such as terracing and construction of earth dams and embankments that enable households to increase and diversify agricultural activities in the Red Sea Hills of Sudan (also referred to as “hard” resilience measures), whilst also reducing the beneficiary

communities' vulnerability to droughts. The cost benefit analysis indicated that these projects were not only highly beneficial for ensuring diversified incomes for the participating communities ("soft" resilience measures), they also reduce the cost of responding to future disasters by a ratio greater than 1:25. In another example, the cost-benefit analysis of a drought risk reduction and food security programme in a Malawian agricultural community shows that for every US\$1 invested the project activities delivered US\$24 of net benefits in terms of household income and assets, education, health and reduced mortality rates.

From the above examples evidently investment in disaster risk reduction pays in Africa, reducing both the short and longer-term impacts of disasters on individual households, communities and the wider macro economy and therefore strengthening resilience to climate change impacts. According to Annan (1999) "more effective prevention strategies would save not only tens of billions of dollars, but save tens of thousands of lives. Funds currently spent on intervention and relief could be devoted to enhancing equitable and sustainable development, this will further reduce the risk for war and disaster. While the costs of prevention have to be paid in the present, its benefits lie in a distant future. Moreover, the benefits are not tangible; they are the disasters that did not happen". Despite all the clear advantages of investing in disaster risk reduction, the level of public investment in disaster risk reduction in many countries remains insufficient. This situation needs to be improved through improved partnerships and funding mechanisms.

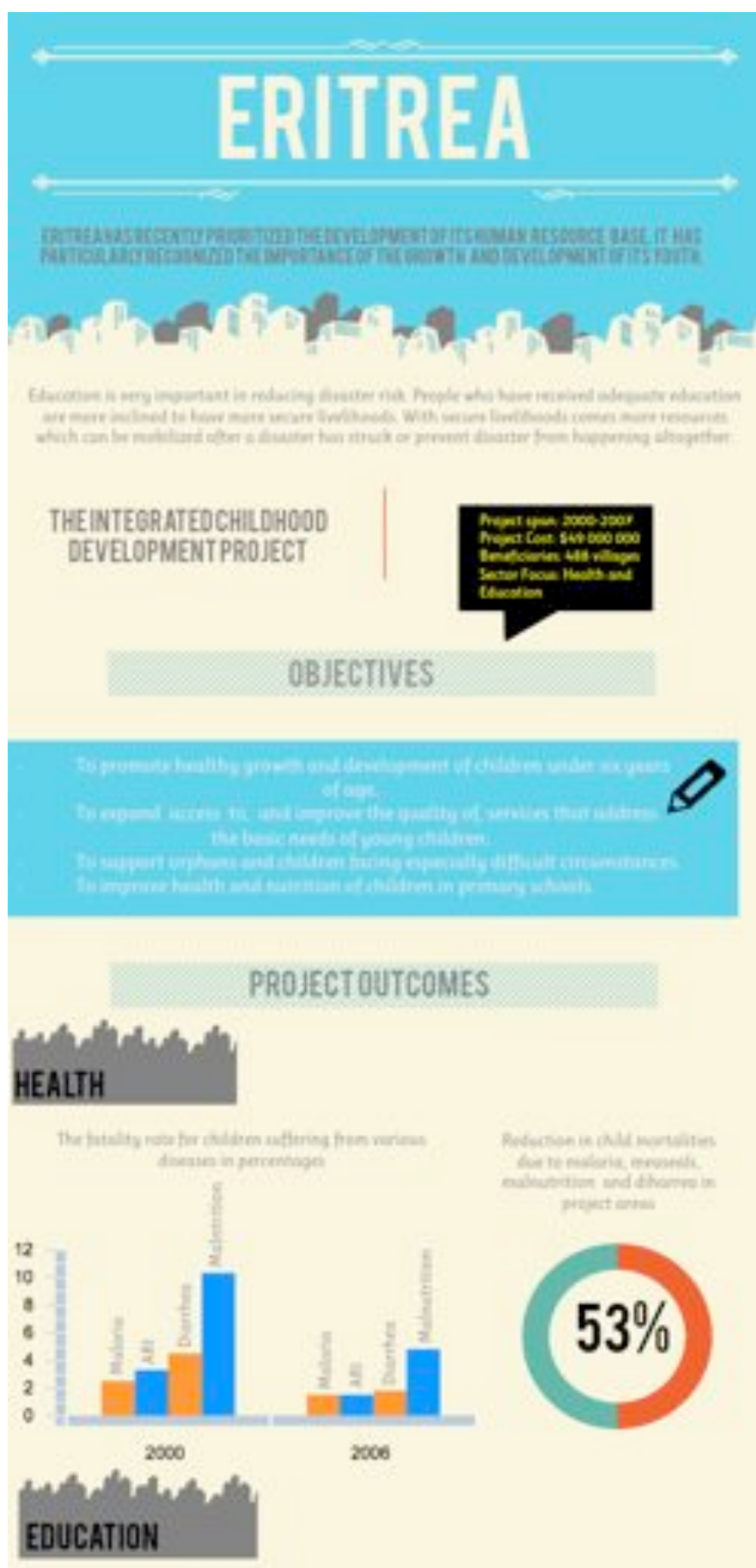
4.1 Emerging partnerships and funding for disaster risk reduction

Investment partners, just like governments, must realise the importance of correct investment in disaster risk reduction related activities. Over the past 10 year it has become evident that the international donor community is becoming more risk averse and focussed on disaster risk reduction investment. To this end the work undertaken by organisations such as the World Bank (through the Global Facility for Disaster Risk Reduction), the European Commission (through DIPECHO), the African Development Bank, GIZ, USAID, UKAid-DFID, AUSAID, SIDA, Noraid, various UN organisations and many civil society actors (such as the IFRC, Oxfam, CARE, Plan International, WorldVision as well as smaller country-based organisations) is increasingly disaster risk reduction focussed. There are, however, little evidence to suggest that adequate investment in disaster risk reduction in Africa is present. Unfortunately many donors remain disaster response and humanitarian relief focussed and the connection to long term disaster

risk reduction and integrated development is not made. The insurance industry who arguably has the most to loose in the developed world are not making preemptive investments in disaster risk reduction activities in the emerging African markets.

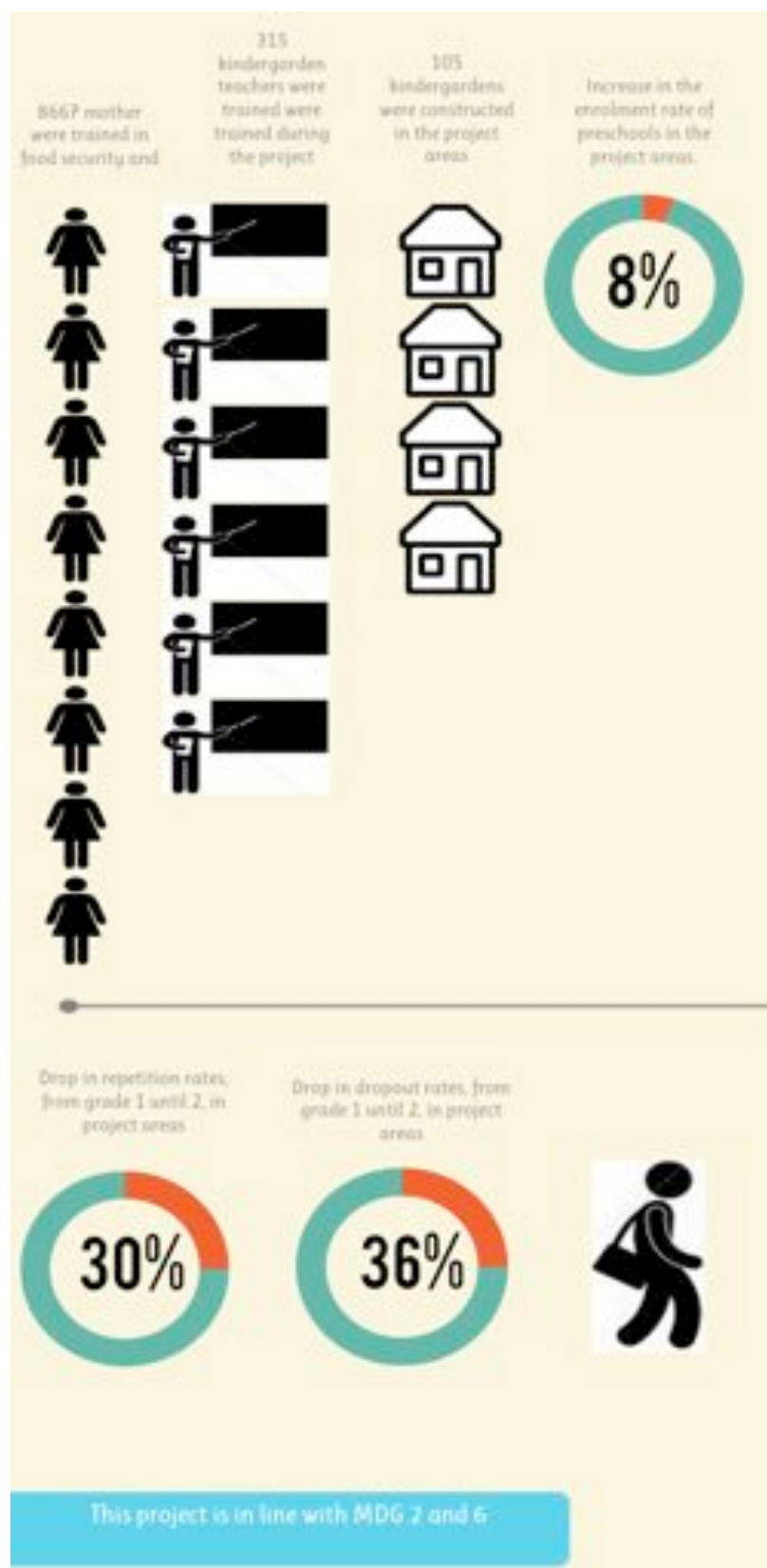
The World Bank has pledged loans estimated at US\$1 billion towards long-term investment in the dry land areas of the Horn of Africa to build resilience to drought. The African Development Bank committed loans estimated at US\$300 million to human capital development, water resource development, water management and livestock development and other interventions in the Intergovernmental Authority on Development (IGAD) region. Germany tentatively committed grants estimated at US\$100 million. Other multilateral and bilateral partners also indicated or committed substantial resources in support of long term drought resilience in the Horn of Africa, including USAID, the EU, IFAD, DFID, among others. The Islamic Development Bank pledged a grant of US\$50 million for water resources management in Somalia.

Furthermore the UNISDR (2011c) notes that governments in Africa, e.g.



Mozambique, Senegal, South Africa and Uganda are investing resources to reduce the risk to natural hazards. A close examination shows that African countries are experimenting with different approaches to offset the impacts of natural hazards on their economies, with contingency funds, emerging risk transfer schemes, as well as investments to address disaster risk in their national and local public planning and budgeting (Botha et al, 2010). Regional efforts to create DRR partnerships have also been launched in Africa. The IGAD Secretariat in consultation with member states, development partners and other stakeholders, including non-state actors, developed the Regional Programming Paper (RPP) for the drought resilience and sustainability initiative in the IGAD Region. The RPP originates from the Summit in Nairobi in September 2011 in relation to the political commitment stemming from the joint decision made by the governments of the IGAD Member States to work together as a region and increase investment to end drought emergencies through building sustainable livelihoods.

Disaster risk reduction is closely linked to climate change adaptation and therefore the funding of adaptation activities will also be elaborated upon. Hedger *et al.* (2008) state that the UNFCCC and Kyoto Protocol require “developed countries” to provide financial resources exclusively to “developing countries” to assist them in adapting to a changing climate. The financial mechanism for the UNFCCC has been the Global Environment Facility (GEF), the preferred institution of the developed



countries. The largest share of GEF managed funds are available for adaptation, including Piloting an Operational Approach for Adaptation (SPA) of the GEF Trust Fund, the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF). Since 2005, the GEF has provided US\$110 million for adaptation. In the SCCF, as of October 2007, US\$59 million had been pledged for adaptation; in the LDCF had US\$163 pledged as of October 2007, approximately US\$9.4 million has been allocated to National Adaptation Programmes for Action (NAPA) preparation and US\$28.5 million committed to only eight NAPA priority implementation projects. Nearly all of the completed NAPAs have priority actions identified, which in September 2007 totalled US\$352 million for the first 20 (including US\$ 74.4 million for Bangladesh). Most of the funding comes from EU Member States, principally Denmark, Germany, Sweden and the UK.

4.2 Disaster risk impacts on the poor - drought as driver

According to Vakis (2006), natural disasters have a huge impact on social and economic welfare. This impact is especially severe in low/middle-income countries where governments often have insufficient funds after major disasters to repair critical infrastructure and provide assistance to the private sector (Linnerooth-Bayer & Mechler, 2007; Kotler et al., 2006). Specifically the poor are particularly exposed to natural hazards and have limited access to risk management instruments. This leaves poor households in a situation where they are less able to cope with the impact of disasters than more affluent citizens (Vakis, 2006). Vakis shows that this state of affairs has two major consequences for the poor: firstly the poor are severely affected when shocks do occur, accentuating their poverty; and secondly, the poor become more risk averse and unwilling (or unable) to engage in risky but higher return activities (Vakis, 2006). In this context, and to prevent sharp increases in poverty in a country following a disaster impact, mechanisms should be in place to mitigate the possible financial and societal impacts (Skoufias, 2003; Subbarao et al., 1997). Drought as a driver of disaster risk driver is never so evident as in the Horn of Africa since the 1980s.

5. Drought in the Horn of Africa

The Horn of Africa has a long history of being one of the more susceptible areas of Africa to drought. In the 1980s the region became the focus of attention in western media as a result of drought, war and famine. This event inspired and led to well publicised fund raising campaigns

by popular musicians, film stars and other famous personalities. The consequence of this attention was to positively highlight the plight of the vulnerable rural communities in the Horn of Africa but also negatively established a stereotype especially in the West of the inability of Africa to confront and overcome the challenges of environmental conditions, sustainable development by creating the prerequisite conditions of good governance, peace and security.

In 2011 the drought induced crisis in the Horn of Africa resulted in western donors and NGOs, raising billions of dollars for the region in emergency and humanitarian responses (IFRC, 2011). Drought, a slow onset and persistent natural hazard in many regions of the world has in the Horn of Africa continuously elicited an emergency response more comparable to a rapid onset hazard such as an earthquake or tsunami. There are several reasons for this although these tend to be more political and bureaucratic rather than technical (IFRC, 2011; Oxfam/SCF, 2012). Where droughts are prolonged, or where there are multiple drought events, they can be drivers of “mega change” and result in set of very complex influences on a range of other key drivers. The impact of drought in the Horn of Africa for the purposes of this report can be summarised in terms of its impact on the following key drivers for human survival and well being:

5.1 Food Security

It seems to be stating the obvious that droughts affects food security but it is often not understood that food security is not just crops in the ground but includes the ability of people to secure food from other sources or regions. It is also about adaptation and resilience that enables people to produce food in drought conditions. In the Horn of Africa there are programmes by NGOs such as the IFRC that are working with communities to enable them to cultivate in low rainfall and drought conditions. In 2011 it was estimated that across the region the food security of over 13 million people was threatened with an international response for only 7.5 million people available. Those 13 million people remain vulnerable to the next drought cycle as long as the fundamental root causes of vulnerability remain (Oxfam/SCF, 2012).

5.2 Environmental degradation

Drought induced environmental degradation is an extremely serious threat. In degraded environments not only is the possibility of alternative sources of food and livelihood reduced

but the regenerative capacity of soil and ecosystems is also reduced making the recovery process much longer and in some cases irreparably damaged. The loss of topsoil, indigenous plant seed stock, collapsed water courses, invasive alien plant species and lost wetlands are key factors in longer term ecosystem and consequently human recovery. Where drought is combined with increasing human population pressure the resultant impact on the natural resource base and traditional land management practices is nothing short of catastrophic (Oxfam/SCF,2012; IFRC,2011).

5.3 Peace and security

It may be arguable whether droughts cause wars or not - both sides of the argument is valid. However, it is clear that war has a major influence on the impact of drought and drought will often influence the intensity and nature of warfare. Drought related conditions in the Horn of Africa have certainly impacted on both the intensity and nature of war in the region. The capture and use of food supplies as a weapon to ensure the compliance or patronage of civilian populations is well known. It has also led young men to join militant groups or “pirates” as a survival strategy. The proliferation of weapons as a result of war has also resulted in pastoralists having the incentive and the technology to kill each other for scarce resources. All of this based on an extended period of political and military conflict that has more recently included Islamic extremist movements such as the Harakat Shabaab al-Mujahidin in Somalia, an organisation connected to Islamic radical groups in the Middle East and Central Asia (NCTC, 2013).

5.4 Social cohesion

Droughts have had a major impact on social cohesion and the disaster is created when local social systems are no longer capable of managing the impact of the environmental hazard on their own coping strategies. In the Horn of Africa, families and communities have been broken apart while towns and cities have been unable to cope with the influx of destitute people from rural areas. In such situations basic service provision breaks down, water reticulation collapses, transport networks deteriorate along with other municipal functions. Often overlooked one of the first institutional victims of severe drought is the education system as people migrate, use children to search for food or children become too weak to attend classes (UNICEF, 2011).

5.5 Health

Droughts clearly have a massive impact on human health and the longer the drought the more acute and cumulative the health crisis becomes. As nutrition levels drop the ability of people to maintain effective immune systems declines, their vulnerability to a range of diseases increases. As competition for scarce water sources increases the exposure to zoonotic diseases carried by wildlife and livestock also increases. With weakened immune systems, exposure to disease and subsequent migration to camps the likelihood of epidemic outbreaks becomes a major concern. (WHO, 2011) All of this is aggravated by poor to non-existent health, water and sanitation services.

6. Disaster Risk Reduction, Health and Education in the Horn of Africa

Education during the drought crisis of 2011 concentrated on ensuring children in camps received their basic educational requirements with the supply of books and incentives for teachers (UNICEF, 2011). This support was combined with a WASH programme for school children and a collaborative approach was taken by the organisations providing support and relief. In addition to this there was a multi agency approach to adult education, training and skills development. Innovative community based approaches to rangeland management, natural resource management and water management were and still are being implemented in the region.

In drought situations the primary concern is malnutrition. As pointed out by the WHO: “Malnutrition not only increases the risk of contracting infectious diseases, it also increases disease severity and therefore the risk of death. This, added to being weak and stressed from displacement and fleeing from insecurity, along with poor prior health and immunization status, decreased access to basic needs such as food, water, shelter, and sanitation, will put these populations at high risk of contracting infectious disease and subsequent death. Furthermore, infectious diseases can also exacerbate malnutrition. This destructive cycle needs to be broken with appropriate nutritional support for the population, treatment of malnutrition as well as preventing and rapidly treating disease.” (WHO, 2011)

The response to health requirements have been primarily based on the following:

- Improve and stabilise basic nutritional needs, especially those of children.
- Implement WASH programmes throughout the affected area.
- Immunisation for critical communicable diseases such as measles and polio.

7. The challenges of Disaster Risk Reduction, Education and Health in the Horn of Africa

The challenges of providing a sustainable and viable solution to the education and health care systems of the region are invariably tied to the complexity of the social and environmental factors that are the persistent cause of crisis in the Horn of Africa. A review of reports from several agencies involved in the humanitarian and relief efforts show that there is wide ranging support that the emphasis needs to be on addressing root causes rather than responding to crisis situations. This invariably entails the following:

1. Creating the enabling environment that allows for stable governance structures at all levels and allows for local solutions to local challenges. This is particularly important in land and natural resource management systems.
2. Reform the mechanisms used by the international humanitarian relief system in a way that promotes a disaster risk reduction approach rather than a disaster response approach that in the case of the 2011 crisis responded way too slowly and thus increased the impact of the crisis. It also failed to heed the warnings given several months earlier by FEWSNET.
3. In line with point 2, the linkage between sustainable development, humanitarian assistance and disaster risk reduction needs to be more clearly integrated. Funding programmes need to be more adaptable and suited to local conditions with funding spread over much longer time frames and targeted at locally identified needs.
4. In education there needs to be a significant investment in training teachers, local officials, aid workers, donor support staff and politicians in the basic concepts of disaster risk reduction.
5. Addressing health challenges will entail an investment in preventive health care and WASH.

As a possible disaster risk reduction focus, the application of a One Health¹ approach which links environmental health with, human and animal health is well suited for this region. Due to its socio-economic conditions, the rural areas of the Horn of Africa hosts a variety of health interfaces both between humans and livestock and between these two and wildlife. The interface represents, therefore, a slow onset hazard under normal conditions and a rapid onset hazard when external variables come into play from climatic phenomena to armed conflict. A One Health approach to health and education in the region would initiate a disaster risk reduction process aimed, primarily, at changing behavioural patterns in the rural populations whilst raising awareness over the need for sustainable land-use planning in government and local administrations. Set into the context of sustainable development, One Health helps in explaining the connection between different actors in their environment, and in the presence of internal and external drivers, by using the existing strengths and weaknesses of a given (eco)system. In the health sector, understanding the pathways of transmission amongst humans and between humans and animals would help better detection, monitoring and treatment of disease with limited medical requirements. It would also help, with education, to address livestock management practices, and enhance the ability to detect disease early.

In the education sector, One Health can be discussed at different levels from primary education with children to awareness raising with adults. The education process with communities is actually essential to the success of any other One Health related activity. The programme should address the basics of human hygiene, as well as the pathways of transmission for the most important diseases in the given area. However, the education process should be simultaneously implemented with critical decision-takers in the government and its local administration. Without apt land use planning, in fact, it would be difficult to see real benefits from a One Health approach and a Disaster Risk Reduction approach, because their basic principles would be undermined. The Horn of Africa stands at a critical point in time when strategic decisions and actions need to be taken: to adopt a combined One Health and disaster risk reduction approach would provided the basis for its future sustainability.

With the above background and context of disaster risk reduction, education and health in the Horn of Africa the analysis of case studies were undertaken.

¹ See: <http://www.onehealthinitiative.com>

8. Case study analysis

According to Venton, (2010) any project which also encompasses wider development goals is always going to be more cost-effective. The case study analysis aimed to consider of projects simultaneously accomplishes developmental goals and disaster risk reduction for a single allocated budget. Hard resilience measures which improve physical structures to withstand disaster are often less cost effective than soft resilience measures which are more indirect ways in which the impact of disasters is reduced, for example increasing the livelihoods of pastoral populations in Ethiopia. Some studies have shown that hard resilience measures deliver the same cost-benefit ratios as soft resilience measures, but cost more (Venton, 2010). It is exceedingly important for disaster risk reduction interventions to be sensitive to the context of the targeted community. Many projects have been technically flawless but failed to incorporate the cultural context, which lead to low returns on investments (Venton, 2010). Venton, (2010) argues that the cost-benefit of projects can double if they run for longer periods of time (longer than three years) and if they are continuously monitored.

For the purpose of this research case studies were selected from the countries of the Horn of Africa which best illustrated benefits and less benefits in their implementation. In particular the link to disaster risk reduction had to be made. The integrated nature of disaster risk reduction relates to many cross cutting issues and it was one of the main challenges to ensure that disaster risk reduction is in fact an underlying outcome of the selected case studies. In the end ten case studies were selected on the basis of providing a fair representation between the type of disaster risk reduction and other investments and the risks faced by the countries in question. It is thus natural to find more case studies relating to, for example, Ethiopia, than Djibouti. Table 1 below is a synopsis of the case studies to be found in Annexure 2: Case studies.

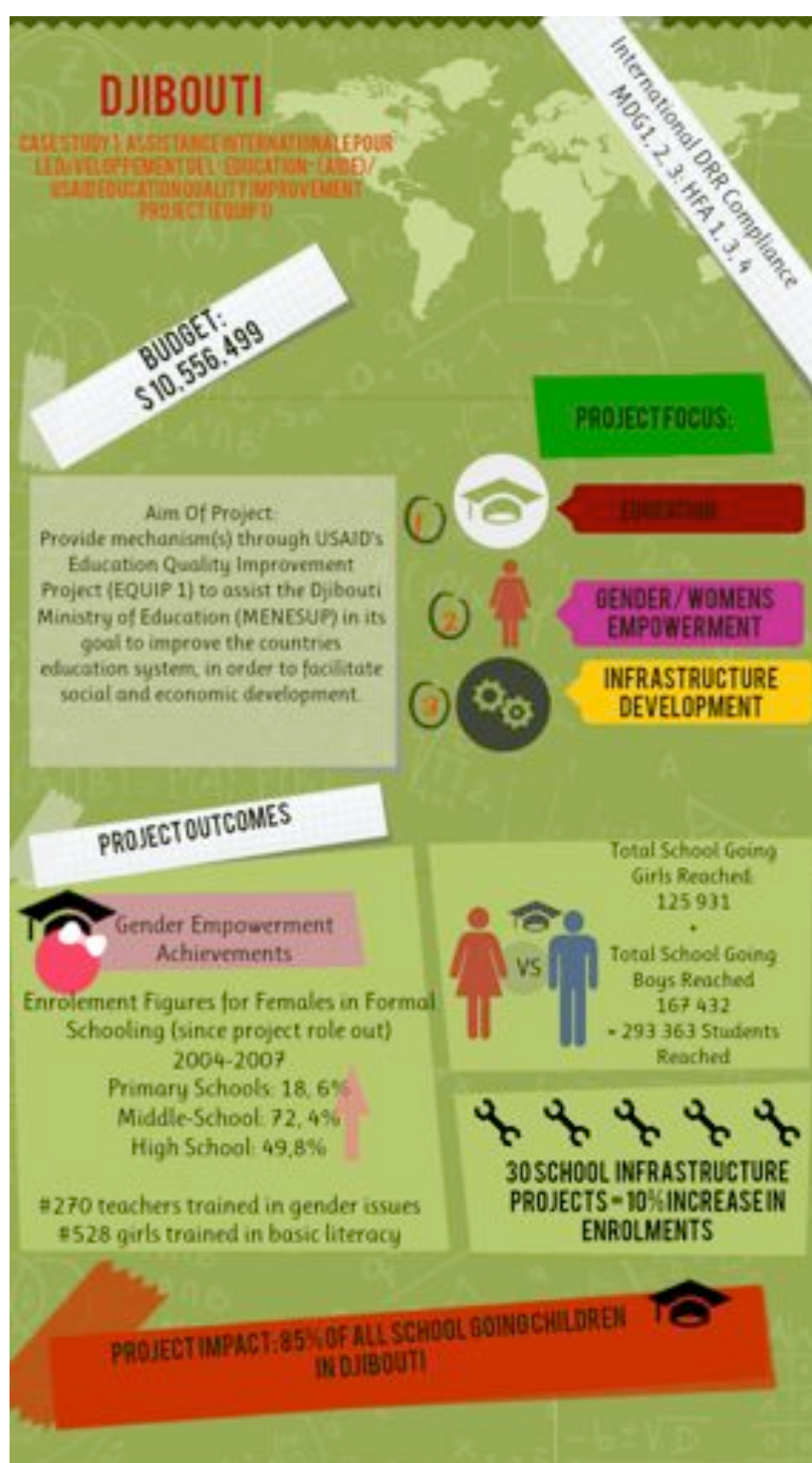
Country	Project title	Sector	US\$ investing	Beneficiaries
Djibouti	Assistance Internationale pour le Développement de l' Education'' (AIDE)/ USAID Education Quality Improvement Project (EQUIP 1)	Education	10,556,499	293 363
Djibouti	Expanded Coverage of Essential Health Services Project [Projet D.Extension de la Couverture de Services de Santé Essentiels (PECSE Project)]	Health	9,195,958	unknown
Ethiopia	The Ethiopia Food by Prescription (FBP) program, implemented by Save the Children US, USAID/Ethiopia, and the Ethiopian Ministry of Health	Health	2,047,189.78	89 180
Ethiopia	Integrated family health project - Youth friendly services to scale	Health	unknown	539 859
Ethiopia	Maternal Child Health Integrated Program (MCHIP)	Health	unknown	unknown
Ethiopia	Pastoral Community Development Project	education	unknown	
Kenya	The Orphans and Vulnerable Children (OVC) Scholarship Program	Education	10,119,640	11 500
Somalia	Support to IDP Alternative Basic Education and transition to Formal School in South, Central, Puntuland and Somaliland	Education	2,000,000	20 675
Somalia	Control and response to outbreaks of communicable diseases in emergency health setting including IDP camps and settlements in Somalia and provision of gaps fillings activities for access to quality essential medicines and suppliers of identified vulnerable population.	Health	1,662,948	2,968,000
Somalia	Drought Management and Livelihood Protection (DMLP) Project	Drought resilience	9,000,000	35 000 households

Country	Project title	Sector	US\$ investing	Beneficiaries
Eritrea	Climate change adaptation program in water and agriculture	Climate Change Adaptation	6,100,000	unknown

Table 1: Synopses of case studies

8.1 Assistance Internationale pour le Développement de l' Education" (AIDE)/ USAID Education Quality Improvement Project (EQUIP 1) (Djibouti)

The project represents a a great example of cost effectiveness in terms of DRR investment. During the implementation of the project the project managed to reach 293 363 school going children in Djibouti. This works out to a total investment of \$35.98 per child (293 363/ \$10 556 499), which is amazing, seeing as this ratio includes all investments on infrastructure, teacher capacity building and school materials (text books). The value becomes even more significant if one takes into account that the project managed to reach 85% of all youths in Djibouti, and that this grouping also comprises the biggest part of the countries population (46%). Thus for only a \$35.98 the project has managed to make a rather large investment in the future development of Djibouti through its youth. Put differently, through a mere \$10 556 499, the project has managed to increase the livelihood opportunities of almost 46% of



Djibouti's total population, thus greatly increasing the society overall resilience in terms of disaster risk reduction. The important aspect of the projects cost effectiveness is that it is mostly driven by policy reform (soft resilience projects) within the education sector of Djibouti, and thus the main currency and input is political will, not money. The project also links to development efforts through the achievement of MDG 1, 2 and 3

8.2 Expanded Coverage of Essential Health Services Project [Projet D.Extension de la Couverture de Services de Santé Essentials (PECSE Project)] (Djibouti)

The project also proved to be rather cost effective, although much of the investment in the project went towards infrastructure development (hard resilience projects). In spite of the focus to project still returns a cost effectiveness ratio of \$61.30/1 person reached (\$9 195 958/150 000). This is a low ratio considering that the project contained a large infrastructure development component (i.e. 89% of the country sub-district health facilities). It is also a low ratio considering what the losses would be in terms of human lives in the absence of these health facilities during disaster times. The project also contributes to sustainable development through its support of MDG 4 and 5, thereby rendering it even more cost effective.

8.3 The Ethiopia Food by Prescription (FBP) program, implemented by Save the Children US, USAID/Ethiopia, and the Ethiopian Ministry of Health (Ethiopia)

This project makes use of community development goals with disaster risk reduction although it is not integrated to great extent. Providing training to HIV affected individuals will sustainably increase the health benefits of this project and simultaneously decrease the individuals vulnerability to disasters. There is a concern with the allocation of food donations to these individuals. Projects which grant aid in whatever form is unwise from a cost-benefit analysis perspective. It is a once off intervention, which does not provide any return in investments or reduces future disaster risk. It may also result in dependency and thus create more problems than it solves. One factor which many cost-benefit analysis often omit is the distribution of benefits. Many times the benefits of a project are enjoyed by certain people often neglecting the most vulnerable (Mechler, 2012). This project triumphed in this regard, with the huge amount of people it reached indicating an equal share of benefits across the community. A positive indication is the long period time this project is scheduled for. Longer projects drastically increases the benefits of a project. Based on the previous inferences this

project's cost benefit is deemed relatively satisfactory.

8.4 Integrated family health project - Youth friendly services to scale (Ethiopia)

The cost effectiveness of the project is especially evident in the type of resilience that the project tries to achieve. Venton (2010), describes two types of resilient building projects. The first aims to build hard resilience, these are projects focused on infrastructure development, or medication roll out schemes (e.g. ARV drugs). These projects only address the symptoms of underlying vulnerability and are thus very expensive (due to the response nature of the activity). The other type of resilience, is soft resilience

projects. These project aim to address root causes of vulnerability, and are less expensive than hard resilience projects, as they often only require political will, policy change an minimal financial investment. This projects falls into the the latter category. In essence it is extremely cost effective, because the main focus is on changing attitudes toward SRH services, and improving access to these services for youths. Through the proactive, preventative nature of the project, it has managed to reach 539 859 individuals, at a substantially reduced cost as



opposed to if the project reached the same amount of people in a reactive fashion through a ARV role out scheme (hard resilience). The project also make a significant contribution towards sustainable development through its combatting of the spread of the HIV/AIDS (MDG 6).

8.5 Maternal Child Health Integrated Program (MCHIP) (Ethiopia)

Utilising training programs in a project always makes sense from a cost-benefit analysis point of view. The benefits of the project will continue to accumulate even when the project is finished. Projects which address strategic level change in a organisation or at governmental level, as evidenced in this project, will always result in large, far reaching benefits at a relatively low cost. An encouraging aspect of this project is that it addresses the root causes of the vulnerabilities these people have in relations to disasters. Addressing the root causes of peoples vulnerabilities to disasters will always result in an increase in benefits because the problem won't normally resurface in the future, or will have a far less impact. Building on the previous notion this project is preventative in nature stopping economical and social losses before they occur. Indirect measures, as those used in this project, aimed to minimise the consequences of a disaster and are also more robust in nature. Based on the previous discussion it is deemed that this project is cost effective.

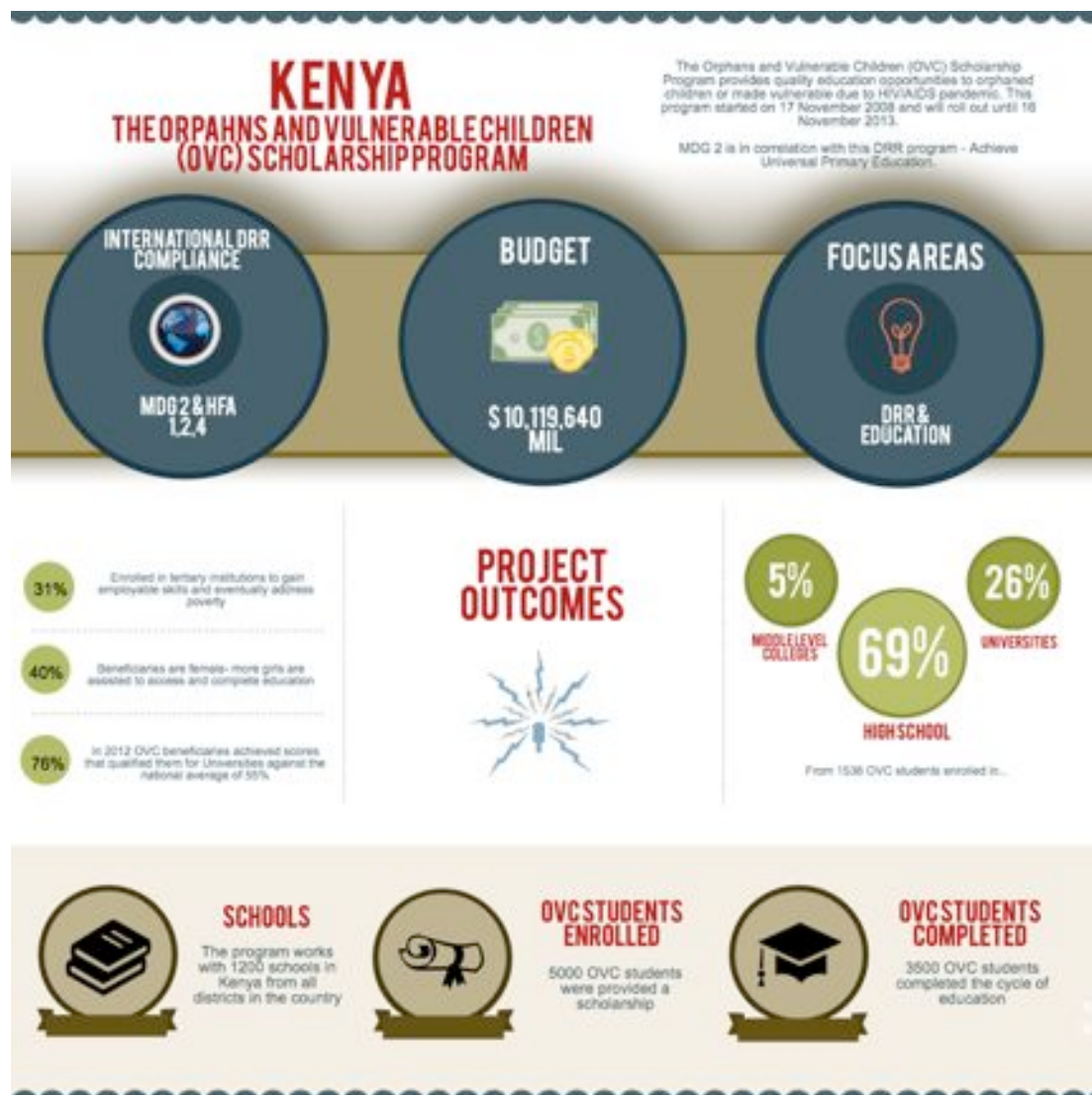
8.6 Pastoral Community Development Project (Ethiopia)

Any project which also encompasses wider development goals is always going to be more cost-effective. This project simultaneously accomplishes developmental goals and disaster risk reduction from a single allocated budget. Hard resilience measures which improve physical structures to withstand disaster are often less cost effective than soft resilience measures witch are more indirect ways in which the impact of disasters is reduced, for example increasing the livelihoods of Pastoral populations in Ethiopia. The Pastoral Community Development Project incorporated local knowledge into their design which will most certainly lead to an increase in returns. The Pastoral Community Development Project is expected to run for five years, with adjustments that have been made during the course of the project due to newly identified needs. It stands to reason that the cost-benefit of such a project can double if they run for longer periods of time (longer than three years) and if they are continuously monitored. The World Bank indicated that most of the objectives which were identified before

the start of the project were satisfied. Due to the above mentioned reasons it can be relatively confidently said that the Pastoral Community Development Project is cost effective.

8.7 The Orphans and Vulnerable Children (OVC) Scholarship Program (Kenya)

This project should be commended for its commitment on long term emphasis. It sometimes occurs that a project will show a significant amounts of benefits in the early stages of a project due to low base line at the start, and will start to level off later in the project indicating low cost-benefit implications for the later stages of a project. These figures may be misleading and decision makers should not interpret them in the wrong way. Although the numbers are not that flattering, this is a crucial phase in many projects. As stated previously the soft resilience measures and the integration of development goals will increase the robustness and benefits of the project. Based on these inferences it can be concluded that the project is cost beneficial.



8.8 Support to IDP Alternative Basic Education and transition to Formal School in South, Central, Puntuland and Somaliland (Somalia)

This project has integrated development aspects into its application. Thus it is expected to be sustainable in nature accumulating developmental and disaster risk reduction benefits in years to come. Linked with the previous notion, the multi-sectoral focus of this project will increase benefits. This project addresses challenges due to access to education, capacity of teachers and health issues simultaneously. Mechanisms have been established to monitor the effectiveness of the project by determining clearly defined attainable goals during its course. This monitoring of the project will increase its cost effectiveness, making sure that outcomes are being attained. A significant number of people benefits from this project. Projects which target a smaller number of people or only a subset of a population usually do not reap significant benefits because the context causing the risk is not entirely addressed. The target population of this project is disproportionately disadvantaged. The project conducted with this population will invariably reap significant benefits due to the low baseline the project started with. The short period of the project is a little disconcerting. Projects which provide continued support are generally more cost-effective. Without continued infrastructure, support and adaption to new emerging challenges in the designated project areas, benefits from a project tend to decrease. Nevertheless it cost only US\$96 per person to significantly increase their educational opportunities and reduce their vulnerability to disasters, which is quite impressive. The advantages of the project outweigh its disadvantages and it can be concluded that this project was cost-effective.

8.9 Control and response to outbreaks of communicable diseases in emergency health settings (Somalia)

Training individuals in health can be seen as a mechanism which ensures that the individuals will still reap benefits from the project even when the project is complete, thus increasing the benefits of the project. Awareness campaigns are especially conducive to satisfactory cost-benefit ratios. They are inexpensive and reap significant benefits for communities. A project concerned with prevention, in general, will reap increased benefits in comparison to reactive projects. Preventive projects will decrease or even eliminate future emergencies and reactive projects will not necessarily. Health interventions generally have high costs associated with

them due to expensive nature of medical supplies. Decision makers should not take these expenses at first glance and should keep the expensive nature of medical interventions in mind. Due to the above mentioned reasons it is concluded that this project is quite cost effective.

8.10 Drought Management and Livelihood Protection (DMLP) Project (Somalia)

The drought management and livelihood protection program can be said to be a cost effective project for various reasons. If one looks at the projects stated goals vs the investment per person need to implement the project , cost are very low. In order to achieve cash-for-work outcome, the project will only cost \$26,08 per person. The drought recovery crop input or livestock packages will only cost \$257,15 per household, this is very low considering that the goals is to make a household agriculturally active, and able to generate its own sustainable income. Importantly the project can be considered cost effective, because through its objectives it will not only manage to address the drought risk (that contribute to famine conditions), but it will also contribute to the sustainable development goals of Somalia (as per the MDG1). The dual focus on development/ DRR contained in this project means that funding is used more efficiently. Finally one should keep in mind that the projects aims to make communities/families/individuals independent from external aid for their livelihood security through agricultural development. Once communities/families/individuals reach a level of independence, they will also start to produce surplus food stuffs. These surpluses can be used, to improve the food security of the 3.7 million people affected by drought. This improves the cost effectiveness of the project even more to a ratio \$ 2.43/1 life affected (USD9 million/3.7 million).

8.11 Climate change adaptation program in water and agriculture (Eritrea)

The cost effectiveness of the project is illustrated in a couple of ways the first of these lies in the comparison between the total contribution of agriculture to Eritrea's GDP and the total DRR/Climate adaptation investment attached to the project. Agriculture contributes a massive 60% of Eritrea's total GDP, the loss of this sector would be catastrophic to the economy and the people of Eritrea. The cost of response to the loss of this sector would be astronomical. Compared to the minimal investment of US\$6,010,000, to protect 60% of the countries GDP from the effects of climate change, and its accompanying disaster risks, and the cost

effectiveness of the project comes into stark view. Furthermore although the project has some hard resilience projects attached to it (i.e. building of dams and pipelines), it also has a great deal of soft resilience projects aimed at raising awareness and building community capacity in terms of climate change adaptation and disaster risk reduction. This reduces the overall cost of the project to some degree. Finally due to the community orientated nature of the project, the risk of a project collapsing or being delayed is significantly reduced. By avoiding delays brought on by lack of community ownership the project manages to save time and money for the implementing parties.

9. Findings and recommendations

The diverse nature, scale and focus of the case studies assessed in this research makes specific findings to one sector (such as health) debatable. Therefore the findings rather aim to answer the question: “What makes for cost effective projects?” The findings and recommendations to follow will hopefully be thought provoking for policy makers, project planners and implementers. The research aimed to generalise between the various projects and sectors to some useful observations which can be applied in any sectoral or disaster risk reduction related programme or project. Validation of these recommendations has been found in similar research which thus adds to the triangulation and validity of these findings and recommendations.

The research can thus make the following findings and recommendations:

- Projects focused on children and women, show greater numbers of involvement and annual growth than when projects solely focus on men.
- Interventions which integrated into development and thus bring wider gains tend to be more cost effective due to their multiplying factor and sustainability through generations.
- Projects which address multiple issues (cross cutting), are integrated to an extent, and also have “hidden” benefits and beneficiaries, tend to be more cost effective.
- Projects enjoy greater degrees of success when multiple role players (i.e governments, NGOs, UN Agencies, communities) are involved in project roll out.
- When planning interventions it is crucial to design the project to fit the envisioned outcome.

- Community driven projects can become sustainable only if sufficient skills transfer and capacity development occurs and when ownership of the projects are ensured from the start.
- Projects aimed at preventive measures are less costly than those focussed on response and reconstruction.
- Long term support to projects can reap significant benefits.
- “Soft” resilience (e.g. education/training, improved drought forecasting) measures are often more cost effective and more robust in relation to uncertainties than “hard” resilience measures (e.g. flood walls).
- Projects that include a pilot phase as part of its roll-out seems to be more cost effective, as small problems can be identified and rectified before they become bigger issues, and thus more costly problems later in a project.
- Projects which has a much more holistic view, although they might be narrowly implemented, tend to be more cost effective because they address a small problem within the greater whole, but is thus aligned with the greater whole.
- Although most projects addressed vulnerability, and reduced risk to some degree, many still failed to address the root causes of the vulnerability. Thus projects, remained more expensive than they should be (i.e. it remains cheaper to address root causes).
- More regional mechanism should be established to pool funds for disaster risk reduction and response. Where risk pools exist between states, the financial burden of disaster response is significantly reduced on individual states.
- Quality rather than quantity in “soft resilience” projects is more beneficial to communities although they can be very difficult to measure and quantify.

Annexure 1: Terminology

Cost-benefit analysis (CBA): An systematic economic tool used to compare the benefits against cost of a given activity. CBA can be particularly useful tool in the disaster risk context. CBA can assist role-players in deciding the best programme options to follow. Cost-benefit analysis has two purposes:

- To determine if a project/programme is a sound investment/decision (justification/feasibility),
- To provide a basis for comparing projects. It involves comparing the total expected cost of each option against the total expected benefits, to see whether the benefits outweigh the costs, and by how much.

Cost effectiveness analysis: A qualitative assessment tool used to measure the projected/real outcomes of a project against the cost/inputs associated with the project. A cost effectiveness assessment is used where inadequate data does not allow for a traditional cost-benefit analysis but where a judgement on the value of a project is needed.

Disaster risk management: The systematic process of using administrative directives, organisations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

Disaster risk reduction (DRR) is the concept and practice of reducing disaster risk through systematic efforts to analyse and manage the causal factors of disasters, including through exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

Climate change adaptation (CCA) is the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Annexure 2: Case Studies

Country	Project title	Sector
Djibouti	Assistance Internationale pour le Développement de l' Education'' (AIDE)/ USAID Education Quality Improvement Project (EQUIP 1)	Education
Djibouti	Expanded Coverage of Essential Health Services Project [Projet D.Extension de la Couverture de Services de Santé Essentiels (PECSE Project)]	Health
Ethiopia	The Ethiopia Food by Prescription (FBP) program, implemented by Save the Children US, USAID/ Ethiopia, and the Ethiopian Ministry of Health	Health
Ethiopia	Integrated family health project - Youth friendly services to scale	Health
Ethiopia	Maternal Child Health Integrated Program (MCHIP)	Health
Ethiopia	Pastoral Community Development Project	education
Kenya	The Orphans and Vulnerable Children (OVC) Scholarship Program	Education
Somalia	Support to IDP Alternative Basic Education and transition to Formal School in South, Central, Puntuland and Somaliland	Education
Somalia	Control and response to outbreaks of communicable diseases in emergency health setting including IDP camps and settlements in Somalia and provision of gaps fillings activities for access to quality essential medicines and suppliers of identified vulnerable population.	Health
Somalia	Drought Management and Livelihood Protection (DMLP) Project	Drought resilience
Eritrea	Climate change adaptation program in water and agriculture	Climate Change Adaptation

Country	Title	Sector
Djibouti	Assistance Internationale pour le Développement de l' Education" (AIDE)/ USAID Education Quality Improvement Project (EQUIP 1)	Education

Aim of the project

Provide mechanism(s) through USAID's Education Quality Improvement Project (EQUIP 1) to assist the Djibouti Ministry of Education (MENESUP) in its goal to improve the countries education system, to facilitate social and economic development.

Role out (years of project)

3 years (2003-2007)

Focus Area

Education, Gender Empowerment, Infrastructure Development

Budget (allocations)

US\$10,556,499 (Funded by USAID)

Key Outcomes (realised)

Rate of School enrolments for Girls

- Primary: 2004-2007 (18,6% increase)- 84 001 (total girls)
- Secondary: 2004-2007 (72,4% increase) 33 218 (total girls)
- High School: 2004-2007 (49,8% increase) 8 712 (total girls)

Total School Going Girls Reached: 125 931

Rate of School enrolments for Boys

- Primary: 2004-2007 (8 % increase) 103 357 (total Boys)
- Secondary: 2004-2007 (52,2% increase) 49 866 (total Boys)

- High School: 2004-2007 (56,1% increase) 14 209 (total Boys)

Total School Going Boys Reached: 167 432

Total School Going Pupils Reached By Project: 293 363

39 % of population reached, 46% of population between 0-15 years. Thus: 85% of all school going Children in Djibouti Reached by the project.

* School Infrastructure Projects

30 Projects (Classrooms, Toilets, Dormitories, School Kitchens, Water Storage Tanks) - 10% increase in enrolment figures in schools were projects were done by 2006

* Additional Gender Related Achievements:

- 270 teachers trained in gender issues
- 528 girls trained in basic literacy

* Text Books/Learning materials

- 152 178 (textbooks)- Improve Child to books ratio to 0.7 books per child

Relationship with disaster risk reduction

Within society women are one of the most vulnerable grouping when it comes to disaster risk. Often disenfranchised and lacking access to resources and power structures, they bear the brunt of disasters when they strike. In this context the project, can be considered to contribute to DRR because, through education, the project provides women with the opportunity to become literate. This gives them access to better livelihood possibilities (e.g. Housewife vs Lawyer), which increases their resilience to disaster by providing a bigger income safety net, should a disaster occur. The total number of literate women generated through the project also increases the likelihood that women's rights will be advanced on the country agenda. This will give women a voice in power structures that make decisions on development and disaster risk reduction.

Cost-effectiveness of the project

The project represents a a great example of cost effectiveness in terms of DRR investment. During the implementation of the project the project managed to reach 293 363 school going

children in Djibouti. This works out to a total investment of \$35.98 per child (293 363/ \$10 556 499), which is amazing, seeing as this ratio includes all investments on infrastructure, teacher capacity building and school materials (text books). The value becomes even more significant if one takes into account that the project managed to reach 85% of all youths in Djibouti, and that this grouping also comprises the biggest part of the countries population (46%). Thus for only a \$35.98 the project has managed to make a rather large investment in the future development of Djibouti through its youth. Put differently, through a mere \$10 556 499, the project has managed to increase the livelihood opportunities of almost 46% of Djibouti's total population, thus greatly increasing the society overall resilience in terms of disaster risk reduction. The important aspect of the projects cost effectiveness is that it is mostly driven by policy reform (soft resilience projects) within the education sector of Djibouti, and thus the main currency and input is political will, not money. The project also links to development efforts through the achievement of MDG 1, 2 and 3.

Country	Title	Sector
Djibouti	Expanded Coverage of Essential Health Services Project [Projet D.Extension de la Couverture de Services de Santé Essentials (PECSE Project)]	Health

Aim of the project

A main objective of the MOH health sector reform strategy is to: significantly increase equitable access to health care (especially among poorer rural populations); strengthen the quality and efficiency of health services; and, reduce infant, child and maternal morbidity and mortality.

Overview

Main target group for assistance program was to be the hard-to-reach Djiboutian population (initially estimated at around 150,000) living in rural areas of the country. Each year, around 2,800 children die in Djibouti from preventable deaths and about 160 women die at childbirth. The main causes of death among children less than 5 years of age include: pneumonia, diarrhoea, and neonatal complications.

Role out (years of project)

4.5 years (2004-2008)

Focus Area

- Maternal Health
- Health Sector Reform

Budget (allocations)

US\$9 195 958 (Funded by USAID)

Key Outcomes

- Substantially upgraded care at 89% of the country's sub-district health facilities (23 of 26);
- Enhanced services and facilities at 4 of 5 (80%) district hospitals;
- Created a real option for maternity care in rural areas where virtually none existed before;

- Established the first viable national health information system in the country that can regularly generate as well as aggregate facility-specific service-delivery statistics to both the district and national level;
- Introduction of a system for involving communities in local-level health services and providing important new capacity for community outreach in service delivery through the addition of health outreach workers.

Relationship with disaster risk reduction

The availability of adequate medical facilities is key in improving community resilience. Communities that lack access to these facilities are left exceedingly vulnerable during normal times, but are even worse off during times of disaster. The lack of access to medical facilities lead to many deaths that could have been prevented, especially amongst the weakest and most vulnerable in society (i.e women, children and the elderly). Thus the project described contributes to DRR by improving the access of vulnerable people to adequate medical facilities, this will be beneficial in normal times and times of disaster. By addressing the issue of access to facilities, which is a root cause of a communities vulnerability, a much bigger societal problem is addressed and community resilience amplified.

Cost-effectiveness of the project

The project also proved to be rather cost effective, although much of the investment in the project went towards infrastructure development (hard resilience projects). In spite of the focus to project still returns a cost effectiveness ratio of \$61.30/1 person reached (\$9 195 958/150 000). This is a low ratio considering that the project contained a large infrastructure development component (i.e. 89% of the country sub-district health facilities). It is also a low ratio considering what the losses would be in terms of human lives in the absence of these health facilities during disaster times. The project also contributes to sustainable development through its support of MDG 4 and 5, thereby rendering it even more cost effective.

Country	Title	Sector
Ethiopia	The Ethiopia Food by Prescription (FBP) program, implemented by Save the Children US, USAID/Ethiopia, and the Ethiopian Ministry of Health	Health

Aim of project

The Ethiopia Food by Prescription (FBP) program provides therapeutic food along with nutritional assessment and counselling to malnourished HIV positive individuals.

Project duration

The project started in 2010, initially in 58 health facilities and rolled out to its third year in 2012.

Population affected

2011= 41180

2012= 48000

Project Focus Areas

- Disaster risk reduction
- Health
- Education
- Humanitarian Aid

Budget

Budget in 2011= \$2,047,189.78 thus \$49.71 per patient

Project Outcomes

- 70% of budget used for product and 30% for the implementation of the project
- 7.4% recovered from malnutrition
- Malnutrition recovery increases from 18.7% - 41.6%
- 48000 received counselling and training

- Loss of 1 BMI point significantly increases the chances of mortality in HIV + patients
- Patients who received food were significantly more likely to recover from malnutrition

Cost effectiveness

As seen in previous case studies this project makes use of community development goals with DRR although it is not integrated to great extent. Providing training to HIV affected individuals will sustainably increase the health benefits of this project and simultaneously decrease the individuals vulnerability to disasters. There is a concern with the allocation of food donations to these individuals. Projects which grant aid in whatever form is unwise from a cost-benefit analysis perspective. It is a once off intervention, which does not provide any return in investments or reduces future disaster risk. It may also result in dependency and thus create more problems than it solves. One factor which many cost-benefit analysis's often forget is the distribution of benefits. Many times the benefits of a project are enjoyed by certain people often neglecting the most vulnerable. (Mechler, 2012) This project triumphed in this regard, with the huge amount of people it reached indicating a equal share of benefits across the community. A positive indication is the long period time this project is scheduled for. Longer projects drastically increases the benefits of a project (Venton, 2010). Based on the previous inferences this project's cost benefit is deemed relatively satisfactory.

Country	Title	Sector
Ethiopia	Integrated family health project - Youth friendly services to scale	Health

Aims of the project

- At the individual level: The project emphasises provider-client counselling to increase young people's SRH knowledge, skills, and health care seeking behaviours.
- At the social level: Initiate a move beyond facility service delivery to foster an enabling community environment for adolescents to seek services, with targeted efforts to reduce bias and stigma through peer-to-peer comprehensive SRH and life skills counselling.
- Finally, the YFS (Youth Friendly Services) approach works at the structural level by promoting national, regional, and local YFS-oriented policies, as well as the integration of YFS into national public health systems.

Project Context

Young people (aged 10-24) represented one of the country's largest groups, comprising about 35 percent of the population. Poverty and gender inequality amplified young women's vulnerability to poor SRH (Sexual Reproductive Health) outcomes, increasing their exposure to early marriage and early childbearing, unintended pregnancies, and sexually transmitted infections (STIs). Young people, particularly young women, were also among the most vulnerable to HIV infection, with one and a half percent of young women aged 15-24 living with HIV in 2007, compared to a half of a percent of young men the same age. Just 20 percent of young women and 33 percent of young men aged 15-24 had comprehensive knowledge of HIV and its transmission. This lack of knowledge leaves young people more vulnerable to the risk posed by HIV.

Project Focus:

- Health
- Youth And Gender Empowerment
- Awareness and Capacity Building

Project Description

Often medical/health service providers refuse to offer SRH (Sexual Reproductive Health) services to young people due to their age or marital status. Furthermore existing services fail to provide privacy and confidentiality to adolescents often resulting in poor SRH service use among young people. This, in turn, contributes to poor SRH outcomes. In this regard YFS (Youth Friendly Services) improves the availability, acceptability, accessibility, and equity of health services for young people to addresses the complex drivers of adolescents' poor SRH outcomes by targeting the barriers to health care access at the individual, social, and structural levels.

Project Outcomes

-Establishment of Youth Friendly Services counselling sites: During the implementation of the the project 115 counselling sites were established in 6 Regions within Ethiopia. This has significantly improved the access of vulnerable youths to Sexual Reproductive Health services.

The increase in the amount of counselling sites have significantly increased the amount of young men and women reached with SRH services. With a total of 539 859 individual receiving SRH services during the projects life cycle, the project has had a major impact.

In terms of policy or structural influence the projects has succeeded in incorporating the YFS approach national and regional level planing and policy. Major milestones include for:

- Development of a *National Adolescent and Youth Reproductive Health Strategy*
- Development, testing and Launch of the *National Standards on Youth Friendly Reproductive Health Services and Minimum service delivery package (2007)*
- *National planning implementation and evaluation tools for adolescent and youth friendly reproductive health service standards (2010).*

Link to disaster risk reduction

Along with the continuous spectre of drought and famine, HIV/Aids and other sexually transmitted diseases poses the greater disaster risk to the African Continent. In this regard, a lack of awareness and knowledge about sexual health practices amongst vulnerable groups, such as youth and women, has lead to the increased impact of the epidemic. The project described above therefore reduces disaster risk associated with the HIV epidemic, through education and awareness on safe sexual reproductive health practices.

Cost effectiveness

The cost effectiveness of the project is especially evident in the type of resilience that the project tries to achieve. Venton (2010), describes two types of resilient building projects. The first aims to build hard resilience, these are projects focused on infrastructure development, or medication role out schemes (e.g. ARV drugs). These projects only address the symptoms of underlying vulnerability and are thus very expensive (due to the response nature of the activity). The other type of resilience, is soft resilience projects. These project aim to address root causes of vulnerability, and are less expensive than hard resilience projects, as they often only require political will, policy change an minimal financial investment. This projects falls into the the latter category. In essence it is extremely cost effective, because the main focus is on changing attitudes toward SRH services, and improving access to these services for youths. Through the proactive, preventative nature of the project, it has managed to reach 539 859 individuals, at a substantially reduced cost as opposed to if the project reached the same amount of people in a reactive fashion through an ARV role out scheme (hard resilience). The project also make a significant contribution towards sustainable development through its combatting of the spread of the HIV/AIDS (MDG 6).

Country	Title	Sector
Ethiopia	Maternal Child Health Integrated Program (MCHIP)	Health

Project description and aim

This program aims to curb maternal, neonatal and child mortality in Ethiopia. The Maternal and Child Health Integrated Program focuses on reducing maternal, neonatal and child mortality through increased access and utilisation of high impact MNCH interventions and reduction of mother-to-child transmission of HIV in Ethiopia's four major regions. The MCHIP project supports the Government of Ethiopia's initiative to curb maternal morbidity and mortality.

Goals of MCHIP program

- Provide basic emergency obstetric and newborn care training
- Introduce a performance improvement approach
- Work with Integrated Family Health Project (IFHP) to identify areas where MCHIP's maternal and newborn health experts can provide technical support, such as immediate care of the newborn
- Provide national level technical assistance in critical areas like roll-out of the national newborn resuscitation program

Program Duration

2010-2013

Program Results:

- Improve the quality of pre-service midwifery education
- Support the Ethiopian Midwifery Association to lead the professionalisation of midwifery
- Train health workers in Basic Emergency Obstetric and Newborn Care (BEmONC) to ensure quality of care
- Integrate prevention of mother-to-child transmission (PMTCT) services into mother and neonatal health services at the health centre level

- Improve the quality of newborn care through the introduction of the Kangaroo Mother Care (KMC) method and Integrated Community Case Management (ICCM) of malaria
- Increase the availability of post-partum family planning methods at the facility level
- Support the Federal Ministry of Health National Communication and Advocacy Plan
- Synthesise existing cultural barriers to institutional delivery, and identify, disseminate and ensure the scale-up of promising health practices

Relationship with disaster risk reduction

DRR strategies are deduced through the training of health emergency services to reduce child mortalities and spreading of HIV from mothers to children. In this program MDG 4 and 5 are addressed, reducing child mortality and improve maternal health. DRR will thus protect children from direct hazards and lower mortality from diseases like HIV and overall improve family nutrition.

Cost-effectiveness of project

Utilising training programs in a project always makes sense from a cost-benefit analysis point of view. The benefits of the project will continue to accumulate even when the project is finished. Projects which address strategic level change in a organisation or at governmental level, as evidenced in this project, will always result in large, far reaching benefits at a relatively low cost. An encouraging aspect of this project is that it addresses the root causes of the vulnerabilities these people have in relations to disasters. Addressing the root causes of peoples vulnerabilities to disasters will always result in an increase in benefits because the problem won't normally resurface in the future, like it will with reactive projects. Building on the previous notion the this project is preventative stopping economical and social losses before they occur. Indirect measures, as utilised in this project, aimed to hinder the consequences of a disaster are also more robust in nature (Mechler, 2012). Based on the previous discussion it is deemed that this project is cost-beneficial.

Country	Title	Sector
Ethiopia	Pastoral Community Development Project	Education

Aim of the Project

- Increase pastoral community engagement in *woreda* processes and local development decision making;
- Increase access to and effective delivery of social services;
- Enhance pastoralists' access to support for savings and credit activities;
- Improve *woreda* authorities' accountability and responsiveness to pastoralist citizens;
- Expand the pastoral early warning system;
- Enhance the responsiveness of the disaster contingency fund in a decentralised manner;
- Prepare and implement regional disaster preparedness investment strategies; and
- Improve access to information and awareness of pastoralist development issues.

Roll out (years of project)

2008 – 2013

Focus Area

Education and Sustainable Development

Outcomes

- 100 early warning monthly and quarterly reports produced and disseminated.
- Early warning information on disaster risks was made available for 122 pastoral and agro-pastoral *woredas*.
- 243 Website visits per month.
- 100 agreed upon training plans completed each year (gender, communications, social accountability, conflict, MIS, M&E and IT).
- 681 216 men and women participating in consultation activities that takes place as part of the project implementation.

Total persons affected

N/A

Disaster risk reduction link

Pastoral populations in Ethiopia consists of 12 million people living in various areas. It is well known that these people consist of the “poorest of the poor”. These pastoralists are disproportionately vulnerable to the effects of disasters, especially drought. They find it hard to recover from even minor disasters due to the intense poverty that plagues them. The Pastoral Community Development Project attempts to reduce their vulnerability to disasters by developing sustainable livelihoods in this community through various projects. One of the focuses of the project is participatory disaster risk assessment and preparedness. Where the community and various role players engage in a two way flow of information about potential risks and coping strategies. The findings of these contact sessions are then disseminated across the community and awareness is raised on various disaster risks and disaster preparedness practices. Thus educating the participants in the project and the wider community about DRR. Teaching communities about their potential disaster risks and best practices to reduce the effects of a disaster is an essential component in DRR.

Cost-effectiveness of the project

Any project which also encompasses wider development goals is always going to be more cost-effective. This project simultaneously accomplishes developmental goals and disaster risk reduction from a single allocated budget. Hard resilience measures which improve physical structures to withstand disaster are often less cost effective than soft resilience measures which are more indirect ways in which the impact of disasters is reduced, for example increasing the livelihoods of Pastoral populations in Ethiopia. The Pastoral Community Development Project incorporated local knowledge into their design which will most certainly lead to an increase in returns. The Pastoral Community Development Project is expected to run for five years, with adjustments that have been made during the course of the project due to newly identified needs. It stands to reason that the cost-benefit of such a project can double if they run for longer periods of time (longer than three years) and if they are continuously monitored. The World Bank indicated that most of the objectives which were identified before the start of the project were satisfied. Due to the above mentioned reasons it can be relatively confidently said that the Pastoral Community Development Project is cost effective.

Country	Title	Sector
Kenya	The Orphans and Vulnerable Children (OVC) Scholarship Program	Education

Aim of project

The Orphans and Vulnerable Children (OVC) Scholarship Program provides quality education opportunities to orphaned children or made vulnerable due to HIV/AIDS pandemic. This program provides university scholarships and all related fees to eligible beneficiaries which are selected by the Ministry of Education, the Department of Children Services and APHIA II Programs.

This program is implemented by PricewaterhouseCoopers (PWC) that works in partnership with the Ministry of Education, Ministry of Higher Education and Technical Training, and the Department of Children's Services.

This project's objectives are:

- to provide badly needed schooling assistance for children who would otherwise not have access to education due to the HIV/AIDS pandemic;
- to improve young girls' chances and levels of education;
- to facilitate the acquisition of skills beyond secondary school education;
- to alleviate poverty;
- to support the government of Kenya in eliminating ignorance;
- to boost morale and self confidence of young people;
- to encourage other stakeholders to offer education assistance, and
- to perform in National Examinations.

Budget

Total Budget: \$10,119,640

Project duration

November 17, 2008 – November 16, 2013

Project Focus Areas

- Disaster Risk Reduction
- Education

Beneficiaries

The program works with 1,200 schools (secondary schools, colleges, and universities) in Kenya from all districts in the country. USAID has provided more than 5,000 OVC students with scholarships

Project Outcomes

- 5000 OVC have been assisted
- 3500 OVC have completed the cycle of education
- From 1536 OVC- 69% enrolled in high school, 26% in universities and 5% in middle level colleges.
- 31% enrolled in tertiary institutions to gain employable skills and eventually address poverty.
- More girls are assisted to access and complete education- 40% of beneficiaries are female, with 28% in high school.
- Increasing available income in families through provision of secondary support to the 1536 beneficiaries
- In 2012, 76% of the OVC beneficiaries achieved scores that qualified them for Universities against the national average of 55%.
- Overall morale and self-confidence of young people are boosted.

Relationship with disaster risk reduction

Enough evidence suggest the direct link between vulnerability and lack of education. An education project of this nature has direct disaster risk reduction benefits in the long term. Better education contributes to a better understanding of hazards, vulnerability and the risk associated with them. An increase in the social and economic development in turn will have positive benefits for the population at large, contributing to better health, wealth creation and poverty reduction - all has direct disaster risk reduction implications.

Cost-effectiveness of project

This project should be commended for its commitment on long term emphasis. It sometimes occurs that a project will show a exceeding amounts of benefits in the early stages of a project due to low base line in the start of the project and will start to level of later in the project

indicating low cost-benefit implications for the later stages of a project. These figures may be misleading and decision makers should not interpret them in the wrong way. Although the numbers are not that flattering, this is a crucial phase in many projects. As stated previously the soft resilience measures and the integration of development goals will increase the robustness and benefits of the project. Based on these inferences it can be concluded that the project is cost beneficial.

Country	Title	Sector
Somalia	Support to IDP Alternative Basic Education and transition to Formal School in South, Central, Puntuland and Somaliland	Education

Aim of the Project

The main objective of the project is to provide access to protective and inclusive quality Alternative Basic Education for Returnees, displaced boys and girls in the IDP settlements and vulnerable host to improve the capacity and the quality of child friendly learning environment in schools hosting displaced and other vulnerable children. It is also to facilitate the transition of ABE graduating learning into formal upper primary education.

It is to improve the state of Boys and Girls within the above- mentioned regions. The situation is worse in the IDP settlements due to lack of education infrastructure. The low standard of quality of curriculum instruction, curriculum supervision and educational management at the central, regional and school levels is also a problem. The main focus area was to:

- enrol more than 9000 boys and girls in ABE classes,
- distribute scholastic materials to the learners,
- train female and males teachers/head teachers on school management,
- conduct a rapid baseline assessment and identifying participating community schools,
- conduct awareness raising on Gender, HIV/AIDs, SGBV, human rights, protection, hygiene and sanitation.

Roll Out (years of project)

July 2011- Dec 2011

Focus Area

The Project focuses on Education Cluster

Budget

US\$2 000 000

Outcomes

9000 displaced and other vulnerable children provided access to quality Alternative Basic Education (ABE). Improved quality of teaching and learning for boys and girls in schools supported by the project. 9000 displaced and other vulnerable boys and girls benefited from improved protection in schools supported by the project. Improved child friendly learning environment through provision of space and rehabilitation of existing schools. Capacity of the teachers, CECs and authorities improved through training and awareness campaigns. Improved coordination and capacity building of the MoE and CECs members. 2000 displaced, returnees and other vulnerable children assisted to transit into formal upper primary schools. 300 parents capacity enhanced to better protect the vulnerable boys and girls in selected IDP settlements. Improved enrolment and retention among students from poor families was supported by the project.

Beneficiaries

Children: 10 000

Women: 5 280

Males: 5 395

Relationship with disaster risk reduction

Enough evidence suggest the direct link between vulnerability and lack of education. An education project of this nature has direct disaster risk reduction benefits in the long term. Better education contributes to a better understanding of hazards, vulnerability and the risk associated with them. An increase in the social and economic development in turn will have positive benefits for the population at large, contributing to better health, wealth creation and poverty reduction - all has direct disaster risk reduction implications.

The cost effectiveness of the project

This disaster risk reduction project has integrated development aspects into its application. Thus it is expected to be sustainable in nature accumulating developmental and disaster risk reduction benefits in years to come. Linked with the previous notion, the multi-sectoral focus of this project will increase benefits. This project addresses challenges due to access to education, capacity of teachers and health issues simultaneously. Mechanisms have been established to monitor the effectiveness of the project by establishing clearly defined attainable goals during its course. This monitoring of the project will increase its cost effectiveness, and making sure that outcomes are being attained. The project benefits a high

amount of people. Projects which target a smaller number of people or only a subset of a population usually do not reap significant benefits because the context causing the risk is not entirely addressed. The target population of this project is disproportionately disadvantaged. The project conducted with this population will invariably reap significant benefits due to the low baseline the project started with. The short time period of the project is a little disconcerting. Projects which provide continued support are generally more cost-effective. Without continued infrastructure, support and adaption to new emerging challenges in the designated project areas, benefits from a project tend to decrease. Nevertheless it cost only US \$96 per person to significantly increase their educational opportunities and reduce their vulnerability to disasters, which is quite impressive. The advantages of the project outweigh its disadvantages and it can be concluded that this project was cost-effective.

Country	Title	Sector
Somalia	Control and response to outbreaks of communicable diseases in emergency health setting including IDP camps and settlements in Somalia and provision of gaps fillings activities for access to quality essential medicines and suppliers of identified vulnerable population.	Health

Aim of the Project

To ensure timely detection and appropriate response and control of communicable disease outbreaks affecting populations of humanitarian concern across Somalia. To prevent early death and disability due to communicable diseases outbreaks amongst populations affected by humanitarian emergencies across Somalia. To provide access to quality medicines and supplies and effective case management for cases of communicable disease outbreaks across Somalia with focus on those in humanitarian emergency.

Roll-out

Jan 2011 – Dec 2011

Focus Area

Health Cluster

Budget

US\$ 1 662 948

Outcomes

Health workers trained both male and female in equal proportions where feasible on communicable diseases outbreaks detection and case management. The project included training (in service and on job training) and building capacity of health workers, both male and female to respond to, and effectively manage cases during outbreaks of communicable diseases especially AWD. Two trainings per region targeting at least 6 participants per district with 50% female where feasible, including local health authorities. Training of district based outbreak investigation teams including both men and women (50% women when feasible) and members of local health authorities (at least 1 team per region). Essential medicines, supplies

and emergency kits were strategically prepositioned and distributed to identify risk areas. Stockpiling of essential medicines, supplies and equipment for disease outbreak control (cholera kits, cholera treatment centre supplies, and diarrheal disease kits) in strategic warehouses in Mogadishu, Hargeisa, Garowe, Galkacyo, Merka, were achieved.

Beneficiaries

Total: 2,968,000

Women: 1,656,160

Males: 1,311,840

Relationship with disaster risk reduction

Disaster risk reduction strategies are deduced through the trainings and public awareness's raised to reduce the outbreaks on Somalia. In addition the MDG 4 is addressed, on promotion of gender equality and giving the women empowerment a priority in the improving the services to the communities.

Cost-effectiveness of the project

Training individuals in health can be seen as a mechanism which ensures that the individuals will still reap benefits from the project even when the project is complete, thus increasing the benefits of the project. Awareness campaigns are especially conducive to satisfactory cost-benefit ratios. They are inexpensive and reap significant benefits for communities. A project concerned with prevention, in general, will reap increased benefits in comparison to reactive projects. Preventive projects will decrease or even eliminate future emergencies and reactive projects will not necessarily. Health interventions generally have high costs associated with them due to expensive nature of medical supplies. Decision makers should not take these expenses at first glance and should keep the expensive nature of medical interventions in mind. Due to the above mentioned reasons it is concluded that this project is quite cost effective.

Country	Title	Sector
Somalia	Drought Management and Livelihood Protection (DMLP) Project	Drought resilience

Aim of the project

The project will promote targeted community-based resilience through two components:

1. **Cash-for-Work activities** to ensure immediate relief to the most vulnerable households and rehabilitate productive infrastructure/assets. Special focus will be on strengthening drought resilience in infrastructure and assets such as canals, water catchments, village level slaughter slabs, and feeder roads; and
2. **Restoration of the crop production capacity of the affected households** through the provision of selected agriculture inputs – seeds, fertilizers, tools and extension advice - for the October – December rain season for accelerated recovery of livelihoods affected farmers.

Funding context and fund assigned

The unprecedented drought in Somalia has affected 3.7 million people. GFDRR is supporting drought resilience in Somalia with a **US\$5 million** grant to be implemented through Food and Agriculture Organization (FAO) in partnerships with INGOs/NGOs as well as local institutions with strong operational presence in the project areas.. The grant is pooled with another **US\$4 million** grant from the State and Peace-building Fund of the World Bank for the DMLP Project.

Total Investment = \$9 Million

Project focus:

- Drought Management
- Agriculture Development
- Capacity Building
- Infrastructure building

Project description

The Project will target drought affected populations in areas of South and Central Somalia, currently battling famine conditions. It will promote targeted community-based resilience interventions to support the drought affected populations in Somalia.

Project outcomes

The two components associated with the project will ultimately create 345,000 person days of cash-for-work and provision of drought recovery crop input or livestock packages to 35,000 households, disaggregated by gender.

Link to disaster risk reduction

Improving livelihood security is seen as a crucial part to reducing community wide risk to disaster. In this regard, the project contributes to risk reduction in a direct, short term fashion by increasing the livelihood security of the most vulnerable communities by getting them involved in agriculture activities, or improving the resilience of those that are already involved in agriculture. The project also reduced disaster risk in the form of droughts in the long run through capacity building and skills development components (i.e. water canal construction and extension advice).

Cost effectiveness of the project

The drought management and livelihood protection program can be said to be a cost effective project for various reasons. If one looks at the projects stated goals vs the investment per person need to implement the project, cost are very low. In order to achieve cash-for-work outcome, the project will only cost \$26,08 per person. The drought recovery crop input or livestock packages will only cost \$257,15 per household, this is very low considering that the goals is to make a household agriculturally active, and able to generate its own sustainable income. Importantly the project can be considered cost effective, because through its objectives it will not only manage to address the drought risk (that contribute to famine conditions), but it will also contribute to the sustainable development goals of Somalia (as per the MDG1). The dual focus on development/ disaster risk reduction contained in this project means that funding is used more efficiently. Finally one should keep in mind that the projects aims to make communities/families/individuals independent from external aid for their livelihood security through agricultural development. Once communities/families/individuals reach a level of independence, they will also start to produce surplus food stuffs. These surpluses can be used, to improve the food security of the 3.7 million people affected by

drought. This improves the cost effectiveness of the project even more to a ratio \$ 2.43/1 life affected (USD9 million/3.7 million).

Country	Title	Sector
Eritrea	Climate change adaptation program in water and agriculture	Climate change adaptation

Aims

- Improve integrated water management and agricultural development in the sub-zobas of Hamelmalo and Habero, Anseba Region, Eritrea.
- Increase the availability of water through floodwater harvesting and groundwater recharge;
- Promote a range of climate-resilient technologies for enhanced agricultural and livestock production;
- Improve the dissemination of climate risk information among community, civil society and government stakeholders through a community-based early warning system;
- Capture and disseminate lessons learned through programme activities, and to influence policy through advocacy activities.

Total project funding

US\$6,010,000

Project: Focus Areas:

- Agriculture
- Climate Change Adaption
- Education/Capacity development

Project Context

Eritrea is particularly vulnerable to climate change. Current adaptive capacity is low and the country has Africa's highest level of food insecurity, accompanied by high levels of malnutrition. Projected climate change impacts are significant and include a temperature increase above the mean global value, increasing variability in rainfall, more frequent dry spells and more severe droughts. The effects of these impacts on water resources and agriculture will exacerbate food insecurity.

Project Description

The overall goal of the programme is to promote increased food security in Eritrea through ecologically sustainable and climate-resilient improvements in agricultural

production. Furthermore the objective project aims to increase is community resilience and adaptive capacity to climate change .

Project Outcomes

- Supplementary irrigation promoted by introducing flood water harvesting to improve rain-fed cereal production and rangeland development
- A range of climate resilient agricultural technologies and methods developed and transferred to farmers e.g. drought- and disease-resistant varieties, integrated crop-livestock production systems, conservation agriculture, agroforestry, rangeland management; and traditional improved fuel-efficient stoves
- Seasonal forecasts used in a farmer-led collaborative action learning process to enhance adaptive capacity and climate-proof production systems
- Awareness raised at different levels on climate change risks facing Zoba Anseba
- Community preparedness enhanced through development of a community-based early warning system in sub-zobas Hamelmalo and Habero
- Knowledge management system established and knowledge management activities implemented
- Policy advocacy activities implemented

Link to DRR

Climate Change poses a great risk for Eritrea's Agricultural sector. Much of the population of the country either works in the sector or is dependent on it for food security. Not addressing the real threat of climate change would be disastrous. The above mentioned project plays an active role in reducing the risk posed by climate change through structural measures (i.e. building of dams and pipelines) and non-structural measures (i.e. awareness raising and capacity development). The importance assigned to the role of awareness and capacity building brings the project in line with the HFA.

Cost-effectiveness of the project

The cost effectiveness of the project is illustrated in a couple of ways the first of these lies in the comparison between the total contribution of agriculture to Eritrea's GDP and the total DRR/Climate adaptation investment attached to the project. Agriculture contributes a massive 60% of Eritrea's total GDP, the loss of this sector would be catastrophic to the economy and the people of Eritrea. The cost of response to the loss of this sector would be astronomical.

Compared to the minimal investment of US\$6,010,000, to protect 60% of the countries GDP from the effects of climate change, and its accompanying disaster risks, and the cost effectiveness of the project comes into stark view. Furthermore although the project has some hard resilience projects attached to it (i.e. building of dams and pipelines), it also has a great deal of soft resilience projects aimed a raising awareness and building community capacity in terms of climate change adaption and disaster risk reduction. This reduces the overall cost of the project to some degree. Finally due to the community orientated nature of the project, the risk of a project collapsing or being delayed is significantly reduced. By avoiding delays brought on by lack of community ownership the project manages to save time and money for the implementing parties.

References

- Anon. 2001. Cost-effectiveness evaluation methodological report. <http://www.ness.bbk.ac.uk/cost-effectiveness/documents/2/pdf>.
- Anon, 2010. *Ministerial Declaration Adopted at the Second African Ministerial Conference on Disaster Risk Reduction*, Nairobi: African Union Commission.
- BBC News. 2004. Natural disasters on the rise. <http://news.bbc.co.uk/2/hi/3666474.stm> Date of access: 31 Dec. 2012.
- FAO (Food and Agriculture Organisation). 2011. Drought Emergency: Overcoming the crisis: Horn of Africa. Emergency Ministerial Level Meeting. 25 July. Rome, Italy.
- GFDRR (Global Facility for Disaster Reduction and Recovery). 2010. Disaster risk financing programme. http://www.gfdr.org/gfdr/sites/gfdr.org/files/documents/GFDRR_DRF_Program.pdf Date of access: 17 Dec. 2012.
- Guha-Sapir, D., Vos, F., Below, R. & Ponserre, S. 2012. Annual disaster statistical review 2011. The numbers and trends. http://reliefweb.int/sites/reliefweb.int/files/resources/2012.07.05.ADSR_2011.pdf Date of access: 4 Jan. 2012.
- Hall, P. 2008. Discussion paper on mobilising resources for disaster risk reduction: From recovery to preparedness: Investing in disaster risk reduction. <http://www.unescap.org/idd/events/AMCDRR-2008/documents/TS4-Philip-Hall.pdf> Date of access: 31 Dec. 2012.
- Hedger, M.M., Mitchell, T., Leavy, J., Greeley, M. & Downie, A. 2008. Institute of development studies. Desk review: evaluation of adaptation to climate change from a development perspective. United Kingdom: GEF Evaluation Office.
- Huebner, A. 2011. Lethal weather: the rise of natural disasters due to climate change. <http://www.towardfreedom.com/environment/2530-lethal-weather-the-rise-of-natural-disasters-due-to-climate-change> Date of access: 31 Dec. 2012.
- IFRC (International Federation of Red Cross and Red Crescent Societies). 2011. Disasters in Africa: the case for legal preparedness. http://www.ifrc.org/PageFiles/86607/Disasters%20in%20Africa_2011.pdf Date of access: 7 Feb. 2013.
- Jackson, D. 2011. Effective Financial Mechanisms at the national and local level for Disaster Risk Reduction. http://www.unisdr.org/files/18197_202jackson.financialmechanismstosup.pdf Date of access: 17 Dec. 2012.
- Kotler, P., Roberto, N., & Leisner, T. 2006. Alleviating poverty: a macro/micro marketing perspective. *Journal of Macromarketing*, 26(2):233-239
- Levin, H.M. 2012. Cost Effectiveness in Education-Methodology Examples, Use of Cost-Effectiveness Analysis. <http://www.stateuniversity.com>.

- Linnerooth-Bayer, J. & Mechler, R. 2007. Disaster Safety nets for developing countries: Extending public private partnership. *Environmental Hazards*, 7(1):54-61.
- Mechler, R., 2005. Cost benefit of natural disaster risk management in developing countries: Manual. <http://www.mekonginfo.org/assets/midocs/0003131-environment-cost-benefit-analysis-of-natural-disaster-risk-management-in-developing-countries-manual.pdf>. Date of access: 5 December 2012
- Oxfam/Save the Children (Oxfam/SCF). 2012. A dangerous delay: The cost of late response to early warnings in the 2011 drought in the Horn of Africa. Joint Agency Briefing Paper. 18 January. Oxfam:UK.
- Phillips, C. 2009. What is cost-effectiveness? http://www.medicine.ox.ac.uk_1.pdf. Date of access: 31 Dec. 2012.
- PreventionWeb: serving the information needs of the disaster reduction community. 2011. South Africa: floods highlight lack of disaster preparedness. <http://www.preventionweb.net/english/professional/news/v.php?id=17675> Date of access: 2 Jan. 2013.
- Rice, D.S. 2012. Report: climate change behind rise in weather disasters. <http://www.usatoday.com/story/weather/2012/10/10/weather-disasters-climate-change-munich-re-report/1622845/> Date of access: 31 Dec. 2012.
- Skoufias, E. 2003. Economic crises and natural disasters: Coping strategies and policy implications. *World Development*, 31(7):1087-1102.
- UNICEF (United Nations Children's Fund). 2011. Response to the Horn of Africa Emergency: A crisis affecting life, livelihoods and ways of life. Regional three-month Progress Report. East and Southern Africa Regional Office.
- UNISDR (United Nations International Strategy for Disaster Reduction). 2011(a). Private Sector. <http://www.unisdr.org/partners/private-sector> Date of access: 31 Dec. 2012.
- UNISDR (United Nations International Strategy for Disaster Reduction). 2011(b). Interim report of accomplishments. UNISDR 2010-2011. Biennial work plan outcomes and strategic objectives. Draft report.
- UNISDR (United Nations International Strategy for Disaster Reduction). 2011(c). Effective measures to build resilience in Africa to adapt to climate change. Geneva: United Nations.
- UNISDR (United Nations International Strategy for Disaster Reduction). 2012. Disaster risk reduction in Africa:
- UNISDR informs. Special issue on drought risk reduction. Kenya: UNISDR Africa.
- Vakis, R. 2006. Complementing natural disasters management: the role of social protection. Washington DC: World Bank. 21 p.
- Venton, C, C., 2010. Cost benefit Analysis for community based climate and disaster management: Synthesis report. http://www.preventionweb.net/files/14851_FinalCBASynthesisReportAugust2010.pdf. Date of access: 5 December 2012
- Vordzorgbe, S.D. 2006. UNISDR: Making the case for disaster risk reduction in Africa. http://www.preventionweb.net/files/1356_1356SethDoeVordzorgbedrrinafrica.pdf Date of access: 31 Dec. 2012.

WHO (World Health Organisation). 2011. Public health risk assessment and interventions: The Horn of Africa: Drought and famine crisis. July. Disease Control in Humanitarian Emergencies: Geneva. (Report: WHO/HSE/GAR/DCE/2011.3)

Wahlstrom, M. 2012. Introduction of the SG report on the Implementation of the International Strategy for Disaster Reduction: Remarks by the Special Representative of the Secretary-General for Disaster Risk Reduction. http://www.preventionweb.net/english/professional/policies/v.php?id=29553&utm_source=pw_search&utm_medium=search&utm_campaign=search Date of access: 3 Jan. 2012.

