Indicators of social vulnerability (SV) and sustainable development

BY

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Abstract

The fragility of the human condition in relation to disaster centres on the idea that disasters are simply unavoidable extreme physical events produced by the complex mix of social, political, and economic forces that produce vulnerability of people to hazardous environments. Depending on the nature of the hazard and the socio-cultural context, different groups are more vulnerable than others. Important here is the focus on human agency as expressed in culturally reinforced social practice. That is, the specific things people do, situated in time and space, affect their vulnerability to various kinds of natural hazards. Therefore, in order to effectively address issues of sustainable development in areas that are susceptible to disaster there is the need for the identification of factors that are indicative of social vulnerability (SV) in such societies. Hence, the need for this paper, which examines the indicators of social vulnerability and sustainable development in developing areas like Nigeria susceptible to disaster.

Key Words: *Disaster; Social Vulnerability;* indicators; *& Sustainable Development.*

Introduction

Globally, many nations are prone to numerous types of disaster (natural or man-made) which bear risks of varying magnitude. Nigeria which is the most populous developing nation in Africa is not excluded in the social effects of disaster on vulnerable groups. It has witnessed the occurrence of different types of disasters. Religious conflicts, inter-tribal conflicts, political conflicts and struggle for the equal sharing of the national assets, amongst others have resulted in serious disruption of the functioning of affected communities causing widespread human, material, economic or environmental losses which often exceed the ability of the affected community (Yoruba, Hausa or Ibo) to cope using its own resources.

The major terrorist groups in Nigeria are the radical Islamic Jama'atu ahlus Sunnah lid da'awati wal Jihad sect, popularly called Boko Haram, in the North East and the militant

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group in the Niger delta. Presently, the Northern parts of Nigeria (especially, Maiduguri, Jos, and Abuja) are under sporadic attacks of suicide bombing and violence assumed to be organized by Boko haram (an Islamic group). This said that they were responsible for the suicide bombing at the Force Headquarters in Abuja. They also said they did not accomplish their mission because their prime target was the Inspector General Hafiz Ringim. A statement from a senior member of the group, Abu Zaid, said the attack at the police headquarters was to prove a point to all who doubt the capabilities of the sect. The statement came barely two hours after another bomb exploded in Damboa town, about 87 kilometres from Maiduguri the Borno state capital, which killed four children and injured two others.

Figure 1: Boko Haram members

The number of casualties and damage caused by such disasters, while fluctuating strongly, has been on the increase in recent decades (Flint and Luloff, 2005) in both the developed (e.g. Japan) and less developed (e.g. Sudan) nations across the globe. A typical example of which is the recent pacific tsunami that occurred in Japan on Friday 11th March, 2011 which resulted in massive loss of lives, properties and a sharp drop of the value of the Japanese Yen.

In Nigeria, the vulnerability to disaster focuses attention on the totality of relationships in social situations which constitute a condition that, in combination with environmental forces, produces a disaster. According to Bankoff, Frerks & Hilhorst (2004) this refers to a community's social vulnerability (SV) to multiple stressors and shocks, including natural or man-made disaster and hazards, both physical and social characteristics that contribute to decreased capacity and resilience.

The term, "vulnerability", is derived from the Latin word *vulnerare* (to be wounded) and denotes risk, fragility, defencelessness, as well as the potential to be harmed physically and/or psychologically. It is the counterpart of resilience and the degree to which a system or unit (such as a human group or a place) is likely to experience harm due to exposure to perturbations or stresses (Flint and Luloff, 2005). Social vulnerability (SV) is the defenceless potential (or characteristics inherent) in social interactions, institutions, systems of cultural values, people, organizations, and societies to withstand adverse impacts from multiple

stressors (loss of life or property) due to hazards to which they are exposed. Clark et al. (1998) stated that SV is “people's differential incapacity to deal with hazards, based on the position of the groups and individuals within both the physical and social worlds", which has to be assessed with respect to the particular hazard or combination thereof (e.g. earthquakes and/or landslides). This, therefore, implies that disaster has three major facets: a) *exposure* to stresses, perturbations, and shocks; b) *sensitivity* of people, places, and ecosystems, to the stress or perturbation, including their capacity to anticipate and cope with the stress; and c) *resilience* of the exposed people, places, and ecosystems, that is their ability to *recover* from the stress and to *buffer* themselves against and *adapt* to future stresses and perturbations. Risk, in the context of vulnerability, is the probability of exposure to threats and potential associated damage to ecosystems and/or human well-being. Receptors are ecosystems or people that are exposed to environmental stress, where stress is the pressure exerted by environmental change caused by development activities on people and/or ecosystems.

In Nigeria, different living conditions and social standards (Rural, Urban & Urban slum) usually lead to different abilities of people to prepare for and cope with disasters. In its broadest sense, the concept links environments where people live to social interactions, institutions, and systems of cultural values (Weichselgartner, 2001). Therefore, an identification of the social forces and multiple stressors such as marginalization or social inequalities (Cutter, Bryan and Shirley, 2003) which increase the susceptibility of a community to respond to, cope with, recover from, and adapt to the impact of hazards will enhance the evolution of sustainable development in fragile states like Nigeria. However, within most developing societies, a search of existing literature reveals that little or no attempt has been made to determine the social forces and or stressors that reinforce the overwhelming existence of social vulnerability (Mileti, 1999; White & Haas, 1975). Hence, the need for this paper which attempts to identify the social conditions and driving forces that transform natural hazards (e.g. flood, earthquake, mass movements etc.) into a social disaster (who and what is vulnerable).

Theories of Social Vulnerability

Numerous theories of social vulnerability have been proposed over the years. Some of which are the risk-*hazard* (RH) model, the *pressure and release* model (PAR), the hazards-of-place model, social vulnerability model, and political economy. The Risk-Hazard (RH) Model states that the impact of a hazard is a function of exposure to the hazardous event and the sensitivity of the entity exposed (Turner, Kasperson, Matson, McCarthy, Corell, Christensen, Eckley, Kasperson, Luers, Martello, Polsky, Pulsipher & Schiller, 2003). This model emphasised exposure and sensitivity to perturbations and stressors (Kates, Hohenemser & Kasperson, 1985) and worked from hazard to impacts (Turner et al., 2003).

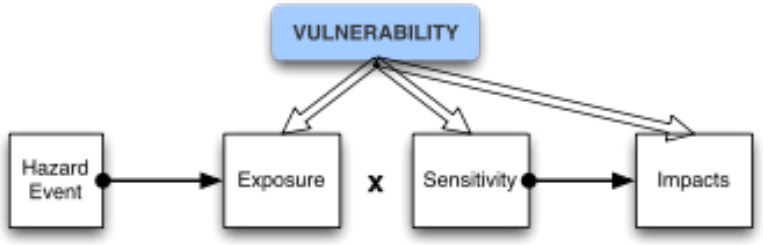

Figure 2: Risk-Hazard (RH) model (diagram after Turner et al., 2003), showing the impact of a hazard as a function of exposure and sensitivity. The chain sequence begins with the hazard, and the concept of vulnerability is noted implicitly as represented by white arrows.

(Retrieved from **http://upload.wikimedia.org/wikipedia/en/thumb/5/55/RH_model.svg/350px-RH_model.svg.png)**

The Pressure and Release (PAR) model views disaster as the intersection between socio-economic pressure and physical exposure. It defines risk as a function of the perturbation, stressor, or stress and the vulnerability of the exposed unit (Blaikie, Cannon, Davis & Wisner, 1994). This model directs attention to the conditions that make exposure to disaster unsafe, leading to vulnerability and to the causes creating these conditions. The model distinguishes between three components on the social side (root causes, dynamic pressures and unsafe conditions) and the natural hazards itself. Principal Root causes include "economic, demographic and political processes" which affect the allocation and distribution of resources between different groups of people. Dynamic Pressures translate economic and political processes in local circumstances (e.g. migration patterns). Unsafe conditions are the specific forms in which vulnerability is expressed in time and space, such as those induced by the physical environment, local economy or social relations (Blaikie, Cannon et al. 1994).

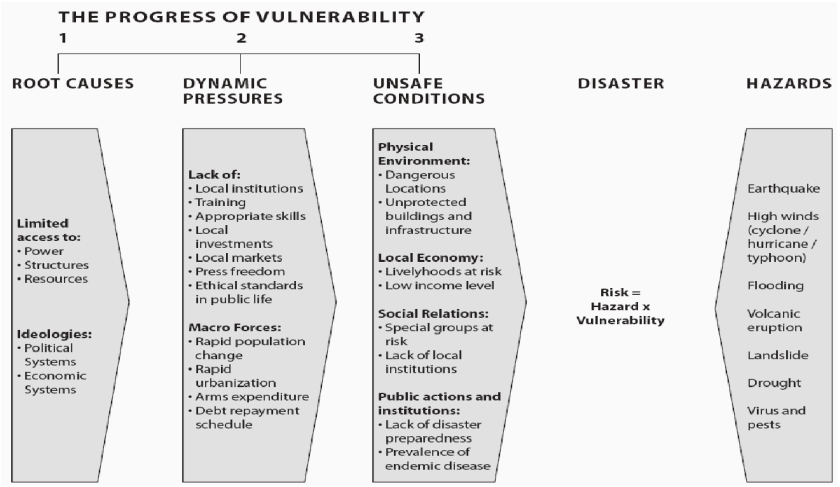

Figure 3: Pressure and Release (PAR) model after Blaikie et al. (1994) showing the progression of vulnerability. The diagram shows a disaster as the intersection between socio-economic pressures on the left and physical exposures (natural hazards) on the right. (Source: Blaikie et al 1996, Wisner et al 2004)

The hazards-of-place model (HOP) of vulnerability (Cutter, 1996; Cutter, Mitchell, and Scott, 2000; Heinz Center for Science, Economics, and the Environment, 2002) implies that SV is a multidimensional concept that helps to identify those characteristics and experiences of communities (and individuals) that enable them to respond to and recover from environmental hazards. HOP provides a place-based overview of both the physical event parameters (and their potential impacts) and the underlying socio-economic and demographic characteristics of the population residing within the hazard zone. It combines the biophysical vulnerability (physical characteristics of hazards and environment) and social vulnerability to determine an overall place vulnerability; it focuses more on the identification of at-risk and vulnerable populations.

The exposure model (Burton, Kates, and White, 1993; Anderson, 2000) identifies conditions that make people or places socially vulnerable to extreme natural events. It assumes that vulnerability is a social condition, a measure of societal resistance or resilience to hazards (Blaikie et al., 1994; Hewitt, 1997), as well as the integration of potential exposures and societal resilience with a specific focus on particular places or regions (Kasperson, Kasperson, and Turner, 1995; Cutter, Mitchell, and Scott, 2000).

Political economy analysis theory of vulnerability posited by North (1990) states that poverty, the use of resources, and the distribution of assets and income within a population is all institutionally determined. It attributes social vulnerability to structural characteristics of the state and economy which determine how resources are distributed (March and Olsen, 1996). According to this perspective, the economic, political and ideological structures create inequality by constructing and reconstructing factors like class, gender, race and ethnicity as barriers (Quadagno, 1999). These structural barriers limit opportunities and choices for people and by doing so reduce their access to valued resources (Hooyman and Kiyak, 2005; Bengtson, Burgess and Parrott, 1997). Ultimately this increases their risk of vulnerability (Sanderson, 1994; Thompson (1997).

Feminist theoretical perspectives focused on the issue of gender inequality and states that women are disproportionately disadvantaged globally (Lorber, 2005). It argues that gender inequality is supported by gender cultural systems that have an ideological and a material dimension, and are extremely resilient (Barriteau 1998; Ridgeway and Correll, 2004).

Capacity and vulnerability analysis theory (Anderson and Woodrow, 1998) views people's vulnerabilities and capacities in three broad interrelated areas: existence or lack of physical/material resources, lands, climate, environment, health, skills and labour, infrastructure, housing, finance, technologies and hazards; existence or lack of social/organizational relations among people; and communities' attitude/motivation to create change. This theory distinguishes between vulnerability and needs. It views vulnerability as long term factors that affect a community's ability to respond to events or make it susceptible to disaster; and as immediate requirement for survival or recovery after disaster.

The structural social theory to causes of vulnerability to hazards initiated by Hewitt (1983) which emphasized lack of access to resources (poverty and marginalization translate into vulnerability through the mechanisms of coping behaviour and stress) as the causes of vulnerability to hazards.

Who are the most vulnerable to disasters?

The documentation of disaster experience in Nigeria over the past centuries has revealed a consistent pattern of vulnerability for certain groups in the six geopolitical zones (North Central, South East, North West, North East, South South and South West) that persistently suffer to a disproportionate degree from disaster impact. These are the unemployed, stigmatised with illnesses (such as HIV/AIDs affected individuals and the mentally ill persons), the poor families, the elderly, people with disabilities, the self-employed (especially in rural areas), migrant workers, in areas facing war or civil conflicts, displaced people and refugees, and Informal economy workers - majority of who are women. The victims of official or cultural prejudice (such as ethnic or religious minorities) leading to inequitable access to resources may also be categorized as vulnerable groups (ISSA, 2009b; UN, 2007; ADB, 2003).

Type of Social Vulnerability

Social Vulnerability to hazards and disasters varies among different social groups over time and space (Dow, 1992; Cutter, 1996, 2001a). Four of them are identified below:

A. Individual vulnerability is determined by:
   - Personal data: age, gender, race and ethnicity, employment status, literacy, marital status
   - Personal disaster preparedness: social standard, knowledge about hazard and risks, access to information, willingness to decrease susceptibility,
   - access to resources;
   - the diversity of income sources,
   - social status of individuals within a community.

B. Family or Household vulnerability is determined by:

- Household characteristics: household size, tenure status, access to water, gas and power supply,
- Housing condition: residence type, building stock, building construction material

C. Neighbourhood vulnerability is determined by:

- Physical: Proximity to hazard zone, relief/slope, abundance of transport infrastructure, road condition, building density / proportion of built-up area, roof material/ roof size, distance to neighbouring buildings, size and distribution of green spaces, commercial and industrial development, distance to city centre (rural and urban)
- Social environment: supply of gas, water and electricity, abundance of education facilities, abundance of medical facilities and emergency management, building codes.

D. Collective *vulnerability* of a nation, region or community in different forms and spheres is determined by:

- institutional and market structures, such as the prevalence of informal and formal social security and insurance, and
- Infrastructure and income. Collective vulnerability is exacerbated by 'exogenous' environmental changes which occur through climate change.

These aspects of vulnerability are obviously interlinked. At the community level social vulnerability is affected by relative distribution of income, access to and diversity of economic assets; and by the operation of informal social security arrangements.

Indicators of Social Vulnerability

Indicators of SV are quantitative measures intended to represent the characteristic (Cutter, Barnes, Berry, Burton, Evans, Tate, and Webb, 2008) of who and what is exposed to threat (hazard identification), and the differential susceptibility (the potential for loss, injury, harm, adverse impacts on livelihoods), and impacts of that exposure. Over the years, researchers have identified multiple indicators for social vulnerability. For instance, Cutter et al. (2000) identified eleven (11) principle factors of SV including personal wealth, age, density of the built environment, occupation, household stock and tenancy, single-sector economic dependence, infrastructure dependence and three factors related to differences in race and ethnicity. Evans, DeBonis, Krasilovsky & Melton, (2007) also recognized age, wealth, and employment, and ethnicity as indicators of SV.

In line with literature (Peacock, Morrow and Gladwin, 2000; Masozera, Bailey and Kerchner, 2007; Fothergill and Peek, 2004; Carroll, Cohn, Seesholtz, & Higgins, 2005;), the indices of social vulnerability in developing nations like Nigeria consisted of the following:

- Socio-economic status (Income, Political Power, and Prestige) which affects the ability of individuals and communities to absorb losses and be resilient to hazard impacts.
- Poverty which is a state of deprivation (lack of access) to key resources (Fothergill and Peek, 2004). Poor people are more likely to live in substandard housing, which can be a major disadvantage when disasters occur (Long, 2007), and during disasters, are less likely to have access to critical resources and lifelines, such as communications and transportation (Dash and Morrow, 2007).
- Disability and physical frailty status: people with mental and physical disabilities are at increased risk because they will require extra assistance (Morrow, 1999).
- Gender inequality causes and perpetuates poverty and vulnerability, especially for women. Women often suffer the impacts of a disaster disproportionately (Cutter, 1995; Fothergill, 1996; Enarson and Morrow, 1998; Enarson, Fothergill and Peek, 2006; Enarson, 2007; Bianchi and Spain, 1996).
- Cultural, racial and ethnicity differences: The confluence of race and class (socioeconomic status) produces social inequalities ((Buckland and Rahman, 1999; Füssell, 2007; Germany, 2007; Peacock et al., 2000). Discrimination also plays a major role in increasing the vulnerability of racial and ethnic minorities (Fothergill, Maestras, and Darlington, 1999; Bolin 2006). Ethnic communities are often geographically and economically isolated from jobs, services and institutions.
- Age {Elderly + Children}: Both the young and the elderly may be unable to respond to disasters without outside support (Ngo, 2001; Heinz Center, 2002; Anderson, 2005; Phillips and Hewett, 2005; Kar, 2009; Smith et al. 2009). The elderly are more likely to lack adequate economic resources and the necessary physical ability to respond effectively to a disaster. They are more likely to suffer health problems, physical harm and experience a slower recovery (Ngo, 2001). They also tend to be more reluctant to evacuate their homes in a disaster (Gladwin and Peacock, 1997).
- Employment loss: The potential loss of additional employment following a disaster increases the possible number of unemployed workers in a community. Such losses contribute to a slower recovery from the disaster.
- Under-development of rural areas as against the development of urban cities**.** Rural residents may be more vulnerable because of lower incomes and more dependence on a locally based resource economy (e.g., farming or fishing). The commercial and industrial development of a community (Infrastructure and lifelines), the value, quality, and density of residential, commercial and industrial buildings may provide indicators of the state of economic health of a community, potential losses in the business community, and longer-term issues with recovery after an event.

- Family structure and population growth: Families with large numbers of dependents and single-parent households often have limited wherewithal to outsource care for dependents and thus must juggle work responsibilities and care for family members.
- Educational status (a lack of literacy, literacy and language skills) as an index may cause disadvantages in responding to a disaster when seeking information, applying for assistance or seeking post disaster employment (Morrow, 1999).
- Health status: The public health literature shows that people with pre-existing illnesses may be at risk for death/illness/injury in disaster settings. People with pre-existing cardiovascular and respiratory conditions who are exposed to smoke and haze from forest fires may be more at risk for adverse health outcomes; they also may be vulnerable to heart attacks during seismic activity. People living with mental or physical disabilities are less able to respond effectively to disasters and require additional assistance in preparing for and recovering from disasters (McGuire, Ford and Okoro, 2007).
- Lack of proximate medical services: Health care providers, including physicians, nursing homes, and hospitals, are important post-event sources of relief. The lack of proximate medical services lengthens the time needed to obtain short-term relief and achieve longer-term recovery from disasters.
- Special-needs populations (infirm, institutionalized, transient, and homeless) and people who are totally dependent on social services for survival. They are already economically and socially marginalized and require additional support in the post-disaster period. Special-needs populations (infirm, institutionalized, transient, and homeless) are difficult to identify, let alone measure and monitor.
- Resource dependency: This is constituted by reliance on a narrow range of resources leading to social and economic stresses within livelihood systems. Resource dependency relates to communities and individuals whose social order, livelihood and stability are a direct function of its resource production and localized economy (Machlis, Force and Burch, 1990; Adger, 1997b).
- Social Vulnerability Context: The social vulnerability context of within which people pursue their livelihoods includes:
  - Trends: such as economic trends, resource trends
  - Shocks: such as conflict, economic shocks, health shocks and natural shocks such as earthquakes
  - Seasonality: seasonal fluctuations in prices, production, health, employment opportunities

Mental Health Implications

The concept of social vulnerability has been associated with a number of indicators that bind the socio-economic, environmental, cultural and psychological factors to the exposure of poorer social groups to risks in areas prone to disaster (such as environmental degradation) and lack of public policy. Therefore all indicators of SV have a number of mental health implications for psychological interventions and counselling. First, the mental health, disability and physical injury impacts of disaster and loss may negatively affect the victims' perceptions of themselves, their motivations, self-esteem, self-confidence, emotional well-being, "spiritual" or "religious" well-being and capacity as well as the will to assert themselves and claim their rights (survival and resilience). There is therefore the need to pay attention to the socially vulnerable groups in both rural and urban centres. Attention should be focused on the development of psychotherapeutic intervention programmes which will enable them to improve their life chances and also grant them the opportunity to function fully in society. Some of them may require basic psychological care without hospitalization; others may require hospitalization with life threatening injuries and poor mental illness.

In Nigeria, little or no attention is currently being placed on the psychological needs of the mentally ill. As a result, there is therefore a dearth of policies and advocacies focusing on this aspect of socially vulnerable groups. The implication of which is that everyone in Africa lives in highly volatile societies prone to vulnerability emanating from disaster, loss, hazards, conflicts (ethnic, political, religious or otherwise). There is therefore the need for creations of enabling agencies (i.e policy makers) that will interact with mental health service providers in order to create an enabling environment for the development of pre and post-disaster mental health services to cater for the socially vulnerable groups. This will greatly reduce the trauma to hazards in socially vulnerable societies like Africa.

Location wise, people in rural areas in developing nations like Nigeria have lower levels of development, and also face many challenges as a result of where they reside. Such challenges include less access to health and other social services. They therefore require better access to psychological health and social services to improve their quality of life.

The impact of disaster such as complete destruction of a residence and or job loss may also have negative psychological implications for the socially vulnerable groups in Nigeria. It may take them a longer period to recover. They may be forced to live on the streets, squatting, staying with friends and family, or staying in boarding houses and supported accommodation with no usual address. They usually have lower levels of income, unemployment, limited or no access to safe, secure services and adequate housing. They may be exposed to many dangers in society. Anti-social wise, they may be exposed to violence which has the capacity to endanger and increase their risk of developing physical

and mental health problems (such as mental disorders, suicide, drug and substance abuse, self harm and cardiovascular disorders).

Additionally, policies and practices related to disaster response often assume that all residents of an area have the same information as well as the same resources and ability to act upon information. Furthermore, they assume that all residents will react in the same way. However, social vulnerability factors in Nigeria can shape and influence access to and knowledge of resources (physical, financial, and social), control of these resources, as well as perceived or real power within the larger community or society. They may also weaken the capacity of the individual or household to act. Consequently, the relationships between enabling agencies (policy makers), mental health service delivery agencies and the poor need to function well to support the poor, as well as their capacity to deal with indicators of social vulnerability. Otherwise both the aspirations and opportunities of the poor will be correspondingly reduced in developing nations. The emphasis and importance of their "coping strategies" to deal with vulnerability, or "development" strategies to take advantage of market opportunities will also be negatively affected. The amount of choice available to them will be limited if failures in policies to support the poor and manage resources mean that the poor are forced to exploit their natural resource base unsustainably. These will lead to the erosion of their livelihood asset base on which they depend. Vulnerability is all-embracing in Nigeria– affecting everything inside it: the poor, the assets they use, the agencies they deal with, their relationships, and the ways that processes influence those relationships. With good psychological tools, vulnerability factors can be kept at bay or people can be helped to deal with them better

Recommendations: Measures to reduce Social Vulnerability in Africa

Africa is a developing continent prone to a wide variety of natural and human-induced hazards and disasters, such as floods, hurricanes, earthquakes, tsunamis, droughts, wildfires, pest plagues, and air and water pollution, which cause extensive losses to livelihoods and property, and claim many lives. It is a continent with a growing number of populations which will continue to increase. Most of the African countries are poor and least equipped as well as least prepared to cope with the impacts of hazards and disasters. At present, disaster management in Africa is largely limited to emergency humanitarian assistance. Reducing disaster risk through preventive measures is a central concern for Africa's sustainable development. It is vitally important that its countries adopt cost-effective policies to lower risk and allocate appropriate resources for hazard and disaster mitigation.

Measures to reduce Social Vulnerability to disaster in Africa are therefore strategies for sustainable development which include measures for the eradication of poverty and halting environmental degradation. These are individual or societal capacity or capability building strategies in the face of hazards which require pre-and–post disaster development

targeted at access to: educational opportunities; communications and early warning; available means of risk mitigation (social and personal protection); economic surplus available for preparedness; social assets (networks) available for preparedness; savings and other buffers as well as resources (social and personal) for reconstruction and recovery.

The pre-and–post disaster development will require adequate knowledge of the social, economic, demographic, and housing characteristics that influence each community's ability to respond to, cope with, recover from, and adapt to environmental hazards. Such knowledge will enhance the formulation of policy advocacy that will centre on two main components of hazard risk and vulnerability reduction. The first component will support policies aimed at structural mitigation or the reduction of adverse effects to property by using protective measures. The second component will support policies aimed at non-structural mitigation measures focusing on reducing the impacts of disasters through the betterment of those segments of society that are adversely impacted or at a high risk of impact from disaster events.

Furthermore, these strategic measures will necessitate the development of sustainable Social Protection Strategies to guide and coordinate social protection interventions targeted at the poor, the disabled, the aged, children, widows, orphans and other vulnerable groups in Africa. The strategies will ensure that the livelihoods of these vulnerable groups are secure enough to meet their basic needs and also protect them from the worst impacts of risks and shocks. Such sustainable Social Protection Strategies will include:

- Post-Disaster Debris removal: Debris created in a disaster poses significant challenges to relief and recovery operations and to a rapid return to normal. Disaster debris needs to be removed from roads, homes and public facilities before survivors can begin rebuilding normal lives. if in the haste to recover, disaster debris is disposed of improperly it will cause future hardships for the disaster-affected population. Disasters often destroy physical infrastructure (buildings, roads, bridges) which has taken decades to create. Disaster debris can include:• Household items, Vehicles, Personal possessions, Damaged or destroyed buildings, including bricks, broken concrete, reinforcing iron, wood, roofing, electrical wiring and piping, Materials from damage to roads, railways and other infrastructure, Materials collected in irrigation canals, water ponds, lagoons and rivers, Hazardous materials, and, Sand, gravel and wood and other vegetative matter transported by disaster agents.
- Technological development: Africa is, in many ways, the continent most in need of scientific knowledge to provide solutions and assist its socio-economic development. However, investment in science, technology, and innovation (STI) is frequently a low priority for decision- and policy-makers, and scientific institutions have relatively weak infrastructures.

- Development of Human and Financial Resources: This is the building of human capital through establishment of training workshop, outreach and advocacy programmes, and field workshops for economists and scientists from the continent and the Diaspora promotion of e-learning and IT application kits at lower levels of education; Establishment of support for young and emerging African scientists in all areas of Quaternary Research through a committed grants programme for attendance of training workshops and meetings.
- Educational development: The scarcity and inaccessibility of knowledge is a key constraint for residents of vulnerable societies. Therefore, increased knowledge generation would necessitate the development and Improvement of the Education and Training Sector. This would require huge intellectual and financial resources, as well as political will and commitment, to rectify the situation in Vulnerable societies
- Incorporation of research findings into policies that will facilitate planning guides and training activities at all levels in African society.
- Development of Sustainable energy: Increase in access to high quality, reliable and affordable energy in a sustainable manner.
- Building resilience strategies to shocks and stresses through information, access to services and facilities, as well as increase of social capital' by all stakeholders and partners.
- Improved understanding on the numbers and needs of poor households. Poor households are incapacitated households which have no adults fit to work, or have such a high dependency ratio that maintaining the household is virtually impossible. Such households often have many elderly members and children, and require long-term welfare support. They are more likely to be vulnerable to shocks and stresses – such as HIV and AIDS, droughts and floods, changes in agricultural policies and volatility in prices – that can damage the welfare and productivity of vulnerable households. Their capacity will only improve when the children grow up to become economically active.

Conclusion

This presentation of the indicators of social vulnerability and sustainable developments contributed to a greater understanding of the nature and level of risks that vulnerable people experience in Nigeria; where these risks come from; who will be the worst affected; what means are available at all levels to reduce the risks and what initiatives can be undertaken both locally and internationally to reduce the vulnerability and strengthen the capacities of people at risk.

Social Vulnerability is the exposure of individuals or collective groups to livelihood stress as a result of the impacts of social and environmental climate extremes and climate

change. A set of indicators of social vulnerability of any given set of individuals or social situation have been identified. The indicators of individual vulnerability are the incidence of poverty and the riskiness of income sources to extreme events. Changes in collective vulnerability are indicated through changes, in distribution of resources within a population, and by institutional changes which can either enhance security or exacerbate vulnerability.

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