

Application and incorporation of the city resilience principles in the built environment and the proposal for a wider research agenda of city resilience framework relevant to the various county governments in Kenya

by

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## Abstract

Resilience can be best described by three crucial characteristics: the amount of disturbance a system can absorb and still remain within the same state; the degree to which the system is capable of self-regulation; and the ability to build and increase the capacity for learning and adaptation

The paper starts off with an outline of an attempt to explain what constitutes resilience including a further description of the various concepts of resilience and how there has been worldwide efforts to promote the city resilience frameworks since 2013 when The Rockefeller Foundation pioneered [100 Resilient Cities](#) to help more cities build resilience to the physical, social, and economic challenges that are a growing part of the 21<sup>st</sup> century. Since August 2014, the USAID partnered with the Rockefeller Foundation to sponsor US\$100 million in prize money to inspire new measures in resilience from public and private sector actors. In addition this push includes the promotion by the UN-Habitat in its goal to increase the resilience of cities to the impacts of natural and human-made crises. The paper goes on to highlight the UNISDR Campaign of Five Priorities of the Hyogo Framework for Action 2005-2015: Building the resilience of nations and communities to disasters (HFA) in an attempt to understand the Ten Essentials framework in a local African city resilience context and the application of the city resilience principles and the '10 Essential' - a list of factors considered fundamental for cities to improve their resilience capacity. The paper concludes with a set of proposals for a wider research agenda of city resilience framework relevant to the various county governments in Kenya. Some of these include the introduction of multi-hazard resistant standards, the introduction of Building Back Better Factors in determining replacement costs and other housing reconstruction options in case of recent city floods. A major proposal is also to enhance research on existing risk mapping and mitigation techniques. There is need for developing an urban systems model that is adaptable to any human settlement and establishing a set of indicators and standards for calibrating urban systems' ability to withstand a crisis. Finally the paper suggests initiation of a pragmatic effort to enhance ongoing exercise on city resilience profiles for pilot cities including the role of gender and city resilience.

**Keywords:** city resilience, vulnerability, disaster preparedness, mitigation. gender and city resilience.

## Introduction

Resilience, according to United Nations International Strategy for Disaster Reduction (UNISDR 2005), refers to “the capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organising itself to increase this capacity for learning from past disasters for better future protection and to improve risk reduction measures.”

Resilience refers to the ability of communities, cities or regions to withstand the challenges posed by an increased intensity and frequency of floods and droughts according to a recent article by researchers from the University of British Columbia (Lucy and Leila 2016). Resilience often involves adopting diverse, flexible, adaptive and redundant or supplemental systems. This pertains to both physical infrastructures and governance arrangements. The Stockholm-based Resilience Alliance and other Euro-American institutions have largely driven the frameworks for resilience. However, they are now increasingly being applied in African cities. For example, Accra, Cape Town, Dakar, Durban, Enugu and Kigali are all participating in the Rockefeller Foundation’s 100 Resilient Cities initiative.

According to the UNHABITAT, with 50% of the world’s population already in cities, and substantial urban population growth projected over the coming decades, there is a pressing need for new tools and approaches that strengthen local administrations and citizens to better protect human, economic, and natural assets of our towns and cities.

Resilience refers to the ability of human settlements to withstand and to recover quickly from any plausible hazards. Resilience against crises not only refers to reducing risks and damage from disasters (i.e. loss of lives and assets), but also the ability to quickly bounce back to a stable state. While typical risk reduction measures tend to focus on a specific hazard, leaving out risks and vulnerabilities due to other types of perils, the resilience approach adopts a multiple hazards approach, considering resilience against all types of plausible hazards. UN-

Habitat's goal is to increase the resilience of cities to the impacts of natural and human-made crises. One key pillar of this aim is ensuring that cities are able to withstand and recover quickly from catastrophic events.

### **The conceptual framework of Resilience**

The conceptual framework of Resilience is clearly illustrated in the following excerpt from the Working Paper #2 by **Martin Brown Munene at the King's College London** *'The term resilience has become a fashionable "buzzword" (Comfort et al., 2010) in research, public policy, development and the civil society (Reghezza-Zitt et al., 2012). 'Resilience' originated from research studying predation processes in ecology in the 1960s and 1970s ((Holling, 1961; Morris, 1963; Lewontin, 1969; Rosenzweig, 1971; May, 1972, Holling, 1973). Using it in this context, C.S. Holling defined resilience as "a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables" (Holling, 1973:14). The concept has influenced many fields (Folke, 2006) including human geography (Zimmerer, 1994), behavioural research (Campbell-Sills, et al., 2006), psychology (Luthar, 2006), engineering (da Silva 2012), urban planning (Eraydin et al., 2013), business studies (Coutu, 2002; Sheffi, 2005) and social sciences (Scoones, 1999; Davidson-Hunt and Berkes, 2003).. Consequently, resilience is widely debated and interpreted. Resilience is often used to mean 'to bounce back', referring to a system's recovery and return to pre-disturbance state. This can be traced to its Latin root, resiliere, literally meaning "to jump back" (Paton and Johnston, 2006). This meaning is common in health and psychological studies (Richardson, 2002; Smith et al., 2010). Extensive discussions of resilience (e.g. Carpenter et al., 2001; Pelling and Uitto, 2001; Folke, 2006; Manyena, 2006; Paton and Johnston, 2006; Alexander, 2013) have demonstrated that there is more to resilience than simply 'bouncing back'. Resilience's association with concepts such as adaptation, resistance, vulnerability, sustainability, transition and transformation (Walker et al., 2006; Folke et al., 2010; Pelling, 2011; Eraydin et al., 2013) has also been explored. Initially, Pelling, (2011) used resilience alongside stability but later distinguished the two following Holling's original guidance that distinguished 'resilience' and 'stability' (1973:17).'*

## **Why resilience in cities?**

Over the last decade, natural disasters affected more than 220 million people and caused economic damage of USD \$100 million per year. The number of people affected by disasters since 1992 amounts to 4.4 billion people (equivalent to 64% of the world's population), and economic damage amounts to roughly US \$2.0 trillion (equivalent to 25 years of total Official Development Assistance). Cities hit by mega-disasters, such as Kobe or New Orleans, can take more than a decade to recover to their pre-disaster standards. Chronic and recurrent crises, as seen in the droughts in the Horn of Africa, require the root causes of crises be addressed, rather than only responding to the consequences.

Human-made disasters, such as conflicts and technological disasters, can also undermine the development gains of countries and cities. The number of people at risk is increasing significantly, with rapid urbanization inducing uncontrolled and densely populated informal settlements in hazard-prone areas. The lack of capacity of cities and local governments to regulate building standards and land use plans exacerbates the risk of those living in vulnerable conditions. Local governments are the closest level to citizens, and have a huge role to play in delivering critical infrastructure and services to protect lives and assets during crisis response. In sum, cities and local governments need to increase their capacity to reduce both the damage and the recovery period from any potential disaster.

According to United Nations International Strategy for Disaster Reduction (UNISDR 2005), disaster loss is on the rise with grave consequences for the survival, dignity and livelihood of individuals, particularly the poor, and hard-won development gains. Disaster risk is increasingly of global concern and its impact and actions in one region can have an impact on risks in another, and vice versa. This, compounded by increasing vulnerabilities related to changing demographic, technological and socio-economic conditions, unplanned urbanization, development within high-risk zones, under-development, environmental degradation, climate variability, climate change, geological hazards, competition for scarce resources, points to a future where disasters could increasingly threaten the world's economy, and its population and the sustainable development of

developing countries. In the past two decades, on average more than 200 million people have been affected every year by disasters.

The World Conference on Disaster Reduction (WCDR) held from 18 to 22 January 2005 in Kobe, Hyogo, Japan, adopted the present Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. The WCDR provided a unique opportunity to promote a strategic and systematic approach to reducing vulnerabilities and risks to hazards. It underscored the need for, and identified ways of, building the resilience of nations and communities to disasters. The Hyogo Framework for Action addresses the following key areas including the challenges posed by disasters. It focuses on the review of progress made in implementing the Yokohama Strategy to identify major challenges for the coming years in ensuring more systematic action to address disaster risks in the context of sustainable development and in building resilience through enhanced national and local capabilities to manage and reduce risk. The Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action (“Yokohama Strategy”), adopted in 1994, provides landmark guidance on reducing disaster risk and the impacts of disasters. The World Conference on Disaster Reduction in 2005 was convened with specific objectives to conclude and report on the review of the Yokohama Strategy and its Plan of Action, with a view to updating the guiding framework on disaster reduction for the twenty-first century. The framework priorities for action 2005-2015 proposed that an integrated, multi-hazard approach to disaster risk reduction should be factored into policies, planning and programming related to sustainable development, relief, rehabilitation, and recovery activities in post-disaster and post-conflict situations in disaster-prone countries. It further stipulated that a gender perspective should be integrated into all disaster risk management policies, plans and decision-making processes, including those related to risk assessment, early warning, information management, and education and training and cultural diversity, age, and vulnerable groups should be taken into account when planning for disaster risk reduction, as appropriate (UNISDR, 2005).

### **Reconstructing after disasters: Build back better**

This “build back better” approach first gained global attention during the reconstruction of Aceh, Indonesia, following the 2004 Indian Ocean earthquake and tsunami. While building back better has been defined in many ways, at its core, it advocates for the restoration of communities and assets in a manner that makes them less vulnerable to disasters and strengthens their resilience. The Hyogo Framework for Action (HFA) called for the ‘incorporation of disaster risk

reduction’ measures into post-disaster recovery and rehabilitation processes and use opportunities during the recovery phase to develop capacities that reduce disaster risk in the long term’. The concept was further promoted through the International Recovery Platform, and the annual International Recovery Forum. The Global Platforms on Disaster Risk Reduction and the World Reconstruction Conferences 1 (in 2011) and 2 (in 2014) have consolidated the experiences given a higher profile to the concept of build back better. (UN World Conference on Disaster Risk Reduction, UNWCDRR,(2015).

Resilient recovery and reconstruction are now recognized as imperative for sustainable development. To maintain a path toward sustainability, recovery and reconstruction programs require predictable technical and financial resource commitments for planning, implementation, and performance management. Additionally, at national levels, governments must have the capacity to develop policies and mechanisms that ensure integration of disaster risk reduction in recovery and reconstruction efforts. According to the 2007-2013 *Hyogo Framework of Action* Monitor, while many countries have successfully introduced policies to integrate disaster risk reduction in recovery planning, they often encounter difficulty during implementation.

### **Post-2015 Framework for disaster risk reduction:**

The UNWCDRR (2015) has recommended the following measures should be considered when assessing a way forward for the post-2015 framework for disaster risk reduction:

- Building greater financial resilience and predictability within government to manage and respond to disaster triggered by natural hazards, and formalized strategic and resource commitments toward recovery planning, implementation and performance management;
- Promoting the institutionalization of post disaster assessments and national recovery frameworks to enhance risk governance, ensure recovery readiness; strengthen coordination of governments, civil society, multi-laterals and other, and; increase efficient and effective recovery and reconstruction operations;
- Strengthening capacity for recovery planning and monitoring at the national, local, and community level, and establishing clear roles and responsibilities for all actors in a recovery setting, including national and local governments, private sector, academia, and civil society organizations;
- Strengthening mechanisms for cooperation with services in areas of recovery and

reconstruction that include sharing rosters of experts, capacity building, tools, bi-lateral support between countries, progress monitoring; and standardized approaches for post-disaster assessments and recovery planning frameworks;

- Development of national and international policy standards for informing and guiding disaster recovery strategies;
- Maintaining an institutional continuum between preparedness, response, recovery, mitigation and sustainable development measures.

### **How can cities become more resilient?**

An increasingly common methodology used by local governments and the international community to build resilience are the UNISDR's "Ten Essentials." UN-Habitat's City Resilience Profiling Programme introduced the following "essentials" in order to further upgrade this framework by making it more rigorous, objective, and fit to conduct quantitative assessment and profiling of city resilience.

- Essential 1: Put in place organization and coordination to understand and reduce disaster risk, based on the participation of citizen groups and civil society. Build local alliances. Ensure that all departments understand their role in disaster risk reduction and preparedness.
- Essential 2: Assign a budget for disaster risk reduction and provide incentives for homeowners, low-income families, communities, businesses, and public sector to invest in reducing the risks they face.
- Essential 3: Maintain up-to-date data on hazards and vulnerabilities, prepare risk assessments, and use these as the basis for urban development plans and decisions. Ensure that this information and the plans for your city's resilience are readily available to the public and fully discussed with them.

- Essential 4: Invest in and maintain critical infrastructure that reduces risk, such as flood drainage, adjusted where needed to cope with climate change.
- Essential 5: Assess the safety of all schools and health facilities and upgrade these as necessary.
- Essential 6: Apply and enforce realistic risk compliant building regulations and land use planning principles. Identify safe land for low-income citizens and upgrade informal settlements, wherever feasible.
- Essential 7: Ensure education programmes and training on disaster risk reduction are in place in schools and local communities.
- Essential 8: Protect ecosystems and natural buffers to mitigate floods, storm surges, and other hazards to which your city may be vulnerable. Adapt to climate change by building on good risk reduction practices.
- Essential 9: Install early warning systems and emergency management capacities in your city, and hold regular public preparedness drills.
- Essential 10: After any disaster, ensure that the needs of the survivors are placed at the centre of reconstruction, while supporting them and their community organizations to design and help implement responses, including rebuilding homes and livelihoods.



## **The 2012 pilot project to ‘operationalise’ the campaign in three cities in Africa**

In 2010, UNISDR launched a global resilient cities Campaign with the specific focus on improving urban cities’ capacity to withstand and recover from natural disasters.

The Campaign is guided by three central principles to “Know more; Invest wiser; and Build safer, which are grounded in the Five Priorities of the Hyogo Framework for Action 2005-2015: Building the resilience of nations and communities to disasters (HFA). As of October 2012, more than 1,200 cities had signed up the Campaign. By signing up to the Campaign, cities commit to take specific actions to build their resilience. These actions are guided by the “Ten Essentials for Making Cities Resilient”- a 10-point checklist of factors considered Fundamental for cities to improve their resilience capacity, which was developed by UNISDR in conjunction with multiple stakeholders and partners. In 2012, the Campaign two tools to help local governments implement the Ten Essentials: The Handbook for Local Government Leaders and the Local HFA-Local Government Self Assessment Tool.

In 2012, UNISDR Regional office for Africa in Nairobi, Kenya commenced a pilot project to ‘operationalise’ the Campaign in three cities in Africa – Narok and Kisumu in Kenya and Moshi in Tanzania. The specific objectives of the pilot were to find out what disaster prevention activities cities were undertaking, make a preliminary assessment of city resilience according to the Ten Essentials and in doing so, understand the Ten Essentials framework in a local African city context.

Similarly, after initial selection of cities globally based on proposals submitted to the UN-Habitat in response to its call for proposals in November 2012, the UNHABITAT’s City Resilience Profiling Programme (CRPP) was launched with a focus on providing national and local governments with tools for measuring and increasing resilience to multi-hazard impacts, including those associated with climate change. Working through partnerships with stakeholders including international agencies such as UNISDR, academic and research institutes, private sector actors, and NGOs, the CRPP will develop a comprehensive and integrated urban planning and management approach for profiling and monitoring the resilience of any city to all plausible hazards.

## **Suggested modifications to the 10 essential framework**

This pilot study suggests that achieving ‘resilience’ according to the Ten Essentials framework requires significant strengthening in some African city context. The pilot study also makes clear that there are a range of inter-related issues that are greatly affecting some city’s capacity for DRR action.

The Ten Essentials framework might therefore be better adapted or refined to reflect the local context of these cities. Specifically, the Local HFA Local Government Self Assessment Tool should be expanded to include a process of facilitation and engagement on the Ten Essentials framework so that knowledge and skill capacity is enhanced alongside any information that is gathered. Likewise, the ranking system might also benefit from being a facilitated process rather than a stand-alone Local HFA-Local Government Self Assessment Tool.

The following modifications are suggested for the Ten Essentials in order to make them more relevant and reflective of city resilience in African cities, UNISDR (2012).

### **Overall Suggestions:**

- Adapt the 10 Essential Tool and questions to reflect the African city context with African city examples for each essential.
- Operationalize the Local HFA-Local Government Self Assessment Tool component as a facilitated process. This will increase participation and response rates and also make the Ten Essentials an important capacity building tool. Knowledge and skills are more likely to be strengthened in participating cities via an engagement process. Many government staff and non-government organisation’s staff in the pilot cities have limited skills (no experience with self-assessments and questionnaires), limited access to computers and will thus not allocate time for such an assessment.
- Build capacity and knowledge about the key themes of the Campaign and the Ten Essentials as part of future engagement processes. Many staff are still learning about DRR themes and how they relate to their work.
- Strengthen the 10 Essential Framework’s capacity to capture the impact of governance issues on city level DRR work

- Strengthen the 10 Essential framework's capacity to account for urban-rural and periurban issues that affects many African towns and cities (deforestation, farming practices, energy issues, cultural traditions, informal settlement expansion). Make it clear how rural-urban issues impact on DRR.

- Strengthen the 10 Essential framework's capacity to account for the basic urban infrastructure issues that many cities in Africa are still grappling with (infrastructure development and maintenance, basic urban planning, informal settlement expansion, rural urban migration, service provision). Make it clear how urban issues impact on DRR.

- Make very clear that the Ten Essentials framework is one that will 'add value' to local governments and other key stakeholders and can build on existing plans and work being undertaken by relevant organisations. In resource stretched organisations (and cities), it needs to be clear how DRR links with existing programs. It is less likely that DRR will be addressed if it is presented in a way that is too far outside the current work programs of both Council and other relevant city wide stakeholders

- Make it clear how the Ten Essentials can be achieved over a period of time and across a series of phases. Many African cities are 'far' from the Ten Essentials 'ideal' in terms of plans, budget and infrastructure in place for example. Key stakeholders are not sure what specific steps are required to achieve some or all of the Ten Essentials. The Ten Essentials could therefore be conceptualised as a series of 'City Resilience' Phases' with clear but relevant targets set for African cities. For example:

- Phase one could be an initial engagement process assessing the status of DRR from different stakeholder's perspectives – outlining what specific strengths, challenges and opportunities there are to further develop DRR activities. This phase would recognize the value of bringing people together in cities around the table to discuss DRR This phase might also include some form of assessment similar to that undertaken in this pilot project (qualitative and quantitative but emphasis on qualitative as many African cities don't have formal data, plans for example, in place to measure). This phase might also begin to gather any relevant best practice activities that are DRR related. Finally, this initial phase would set the groundwork for a city-UNISDR partnership relationship or for identifying key partners to implement the following phases.

- Phase 2 would be a ‘strategic plan development’ and ‘partnership strengthening’ phase as organized and facilitated by UNISDR (or key partners). A key part of the strategic plan process would be setting specific DRR city targets (for both Council and any city wide group formed). It would also be important to set up a broader city wide DRR committee in advance who could come together and develop a citywide DRR strategic plan.
  
- Phase 3 would comprise a review and monitoring process 1-2 years after the Strategic plan development. This might be a self-assessment process combined with a more detailed assessment of ‘key cities’ undertaken by UNISDR or the key partners, in order to build best practice examples and truly understand in detail, how DRR is progressed in the African city context. This phase would also include a strategic review of the 10 Essential framework for the African context.
  
- Phase 4 might therefore be some form of Africa wide conference on DRR development(current successes, best practice activities and on-going/future challenges)
  
- Strengthen the Campaign message about why cities should be involved and how UNISDR is going to specifically assist. All pilot city participants, especially local government, asked 1) how UNISDR could help them achieve better city resilience according to the Ten Essentials and 2) how participating in the Campaign could truly help them achieve change, the Local HFA-Local Government Self Assessment Tool process was not seen helpful.
  
- Strengthen the communication strategy to participant cities so they can be informed of the Campaign’s progress. Make the strategy appropriate for the African city context (departments) as well as items like official MOU’s between partners in relation to DRR as well as disaster response
  
- Capture/Reflect on governance (overall political enabling environment) across government authorities and between tiers of government (local, regional and national) such as:
  - Capacity, commitment, transparency and leadership (how proactive in seeking solutions? Forming partnerships?)
  - Co-ordination, information gathered and shared

- Capture policy and strategic plan on climate change (environmental policies) as well as health plans
- Capture experience of disasters as specific question (as a way to capture local knowledge more specifically)
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- Many local governments have no plans or policies so the current question on consulting with community is not relevant at this point (maybe part of second phase evaluation). Furthermore, the most vulnerable communities can sometimes be very difficult for local government to work with because of all sorts of issues and the fact that these communities are still seeking acknowledgement of housing rights for example and the provision of basic urban infrastructure. It would be better that in Phase 2 cities or assessments that this question be reworded to ask Council who it consults, in general, to inform its DRR Strategic Plan (and probe for vulnerable groups etc.)

## CONCLUSIONS

The paper concludes with a set of proposals for a wider research agenda of city resilience framework relevant to the various county governments in Kenya. Some of these include

- The **INTRODUCTION OF MULTI-HAZARD RESISTANT STANDARDS.**
- A major proposal is also to enhance **RESEARCH ON EXISTING RISK MAPPING AND MITIGATION TECHNIQUES.**
- **DISASTERS AND URBAN CULTURAL HERITAGE:** The Need for Capacity Building
- There is need for **DEVELOPING AN URBAN SYSTEMS MODEL** that is adaptable to any human settlement and establishing **A SET OF INDICATORS AND STANDARDS FOR CALIBRATING URBAN SYSTEMS' ABILITY** to withstand a crisis.
- suggests initiation of a pragmatic effort to **ENHANCE ONGOING EXERCISE ON CITY RESILIENCE PROFILES FOR PILOT CITIES** including the role of gender and city resilience.

- As provided for in the Hyogo Framework for Action 2005-2015, it is essential that a **GENDER PERSPECTIVE SHOULD BE INTEGRATED INTO ALL DISASTER RISK MANAGEMENT POLICIES**, plans and decision-making processes, including those related to risk assessment, early warning, information management, and education and training and cultural diversity, age, and vulnerable groups should be taken into account when planning for disaster risk reduction, as appropriate.
- **PROVIDING RESILIENT, SAFE PLACES IN STRATEGIC LOCATIONS** close to the community will help reduce vulnerability during disasters. Incorporating community-based capacity-building activities that will help increase awareness of hazards in the area and strengthen disaster preparedness will help decrease the number of people who will potentially be affected during disasters.
- In view of the recent floods in the major cities in Kenya , there is an urgent for **FLOOD DISASTER PREPAREDNESS AND RESPONSE PLANNING PROCESS** by the introduction and adoption of flood disaster preparedness framework, flood contingency planning process, flood forecasting and early warning systems, flood emergency management , flood evacuation process and flood search and rescue
- Incorporation of the “**BUILD BACK BETTER**” **approach**: Where: Costs of building back better = Replacement Costs x Building Back Better Factor and Building Back Better Factor = Costs of Quality Improvements + Technological Modernization + Relocation to Safer Areas (if needed) + Disaster Risk Reduction Standards + Multiannual Inflation, (GFDRR 2010 and various PDNAs).
- **THE INTRODUCTION OF BUILDING BACK BETTER FACTORS** in determining replacement costs and other housing reconstruction options in case of recent city floods
  - People led efforts to reduce effects of disaster
  - Adopt in key local county governments the importance of HFA at the county and community levels in every county in Kenya

- Enhancing research and analysis on risk and disaster impacts
- **WHAT IT MEANS TO BUILD RESILIENCE**
  - Making disaster reduction part of the national and local government agenda
  - People led efforts to reduce effects of disasters
  - Schools and hospitals as local champions for disaster risk reduction
  - Integrated approach to environmental sustainability and disaster reduction.
- **WHAT COULD BE DONE BETTER?**
  - Up-scaling and widely replicating school and hospital based safety programmes
  - Engaging participants from all sectors is essential to create an enabling environment to build resilience as community activities do not take place in a Vacuum!!
  - Mainstreaming of disaster risk reduction principles and activities in local development processes is the key to sustained and low cost measures for reducing the impact of future disasters.
  - Addressing underlying risks such as poverty and environmental degradation is of strategic importance for the long term.
  - The need to demonstrate disaster resistant recovery projects, is therefore of very high importance.
- **NETWORKING AMONG ACADEMICIANS AND PRACTITIONERS** is crucial. The bringing together of knowledge and practice. This convergence ensures that technologies are locally appropriate, socio-culturally suitable and viable for the local economy. There is need for training at Universities say at postgraduate level for a Master of Science in Disaster Management (Resilience, Response and Relief) in which courses the following courses are comprehensively covered: Disaster Preparedness, Emergency Humanitarian Assistance, Introduction to Disaster Risk Management, Recovery and Rehabilitation in a Disaster & Risk, Vulnerability and Resilience Assessment

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