NATURAL DISASTER RECOVERY PLANNING

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ROGER BREWSTER BSc, MTP, Grad Dip(Proj Man), MPIA,QELA

Co-ordinator South West Pacific Region
Commonwealth Association of Planners

Ph:+61 755 911811
Fax:+ 61 755 911380

Email: roger.brewster@gmail.com

1. Introduction

The concepts presented in this paper arose out of the aftermath of the 26 December 2004 Indian Ocean tsunami, partly as a result of personal involvement in the post disaster recovery planning in Sri Lanka. It is an initial overview of a critical aspect of the recovery, which is inclusive of all four themes of this conference on the Built Environment Issues in Small Island States.

That aspect is *post-disaster recovery planning*, which is considered to be a critical element that is seriously delaying the actual recovery reconstruction in many affected countries, at the regional, district and local levels of development planning. Because planning ideally is at the *front end* of the development process, it is a necessary precursor activity, often behind the scene or off-stage as it were, giving the impression that not much is happening.

Hence this increasingly long interregnum is frustrating for all and politically destabilising. The victims rightly want action and a sense that generously donated aid resources are being utilised quickly for their benefit. Aid donors begin to query the competence and efficiency of recovery programmes. The normally fragile national economy, as well as the impacted communities, suffer unduly from the secondary post-disaster tragedy. In the case of the Indian Ocean tsunami, the coming monsoon season will compound the disaster.

Because the magnitude of the 2004 tsunami is unprecedented in modern times, it severely tested national and international disaster management preparedness and will yield valuable lessons for all kinds of future natural disaster recovery. However, no less severe was the more localised impact of Hurricane Ivan in Grenada and Cyclone Heta in Nuie, South Pacific Ocean in 2004.

The increasing unpredictability, severity and frequency of natural disasters in the past decade due partly, if not mainly, to climate change caused by global warming highlight the urgent need for better preparedness to major events, even in countries with little previous exposure to such vulnerability, such as Sri Lanka.

The paper addresses disaster recovery planning issues in the context of Small Island Developing States and in particular the Barbados Programme of Action for more sustainable development.

Reference is made to recent international publications on disaster reduction and risk management and identifies a significant gap in the land use/built environment planning aspect of recovery, which needs to be included in Disaster Management Plans.

It then suggests that a different approach to traditional land use planning is essential in disaster recovery – *rapid action planning*. This approach is also relevant to man-made disasters, although such tragedies are less amenable to international assistance and cooperation. There is not the luxury of carefully crafted strategic and local area plans in the face of emergency rebuilding of homes, livelihoods and communities. Successful post warfare reconstruction efforts and rebuilding of numerous places after major earthquakes need to be revisited in the context of environmentally sustainable redevelopment to learn valuable lessons form these experiences.

2. Barbados Programme of Action

The Barbados Programme of Action (BpoA) for more sustainable development in Small Island Developing States (SIDS) noted their vulnerability to natural and environmental disasters, the scarce land resources, ecological and economic fragility, limited fresh water and coastal management pressures. It also noted their potential strengths in human resources, cultural heritage and natural assets.

The Declaration urged international cooperation with SIDS to achieve sustainable development and a higher quality of life. For human requirements to be met in a sustainable manner, competing demands for the use of land resources must be resolved and more effective and efficient ways of using those natural resources must be developed and adopted.

Currently, fifty-one small island developing States and territories are included in the list used by the United Nations Department of Economic and Social Affairs in monitoring the progress in the implementation of the Barbados Programme of Action.

The BpoA was revisited in January 2005 at the Mauritius International Meeting. A major concern was raised that whilst they have made progress in implementing the programme of action for sustainable development in their respective island states, efforts have fallen short of expectations. However, it was recognized that "the BPoA is currently being implemented in a very different global environment from that prevailing at the time of its adoption in 1994. In this regard, they expressed concern that the social, economic and environmental vulnerabilities of SIDS have increased since the adoption of the BpoA." [BpoA +10 Communique Clause 10]

The meeting leaders also "expressed concern at the increasing incidence and magnitude of natural disasters, such as the December 26, 2004 earthquake and tsunami, and the 2004 hurricane season in the Caribbean, and their devastating effect on the communities of SIDS. They called for the international community to support appropriate initiatives and mechanisms for strengthening national and regional capabilities for natural disaster prediction, prevention, and mitigation, as well as post-disaster reconstruction and rehabilitation." [Communique Clause 16]

Panel One discussions on the environmental vulnerabilities of small island developing States noted that "the vulnerability of small island developing States is not just an environmental issue but has immense social and economic implications, as exemplified by the devastating consequences of many natural disasters that have occurred in the developing world, including the latest tsunami in East Asia. By the same token, the threat of climate change is not only geophysical but also poses grave risks to the social and economic viability of small island developing States."

"Adaptation to environmental vulnerability and climate change is vital but will force difficult choices and trade-offs in policy-making, involving, for example, further intensive coastal development or its possible limitation or restriction. In some SIDS, there is no hinterland and the coast cannot be avoided. The choice is limited to remaining on the island/atoll or not." [Clauses 8-9]

These extracts are included to emphasise the need to plan for post-disaster reconstruction and rehabilitation under difficult circumstances with few options. The full relevant text of the meeting is attached at Annex A. It includes a message to Panel One from the President of Maldives, Maumoon Abdul Gayoom. He lamented that "the tsunami waves receded within hours. However, the waves and flooding from sea-level rise triggered by global warming will not recede. The damage then will be unspeakable and we will all become environmental refugees."

This sobering observation leads to the consideration of current best practice for disaster reduction.

3. Disaster Reduction and Risk Management Practice

A brief overview of three current publications on sustainable recovery from disasters is provided to show best practice principles and indicate an apparent gap in the *planning component* of recovery.

UN Habitat Theme Paper on *Sustainable relief and reconstruction in post-crisis situations*

UN Habitat published a Theme Paper on *Sustainable relief and reconstruction in post-crisis situations* [2005]. "Disasters can provide opportunities for sustainable development. But sustainable relief and reconstruction requires that rehabilitation efforts should be integrated into long-term development strategies. The theme of mobilizing sustainable relief and reconstruction - transforming disasters into opportunities for sustainable development - explores problems and possibilities including vulnerability, risk mitigation, planning and response. The aim is to develop guidelines for 'sustainable relief and reconstruction' in order to provide a framework for development-oriented sustainable relief and reconstruction activities.

"The changing nature of conflict and natural disasters is leading to re-visioning of traditional approaches to relief assistance and reconstruction process. Natural and human-caused emergencies are increasing in regularity, and perhaps more importantly, their impacts on populations and human settlements are rising alarmingly. This, coupled with cycles of dependency and shortage of resources, point to the need to develop innovative approaches and re-examine traditional policies on relief and reconstruction assistance ... Disaster mitigation and management needs to look beyond the hazards alone to consider prevailing conditions of vulnerability. It is the social, cultural, economic, and political setting in a country that defines the level of vulnerability, or

resilience, of its people and communities to disasters ... Disaster management and mitigation needs to be introduced as an integral part of any on-going development and poverty reduction plans, to promote a 'culture of prevention'. Integration will reduce piecemeal efforts that are not connected with the long-term development strategy and not only aggravate precarious social conditions creating dependency on aid, but are a critical waste of financial and human resources invested in short-sighted emergency relief and reconstruction plans."

"The concept of sustainability evolves around three key elements; economic growth, environmental protection and social development. It means that 'community' is a good, safe and healthy place for its members, offering a solid foundation for a prosperous life with equal opportunities for all – in line with the six established principles for enhancing community sustainability, as follows[1].

(a) Maintain and, if possible, enhance its residents' quality of life;
(b) Enhance local economic vitality;
(c) Ensure social and intergenerational equity;
(d) Maintain and, if possible, enhance environmental quality;
(e) Incorporate disaster resilience and mitigation;
(f) Use a consensus-building, participatory process when making decisions."

UN-HABITAT has proposed a set of specific strategies from the transitional phase recovery to medium to long-term development in order to promote peace building, poverty reduction, disaster mitigation and sustainable development of human settlements. However the strategies outlined in the Theme Paper do not elaborate, beyond postulating a "range of mitigation measures, for example, can be incorporated during recovery to promote vulnerability reduction, such as land-use, environmental and community planning, improving building codes and construction regulations." Hence the paper does not attempt to set out any planning methodologies or outputs.

EMA Disaster Recovery Manual

The Australian Agency responsible for Disaster Recovery Management - Emergency Management Australia – has published a Manual[2] as a comprehensive guide on disaster recovery at all levels. It discusses redevelopment planning key issues in the categories of:

- sense of place and preservation of visual and historical links with the past;
- the capacity for disaster-affected communities to cope with change and redevelopment;
- involvement of the community in the redevelopment process; and
- the opportunity for disaster-affected areas to be improved rather than just restored through the
- redevelopment process.

Chapter 10.20 notes that "One of the inherent difficulties in ensuring community participation following a disaster is the need for rapid redevelopment. Conflict is likely to arise as a result of this tension between the competing need for a rapid rebuilding process and adequate community consultation in its development and implementation. Imposing a highly centralised approach to redevelopment and reconstruction, at the expense of community involvement, is inappropriate and would accentuate further the dependence already engendered by the impact of the disaster."

One of the positive aspects of the disaster recovery process is considered to be "*the potential for individuals and communities to improve on their situation before the event, rather than merely restoring things to the way they had been previously*. In fact, the impact of the disaster will usually mean that a return to the status quo prior to the disaster is not possible; the quality of the recovery process will determine whether affected individuals progress or regress. Nevertheless, in the redevelopment process there is likely to be a strong tension between elements of the community which see the disaster as an opportunity for renewal and those which want to see an affected area restored exactly as it was before the disaster occurred."

"It is in this context that the devastation wrought by disasters provides a unique opportunity for a community to examine a range of issues such as housing inequities, traffic problems and inadequate

[1] Mileti, Dennis S., 'Disasters by Design' (1999), p. 31
[2] EMA 1996 ema@ema.gov.au

infrastructure. In addition, there may be opportunities for modernisation of public facilities, beautification of the landscape and built environment, and even stimulation of the local economy."

Practical considerations include the observation that "following a disaster the affected community will have needs ranging from housing and reconstruction of public facilities through to restoration of business and community activities. *A critical issue is the speed which will be required for the restoration of the community*. While the opportunities for improvement and community involvement discussed previously will be significant, these will be tempered with the requirement for early restoration and redevelopment." [italics added]

The EMA Manual raises an important fact about circumstances subsequent to a disaster - that

"broader community processes set in train by a disaster are not confined to the incident itself. It initiates a *rolling series of impacts* as repercussions are felt in different parts of the system. They continue to occur over time as the community goes through debonding, fusion, and differentiation. Other factors add to the disruption. Physical or climatic changes (such as the monsoon rains after the 2004 tsunami), creating a quagmire in the ground devoid of vegetation while many are still living in fragile tents and cabins, provide a dramatic increase in stress levels.

Political events, like the announcement that a state of disaster will not be declared after a fire, may seem like a callous rejection by government. The death of a local child in a car accident soon after a fire seems the start of a series of tragedies. The re-organisation of a corporation following a massacre disrupts support networks and adds multiple losses, through retirements, to the deaths from the disaster. Other repercussions are evident later. The closure of businesses ruined by a disaster reduces employment in the area.

The effect of a disaster is initiated by the event itself but the subsequent changes are an integral part of the process and must be anticipated by the recovery process. However, they may not be recognised or may be ignored by the recovery system. Community members may not realise that they are experiencing disaster consequences and, in their despondency, simply submit to them as cruel fate. [Or agitate for political change.]

A broader conception of a disaster is that it is as a series of impacts, with the physical environment as the first, followed by others with compounding problems. Community functioning falls sharply at impact and as it rises in the subsequent recovery period, is met by a series of other disaster-related repercussions, which impede recovery and reduce community functioning in each case.

In each disaster the issues that cause such problems are different and may be hard to anticipate. *An active recovery management network is necessary* to identify and respond to them. If not done, the sense of abandonment and helplessness so destructive to recovery are intensified." [Section 7] [italics added]

This Manual is relevant to the thesis of this paper. It summarises the findings of a symposium for urban planners held in the US in 1990, which provides a range of lessons for those involved in the redevelopment of communities following disaster[3]. The lessons derived under the heading *Urban Form and Design* provide a useful summary of the key issues in redevelopment and rebuilding following an earthquake disaster [but equally relevant to other major events]:

a. Cities and towns are almost never relocated;
b. The rebuilt city is a safer city;
c. Earthquakes offer opportunities for specific urban redesign projects;
d. Neighbourhood preservation can aid personal and community recovery;
e. Preserving historic and symbolic buildings helps retain community identity; and
f. Design is everybody's business.

The Manual considers that best practice in recovery management is for the process "to improve upon the situation evident before to a disaster occurring, rather than merely attempting to return to that same situation after the event."

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[3] Spangle, W. & Associates Inc., California (1991) *Rebuilding after Earthquakes. Lessons from Planners,*

2005 World Conference on Disaster Reduction

The World Conference on Disaster Reduction (WCDR) held in Kobe Japan on 18-22 January 2005 is the latest distillation of best practice on international strategies for disaster reduction. It adopted the *Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters.*[4] It reviewed progress made in implementing 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, which provided guidance on reducing disaster risk and the impacts of disasters.

Another objective was to "identify specific activities aimed at ensuring the implementation of relevant provisions of the Johannesburg Plan of Implementation of the World Summit on Sustainable Development (WSSD 2002) on vulnerability, risk assessment and disaster management."

The Conference resolved to adopt the following strategic goals:

(a) The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction;

(b) The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards;

(c) The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities.

The outcome considerations echo the UN Habitat Theme Paper in that "There is a need for proactive measures, bearing in mind that the phases of relief, rehabilitation and reconstruction following a disaster are windows of opportunity for the rebuilding of livelihoods and for the planning and reconstruction of physical and socio-economic structures, in a way that will build community resilience and reduce vulnerability to future disaster risks." [p 5]

Priorities for action to reduce the underlying risk factors related to changing social, economic, environmental conditions and land use, and the impact of hazards associated with geological events, weather, water, climate variability and climate change include land-use planning and other technical measures to:

(n) *Incorporate disaster risk assessments into the urban planning and management of disaster-prone human settlements*, in particular highly populated areas and quickly urbanizing settlements. The issues of informal or non-permanent housing and the location of housing in high-risk areas should be addressed as priorities, including in the framework of urban poverty reduction and slum-upgrading programmes. [italics added]

(o) Mainstream disaster risk considerations into planning procedures for major infrastructure projects, including the criteria for design, approval and implementation of such projects and considerations based on social, economic and environmental impact assessments.

(p) Develop, upgrade and encourage the use of guidelines and monitoring tools for the reduction of disaster risk in the context of land-use policy and planning.

(q) Incorporate disaster risk assessment into rural development planning and management, in particular with regard to mountain and coastal flood plain areas, including through the identification of land zones that are available and safe for human settlement,

(r) Encourage the revision of existing or the development of new building codes, standards, rehabilitation and reconstruction practices at the national or local levels, as appropriate, with the aim of making them more applicable in the local context, particularly in informal and marginal human settlements, and reinforce the capacity to implement, monitor and enforce such codes, through a consensus-based approach, with a view to fostering disaster-resistant structures. [p 12]

[4] Final report of the World Conference on Disaster Reduction (A/CONF.206/6) www.unisdr.org/wcdr

The Final report noted that "Small Island Developing States have undertaken to strengthen their respective national frameworks for more effective disaster management and are committed, with the necessary support of the international community, to improve national disaster mitigation, preparedness and early-warning capacity, increase public awareness about disaster reduction, stimulate interdisciplinary and inter-sectoral partnerships, *mainstream risk management into their national planning process*." [italics added]

4. Post-disaster Recovery Planning

The EMA Manual stated that one of the positive aspects of the disaster recovery process is considered to be "the potential for individuals and communities to improve on their situation before the event, rather than merely restoring things to the way they had been previously."

This principle has been taken up by the Sri Lanka Task Force for Rebuilding the Nation (TAFREN). Fortunately a National Physical Plan, nine Provincial Plans and several Local Area Plans were in the process of being formulated prior to the disaster. All these need to be reviewed urgently.

The immediate government reaction was to declare a Coastal Conservation (Buffer) Zone 100/200 m wide, in which no rebuilding is to take place (with some specified exceptions). This arbitrary limit set the parameters for free replacement housing. Yet the east coast affected area extended some kilometres inland. Some 70% of the coastline was impacted and whole towns and cities were wiped out, displacing about 520,000 people and destroying some 106,000 houses and 20,000 fishing boats. The government is receptive to the notion to relocate communities further inland. Many Small Island States have no such alternative.

However, six months after the tsunami, precious little evidence has been seen of any large scale rebuilding by the government agencies. Most action has been undertaken by international NGOs and external agencies such as UN Habitat and USAID, etc as emergency shelter, initial relief aid and livelihood assistance. The sheer size of the task is clearly daunting. Yet even though nine provinces have the framework of new development Plans, the 200 or so planners in Sri Lanka were overwhelmed by the circumstances. The planning effort appears to be top-down, rather than community-up (contrary to the principles espoused above), partly because of the lack of planners at local level.

However, the seemingly slow progress will accelerate and in this case there is no shortage of donated aid funds. The Planning Institute of Australia has become actively involved since a workshop in March 2005 and has received a letter from the planning minister requesting assistance, endorsed by TAFREN. But that has taken 4 months just to get to the starting gate for action. The identified planning projects will take several more months to organise and resource!

To be fair, the tsunami was a major unprecedented event in recent Sri Lankan history. Tropical hurricanes are almost normal and expected hazards, with a history of fast response management.

It is axiomatic that while the planning function is an essential component of disaster recovery, it should assist reconstruction and not obstruct it. To that end, there must be a better and faster way to initiate disaster recovery planning action!

5. Rapid Action Planning

Rapid action planning would have the dual characteristics of:

- a pre-disaster range of anticipated scenarios, based on a "visioning" type participatory planning framework; and
- a systematic approach to post-disaster recovery planning.

Disaster Scenario Framework

This "visioning" type framework would aim to "second guess" the potential range of impacts within a

hierarchy of possible outcomes. Visioning has become mainstream in strategic planning methodology, by answering a set of four strategic questions –

- What is the present situation?;
- What is the likely probable outcome if no corrective action is taken?;
- What are the desirable long term futures for the community?; and
- What actions are necessary to achieve these futures?

Clearly the scenarios relate to incidents where a significant level of re-planning, rather than simply rebuilding, is a desirable outcome. These outcomes would range from relatively local/minor to national/catastrophic – e.g. Cat. 1 hurricanes to catastrophic tsunamis under the 'weather' category. In other categories, from dramatic engineering failures, to HIV/AIDS depopulation, to mass trans-national migration, different scenarios would be developed with suitable community participation. Simulation modelling and game playing could be a useful tool in such scenario generation. It is reminiscent of disaster recovery in playing the city simulator computer game "Sim City".

Such scenarios would try to anticipate the degrees of threats and opportunities caused or created by the various disasters and the consequential response, so as to bring a focus on the extent of re-development at national, regional and local scales. It goes beyond strictly spatial aspects of landuse to include the whole triple bottom line assessment. Scenarios would identify a particular set of responses as suggested in the examples in the diagrammatic Disaster Scenario Matrix Table 1 below:

TABLE 1: Disaster Scenario Matrix

<table>
<tr><th rowspan="2">Category of Disaster</th><th colspan="6">Scale of Intensity</th></tr>
<tr><th>1. Localised event causing destruction/ loss of life</th><th>2. Community scale event or disruption to daily life</th><th>3. Serious destruction/ disruption to community services</th><th>4. Widespread/ regional impacts and loss of life</th><th>5. Catastrophic devastation and national emergency</th><th>6. Serious threat to national existence</th></tr>
<tr><td>Weather events</td><td colspan="2" rowspan="2">Response dictated by scale and local effects – could be minor adjustment to current plans or codes and make desirable changes to urban fabric.</td><td></td><td></td><td>e.g. Hurricane Ivan – rebuild communities and livelihoods</td><td>e.g. 2004 Tsunami - Maldives reconstruction</td></tr>
<tr><td>Environmental/Climate/ long term change</td><td></td><td></td><td></td><td>Trans-migration of population</td></tr>
<tr><td>Fire events</td><td></td><td colspan="3">Renewed vision of the community and separation of conflicting uses – eg forests in 2003 Canberra bushfires</td><td></td><td></td></tr>
<tr><td>Services destruction</td><td></td><td></td><td>e.g. Reroute road and use as catalyst for planning new communities</td><td></td><td></td><td></td></tr>
<tr><td>Pollution/chemical Disasters</td><td></td><td colspan="3">Relocate offending source of urban pollution/ re-plan area</td><td></td><td></td></tr>
<tr><td>Transport related events</td><td></td><td></td><td></td><td colspan="2">Re-align service corridors and promote transit oriented dlpt.</td><td></td></tr>
<tr><td>Health related events – e.g. epidemics</td><td colspan="2">e.g. Land fill to drain critical swamp areas and develop land</td><td></td><td colspan="2">e.g. HIV/AIDS depopulation - change emphasis of built envt</td><td></td></tr>
<tr><td>Food production crisis</td><td></td><td></td><td></td><td colspan="2">Rural land use re-planning</td><td></td></tr>
<tr><td>[other category events]</td><td>Local scale</td><td colspan="2">Community scale</td><td>Regional scale</td><td>National scale</td><td>Trans-national</td></tr>
</table>

Each scenario would predicate a differing scale of re-development planning. In the example of the 2004 tsunami in Sri Lanka and Banda Aceh as an intensity scale No 5, wholesale relocation and reconstruction of vulnerable communities would be triggered.

To some extent this has happened in Sri Lanka because various levels of national, regional and local area plans were in preparation prior to the tsunami event. It was a freak case of serendipity in action, requiring a modification of these plans, rather than a fresh start. However the enormity of even this task has paralysed the recovery effort to move from planning to large scale construction.

Hence the objective of a Disaster Scenario Framework would be a set of fully developed and agreed possible futures predetermined by appropriate responses to various (and perhaps multiple) scenarios to achieve sustainable development goals. This would provide a sound basis for strategic re-planning – which could in fact be gradually implemented in any case – but would become exogenous opportunities in the event of a disaster. For example in the case of a Cat. 5 Hurricane, vulnerable communities would be re-planned and constructed in better locations, probably with the financial assistance of international aid agencies.

Because the scenarios are founded upon a participatory visioning framework, gender equity and community ownership is reasonably assured. Even if many lives are lost and the fabric of communities are destroyed, the essence of the aspirations of the pre-disaster community will survive to be implemented. This will in turn reduce the potential for social tension and conflict that develops after the initial "debonding" and "fusion" of the relief phase[5].

Disaster Recovery Plans

While such pre-disaster management preparedness is clearly worthwhile and is actually occurring to varying degrees in SIDS around the world, it needs to be complemented by a systematic approach to post-disaster recovery planning.

Disaster Recovery Plans will include components to develop and document arrangements for the effective management of the recovery *planning* process. The suggested concept is to relate or link the planning actions to the most relevant Disaster Scenario, to anticipate the likely threats and the opportunities for improvement. The value of this concept is to significantly speed up the planning process by matching the relevant Scale of Planning Effort to the most relevant Disaster Scenario.

The actual matching of a Recovery Plan is unlikely to be a perfect fit, so some fine tuning would be necessary to determine usability of pre-disaster prepared plans and required resources. However, this would reduce the reconstruction waiting period by several months of wondering what to do.

It is summarised as a schematic Planning Action Matrix in Table 2, which complements the the Disaster Scenario Matrix in Table 1.

TABLE 2: Planning Action Matrix

Time scale	Scale of Effort			
	Local planning	**District planning**	**Regional planning**	**National planning**
Months 1 year 2 years 3+ years	Sets of planning/design actions at local scale for implementation of Intensity 1-2 scenarios by local communities	Sets of planning actions and strategic directions at district scales for implementation of Intensity 3 scenarios by district level authorities	Regional scale plans relevant to Intensity 4-5 scenarios: Could take up to a year to finalise actual plans for implementation over more extended time periods	National scale plans relevant to Intensity 4-6 scenarios: Major effort required by aid agencies coordinated by national authorities over an extended time period which could last 3 + years

[5]EMA Manual op cit Annex A to Chapter 4

The range of planning actions would be linked to methodologies, generally well established in Disaster Management literature, such as those documents quoted in this paper. Typically these include the following activities:

- Disaster proof all the planning documentation and duplicate it in secure depositories of relevant national and even international agencies – including the land tenure records cadastral database
- Appoint project coordinators and teams, request international assistance as necessary from pre-arranged affiliations
- Identify stakeholders and community leaders in the particular event circumstances
- Select from the most relevant Disaster Scenario to identify likely opportunities for improvement
- Select from the relevant matching Scale of Planning Effort pre-disaster prepared plans to determine usability and required resources
- Implement matched sets of responses and actions and program construction projects at earliest time
- Mobilise aid donors for materials, equipment, personnel and funding.
- Build adequate shelter and community facilities if required
- Obtain early feedback from affected area and fine tune actions and level of response
- Assess priorities for infrastructure replacement and relocation
- Liaise with emergency relief teams for smooth transition from relief phase to recovery phase
- Monitor the physical effects of disaster impact on government, business and the community to reduce the psycho-social upheaval, economic disruption and other disaster-related repercussions, which impede recovery and reduce community functioning
- Monitor for compounding disaster consequences and adjust the planning recovery process
- Implement strategies to develop fully a new vision of the future, accepting the disaster as a fact of history, review replacement and integrate the re-establishment of what was lost (insofar as this is possible) and new initiatives into a single enterprise bringing together all members of the community.
- Celebrate the survival and mourn the victims by appropriate means

6. SIDS Special Circumstances

In relation to the special SIDS circumstances, an obvious limitation to this concept is the lack of planning resources, which makes even normal strategic and development planning difficult. Apart from the small number of professional planning staff, they are often centralised in national institutions, with limited detailed local knowledge, which is essential to scenario or vision planning.

It therefore needs a strong local community involvement, facilitated by people trained for that task and possibly assisted by external planners. There is scope for international planning assistance programs to help local communities – possibly in systematised sister or twin city partnering programs between developed and developing countries. This already occurs to some extent in an *ad hoc* manner, but needs to be expanded on a regional scale.

So capacity building is a significant issue in the realisation of this concept, which of course has other benefits for all levels of planning. This is also relevant to other ministries and agencies with built environment planning and infrastructure functions. All these agencies need to integrate their efforts in incorporating planning into disaster risk reduction and management.

There may be a need to amend or introduce supplementary planning related legislation to facilitate fast track planning in declared disaster areas, to reduce timeframes - firstly by the early adoption of disaster scenario plans, secondly by fast tracking development plans and reconstruction approvals.

As much as this paper is devoted to the planning function, the special vulnerability of SIDS to natural and other disasters raises the need for disaster awareness and risk assessment to bring about the culture of disaster prevention noted above, through environmentally sustainable development strategies. It also highlights the need to plan ahead for contingencies in a wide range of disaster categories, which are associated with, or impact upon community survival and development.

The need to sustain the livelihoods of disaster victims can be turned into positive opportunities for retraining and redeployment of human resources in the post disaster recovery phase. In the case of a major catastrophe such as the 2004 tsunami, recovery will take realistically many years – sufficient time to train a new generation of construction trades and professionals lost to the disaster. Fast tracking of training in foreign countries is an obvious avenue of assistance by developed nations to replace an enhance institutional capacity.

7. Conclusions

Post-disaster recovery planning is considered to be a critical element that appears to be deficient in Disaster Management Manuals and Policy Papers. Poor management of the urgent land use and environmental planning can seriously delay the actual recovery reconstruction after a disaster, leading to a cascade of psycho-social upheaval, economic disruption and other disaster-related repercussions, which impede the recovery and reduce community functioning. This in turn leads to political instability and polarisation.

Sustainable development goals can be incorporated into the disaster recovery process so as to enhance the potential for individuals and communities to improve on the situation before the event, rather than merely restoring things to the way they had been previously.

The notion of *rapid action planning* would have the dual characteristics of a pre-disaster range of anticipated scenarios, based on a visioning type participatory framework; and a systematic approach to post-disaster recovery planning. This framework would aim to "second guess" the potential range of impacts within a hierarchy of possible outcomes and pre-plan for those contingencies. This would also provide a sound basis for strategic re-planning – which could in fact be gradually implemented in any case – but would become exogenous opportunities in the event of a disaster.

Such scenario planning would try to anticipate the degrees of threats and opportunities caused or created by the various disasters, so as to bring a focus on the extent of re-development planning at national, regional and local scales, incorporating triple bottom line assessment.

The concept also aims to address one of the critical issues of disaster recovery - the time which will be required before commencing the restoration of the community and economic output.

While the issues that cause problems for recovery in each disaster are different and may be hard to anticipate, the *rapid action planning* model would incorporate disaster risk assessment into the urban planning and management of disaster-prone human settlements and effectively mainstream risk management into their national planning process, as recommended by the 2005 World Conference on Disaster Reduction.

Rapid action planning would be part of an active recovery management system that can mitigate the underlying risk factors related to changing social, economic, environmental conditions and land use. Because it is founded upon a participatory visioning framework, gender equity and community ownership is assured. Even if many lives are lost and the fabric of communities destroyed, the essence of the aspirations of the pre-disaster community will survive to be implemented.

Such a system requires an extra layer of planning effort, which may be difficult to achieve in Small Island Developing States without external assistance. However, it would make the difference between sustainable recovery and compounded catastrophe. It is therefore considered to be an essential component of disaster management and should be supported by the international community. One meaningful way to deliver such assistance is by twin city partnership programs.

As change managers, land use planners have the opportunity to make a meaningful contribution to manage and integrate the various multi-disciplinary efforts involved in disaster recovery. It is a challenge that is being thrust upon all environmental professions in an increasingly fragile world.