- Draft under consultation -

Disaster Risk Reduction in Nepal

Flagship Programmes

Proposed by

The Nepal Risk Reduction Consortium

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Consortium members:
Asian Development Bank (ADB), International Federation of Red Cross and Red Crescent Societies (IFRC), United Nations Development Programe (UNDP) United Nations International Strategy for Disaster Reduction (UNISDR), United Nations Office for Coordination of Humanitarian Affairs (UNOCHA), World Bank

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LIST OF ABBREVIATIONS

AAN	Action Aid Nepal
ADB	Asian Development Bank
AIN	Association of International NGOs
APF	Army and Armed Police Force
AusAid	Australian Agency for International Development
BCPR	Bureau of Crisis Prevention and Recovery
CBS	Central Bureau of Statistic
CBO	Community Based Organizations
CCA	Climate Change Adaptation
CDC	Curriculum Development Center
CDRC	Central Disaster Relief Committee
CDS	Centre for Disaster Study
CIDA	Canadian International Development Agency
CNI	Confederation of Nepalese Industries
CRA	Community Risk Assessment
Danida	Danish International Development Agency
DDC	District Development Committee
DDRC	District Disaster Relief Committees
DEOC	District Emergency Operations Centre
DFID	Department for International Development
DHM	Department of Hydrology and Meteorology
DIPECHO	Disaster Preparedness European Commission Humanitarian Office
DM	Disaster Management
DMG	Department of Mines and Geology
DoE	Department of Education
DoH	Department of Health
DoHM	Department of Hydrology and Meteorology
DoR	Department of Roads
DP	Disaster Preparedness
DPNet	Disaster Preparedness Network
DRM	Disaster Risk Management
DRMC	Disaster Risk Management Committee
DRR	Disaster Risk Reduction
DRRSP	Disaster Risk Reduction through School Project
DSAWSM	Department of Soil Conservation and Water Shed Management
DWIDP	Department of Water Induced Disaster Prevention
ECHO	European Commission Humanitarian Office
EM-DAT	Emergency Data
EOC	Emergency Operations Centres
EWS	Early Warning System
FCN	Food Corporation of Nepal
FFC	Flood Forecasting Center
Finida	Finnish International Development Agency
FM	Frequency Modulation
FNCCI	Federation of Nepalese Chamber of Commerce and Industry
GFDRR	Global Facility for Disaster Reduction and Recovery
GoN	Government of Nepal

GLOF	Glacial Lake Outburst Floods
GIS	Geographical Information System
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation)
HFA	Hyogo Framework of Action
IASC	Inter Agency Standing Committee
ICIMOD	International Center for Integrated Mountain Development
IEC	Information Education and Communication
IFRC	International Federation of Red Cross and Red Crescent Societies
INGO	Non Government Organizations
ISDR	International Strategy for Disaster Reduction
INSARAG	International Search and Rescue Advisory Group
IT	Information and Technology
JICA	Japanese International Cooperation Agency
KEP	Kathmandu Engineering College
KOICA	Korean International cooperation Agency
KU	Kathmandu University
KMC	Kathmandu Metropolitan City
KV	Kathmandu Valley
LDRC	Local Disaster Relief Committees
LIC	Life Insurance Corporation
LUP	Land use Plan
MLD	Ministry of Local Development
MMI	Modified Mercalli Intensity
MoE	Ministry of Education
MOEST	Ministry of Environment Science and Technology
MPAT	Multinational Planning Augmentation Team's
MoHA	Ministry of Home Affairs
MoI	Ministry of Industry
MPPW	Ministry of Physical Planning and works
NCC	Nepal Chamber of Commerce
NEOC	National Emergency Operations Centre
NEP	Nepal Engineering College
NFI	Non-Food Items
NGIIP	National Geographic Information Infrastructure Programme
Norad	Norwegian Agency for Development Cooperation
NPC	National Planning commission
NRB	Nepal Rastra Bank
NRCS	Nepal Red Cross Society
NSDRM	National Strategy for Disaster Risk Management
NSET	Nepal Society for Earthquake Technology
OFDA	Office of foreign Disaster Assistance
PMO	Prime Minister Office
PPERS	Pre-Positioning of Emergency Rescue Stores
RDRCs	Regional Disaster Relief Committees
REOC	Regional Emergency Operations Centres
SAR	Search And Rescue
SDC	Swiss Development and Cooperation
SOP	Standard Operating Procedure

TU	Tribhuvan University
UGC	University Grant Commission
UNDP	United Nations Development Programme
VCA	Vulnerability and Capacity Assessment
VDC	Village Development Committee
WB	World Bank
WFP	World Food Programme
WHO	World Health Organization
WECS	Water and Energy Commission Secretariat

PROGRAMME SUMMARY

An international Consortium of ADB, IFRC, UNDP, UNOCHA, UNISDR, and World Bank was formed in May 2009 to support the Government of Nepal in developing a long term Disaster Risk Reduction Action Plan building on the anticipated new National Strategy for Disaster Risk Management (NSDRM). In addition, the Consortium initiated a multi-stakeholder participatory process with the Government of Nepal and civil society organizations to identify short to medium term disaster risk reduction priorities that are both urgent and viable within the current institutional and policy arrangements in the country.

Based on Government priorities and discussions with multi stakeholder groups, the Consortium members and government developed a draft program proposal which identified five flagship areas of immediate intervention for disaster risk management in Nepal:

1. School and hospital safety- structural and non-structural aspects of making schools and hospitals earthquake resilient

2. Emergency preparedness and response capacity

3. Flood management in the Koshi river basin

4. Integrated community based disaster risk reduction/management

5. Policy/Institutional support for disaster risk management

In developing the programme concepts, the flagship areas have also taken into account the priorities outlined in the 'Hyogo Framework of Action 2005-2015, Building the Resilience of nations and Communities to Disasters', and the Chair's Summary of Outcomes Report of the 2 nd session of the Global Platform for Disaster Risk Reduction, which sets out specific targets for reducing losses from disasters.

The estimated total budget of the proposed programme is USD 131,32 million.

The flagship area on School and hospital safety focuses on a selected number of components that comprise seismic safety for schools and hospitals to comprise a package of activities that: (i) move the draft National Strategy for Disaster Risk Management in Nepal forward; (ii) the groundwork has already been started but further support is required; (iii) are fundamental to public safety; and (iv) will enhance the credibility of the Strategy. In addition, while the focus of the flagship activity is on seismic resilience, the programs take multi-hazards orientation, taking into account anticipated climate variability consequences.

The main programme components include- *Structural and non structural vulnerability assessment of school and principal hospital building stock in the Kathmandu Valley; Physical retrofitting and seismic strengthening of school and hospital building; Land use management Planning- development of a risk- sensitive land use plan for Kathmandu Valley; and Awareness building on constructing resilient structures.*

Flagship area on Emergency preparedness and response capacity recognizes that the disaster response capacity of the Government of Nepal needs to be enhanced, both centrally and at the district level. This involves developing a series of programmes to build a

sustainable response capacity, which includes preparedness planning for emergency response. The Koshi floods of 2008 raised several issues regarding the effectiveness of existing measures and although response capacity exists at the central level, it remains inadequate for responding to large scale disasters in the regions. Therefore, there is an immediate need to enhance disaster preparedness across Nepal to ensure an effective emergency response to those afflicted by natural disasters and to guarantee the operational continuity of major critical facilities.

This programme area seeks to support the objectives outlined above by implementing a series of measures and activities grouped into five main headings: *Disaster Information and Response Management; Capacity Building of First Responders; Emergency Warehouses and Stockpiling; Disaster Response and Disaster Management Planning; and the Facilitation of International Assistance.* These activities will involve consultation and agreement for implementation with all partners, especially with Government of Nepal line ministries, Inter-Agency Standing Committee (IASC) partner organisations and the donor community.

Flagship area on Flood management in the Koshi river basin corresponds with a specific priority towards addressing the risk of floods in Nepal. Annually, floods and landslides, on an average, cause about 300 deaths in Nepal and economic damage exceeding US $ 10 million. Managing water-induced disasters, primarily floods, is a priority for the government with both short and long-term goals. While the short term goals are focused on enhancing institutional capabilities towards better flood management, the longer term goals are focused on implementing effective flood mitigation measures, reducing economic impacts due to floods, better weather and flood forecasting capabilities and effective flood warning dissemination to communities.

The Koshi river basin is the biggest river basin in Nepal and flooding in the Koshi severely impacts communities in Nepal as well as across the border in Bihar, India.
This programme area focuses on the Koshi river basin with a design strategy that includes both structural and non-structural components aimed towards comprehensive disaster management. The main activity areas proposed under this programme area are as follows: *Flood Risk Assessment; Structural Measures; Flood Forecasting and Early Warning System; Strengthening Institutional Capacity.*

Flagship area on Integrated community based disaster risk reduction/management acknowledges the disaster risk management system within Nepal is currently undergoing changes driven by the recognition of the need to shift from reactive and relief based approaches to proactive mitigation and adaptation architecture. This requires institutional, legislative and policy change to support the decentralization of responsibility in support of engaging all stakeholders at national, district and village levels. Through this shift, local government and civil society will be empowered to develop capacity and build sustainable approaches to reducing disaster risk and consequently avoiding costly and external response interventions.
This programme area will address the connection between national and local authorities in relation to resource allocation, planning, hazard mitigation and vulnerability reduction in partnership with a strong civil society. Drawing from the Draft National Strategy for Disaster Risk Management a series of components are being promoted to address priority needs in supporting the scaling up of local level disaster risk management (DRM) which includes: *enhancing local level risk assessment methodologies; improving the reliability and geographical coverage of community based early warning systems; scaling up of community*

based preparedness and mitigation actions; developing community capacity for engaging in local level risk reduction action; and undertaking vulnerability reduction measures.
Flagship area on Policy/Institutional support for Disaster Risk Management (DRM) recognizes that the disaster risk management capacity of the Government of Nepal needs to be enhanced, both centrally and at the local level. Institutional, legislative and policy frameworks are essential backbone elements for DRM system building that are critically necessary for embedding, a much needed DRM agenda in Nepal.

More sustainable, long term, focused and programmatic action is required to continue, build and consolidate the work already started with the development of the National Strategy for Disaster Risk Management, to progress from a policy environment mainly pre-dominated by a "relief" orientation towards one that embraces comprehensive disaster risk management, proactive risk reduction and sector mainstreaming of DRM approaches.

This programme area will result in *Institutional capacity building; Policy formulation & legislative enactment; Orientation of financial mechanisms towards risk reduction and risk management; Training and capacity building; Supporting of mainstreaming DRM and climate change adaptation into the development planning process at all levels*

1. FLAGSHIP AREA 1: SCHOOL AND HOSPITAL SAFETY - STRUCTURAL AND NON-STRUCTURAL ASPECTS OF MAKING SCHOOLS AND HOSPITALS EARTHQUAKE RESILIENT

1.1 Background and rationale[1]

Nepal is considered a high seismic-risk country. The seismic record suggests that the periodicity of an earthquake of MMI X[2] is approximately 75 years. The main source of seismic activity in Nepal is subduction of the Indian plate under the Tibetan plate (the Himalayas). The physical vulnerability of Nepal is very high, with most buildings and infrastructure constructed without reference to hazard-resistant technology. The older neighbourhoods which form the historical core of Nepal's cities, such as Kathmandu, Lalitpur, and Bhaktapur, are particularly vulnerable to earthquake shaking. During the last 37 years, more than 250,000 buildings have been destroyed or damaged by flood, fire or earthquakes. Poor quality construction of buildings and infrastructure is the main cause of structural vulnerability. The prevalence of non-engineered construction of over 90% of existing structures, poor quality control of materials and construction practices, make the built environment, especially lifeline facilities, problematic.

Putting this in a wider context, while Nepal has a National Land Use Policy, actual implementation and monitoring of land-use activities is weak. The National Shelter Policy 1996 and the National Urban Policy 2007 have incorporated DRR to some extent. While building codes are compulsory in municipal areas, the implementation process is ill-defined and there is a serious lack of enforcement: municipal capacity is weak both in terms of lack of institutional structure for DRR and the lack of trained personnel in earthquake risk reduction. Unplanned urbanization and construction of unsafe structures can be clearly seen in the Katmandu Valley, where the absence of land-use planning and management of human settlement has considerably increased the vulnerability of people to risk from hazards. In addition, there is no national-level risk assessment available for Nepal, although several efforts have been made to assess probability, risk exposure, and vulnerability.

With reference to school safety, a 1997-99 *Kathmandu Valley Earthquake Risk Management Project* undertaken jointly by the National Society for Earthquake Technology–Nepal (NSET) and GeoHazards International developed a simplified earthquake scenario and action plan, and identified a community-based *School Earthquake Safety Program* as a sustainable mitigation process with various methodologies for seismic retrofitting. An assessment of 1,100 buildings in 643 public schools in Kathmandu Valley revealed that over 60% were at risk.[3] Such exposure also denies at-risk communities the use of school buildings as temporary

[1] Material for this section is primarily from the UNDP 4th July 2009 draft Mission Report on Proposed Disaster Risk Reduction Plan for Nepal 2010-2013., and augmented by notes provided by the Earthquake and Megacities Initiative (EMI) land use planning proposal, and discussions with the National Society for Earthquake Technology-Nepal (NSET-Nepal), May 2009.

[2] Earthquake intensity (I) is a *qualitative measure* of the actual shaking at a location during an earthquake, and are typically based on three features: (i) perception by people and animals; (ii) performance of buildings; and (iii) changes to natural surroundings. A commonly used intensity measure is the Modified Mercalli Intensity (MMI) scale, ranging from I (least perceptive) to XII (most severe). Earthquake magnitude (M) is a *quantitative measure* of the wave amplitude an earthquake generates, and hence is a measure of its size. An increase in M by 1.0 implies 10 times higher waveform amplitude and about 31 times higher energy released. A commonly cited measure is the Richter scale

[3] NSET in ISDR 2007, Towards a Culture of Prevention: Disaster Risk Reduction Begins at School: Good Practices and Lessons Learned.

post-impact shelters, warehouses or field hospitals. This early work has not been followed up, and the basic issues remain, including the absence of retrofitting, training masons, instituting non-structural mitigation measures, and preparedness efforts. A variety of factors are responsible, such as public school management being the responsibility of uninformed local communities, low annual budgets for school management, and a lack of quality controls and skilled masons for school construction.

Under the UN/ISDR-World Bank Global Facility for Disaster Reduction and Recovery (GFDRR), NSET is implementing a project, "Developing a Strategy for Improving Seismic Safety of Schools in Nepal" in six schools in two districts outside Kathmandu Valley. Project components include inventory/assessment of seismic vulnerability of all school buildings in Nawalparasi and Lamjung districts, seismic retrofitting of three schools in each district, training masons, petty contractors, engineering technicians and engineers, and awareness activities. NSET's experience in implementing school earthquake safety programs since 1997 will be combined with the experiences of education officials at central and district levels, teachers and parents to develop a draft national strategy for enhancing seismic safety of public and private schools in Nepal and draft curricula for teaching DRR in schools throughout Nepal. The draft strategy and curricula are expected in February 2010. Another initiative for school earthquake safety which covers a few schools in Kathmandu Valley is the Disaster Risk Reduction through School Project (DRRSP) being implemented by Action Aid Nepal (AAN) during 2007-2009 in close partnership with NSET and other national and local NGOs under a European Commission-funded DIPECHO[4] program. The next phase of DIPECHO is also expected to include project initiatives on school disaster safety.

For enhancing disaster safety in health institutions and the health system, the Ministry of Health, with support from WHO-Nepal, developed a Health Sector Emergency Preparedness and Disaster Response Plan for Nepal in 2003. the plan could not make much headway, however, with support from WHO-Nepal, NSET conducted (as suggested by the plan) two studies, *Structural Assessment of Hospitals and Health Institutions of Kathmandu Valley* and Non-Structural Vulnerability Assessment of Hospitals in Nepal in 2001 and 2003, which revealed that about 80% of assessed hospitals fell in the unacceptable performance category for new construction, with the remaining 20% of hospitals at high risk of life-threatening collapse. Notwithstanding this, no efforts to date have been made to enhance seismic performance of these facilities. Neither have the majority of health facilities, including major hospitals, prepared any emergency preparedness and response plans. There is no mechanism for networking and resource sharing between hospitals, even within the public hospitals of Kathmandu Valley. Despite the presence of an effective program of health and nutritional surveillance and preparedness for response epidemics, this has not been transferred to deliver preventive measures against other hazards. Health sector personnel, especially in remote areas or outside the government system, lack knowledge and awareness on DRM.[5]

1.1 Joint program results (see also Table 1)

1. Structural and non structural vulnerability assessment: This program builds on an initiative commenced in 1999-2000 but not fully implemented. Intended outcomes include an updated seismic assessment of school and principal hospital building stock in the Kathmandu Valley. In turn, this information will provide input data for program #2 (building retrofitting and seismic strengthening) and program #4 (awareness building).

[4] European Commission Directorate-General for Humanitarian Aid.
[5] MoHA, 2008. National Strategy for Disaster Risk Management UNDP/NSET

Since the program will use national specialists, it will legitimate in-country expertise, facilitate knowledge transfer and knowledge sharing between Nepalese technical groups, sharpen local skills and capacities, and advance practical risk assessment knowledge. Measurable outputs include documentation and measurement of assessed school and hospital structures against design codes[6], and recommended remedial adjustments.

2. Physical retrofitting and seismic strengthening: The anticipated outcomes are enhanced school and hospital building resilience from adverse hazard consequences, greater occupant survivability and safety, more reliable service continuity during/after hazard impact, leading to an overall improvement in community security and well-being. The retrofitting and strengthening operations will be undertaken with local services and trades-people thereby enabling acquired skills and experiences to be retained within the community and which can be used to enhance the safety of communities in Nepal. Measurable outputs will include, as a minimum, structural compliance to national building codes[7].

3. Land use management planning: This program builds on an initiative commenced in 2005-07 but not completed. Expected outcomes are development of a risk-sensitive land use plan for Kathmandu Valley (i.e. the five cities and villages within the Valley) that provide a framework for development, land allocations and related strategies, policies and regulatory tools and procedures for controlling future growth and safeguarding it from natural hazards. A second integral component is to strengthen disaster risk management competency in Kathmandu Metropolitan City (KMC). Component outputs include development of a physical plan, model and/or regulatory tools and procedures, emergency operations plans, and training programs. This component of the program will establish regulatory controlling for the siting and design of future schools, hospitals and other critical facilities, thus ensuring long term sustainability.

4. Awareness building: An expected outcome of the three programs above is improvement in knowledge about constructing resilient structures. When linked to program 4, the outcome is expected to be more resilient communities throughout the Kathmandu Valley and safeguarding measures for sustainability in the future. Measurable outputs will be the production and delivery of community-level 'self-help' material and courses that would improve social mobilization; and the delivery and testing of protocols for inter-institutional coordinating and processes for regulatory enforcement. The development of a land use plan (program 3) will be supported by a training program to improve the qualifications of planners, regulators and other allied professional groups.

1.2 Joint program design and implementation plan

1. Structural and non structural vulnerability assessment: As of now there is no systematic risk assessment for natural hazards carried out for any major development project, not

[6] NSET defines code compliance for schools to mean ensuring immediate occupancy at medium earthquake (MMI VIII) and life safety at large earthquake (MMI IX or more). Although the Nepal building code does not have specific clauses for schools, philosophically it demands the same safety level as above, like most codes.

[7] Similarly, NSET defines code compliance for hospitals to mean ensuring immediate occupancy at large earthquake (MMI IX) and life safety at very large earthquake (MMI X or more). Although the Nepal building code does not have specific clauses for hospitals, philosophically it demands the same safety level as above, like most codes

even for most of the key infrastructure projects. However, there is a recommendation in the Three Year Interim Plan and the proposed National Strategy for Disaster Risk Management in making disaster impact assessments mandatory in relation to strengthening the implementation of the Environment Impact Assessment policy. Economic appraisals of certain disaster risk reduction projects are required in Nepal, but existing government guidelines are unspecific and provide no direction on how to explore the potential risks posed by hazard events to development projects.

In 1999–2000 with assistance from the Ministry of Education, District Education Boards, school principals, and GeoHazards International, the National Society for Earthquake Technology-Nepal NSET) undertook an inventory of public schools in the Kathmandu Valley (KV) to ascertain the feasibility of retrofitting school buildings for seismic safety. The inventory revealed a stock of 643 schools comprising 1,100 structures. None of the structures complied with the seismic building code. The structures were divided into three categories: (i) Quality of construction so poor they cannot be retrofitted; (ii) new structures and/or under construction (but non-compliant); and (iii) structures of sufficient quality requiring immediate attention. Extrapolating this information to today's school building stock, NSET estimates that the current Category C structures in KV to comprise 1,400 structures. It further estimates that the total public school building stock of Nepal as a whole is between 60,000 – 80,000 structures in 32,000 schools. Of this 50% is in Category C. On the basis of NSET estimates a cost and time frame for retrofitting KV school structures is $30 million over a 5–6 year period. This figure includes updating the school stock risk assessment, retrofitting structures in category C; training masons and engineers, and developing an associated community-based awareness program. The cost of retrofitting all school structures throughout Nepal is estimated at $900 million with a 10–15 year time frame.

In 2002 NSET also conducted a structural eismic safety study of the 9 major hospitals in Nepal (4 in Kathmandu Valley; 5 regional hospitals). None were found to be code-compliant. Based on the initial estimate of $5.2 million for structural retrofitting and basic functionality following a major earthquake, a 2009 estimate for the same structures is $20 million).

2. Physical retrofitting and seismic strengthening: Based on previous and more recent assessments, the most vulnerable hospitals and school buildings need to be retrofitted and strengthened urgently. The first priority will be the major hospitals as well as the most vulnerable public school buildings in the Kathmandu Valley. Through a pilot program it started in the Kathmandu Valley, NSET has developed a model for retrofitting Nepalese school structures. NSET estimates costs to be $30,000 per structure, based on a holistic approach that includes technical retrofit of the structure; re-training of local masons, builders, and engineers; and an education/public awareness program for local communities.

3. Land use management planning: This component calls for a risk sensitive land use plan (LUP) for Kathmandu City and the Kathmandu Valley. The generic DRM strategic plan will be developed by KMC with technical and management support from EMI and NSET[8]. Since LUP is a core function of local government and a key instrument of urban

[8] During 2005-2007, EMI (Earthquake and Megacities Initiative) and several partners developed a generic disaster risk strategic plan for Kathmandu that included an output to develop a risk-sensitive land use plan for Kathmandu Valley (KV). This work was partially funded by UNDP. Through funds provided by the German

development, environmental protection, resource conservation, historic and cultural preservation, and social advancement, it is a critical component for effective DRR implementation. A risk-sensitive LUP process has the potential to explicitly incorporate risk reduction in reaching sustainable development and climate change adaptation goals. The project addresses mainstreaming DRR in urban development in the context of both new development and re-development of existing urban neighborhoods, mainly those which are at high risk and house the poor and the underprivileged and have no prospect to attract private investments. Although Nepal has a National Land Use Policy, actual implementation and monitoring of land-use is still extremely weak. Local enforcement of land use is almost nonexistent. The National Shelter Policy 1996 and the National Urban Policy 2007 have incorporated DRR to some extent. Building Codes have been made compulsory in municipal areas, yet there is a serious lack of enforcement. Unplanned urbanization and construction of unsafe houses can be clearly seen in the Katmandu Valley. The absence of land-use planning and management of human settlement in the valley has considerably increased population vulnerability to earthquakes.

The last effort to develop a land use plan for the KV was in 2001. However, that plan was not implemented and is now obsolete because of the rapid growth of the city within the last decade. The project aims to develop a Risk-Sensitive Land Use Plan for the city that will provide a framework for development and land use allocations in the city as well as related strategies, policies, regulatory tools and procedures for safeguarding future development from natural hazards that threaten the city. It is expected the plan will also be adopted by the various government institutions that have mandate over land use in the country such as the Kathmandu Valley Town Planning Committee, the Ministry of Local Development and the Ministry of Planning and Public Works, and be a model for other cities. The development of the LUP will also be supported by a training program (see awareness building section). The two components have been formulated for a 3-year period, where the third year consists of an extension from Kathmandu City to the Kathmandu Valley, incorporating an additional 4 cities and 90+ villages. The projects are formulated as national models for Nepal. In addition to KMC, the ministries of Home Affairs, Local Development, Planning and Public Works, and the Kathmandu Valley Town Development Committee will be involved. Further details are in Appendices 2 and 3.

To enhance co-financing prospects and partner coordination, the proposed EMI project can be linked to an Earthquake Risk Reduction and Recovery Project supported by Government of Japan, which seeks to enhance the government's capacity to implement the Nepal Building Code; train engineers and masons on seismic safe construction; build capacities of municipalities in hazard risk and vulnerability assessments; review the building permit process and promote earthquake safe construction through measures like retrofitting of model public buildings. Note that in KMC, the building code enforcement function and the land use planning function are within the same department. Hence, the

Federal Foreign Office (FFO) and jointly undertaken with the Deutches Komitee Katastrophenvorosrge (DKKV), EMI initiated a follow-up project in November 2007 on DRR through risk-sensitive land use planning with the Kathmandu Metropolitan City (KMC). The intention was to expand the project throughout the KV. However, allocated funding was not sufficient to undertake the whole valley or complete a comprehensive project (FFO indicated it would not extend funding beyond 2009). This section is based on material submitted by EMI following an informal request to provide information that would lead to the completion of the project.

linkage of the two projects will further reinforce the urban development planning and regulatory capabilities of the KMC.

4. Awareness building: This component pertains in particular to UNDP's July 2009 report (refer footnote 3) that public awareness on DRR is very low and demands a massive campaign, with a specific need to enhance disaster awareness among schoolteachers and educators. With respect to school building safety, NSET considers training and public awareness to be essential components of a retrofitting program, since school management is the responsibility of local communities. Stand-alone structural retrofitting of school buildings will not provide a long-term solution in the Nepalese context. The initial pilot programs witnessed a transfer of building resilience to local dwellings. This technology transfer will continue with the school retrofitting program wherein an awareness program will be built into the NSET's retrofitting program. In addition, and since local masons and engineers are identified as specific recipients of this transfer process, technical guidelines will be produced that will assist the overall development and upgrading of design codes (including improvement of building codes to include multi-hazard and climate change risk) and methodologies for incorporating DRR in engineered and non-engineered construction).

   The development of the land use plan will be supported by a training program to (improve the qualifications of planners, regulators, and other professionals), an effort to improve inter-institutional coordination among the various agencies that intervene in LUP in the country, and an awareness campaign to explain the necessity for planning principles and regulation to be respected by all stakeholders.

   A second component of the original EMI project outlined in #3 above was the development of a disaster risk management (DRM) structure at KMC so as to enhance institutional capacity, which complements the LUP project by enhancing internal competency within KMC for advocating and supporting all DRR works9. Experience has shown that those local governments with a DRM framework are better able to mainstream DRR within their governing structures and core functions. This component will develop regulations, operational procedures, contingency plans and other structural elements. It will also test the basic emergency plans, develop drills and exercises and develop a community awareness program. The project will extend the structure to the community level by reinforcing the current ward-level disaster management committees and their capacity, which for the most part are ineffective. The project will build staff competency through a hands-one 34 hour training course and complete and test a city-wide Emergency Operation Plan that conforms to the standards of the International Association of Emergency Managers, and ISO 3100010.

[9] The current effort supported by FFO will enable KMC to have the basic training and initial structure for DRM but will not be able to fully operationalize it

[10] Risk Management Principles and Guidelines. ISO 31000. International Standards Organization. Geneva.

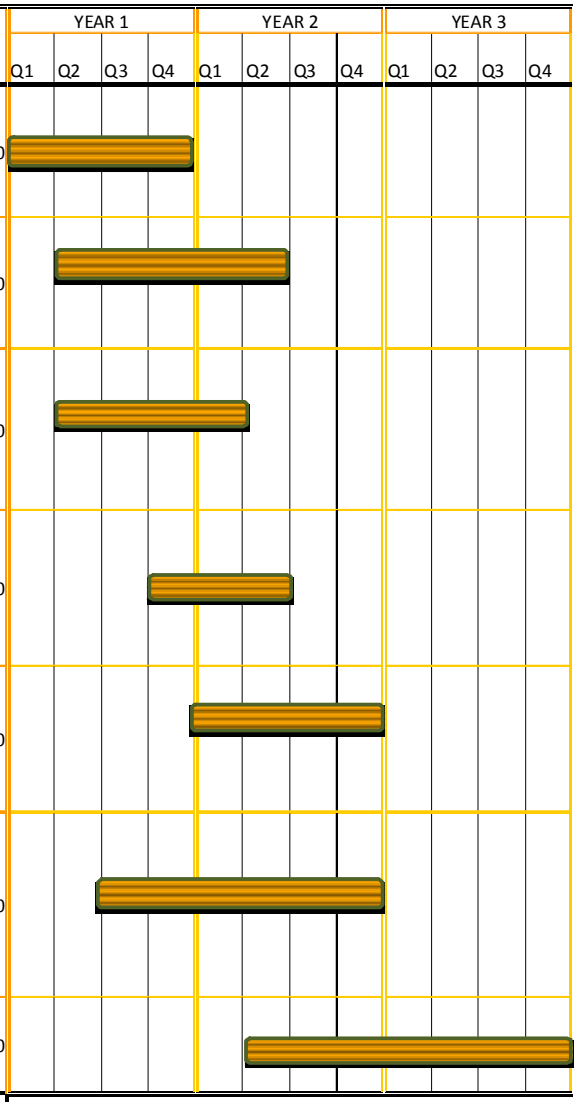
Table 1 – Joint Programme Results Framework

Expected Outcome:	**Flagship area 1: School and hospital safety - structural and non-structural aspects of making schools and hospitals earthquake resilient**			
Joint Programme Outcomes	**Outputs (by Agency)**	**Budget (by output) USD $**	**Indicative activities (by Agency)**	**National / local and intn'l partners[11]**
1. Structural and non structural vulnerability assessment	• Updated seismic assessment of school building stock in the Kathmandu Valley. • Updated seismic assessment of principal hospital building stock in the Kathmandu Valley. • Documentation and measurements of assessed school and hospital structures against design codes, with recommended remedial adjustments where appropriate.	• 30,000,000 for schools in KV over 5-6 years (includes 1, 2, 4a) • 20,000,000 major hospitals in KV	1. TBD	MEd, District Education Boards, NSET, WB, JICA MoH, GTZ, WHO, JICA
2. Physical retrofitting and seismic strengthening	• Enhanced school and hospital building resilience from adverse hazard consequences compliant to national building code.	• See above	2. TBD	NSET, NRC, District Education Boards, WB, DIPECHO JICA, AAN
3. Land use management planning	• Risk-sensitive land use plan for Kathmandu Metropolitan City and communities in the Kathmandu Valley. • Policies and regulatory tools and procedures for safeguarding future growth from natural hazards. Development of disaster risk management competency in Kathmandu Metropolitan City (KMC).	• 2,080,000 million over 3 years (includes 4b)	3. TBD	KMC with technical support from EMI and NSET in collaboration with KVTDC, MoLD, MPPW, MoHA, JICA (thru UNDP)
4. Awareness building	• (a) Production and delivery of community-level 'self-help' material and courses. • (b - Linked to land use management planning above): Training program to improve the qualifications of planners, regulators and other allied professional groups.	• See above.	4. TBD	NSET, District Education Boards KMC, KVTPC
	Total	**$ 52,080,000**		

[11] International partner information based on Disaster Risk Management Matrix in Nepal, 5th July 2009 – UNDP-Nepal and consultations with NSET and EMI

Table 2 Development of Risk-sensitive Land Use Plan for Kathmandu and Kathmandu valley

	ACTIVITIES	Indicative Budget US$
1	Completion of the Land Use Plan for Kathmandu incorporating projects undertaken or planned by government agencies, donors and private interests (e.g., developers, corporations, others)	$150,000
2	Validation of the LUP with national agencies to ensure consistency with national developmental and environmental strategies and regulations, including consultations and workshops	$100,000
3	Development of related policies, regulation, ordinances and bylaws in conformance with national laws, regulation and practices; development of inter-institutional coordination procedures and protocols	$180,000
4	Legal adapation of the plan within KMC and by the relevant national agencies. Operationalization of the plan within KMC including training and competency building to establish a model for the country	$60,000
5	Development of an awareness campaign to ensure acceptance and understanding of the LUP of its regulation by all stakeholders as well as importance of its implementation and enforcement	$80,000
6	Training of planners and other practitionners on risk-sensitive land use planning, the Kathmandu Land Use plan and its components and enforcement processes. Competency building in DRM and its relationship to developmental policies and strategies	$120,000
7	Extension of the plan and its elements to Kathmandu Valley and inclusion of other hazards such as flood and climate change	$500,000
	ESTIMATED BUDGET	**$1,190,000**



Note: Budget does not include financial support to Nepalese government agencies

Table 3 Development of Model Local Level Disaster Risk Management Practice in Nepal. Application in Kathmandu Municipal Council

	ACTIVITIES	Indicative Budget US$	YEAR 1 Q1	Q2	Q3	Q4	YEAR 2 Q1	Q2	Q3	Q4	YEAR 3 Q1	Q2	Q3	Q4
1	Completion and validation of the Emergency Operation Plan (EOP) for KMC and its related annexes with relevant government and non-governmental agencies to ensure consistency with National DRM Strategy	$120,000												
2	Reformulation and Extension of 34-hour training package to serve as a national model for city level DRM competency building, including pilot testing at national level	$140,000												
3	Review of EOP annexes, i.e., policies, related regulation, ordinances and bylaws, implementation enforcement processes, to conform to the national regulation and administrative processes	$60,000												
4	Operationalization of the EOP as a model for the country indlucing development of inter-institutional coordination mechanisms reviewing and indicating role of each agency	$100,000												
5	Consolidation of awareness campaign with government agencies, donors and other stakeholders; pilot application within Kathmandu Valley	$170,000												
6	Extension of the plan and its elements to Kathmandu Valley and inclusion of other hazards such as flood and climate change	$300,000												
	ESTIMATED BUDGET	**$890,000**												

Note: Budget does not include financial support to Nepalese government agencies

2. FLAGSHIP AREA 2 – EMERGENCY PREPAREDNESS AND RESPONSE CAPACITY

2.1 Background and Rationale

Nepal is prone to a multitude of natural hazards such as floods, landslides, earthquakes, fires, cyclonic winds, hailstorms, cloudbursts, drought, famine, and epidemics. An earlier study (UNDP/BCPR, 2004) ranked Nepal, in terms of relative vulnerability to earthquakes, as the eleventh most at risk country in the world, and thirtieth with respect to floods. Another report (World Bank, 2005) classifies Nepal as one of the global 'hot-spots' for natural disasters. Among the major hazards, floods and landslides are the most recurrent in Nepal, claiming an average of 21112 lives annually over the past ten years. Though major earthquakes occur infrequently, the impact and damage could be severe. For example, the loss of life from a strong earthquake in the Kathmandu valley is estimated to be about 40,000, and the number of injured is estimated at 90,000, posing considerable strains on emergency responders. Damage or destruction of critical facilities such as hospitals is expected to be 50% of existing structures. It is therefore crucial that emergency preparedness and response capacities are strengthened through the Flagship 2 programme.

The Disaster Risk Management (DRM) system in Nepal has traditionally been relief and response oriented. The evolution of the DRM system in Nepal began with the enactment of the Natural Calamity Relief Act, 1982. It institutionalized disaster relief from the previously ad-hoc response mechanisms. The Act led to the constitution of the Central Disaster Relief Committee (CDRC) as the apex body for disaster response under the Ministry of Home Affairs (MoHA), and established Regional Disaster Relief Committees (RDRCs), District Disaster Relief Committees (DDRCs) and Local Disaster Relief Committees (LDRCs) for coordinating disaster relief and rescue activities. However, the primary approach towards disaster management remained focused on response, instead of preparedness. The Government adopted the Nepal Environmental Policy and Action Plan in 1993 and enacted the Local Self Governance Act in 1999 to promote the decentralization of DRM and to encourage district authorities to address risk management issues at district, Village Development Committee (VDC) and municipality levels.

The **Tenth National Development Plan** (2002-2007) for the first time, included two separate chapters that dealt with disaster management, further highlighting the GoN's growing awareness of the importance of Disaster Risk Reduction (DRR). Both chapters reiterated the need for policy formulation, strengthened institutional mechanisms and coordination, risk assessment, information collection and dissemination. Similarly, the **Three Year Interim Plan** (2007-2010) also includes a separate chapter on natural disaster management and recognizes the importance of DRR and mitigation; emphasizes the need to introduce changes into the prevailing national policies for the required shift of focus from disaster response to prevention, mitigation and preparedness; identifies challenges such as the need to foster coordination among institutions; and seeks to promote better understanding of hazards and related disaster risks.

Nepal became a signatory to the Hyogo Framework for Action at the World Conference on Disaster Reduction held in Kobe, Japan in 2005. Five "Priorities for Action" were identified during the conference and the fifth "*Strengthen disaster preparedness for effective response*

[12] Source: Ministry of Home Affairs, GoN

at all levels" has particular relevance for Flagship 2. This emphasised the role of preparedness, and subsequent to the Kobe conference, the Ministry of Home Affairs (MoHA) led the development of a *National Strategy for Disaster Risk Management (NSDRM)*[13] in close consultation with senior government officials from all development ministries and other key stakeholders. The NSDRM puts forth suggestions regarding the reorganization and development of Disaster Management (DM) institutions, strategic improvements required in existing policy, the need to create an enabling legal environment for Disaster Risk Reduction (DRR) and preparedness planning at all levels, as well as strategies for mainstreaming DRR into the national development and poverty alleviation agenda. MoHA remains the leading institution of the Government of Nepal (GoN) for emergency relief, response and preparedness, assisted by the relevant line ministries. District Disaster Relief Committees (DDRCs) are mandated to coordinate any emergency related activities in their districts through the participation of humanitarian actors. It is in partnership with MoHA and relevant ministries that the Flagship activities (outlined in section III below), will be developed and implemented by all agencies.

2.2 Joint Programme Results (see also Table 4)

The following outcomes were identified by the ISDR joint mission as high priority intervention programmes for Flagship 2:

a) Strengthened Disaster Information and Response Management: The programme's outcomes will support the set up and development of Emergency Operations Centres (EOCs), communication networks, and control rooms across Nepal. The National Emergency Operations Centre (NEOC) Project in Kathmandu will be implemented and the centre properly equipped and manned. This will be complemented by EOCs at the regional/district and community levels. In addition, the cooperation and linkages between the GoN Emergency Operations Centres, other government line agencies, those of UN Agencies and partners and the Nepal Red Cross Society (NRCS) will be formalized. An information platform to facilitate the work of the EOCs will also be an integral component.

b) Capacity building of first responders: The outcomes for this flagship activity are twofold. Firstly, at the community level, activities will focus on the development of community-based search and rescue (SAR) and first aid medical teams in every district. Search and rescue teams will develop basic capabilities including trauma care and will receive specific training in managing collapsed buildings and structures, and instruction in flood and landslide search and rescue. Community based SAR teams need to be linked to capabilities already established by the Nepal Army and Armed Police Force (APF). The first-aid teams will also develop capabilities in medical evacuation, including "human porter ambulances" in remote and inaccessible areas. This activity will look into linkages with the Nepal Red Cross at the community level (see Flagship 4) and civil response teams at the district level. Secondly, in major urban areas, programme initiatives will upgrade Fire Service facilities and equipment with appropriate training and capacity building, and similarly, medical evacuation ambulances will be delivered to enhance existing first response capacities.

[13] MoHA et al, 2008. *National Strategy for Disaster Risk Management in Nepal*. UNDP/NSET

c) Building emergency warehouses and mobilisation centres across the country for emergency response, and pre-positioning of stocks (food, non-food items and rescue equipment): The pre-positioning of relief materials has been experimented with in Kathmandu valley and this needs to be expanded to other hazard prone and densely populated areas. In Kathmandu, the Pre-Positioning of Emergency Rescue Stores (PPERS) has been implemented by the Nepal Society for Earthquake Technology (NSET) in 10 locations. For non-rescue materials, the Nepal Red Cross (NRC) and WFP have warehouses to store food and non-food items at strategic locations for emergency use across Nepal. The programme outcomes will entail expansion of stocks at all districts and to the VDC level. This will be accompanied by appropriate capacity building on how to maintain inventories, periodically replenish supplies, and formalise the pre-positioning of materials.

d) Disaster response and disaster management planning: The programme will support the development of national and district disaster response and contingency plans, including disaster preparedness workshops at the district level across Nepal. These activities will facilitate joint planning, strengthen inter-ministerial coordination, and expand on the linkages with the national and international humanitarian community.

e) Strengthening legal preparedness for the facilitation and regulation of international assistance: Outcomes for this programme will provide technical assistance for the implementation of key international and regional treaties and standards for the provision of international assistance during large scale disasters. In particular it will identify and recommend legislative measures for implementing the *Guidelines for the Domestic Facilitation and Regulation of International Disaster Relief and Initial Recovery Assistance* (2007), as well as the *Tampere Convention* and the *Framework Convention on Civil Defence Assistance*.

2.3 Joint Programme Design and Implementation Plan

a) Strengthened Disaster Information and Response Management:
In August 2009, the GoN signed a Memorandum of Understanding with UNDP, regarding the establishment of a National Emergency Operations Centre (NEOC). The envisaged cost for completion is US$ 2,820,000 over an 18 month period. For Flagship 2, a similar programme needs to be established to roll-out 4 Regional Emergency Operations Centres (REOCs) and EOCs in each of the 70 Districts (DEOCs), not covered by a NEOC or REOC. The investment and structure of the three levels will be appropriate to their coordination functions and reporting roles and responsibilities. An assessment survey needs to be carried out to assess suitable locations and a standardised equipment list as well the services for each level of EOC needs to be developed. Mobile EOC kits will be kept on standby for deployment. Standard Operating Procedures (SOPs) for reporting and procedural operations will be created, and training programmes will be initiated for all staff at each level to ensure reliable coverage of EOC operations. A “virtual” EOC internet platform will be developed, enabling international responders to interface with national response systems, have access to latest situation reports and updates, review necessary baseline data, and to prepare an appropriate response in terms of personnel, expertise, rescue capacity and goods and materials.

b) Capacity building of first responders:

It is well understood that in the majority of sudden-onset natural disasters, it is the local communities that are the first to respond and who provide immediate life-saving efforts. In close cooperation with Flagship 4, this flagship activity will seek to develop first aid programmes and provide basic kits and supplies at the community level through the Health Posts and Sub-Health Posts if present, or directly within the community. An awareness programme of basic search and rescue techniques and "do's and don'ts" in the event of an emergency will be developed and implemented. At the community level, disaster preparedness and response messages will be disseminated and village level DM programmes and early warning initiatives supported where appropriate, building on best practices from activities already conducted NRCS, UN agencies and I/NGOs. At the capital and major urban centres levels, the role of the Fire Services and the Ambulance Services will be strengthened and enhanced through the provision of updated equipment and specialised training in fire-fighting, paramedical care, search and rescue techniques, and medical evacuation techniques. The International Search and Rescue Advisory Group (INSARAG) network will be requested to provide support and training over the period of the programme with regard to the Fire Service and the Ambulance Services.

c) Building emergency warehouses and mobilization centres across the country for emergency response, and pre-positioning of stocks (food, non-food items and rescue equipment):

The pre-positioning of (appropriate) stockpiles in strategic locations across Nepal is crucial for an effective and rapid emergency response. A country-wide network needs to be developed, with established regional hubs feeding into district level warehouse centres. Minimal stocks should also be established at the VDC levels. An assessment of potential existing structures and the erection of new storage facilities needs to be conducted, and should include GoN and NA warehouses, and those established by UN agencies, humanitarian partners and the IFRC/NRCS. Transport and distribution networks need to be explored, and all regional hubs should have cold-chain facilities for the storage of medical supplies where necessary. The list of essential goods should include food supplies (especially RTEs), medical supplies and equipment, Non-Food Items (NFIs) and PPERS. Appropriate requirements for different caseloads should be developed at each level. Pipelines (and long-term funding for maintaining stock-levels) should be developed to ensure rapid re-supply after use in an emergency or after expiry dates of goods have ended. Training for staff is imperative in all aspects of warehouse management and maintenance, including maintaining inventories, packaging, storage and transportation. Standardisation of all reporting formats should be developed across the country, and coordination and distribution mechanisms should be formalised with the assistance of Information Management Units from Kathmandu based agencies.

d) Disaster response and disaster management planning:

In 2009, IASC partners, in collaboration with Government ministries, planned to conduct 24 district disaster preparedness workshops, many of which have already been completed. The format for these workshops has been officially endorsed by the GoN. In addition, 7 district contingency planning workshops have been conducted, and after adaptation of the

existing planning framework, the structure of these workshops is expected to be similarly endorsed by the GoN in October 2009. Many of these activities have been conducted mainly in the Terai, and it is necessary that these workshops are expanded to all districts of Nepal. As can be seen from the response to the diarrhoeal outbreaks in the hilly and mountainous regions of the Mid-Western and Far-Western regions in 2009, basic awareness of coordination mechanisms and response techniques are lacking at many levels, and preparedness in advance for possible emergencies is absent in many districts. This activity will therefore develop a standardised agreed format for disaster preparedness tools and services, a timetable for covering all districts of Nepal, and a multi-sectoral pool of experienced preparedness and response practitioners to conduct these activities. As a capacity building exercise, GoN staff should be trained in disaster preparedness and included in the roster pool and at least one GoN representative should act as a co-facilitator in all future workshops.

e) Strengthening legal preparedness for the facilitation and regulation of international assistance:

When a Government declares a national emergency and seeks international assistance for a sudden-onset disaster, the response from the international community often overwhelms existing capacities, imposes strains on existing infrastructure and most importantly, often needs to override existing national legislation in certain operational areas and activities. The GoN has been active in alleviating these constraints, but much more can be done especially regarding the communications sector by ratifying the *Tampere Convention*, enacting into law the *National Strategy for Disaster Risk Management (NSDRM*) (presented to the Cabinet for approval in August 2009), and incorporating aspects of the *Guidelines for the Domestic Facilitation and Regulation of International Disaster Relief and Initial Recovery Assistance* (2007), and the *Framework Convention on Civil Defence Assistance*.

Moreover, the GoN has actively supported and participated in the INSARAG earthquake simulation exercise in April 2009, and will be fully involved in the Multinational Planning Augmentation Team's (MPAT) forthcoming natural disaster exercise. The GoN has also signed a "Customs Model Agreement" (one of only 3 countries globally to have signed to date) which allows international responders easier access to enter the country with personnel, goods and equipment.

Therefore this activity will build on the steps already taken by the GoN to enhance and strengthen existing working practices, by advocating for the swift passage of enabling legislation and exploring further opportunities to adopt internationally accepted norms and conventions for humanitarian response, including International Disaster Response L

Table 4 – Joint Programme Results Framework

Expected Outcome:	**Flagship Area 2: Emergency Preparedness and Response Capacity**			
Joint Programme Outcomes	**Outputs (by Agency)**	**Budget (by output) USD $**	**Indicative Activities (by Agency)**	**National, local and international partners**
a. Disaster information and response management	• Establishment of National Emergency Operations Centre (NEOC), Kathmandu	2,820,000 (380,000 already funded)	• TBD	MoHA, UNDP
	• Establishment of Regional Emergency Operations Centres (REOCs) in Far Western, Mid-Western, Western and Eastern Regions	300,000 x 4. Total = 1,200,000	• TBD	MoHA, IASC, NRCS
	• Establishment of 70 District Emergency Operations Centres (DEOCs), including pre-fabricated standardised kits and equipment modules.	25,000 x 70 = 1,750,000	• TBD	MoHA, DDRCs
	• Assessment Survey to be conducted for all locations (availability of suitable buildings, open spaces for mobile EOC, etc)	Flight costs, DSA etc (2 person team) – 3 months. 25,000	• TBD	MoHA
	• Development of standardised REOC and DEOC equipment needs, staffing levels and cost plans, and communications equipment.	Consultant – 1 month 15,000	• TBD	MoHA
	• Development and implementation of standardised training programmes for staff at all levels (e.g. radio procedures, IM including GIS, IT, maintenance, coordination, responsibilities, SOPs etc)	Consultant 6 months 90,000	• TBD	MoHA,
	• Development of SOPs for roles and responsibilities, coordination, and reporting, role of CDOs and DDRCs, standardised formats/forms, assessment techniques.	Consultant (as above)	• TBD	MoHA,

Expected Outcome:	Flagship Area 2: Emergency Preparedness and Response Capacity			
Joint Programme Outcomes	**Outputs (by Agency)**	**Budget (by output) USD $**	**Indicative Activities (by Agency)**	**National, local and international partners**
	• Identification of various software tools and equipment for IM support.	Consultant 2 months (30,000)	• TBD	MoHA,
	• Identification of existing IM tool and datasets; acquisition of various spatial and non-spatial datasets such as reference maps, framework datasets, population data, populated places, critical infrastructure data etc.	Consultant (as above)	• TBD	MoHA,
	• Development of "Virtual" internet EOC platform/website for use by national and international responders to improve EOC's work processes and facilitate decision making, information sharing and emergency response	Website development team 6 months 100,000	• TBD	MOHA
	• Development of inter-operable communications system amongst emergency responders	Communication specialists teams and equipment (hardware and software) 300,000	• TBD	?
	Sub Total	**5,950,000**		
b. Capacity building of first responders	• Develop first aid training programmes	10,000	• TBD	MoHP, WHO, NRCS, NGOs
	• Conduct first aid, SAR awareness and DP and DR training programmes (combined package)	Transport, DSA, workshop costs 400,000	• TBD	MoHP, NRCS, OCHA, INSARAG, WHO, NGOs
	• Conduct awareness programmes and planning activities for linkages between community-based SAR teams, NA and APF forces, and district and regional EOCs	Consultants, ToT workshops 150,000	• TBD	MOHA, NA, APF, EOCs

Expected Outcome:	Flagship Area 2: Emergency Preparedness and Response Capacity			
Joint Programme Outcomes	**Outputs (by Agency)**	**Budget (by output) USD $**	**Indicative Activities (by Agency)**	**National, local and international partners**
	• Provide basic first aid kits and supplies at the community level	25 per kit, transport costs, x 36,288 wards 907,200	• TBD	MoHP, NRCS, WHO, NGOs
	• Develop earthquake search and rescue messages and conduct community awareness campaigns	Consultant /Team 90,000	• TBD	MoHA OCHA, INSARAG, NGOs
	• Develop key disaster preparedness and response messages and conduct community awareness campaigns	Consultant /Team (as above)	• TBD	MoHA, OCHA
	• Provide updated equipment for the Fire Services in major urban centres	4,000,000	• TBD	Ministry of Local Development, OCHA, NRCS, INSARAG
	• Provide specialised training in fire-fighting, paramedical care, and search and rescue techniques for the Fire Services	Consultants (2 x 2 years) 720,000	• TBD	Ministry of Local Development, OCHA, INSARAG
	• Provide updated equipment and training for the Ambulance Service in major urban centres	2,500,000	• TBD	Ministry of Local Development, OCHA, INSARAG
	Sub Total	**8,777,200**		

Expected Outcome:	Flagship Area 2: Emergency Preparedness and Response Capacity			
Joint Programme Outcomes	**Outputs (by Agency)**	**Budget (by output) USD $**	**Indicative Activities (by Agency)**	**National, local and international partners**
c. Building emergency warehouses and mobilisation centres across the country for emergency response, and pre-positioning of stocks (food, non-food items and rescue equipment)	• Assessment of existing structures and need for new facilities	3 persons, transport, DSA 3 months US 1,000,000?	• TBD	MoHA, WFP, NRCS
	• Building, renovating emergency warehouses		• TBD	MoHA
	• Development of minimum essential stocks lists by category of goods, by location (central, district, VDC), by envisaged caseloads	Consultant 1 month 10,000	• TBD	MoHA, IASC Clusters, NRCS, NSET
	• Distribution and on-going maintenance of stock-piles at all levels over 3 years	3,000,000	• TBD	MoHA
	• Training programmes in warehouse management	2 person team – 3 months 40,000	• TBD	MoHA, WFP, DHL
	• Standardisation of reporting formats, coordination and distribution mechanisms	Consultant - 2 months 30,000	• TBD	MoHA, OCHA IMU, WFP, DHL
	Sub Total	**4,140,000**		
d. Disaster response and disaster management planning	• ToT workshops in disaster preparedness to develop roster pool of facilitators	3,000 x 9 = 27,000	• TBD	MoHA, OCHA, IASC
	• DP and CP workshops in all 75 districts annually	3 persons, transport and DSA x 75 x 3 years i.e. 1,500 x 75 x 3 = 337,500	• TBD	MoHA, DDRCs, NRCS, IASC partner agencies

Expected Outcome:	**Flagship Area 2: Emergency Preparedness and Response Capacity**			
Joint Programme Outcomes	**Outputs (by Agency)**	**Budget (by output) USD $**	**Indicative Activities (by Agency)**	**National, local and international partners**
	• Development, training and implementation of standardised early warning and disaster preparedness tools and services kits	600,000	• TBD	MoHA, DDRCs, NRCS, IASC partner agencies
	Sub Total	**964,500**		
e. Strengthening legal preparedness for the facilitation and regulation of international assistance	• Advocate and support the passage of enabling legislation (e.g. NSDRM, Tampere Convention etc)	Core Position / Consultant 3 years 600,000	• TBD	MOHA, OCHA, UNDP Governance section
	• Develop, explore and advocate for adoption by GoN of other areas of IHL, IDRL etc	As above	• TBD	MoHA, IFRC, ICRC, OCHA, UNDP
	• Development and implementation of training and awareness programmes for GoN and partners on the implications of new legislation for humanitarian and development assistance activities	100,000	• TBD	MOHA, OCHA, UNDP Governance section, IFRC, ICRC, NRCS
	Sub Total	**700,000**		
	Flagship 2 – Tentative Total	**$ 20,531,700**		

3. FLAGSHIP AREA 3: FLOOD MANAGEMENT IN THE KOSHI RIVER BASIN

3.1 Background and rationale[14]

Nepal is one of the 20 most disaster-prone countries in the world. The country is exposed to multiple hazards, most prominently earthquakes, floods, landslides, windstorms, hailstorm, fire, glacial lake outburst floods (GLOFs) and avalanches. According to the country profile prepared by EM-DAT on the available database for 1900-2009, earthquake and floods are the biggest hazards in terms of mortality, affected population, and economic losses.[15]

Annually, floods and landslides, on an average, cause about 300 deaths in Nepal and economic damage exceeding US $ 10 million. Most floods in Nepal occur during the monsoon season, between June and September, when 80% of annual precipitation falls, coinciding with snowmelt in the mountains.[16] Flash floods and *bishyari* (the breaking of natural dams caused by landslides) are common in the mountains, whilst river flooding occurs when rivers augmented by monsoon rains overflow their banks in the plains in the south of the country, as well as in northern Uttar Pradesh, Bihar, West Bengal and Bangladesh.[17] Most parts of the middle mountains and Terai are 'exposed' to severe flooding.[18]

Rainfall intensities of about 40-50 mm per hour are common in lower Mahabharat and Siwalik regions of Nepal. Several instances of rainfall of more than 400 mm in a 24-hour period have been recorded by Department of Hydrology and Meteorology (DHM) such as the 431 mm rainfall at Bajura in far-western region in August 12, 1980; 446 mm at Beluwa, in western region in September 29, 1981; 500 mm at Ghumtang in central region in August 25, 1968 and 473 mm at Anarmani in eastern region in October 10, 1959. However, with changing land use and other associated development activities, a lower threshold rainfall intensity (as low as 40mm which are common during monsoons) could also result in damaging landslides and flash floods.

Major floods occurred in 1902/03 in Bagmati river, and the Sunkosi river flooded in 1964, 1981 and 1984 in the eastern region of the country. Floods in Tinau in 1981 caused death and destruction washing away several hectares of fertile lands, while the July 1993 floods devastated the Terai region killing 1336 people and affecting 487,534 people.[19]

Heavy rainfall in central and eastern regions of Nepal during 19-21 July, 1993 had disastrous consequences with heavy loss to life and property as well as severe infrastructure damage due to floods, landslides and debris flows. In 1993, 87 % of the total deaths occurring in Nepal resulted from floods and landslides. More than 500,000 people were directly affected while 1336 people lsot their lives. More than 25,000 livestock were lost and 17,113 houses were destroyed. In the agriculture sector, more than 57,584 hectares of arable land were damaged.

[14] Material for this section is primarily from the Joint Mission 24th July 2009 draft Mission Report on Proposed Disaster Risk Reduction Plan for Nepal 2010-2013., and augmented by notes provided by the Earthquake and Megacities Initiative (EMI) land use planning proposal, and discussions with the National Society for Earthquake Technology-Nepal (NSET-Nepal), May 2009.

[15] http://www.emdat.be/Database/CountryProfile/countryprofile2.php

[16] MoPE, 2004; Regmi and Adhikari, 2007

[17] Dixit et al, 2007; Dixit et al, 2008

[18] NSET, 2008: 8

[19] Nepal country report, ADRC, 'Disaster Management Policies, Problems And Measures : The Case Of Nepal'

67 small and large irrigation projects along with thousands of farmer-managed irrigation schemes were seriously damaged. The estimated loss was around 4,900 million NRs. In 2007, almost half a million people were affected by widespread flooding caused by the early onset of strong monsoon rains and over 23,000 houses were destroyed.

On 18th August 2008, the left embankment of the Koshi river near Kusaha village in Sunsari district of Nepal breached and the river changed its course. The flood affected 8 village development committees rendering more than 42,500 people homeless and 22 dead in Nepal and more than 3 million people displaced in the Indian state of Bihar. The national highway was also damaged at several places due to the flood. About 6000 hectares of agricultural land were inundated and agricultural products worth more than US $ 3.7 million were damaged on the Nepalese side.

Koshi Basin

The Koshi, a major tributary of the Ganga, has the third largest catchment area in the Himalayas with the Bramhaputra and Indus rated first and second. It also is the largest basin in Nepal. Originating in the Tibetan plateau and the Nepali highlands, the river has seven tributaries: the Indrawati, Sunkoshi, Tamakoshi, Likhukhola, Dudhkoshi, Arun and Tamur. The total catchment area of the river at Nepal-India border is 60,500 sq. km, of which 48% or 28,900 sq. km lies in the Tibetan Special Autonomous Region. The other 52% is situated in Nepal. The area includes the entire mountainous region of the Koshi basin within the latitudes of 26 051’ and 29 079’ and longitudes of 85 024’ and 88 057’.

The average elevation of the Koshi basin is 3,800 m. in the great Himalayan range. The river drains rapidly and at very high velocity at Chatara. Sagarmatha (Mt. Everest), the highest peak of the world, lies close to the centre of the basin. The entire Koshi basin can be divided into three units: the Tibetan Plateau, the mountainous zone and the low-lying Terai plains.

The climatology of atmospheric circulation, variations in topography, and rainshadow effects of the Himalayas are the three major factors influencing hydro-meteorological characteristics of the Koshi basin. The following weather systems play a major role in bringing precipitation over the basin:

- Summer monsoon brings several wet spells widespread over the basin. Almost 80 percent of the annual precipitation over the basin occurs during monsoon. Monsoon generally sets-in over the basin during the first half of June and withdraws towards mid-September. The period from June to September is the summer monsoon season.
- Winter monsoon period is dominated by westerly wind with westerly jet stream in the higher troposphere. The weather systems develop as westerly disturbances; hence enter into the Koshi basin from the West. Precipitation amount, although insignificant compared to monsoon precipitation, contributes to significant snow accumulation in high elevation areas.

Annual precipitation within the basin under the influence of topography varies from less than 250 mm to more than 4000 mm. There are several instances of maximum daily precipitation exceeding 300 mm in high precipitation areas of the basin; but these are rare above 3000 m. The seasonal distribution of precipitation has a strong influence on the hydrological characteristics of the basin. The period of summer monsoon is also the period of high flows. The lowest flows are generally observed during the first three months of a calendar year. Streamflow increases in spring as a result of rising temperatures and increasing snowmelt in

high altitude zones. Most of the areas of the basin above 5500 m are covered by permanent snow as the temperature remains below freezing point throughout the year. The areas between 2500 m to 5500 m experience seasonal snow accumulation that melts along with the rise in temperature during spring and summer.

3.2 Joint program results

A large number of structural measures, particularly embankments, barrages and spurs, were constructed in the late 1950s and early 1960s in Nepal to reduce the incidence of floods. However, the designs of these structural measures already in place (embankments, barrages and spurs) must be revisited and checked for their adequacy in view of the complexities of the problem and the huge implications of structural failure.[20]

Flood risk management activities include a number of structural as well as non-structural activities. The following potential areas of intervention are proposed for the further development of projects:

a. Flood Risk Assessment: The program will conduct risk and vulnerability assessment in the flood-affected areas of Nepal, following a river basin approach. Risk assessment involves several steps, such as characterizing the area, assessing the hazard or determining the hazard level and intensity, assessing vulnerability, and finally assessing risk.[21]

b. Structural Measures for Flood Mitigation: The programme will implement structural measures for flood mitigation which include the construction of civil works such as embankments along rivers, minor drainage works to pass the flood and avoid inundation, irrigation canals diverting water to agricultural fields, provision of culverts and flood-ways, polders enclosing houses, fields, food supplies or animal fodder, and construction of flood shelters etc. Structural measures tend to consider mainly the hydrological and hydraulic implications of flooding, which are generally solved by choosing the alternative that maximises the expected net benefit.

c. Non-structural Measures for Flood Mitigation: The programme will also emphasize non-structural measures which include reducing discharge levels through natural retention, watershed management, delimitating flood areas, securing flood plains, and applying flood area regulations. These measures have become more feasible as they are cost-effective and do not interfere with natural drainage systems.[22] Non-structural mitigation also involves improving the coping capacity and resilience of the people.

d. Flood Forecasting and Early Warning Systems: The existing hydro-meteorological network in Nepal is not designed for flood forecasting purposes. This network has to be improved to meet flood forecasting requirements. A combined satellite and surface-based rainfall estimate provides the best input for flood forecasting and early warning systems.

e. The same problem exists with rain gauge stations in many river basins. Many rain gauge stations are in district headquarters and in the Terai area. Being a mountainous catchment and having very little lead-time, the network needs to be modified and rain gauge stations

[20] UNESCO, 2009
[21] Shreshta, et.al 2008
[22] Shreshta, 2008

improved by installing automatic rain gauge recorders for real time data transmission. Data collection, analysis and the transmission system also need to be modernized.

f. Institutional Capacity-building: The programme will identify technical capacity-building as one of its focus areas. Such capacity-building will be accomplished by strengthening the existing network of hydro-meteorological stations and river and rain gauzes in Nepal, improving computer models for interpreting data, and providing training to scientists.

3.3 Joint Program Design and Implementation Plan

The Koshi is one of the most important and flood prone rivers in Nepal impacting communities in the Terai low-lying plains across Nepal and Bihar in India. The program will focus on the following interventions in the Koshi basin region.

a. Flood Risk Assessment: The program will conduct a detailed risk and vulnerability assessment of the entire Koshi basin area. This will include detailed geography, geomorphology, hydrology, hydro-meteorology, vegetation, land use, existing counter-measures, and historical analysis of local flood events. The assessment will also include detailed study of the ice and snow content feeding the Koshi river system and the impacts of climate change on the entire river basin.
   This activity will support strengthening the knowledge base to improve flood management. This includes support for critical topographic and other surveys (e.g. cross-sections/longitudinal sections of embankments and river) in the focus areas of the lower Bagmati Basin. The program will undertake a detailed contour survey at 0.2 m intervals of a 2,500 sq. km. area. Under this activity support will also be provided for the development of a spatial database for flood management, at a coarse level for all Nepal, and more detailed for flood-prone areas of the Koshi basin.
   Following the floods in 2008, the river morphology has changed. A comprehensive research based study will be undertaken to assess the changed river morphology, bed level rising, and its impact on existing flood mitigation measures including embankments.

b. Structural Measures: Following the embankment breach on the Koshi at Kushaha in August 2008, the river has changed its behavior around the Chatra area. Existing river training structures are being eroded. The floods had eroded several studs at Pulthegaunda and threatened the embankment at several locations. Some studs have been strengthened through the flood rehabilitation package provided by the central government. These are, however, relatively small fixes when considering the magnitude of the Koshi floods. Therefore, a serious effort will be undertaken to strengthen existing river training measures, planning and construction of additional works, river channel strengthening and introduction of bio-engineering measures.

c. Flood Forecasting and Early Warning System: The project will concentrate on strengthening and optimization of hydrological and meteorological data observation network including glaciers and glacial lakes monitoring network in the Koshi basin. Telemetric systems will be developed for real-time data transmission from stations. The project component will focus on development of weather forecasting and flood forecasting model based on real time hydro-meteorological data. Flash floods are of huge concern in Nepal where several instances of massive hourly precipitation have been recorded. This component will aim to develop a Flash Flood Guidance System for Nepal.

The component will also work on a flood warning mechanism to be piloted in the Koshi basin for dissemination of flood forecast.

d. Strengthening Institutional Capacity: The two main agencies that will be directly involved in the implementation are the Department of Water Induced Disaster Prevention (DWIDP) focusing on the structural components and the Department of Hydrology and Meteorology (DHM) focusing on the flood forecasting and early warning dissemination. Capacity strengthening will include equipment up gradation, specialized training and better coordination and information sharing amongst different agencies. A new Flood Forecasting Center (FFC) will be established within the DHM. The FFC will also be responsible for sharing flood early warnings regionally downstream in order to provide sufficient lead-time to downstream stakeholders.

Regional Perspective

In a regional perspective, the worst floods occur downstream from the Nepal-India border in the Indian state of Bihar, where the Koshi is named as the “River of Sorrow”. The joint Nepal-India Flood Forecasting Project has not been able to provide timely information to improve flood forecasting for the Indian territory of the Koshi basin. The same holds true for sediment observations. For Bangladesh, the lack of reliable information from Nepal (and India) is crucial to expand its flood warning capacity for several days.

The Koshi basin is shared by China, Nepal and India. North Bihar has been particularly ravaged in past by floods originating largely in the Nepal part of the Koshi basin. As a major tributary to Ganga river which drains into the Bay of Bengal, Bangladesh is highly interested to obtain information from the Koshi basin to improve the lead time of forecast by several days. A large part of the flow in the Koshi originates from high mountain areas and their snow and glacier melt processes. Knowledge on snow and glacier melt and flows from Tibetan part of China, especially for the Arun river is required for Nepal to improve forecasting accuracy. The Koshi basin therefore is highly suitable to establish viable regional mechanism to collect, exchange and disseminate hydro-meteorological data.

Table 5 – Joint Programme Results Framework

Expected Outcome:	**Flagship area 3: Flood Management in the Koshi River Basin**			
Joint Programme Outcomes	**Outputs (by Agency)**	**Budget (by output) USD $**	**Indicative activities (by Agency)**	**National / local and intn'l partners[23]**
• Flood Risk Assessment	• Risk and Vulnerability assessment of the entire Koshi river basin • Topographic survey including contour survey at 0.2 m interval of the lower Koshi basin area (approx. 2,500 sq. km). • Assessment of river morphology, bed level rising	2,500,000	TBD	DWIDP, MoHA,WB, ADB, Int'l NGos
• Flood management Structural Measures	• River bank protection works • Drainage channel works • Embankment strengthening works • Development of tree and grass belts	17,000,000	TBD	DWIDP, WB
• Flood Forecasting and Early Warning System	• Strengthening and Optimization of hydrological and meteorological data observation network • Strengthening glaciers and glacial lake monitoring system in the Koshi basin • Development of telemetric systems for real-time data transmission • Development of weather forecasting and flood forecasting model • Development of a flash flood guidance system for Nepal • Flood warning mechanism and community outreach for flood forecast dissemination • Equipment purchase for enhanced weather forecast	2,500,000	TBD	DHM, MoHA, UNDP, Int'l Weather forecasting institutions,
• Strengthening Institutional Capacity	• Strengthening the DWIDP and DHM agencies including training • Development of a Flood Forecasting Center within the DHM	2,200,000	TBD	DWIDP, DHM, MoHA, WB, UNDP, relevant Int'l organizations
		$ 24,200,000		

4. FLAGSHIP AREA 4 – INTEGRATED COMMUNITY BASED DRR/MANAGEMENT

4.1 Background and Rationale

Nepal is a mountainous country with high peaks and slopes, steep terrain, rugged and fragile geomorphic condition, volatile tectonic processes and variable climatic condition which expose it to multiple hazards, most prominently earthquakes, floods, landslides, fires, avalanches, storms and cold waves. Moreover high population growth, poor economic condition, unplanned settlement, low literacy rate and very rural topography have enhanced the vulnerability. It is well know that Nepal faces high earthquake vulnerability; however it is also ranked 6th in relation to the anticipated impact of changing climate patterns, 30th globally with regard to water related disaster vulnerability and 11th in regards to earthquake vulnerability[24]. Each year thousands of people are affected by floods and landslides, which hit the country on a recurring basis causing immense damage at agricultural land, crops, communal and individual infrastructure. The number of deaths to the affected people in disasters is highest in Nepal when compared to the other countries of the South Asian Region, in the last eight years, 2,206 people died as a result of natural disasters in Nepal (EM-DAT).

While the Government of Nepal has acknowledged the need to move from a relief and response paradigm, the current institutional framework remains orientated towards disaster management. However, recently efforts were undertaken for the transition into a disaster risk reduction (DRR) approach that is mainstreamed across all development sectors and at all levels, e.g. the Tenth Five Year Development Plan (2002-2007) devoted a chapter to highlighting on the need of policy formulation, coordination with the creation of strong and suitable institutional mechanism. The Three Year Interim Plan (2007-2010) has similarly highlighted the importance of DRR and mitigation, emphasizing on the need to introduce changes in the existing national policies so as to give attention to preparedness and reconstruction in place of relief activities alone.

Although the Natural Relief Calamity Act of 1982 has been amended twice it continues to encourage a reactionary response focused approach to DRM. In part the Government tried to address this gap through the Local Self Governance Act (1995), which outlines the delegation of authority for the design and implementation of holistic DRR activities to local level Government through District Development, Municipal and Village Development committees. However, the limited institutional structures, trained personnel in risk reduction approaches, and guaranteed allocation of resources from central government all remain a limiting factor to the decentralization of authority. Moreover, the absence of people elected representatives due to the decade long conflict which ended in 2006 has acted as a stumbling block towards the exercise of this authority.

Since becoming a signatory to the HFA at the World Conference on Disaster Risk Reduction, (2005), the Government has taken a number of important steps and has been leading a consultative process for the review of its institutional mechanisms and policy framework. A draft Disaster Risk Management Act embodies long-term planning, sustainable approaches to disaster risk reduction and linkages between risk reduction and development. The further development of the draft National Disaster Risk Management Strategy outlines priority actions for the establishment of a national framework that includes multi stakeholder national and district authorities for DRM; the devolution of responsibility for local-level DRR and emergency response to Village Development

[24] National Strategy for Disaster Risk Management (Draft)

Committees. Importantly, in addition to the Ministry of Home Affairs alone, the development of these documents has involved the Ministry of Local Development for Preparedness, the Ministry of Home Affairs for Rescue and Relief and the Ministry of Physical Planning and Works on Rehabilitation and Reconstruction.

Within Nepal and the global DRM community the value of capable and empowered Community Based Organizations (CBO) and National Red Cross and Red Crescent Societies has been recognized as a key driver to building community safety and resilience to disaster risk. These organizations are effectively supporting at-risk-communities to understand the risks they face, undertake mitigation and adaptation actions, act on hazard analysis and early warnings, plan and prepare for their eventual need to respond to disaster events as first responders.

A recent report (Department for Water Induced Disaster Prevention, DWIDP 2006) has identified approximately 50 out of all 75 districts across Nepal are vulnerable to disaster. Furthermore around 80 per cent of these 50 districts, which include some 1850 villages, are considered to be exposed to a medium to high vulnerability warranting intensified support to rectify this hazard risk. While the capacity and institutional mechanisms are being addressed, support to these vulnerable villages can not be managed centrally and the current capacity of District, Municipal and Village Develop Committees is limited, especially in remote areas.

In order to effectively promote community level DRM the Government of Nepal has recognized the importance of local community based and non-governmental organizations as well as the Red Cross and is willing to partner with them in the mitigation of risks of communities. In this regard the capacity of these organizations should also be developed in parallel with District and Village Development Committees. The development of capacities for reducing disaster risk across Nepal will promote enhanced cooperation and ensure the capacity to effectively address gaps faced in the disaster risk management environment in Nepal.

4.2 Joint Programme Results

The Joint Mission of ISDR has identified the following components as the high priority areas for intervention in support of developing robust local level government and civil society capacity for DRM.

(a) *Local level risk assessments:* The outcome of this programme will be the enhanced knowledge and awareness of local level hazard risk within vulnerable communities and the institutional structures that support their disaster risk management. Existing community risk assessment (CRA) methodologies being used by DRM practitioners will be reviewed and standardized approaches developed for the promotion of participatory lead, gender and diversity sensitive approaches. The outcomes of CRA exercises in high risk rural, urban or semi-urban communities will include the preparation of local multi-hazard maps, identification of vulnerabilities and local capacities, and the empowerment of communities to address their own disaster risk through support from CBOs, NRCS and Local authorities.

(b) *Community-based early warning (last mile solutions):* The propagation of community based end-to-end early warning systems, for multiple hazards including flash floods, GLOFs and landslides will be achieved through drawing on indigenous knowledge and advances in science and technology. In support of the early warning systems themselves, public awareness and training will be undertaken for DDCs, VDCs and community members in the monitoring, operation and dissemination of early warning

messages, as well as on how to act upon receiving such warnings. Experience has shown that early warning alone is not enough. Activities that enhance early warning messaging will be linked to increasing capacities in early action or first responders as outlined under Community-based preparedness and mitigation. Through this component existing experience in establishing early warning systems will be drawn upon within Nepal: e.g. Practical Action, Mercy Corps and the Department of Hydrology and Meteorology have experience in flood early warning systems, ICIMOD with GLOFs and the Center of Disaster Studies with landslides and earthquakes (the latter through observation of animal behavior).

(c) *Community-based preparedness and mitigation:* The outputs of CRAs will be used to identified and incorporate preparedness and mitigation actions into VDC and DDC development plans. This process will also draw on improved disaster inventories that incorporate information from Government, CBOs and the Red Cross. Increased capacity of community and institutional structures with regard to emergency response preparedness and action will be developed through skills development in areas such as first aid and light search and rescue as well as response preparedness planning and simulation. Existing community networks and focal groups will be engaged during this process, reinforcing existing structures and ensuring greater take up initiatives. Furthermore linkages to Flagship area 2 will be a key to ensure capacity developed at the local level is aligned with national disaster preparedness systems.

(d) *Community capacity development:* The programme will strengthen the institutional capacities of VDCs, CBOs and the Red Cross district and sub-chapters to work with communities on addressing and mitigating their risks. It will amongst others focus on the establishment of inclusive decision-making bodies in communities, training and retaining of community volunteers, establishing relations with authorities and other stakeholders, strengthening coordination mechanisms and introducing measures to ensure sustainability of the support given. These improved systems and processes will be incorporated into local development planning encouraging effective linkages to Local Authorities and national systems.

(e) *Vulnerability reduction measures:* In support of the capacity building, education and awareness processes under the other components, structural mitigation and prevention measures such as strengthening existing or developing new communal infrastructure, retrofitting existing buildings, protecting water supplies and sanitation facilities and constructing new infrastructure to protect river banks etc will be undertaken under the flagship programs for hospital and school safety and flood management. This program plans to establish and manage evacuation shelters for vulnerable communities. In addition, socio-economic risk transfer systems such as risk insurance (agricultural) and the diversification of livelihoods will be supported for urban and rural communities, focused on building the resilience of low socio-economic households within at risk communities. Further vulnerability reduction measures such as cash for work programs could be implemented in coordination with DDC and VDCs as part of emergency response, recover and development plans.

In achieving the above components, lessons from agencies working with community-based disaster risk reduction and management, such as Action Aid, Care Nepal, ICIMOD, Mercy Corps, Nepal Red Cross Society (NRCS), NSET, Oxfam, Practical Action, Save the

Children, UNDP, religious organizations and other (I)NGOS and national CBOs, as well as relevant Government Departments and institutions will be adopted and replicated.

4.3 Joint Programme Design and Implementation Plan

(a) *Local level risk assessments:* Disaster risk management actions at the local level have tended to be limited in their geographical scope and as a result there has been limited progress in the area of increasing knowledge, innovation and education to strengthen community safety and resilience. Overall there is a low level of awareness related to hazard risk within vulnerable communities, local government and CBOs. In the course of working with the communities, the prevailing practice in Nepal is to assemble community members and form a Disaster Risk Management Committee (DRMC) through democratic processes. Building on these proven practices, existing DRMCs where present or newly formed DRMCs will be mobilized to conduct local community risk assessments (CRA) that incorporate community mapping practices identifying hazard risk, individual and communal infrastructure, natural resources, safe places etc. from which the communities will analyze and identify prevention and mitigation measures to be undertaken. Multi-hazard maps will be prepared with the help of technicians outlining current and future hazard profiles. These maps will be displayed in public places and be made available to local Authority and organizations assisting vulnerable communities address their disaster risk.

Special emphasis for CRAs needs to be given for the inclusion of vulnerable groups in order to represent most vulnerable and at-risk groups. As this has not always been the practice in the past years, CRA methodologies will need to be reviewed, best practices identified and issues of gender and diversity incorporated into agreed methodologies. National data sets on the losses incurred by the disasters such as DisInventar data, and that available with the NRCS and Ministry of Home Affairs will be referenced to support community level analysis. Updated CRA methodologies will be disseminated and training provided to District and Village Development Committees, CBO, NGOS and the NRC for the conducting CRAs. Furthermore organizations will be encouraged to update their internal CRA processes and or adopt the agreed CRA methodologies into all their disaster risk management programs. Partnerships with International and national institutions within Nepal will be identified to support the identification and training in implementation of appropriate CRA methodologies.

Project districts are advised to develop overall VCA (Vulnerability and Capacity Assessment) profiles that will be a basis for development of district level plans.

(b) *Community-based early warning (last mile solutions):* The decline in injuries, loss of livelihoods and deaths from disasters over the past three decades is, in part due to the establishment and improvement of early warning systems. Advances in technology and forecasting techniques have been a major contributor, however the development of people-centred approaches is essential to ensure that the warnings captured by satellites, computer modeling and other technologies reach at-risk communities and are then acted upon. While advances in technology have improved early warning systems, they often tend to be sophisticated and high-tech, placing them beyond the functionality of local level DRM actors. Thus, the component will focus on the reach of easily understandable early-warning messages to communities at risk. The component will extend the reach and awareness of end-to-end early warning systems across Nepal,

drawing on national, regional and global advances as well as low-tech systems developed and tested within Nepal. Importantly these will as far as possible be based on the indigenous knowledge so as to reinforce traditional practices and be located in accessible places with authority given to local community groups for their management, maintenance and regular testing. Links will also be made to the national meteorological office and national radio networks to disseminate regular short term and long term weather forecasts. Standardized training will be provided to VDC and village representatives in the monitoring and operation of systems, and importantly in the appropriate communication of messages to be acted upon. An important component beyond the systems themselves is to ensure awareness and knowledge on how to act upon receiving an early warning message. As such public education and awareness programs will be undertaken to ensure communities are aware of their responsibilities on receiving early warning messages.

(c) *Community-based preparedness and mitigation:* Previous efforts at incorporating preparedness and mitigation planning into Local Authority development planning have focused at the DDCs and Municipality level. While this has been somewhat successful, there is a need for consistency in the identification of appropriate preparedness and mitigation actions as well as follow up with regard to the achievement of such plans. In addition there is a distinct lack of such planning at the VDC. This component will draw on the outputs of CRAs to incorporate identified preparedness and mitigation actions into VDC and DDC annual development plans. In regard to preparedness actions, existing capacities within the NRCS and other NGOs and CBOs will be utilized to establish VDC level preparedness and response plans, standard operating procedures and volunteer based first response teams with skills in light search and rescue, first aid, community evacuation, and relief assessment and distribution. Support will be further provided to the establishment HAM radio communication networks, safe evacuation areas and shelters for vulnerable populations and their livestock all of which shall incorporate the needs of both genders. In order to ensure the functionality of evacuation shelters and the response plans, the former should be maintained regularly following an agreed maintenance plan, while the later should be revisited through drills and mock up exercises conducted regularly through community structures such as local women's groups and institutional structures such as schools. Identified disaster prevention and mitigation actions will be monitored through enhanced coordination platforms with linkages to the National DRR Platform through VDC and DDCs. In regards to record keeping and disaster inventories, DesInventar, NRCS and MoHA have established records and databases that can be taken as a point of departure. The aforementioned databases will be assessed regarding their authenticity and the development of a systematic disaster inventory mechanism will be established at the local level.

(d) *Community capacity development:* There is a multitude of community based capacity building approaches being undertaken by DRR actors Nepal. While many of these are successful and work towards developing sustainable local level capacity, there are limited linkages and involvement of District and Village Development Committees, who are ultimately responsible for developing DRM capacity across the country. While it is acknowledged there is a wide spread need for developing the capacity vulnerable community to understand their hazard risk and act to prevent or mitigate current and future disaster risk, it is essential that this is linked and supported by district and national structures, promoting the mainstreaming of DRR and the incorporation of

DRM practice into development planning. The programme will work with VDCs, NGOs, the NRCS, CBOs and also fire brigades for the development of institutional capacities to ensure sustainability of DRM programs. Activities will amongst others focus on the establishment of inclusive decision-making bodies at community level, the training, management and retaining of community volunteers, establishing relations with authorities and other stakeholders, local resource mobilization, strengthening coordination mechanisms and communications systems. The component will establish linkages between NGOs, the NRCS, CBOs and relevant local agencies, e.g. agriculture, banks, local businesses, health and veterinary services to promote holistic disaster preparedness and reinforce multi-level linkages between VDC, DDC and the National level to ensure consistency and reinforcement of joint actions.

(e) *Vulnerability reduction measures:* The reduction of vulnerability is both a humanitarian imperative and a human development necessity if we are to progress, protect and sustain achievement of the Millennium Development Goals, and further forms the core of disaster risk reduction. To complement the education, awareness, preparedness planning, system and skills development activates outlined in the above components, small infrastructure measures and social-economic actions focusing on mitigating and preventing the impact of disasters will also be undertaken. Risk insurance and risk transfer schemes have recently been identified as a key component to diversifying the resilience of communities. As such studies and projects will draw on the successful micro-credit experiences from South Asia (the Agriculture Development Bank) and develop appropriate risk insurance and micro-credit programs for urban and rural communities with a focusing on the areas of agriculture, livestock and horticulture. These initiatives will draw on and revive traditional coping mechanisms such as indigenous practices of maintaining food granary through communal in-kind donations during plentiful harvests. As with the area of risk insurance, the diversification of livelihoods has received very little attention in Nepal. In the aftermath of disasters, one option for the restoration of livelihoods could be through Cash for Work and Cash for Training programs. However these tend to be ad-hoc in nature and there are opportunities for them to be mainstreamed it into the DRR programs. Furthermore engagement with VDCs will be sought to incorporate food/cash for work programs into development planning, and programs will build on local systems such as the existing seasonal labor markets and act as a point of departure for developing minimum standards and common methodology for implementing such programs.

Table 6

Joint Programme Outcomes	Outputs (by Agency)	Units	Budget (RS)[26]	Budget USD $	Indicative Activities (by Agency)	National, local and international partners25
Local level risk assessments	Map existing CRA methodologies and identification of common minimum criteria (incorporating gender and diversity) for CRA processes.	1 consultation process	3,750,000	50,000	TBD	TBD
	Joint training of VDCs, CBOs, NGOs, NRCS etc on CRA methodologies to disseminate minimum identified criteria and develop a resource pool of qualified practitioners.	50 Districts (8 trainings per district max)	32,000,000	426,667	TBD	TBD
	Initiate VCA processes for identifying risks, vulnerabilities and capacities available in the villages	1850 VDCs	111,000,000	1,480,000	TBD	TBD
	Include hazard maps resulting from VCAs in the GIS system		74,000,000	986,667	TBD	TBD
	Sub Total		**220,750,000**	**2,943,334**		
Community-based early warning (last mile solutions)	Install Early Warning Systems using amongst others indigenous practices for flood, landslides, fires, GLOF, and earthquakes with clear responsibilities in the communities	50 Districts	80,000,000	1,066,667	TBD	TBD

[25] Through the process of preparing this concept note, a number of organisations and institutions were identified as stakeholders for integrated community based DRR/M and expressed interest to be included in the further development of the plan. Amongst others these are: Action Aid, Care Nepal, ICIMOD, Lutheran World Federation, Mercy Corps, Nepal Red Cross Society (NRCS), NSET, Oxfam, Practical Action, Save the Children, UNDP and other UN organizations, religious organizations and national CBOs, as well as relevant Government Departments and institutions, such as Kopa Engineering College, Nepal Engineering College, Center for Disaster Studies, DPNet, etc. Who will be involved in what kind of activities needs to be defined at a later stage.

[26] USD 1 = Nepali Rs 75/-

Joint Programme Outcomes	Outputs (by Agency)	Units	Budget (RS)[26]	Budget USD $	Indicative Activities (by Agency)	National, local and international partners25
	Ensure linkages between community base EWS, national communication networks and meteorological services					
	Establish a Radio Network to communicate early warning messages through district local FM	1850 VDCs	37,000,000	493,333	TBD	TBD
	Training of community and VDC representatives in the operation and maintenance of EWS	1850 VDCs (annually)	92,500,000	1,233,333	TBD	TBD
	Undertake public awareness and education programs and IEC materials on EWS, messages and actions to be taken on receipt of messages.	50 Districts (annually)	100,000,000	1,333,333		TBD
	Sub Total		**309,500,000**	**4,126,667**		
Community-based preparedness	DDCs, Municipalities and VCDs incorporate DRR and preparedness for response actions into their development plans, programs and regular activities		No budget needed			
	Develop VDC disaster risk reduction plans based on standard template and have them printed	1850 VDCs	55,500,000	740,000	TBD	TBD
	Plan 1 simulation exercise per year based on the plan	1850 VDCs (annually)	92,500,000	1,233,333	TBD	TBD
	Develop capacity of village level response teams in first aid, light search and rescue, fire fighting, evacuation, assessment and relief distribution	50 districts	10,000,000	133,333	TBD	TBD

Joint Programme Outcomes	Outputs (by Agency)	Units	Budget (RS)[26]	Budget USD $	Indicative Activities (by Agency)	National, local and international partners25
	Strategically place response kits into disaster prone VDCs	1850 VDCs	166,500,000	2,220,000	TBD	TBD
	Develop a systematic disaster inventory mechanism for local level record keeping that is linked to national statistics	Lump sum	7,500,000	100,000	TBD	TBD
	Train for community volunteer regarding risk awareness and community driven risk reduction action (including all risks identified by the community and cross-cutting issues)	1850 VDCs (twice over 5 years)	92,500,000	1,233,333	TBD	TBD
	Sub Total		**424,500,000**	**5,639,999**		
Community capacity development		1850 VDCs	185,000,000	2,466,667	TBD	TBD
	Strengthen sharing and coordination mechanism (regular, e.g. quarterly meetings) between village representation groups, CBO, Red Cross and VDCs					
	Establish emergency response funds in each VDC / municipality with contributions from the local community Develop SOP for the use of the fund	1850 VDCs	No budget needed, as fundraising within the community			
	Establish and or upgrade effective communication systems between VDCs	1850 VDCs	37,000,000	493,333	TBD	TBD

Joint Programme Outcomes	Outputs (by Agency)	Units	Budget (RS)[26]	Budget USD $	Indicative Activities (by Agency)	National, local and international partners25
	Establish a resource center in each VDC with access for the local community (e.g. library)	1850 VDCs	55,500,000	740,000	TBD	TBD
	Subtotal		**277,500,000**	**3,700,000**		TBD
Vulnerability reduction measures	Identification or construction and management of evacuation shelters based on the evacuation plan (part of the DP plan)	1850 VDCs	370,000,000	4,933,333	TBD	TBD
	Awareness raising on humanitarian values to reduce discrimination and on the use and limitations of traditional practices and believes	1850 VDCs	18,500,000	246,667	TBD	TBD
	Establishment of community level risk insurance schemes focusing on agriculture, horticulture and livestock, and micro-credit schemes to support the diversification of livelihoods	1850VDCs	92,500,000	1,233,333	TBD	TBD
	Subtotal		**481,000,000**	**6,413,333**		
	Overall Total		**1,713,250,000**	**$ 22,823,333**		

5. FLAGSHIP AREA 5 – POLICY/INSTITUTIONAL SUPPORT FOR DISASTER RISK MANAGEMENT (DRM)[27]

5.1 Strategic Objective

The programme will focus on developing, strengthening and consolidating institutional, legislative, and policy frameworks for planning and advancing comprehensive multi-hazard & multi-sector DRM, Climate Change Adaptation (beyond response & relief), and national capacity building at central, regional, district, village, municipality and local levels throughout Nepal.

5.2 Linkages to the Global Platform for Disaster Reduction (2009)

Instructively, this action plan is strongly aligned and reflective of recommendations 13 and 14 of the Chair's Summary of Outcomes Report of the Global Platform for Disaster Risk Reduction.

Notably, this well attended global forum identified a pressing need to build institutions, including legal frameworks, to sustain disaster risk reduction action as an ongoing concern, with several countries stressing the need for technical assistance, to help grow their capacities.

The accelerated development of platforms for disaster risk reduction at both national and sub-national levels needs was also identified as critical in order to create an enabling environment, and to inclusively engage varied government and civil society interests and address cross-cutting issues.

The Global Platform also highlighted that the implementation of the Hyogo Framework for Action must now accelerate rapidly from isolated actions and pilot projects to comprehensive programmes of action, and that the setting of targets in specific areas can help to achieve the necessary momentum.

5.3 Background/Rationale

Nepal is exposed to a range of hazards due to its steep topography, exposure to intense monsoons, and seismically active zones[28]. Nepal ranks 11th in the world in terms of vulnerability to earthquakes and 30th in terms of flood risks (UNDP 2004). Because of these factors its population of 27 million is highly vulnerable to disasters.

The challenge of developing and enhancing disaster risk management (DRM) is widely known and has been well documented in Nepal. This is further complicated on a daily basis by the ongoing political situation which impacts central and other key decision-making in this sector.

[27] This conceptual elaboration & preliminary action plan is prepared by the Disaster Risk Management Team of the UNDP Nepal Country Office. Supervisory input: Vijaya Singh. Team members: Yuri Chakalall (DRM Advisor), Ghulam Shirani (DRM Program Manager), Om Mulmi, Rudra Neupane, Jwala Panday, Niranjan Tamrakar & Rajendra K. Gurung. Input from Krishna Vatsa, Regional Advisor UNDP is also incorporated.

28 World Bank (2008) Country DRM Note. Disaster Risk Management Programs for Priority Countries.

A strong implementable, results based DRM agenda will contribute to community and national resiliency towards risks, sustainability of development gains, poverty reduction, and ultimately continued economic growth.

A number of key country papers related to DRM officially presented at important national, regional and international forums by Nepal, including World Bank regional conferences on DRM[29], SAARC meetings to document the progress of HFA Implementation in the South Asian region 2007-2009[30] have clearly indicated the need for new set of legislative and institutional arrangements for implementing risk reduction approaches in Nepal. Recently the country paper on DRM in Nepal developed by Asian Disaster Reduction Center (ADRC) has emphasized this as well (Marasini, 2008). These reports have consistently documented the challenges and critical needs for developing and strengthening institutional, legislative and policy frameworks for DRM.

The Central Disaster Relief Committee (CDRC), headed by the Ministry of Home Affairs (MoHA), is the apex body of the disaster response system in Nepal. The government organization responsible for disaster management is the Disaster Management section within the MoHA. Following a disaster, the CDRC meets as required to address the needs of the affected population. At the district level, the District Disaster Relief Committee (DDRC) is the nodal body for coordinating relief efforts. The Natural Calamity (Relief) Act, 1982 also accommodates the provision for the establishment of regional and local disaster relief committees as required.

UNDP with funding support from EU ECHO (DIPECHO), in partnership and with guidance from MoHA, and with implementation support from NSET has worked to enable the participatory and consultative development of a National Strategy for Disaster Risk Management in Nepal (NSDRM). The NSDRM is a long term DRM strategy for Nepal fully aligned with HFA priorities and proposes new sets of policy, legislation and institutional reform needed for effectively managing disaster risks in the long run. Though the government and partners have principally agreed to NSDRM recommendations, the actual approval and endorsement is still awaiting decision by Nepal's Council of ministers. It has come to our knowledge that the final draft of NSDRM submitted to Council of Ministers by the Ministry of Home Affairs for approval has undergone some amendments and revised NSDRM is shortly expected after intra-Government deliberations and decision.

However, the Government has taken lead on drafting the new legislation in line with the NSDRM priorities to avoid the time lapse between approval of the strategy and its implementation.

Once the NSDRM is finalized, the expectation that key priorities in the strategy will be elaborated in the form of a national plan of action.

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29 Prathap, P.K (2007) Country Approaches to Disaster Risk Mitigation in Nepal: From Vision to Implementation. Presentation at Regional Conference on "Hazards of Nature, Risks and Opportunities for Development in South Asian countries." Learning lessons from the past by preparing for the future. Joint Secretary, Ministry of Home Affairs, Government of Nepal

30 SAARC (2009) Meeting to Document the Progress of the Hyogo Framework of Action in the Asian Region 2007-2009

Despite delays in NSDRM approval and setting up new institutions as recommended, the line ministries of the government have shown great interest in working on DRR mainstreaming within their respective sectors, and a readiness to align their sectoral plans and policies with DRR. To cash in on the momentum already gained within the line ministries to work on DRM, UNDP Country Office supported them to establish disaster focal desks in each key line ministries, with the objective of this network being an enabler and facilitator of DRM sector mainstreaming. These focal desks though set up as ad-hoc arrangements and are still to take the formal shape, have been effectively engaged in implementing preparatory baseline activities required for integrating risk reduction into sectoral plans and policies.
While Nepal's sector policies in general are still to integrate disaster risk reduction, there is a couple of policies, such as the Water Induced Disaster Policy (2006) and Nepal's Water Strategy (2006) which fully integrate this concept.
The current institutional framework of the Government of Nepal has been more oriented towards disaster response and relief. Clearly this needs to be broadened and deepened to enable and entrench more pro-active disaster risk management and risk reduction.

A central consensus perspective is that a number of counter-measures are required including but not limited to:

- policy and legal reform which supports the formation of new policies;
- drafting new as well as revising existing legislation;
- development and implementation of a national DRM plan that is responsive to HFA priorities;
- development and implementation of sector policies embracing DRM;
- institutional reform;
- knowledge management & sharing;
- building code implementation;
- disaster budgeting or financing for pro-active risk management & reduction;
- national platform building;
- domestic professionalization of DRM discipline;
- community based disaster management;
- establishment of independent specifically mandated disaster related organizations at central and local levels.

It is instructive to note that in a recent analysis of UNDP's Bureau for Crisis Prevention & Recovery DRR funding portfolio for the Asia-Pacific Region, four countries: Pakistan, India, Bangladesh & Indonesia account for an annual expenditure of USD $60M representing 95% of BCPR's regional portfolio[31]. There is therefore room for Nepal to make a stronger case for resourcing to reduce its annually recurring risks from disasters conditional to the establishment of effective systems for results delivery and for disaster governance.

5.4 Joint Program Results

The May 26-28, 2009 ISDR Consortium's joint mission identified and recommended the following high priority areas of intervention under Flagship area 5 related to policy and institutional support for DRM:

31 UNDP (2008) UNDP Disaster Risk Reduction & Recovery. Global Portfolio Review 2008: General Observations & Trends UNDP (2008)

(a) *Institutional Capacity Building*: The program will emphasize the need to strengthen the national and local institutions dealing with disaster management and development, including the augmentation of technical and financial capacities of key Ministries including but not limited to the Ministry of Home Affairs, Local Development, Environment, Forest and Soil Conservation, Agriculture and Cooperative, Physical Planning & Works; towards DRR activities. At the local level, the programme would include components which strengthen local government for playing a more effective role in DRM. District authorities, local government bodies, NGO's and civil society organizations would also be involved. This priority intervention also envisages the improvement of inter-agency coordination among ministries, local government and non-state actors as well as the international system. A key activity here will be to ensure the National Disaster Management Office and those at the regional, district and local levels have enough resources and the expertise to conduct the disaster management process in their own areas of responsibility. Model and typical organizations have to be developed/adjusted for these purposes.

(b) *Supporting Policy Formulation and Legislative Enactment Process:* Given that Nepal has formulated many sector specific policies over the years which could have a significant impact on activities related to disaster risk management; the program seeks to support policy frameworks and institutional development at national and local levels in addition to the integration of DRM into core development policies and plans of Nepal. Such support will include activities such as the formulation of a national policy on DRM, development of sectoral planning guidelines and action plans to integrate DRR, revision of existing disaster legislation and also of the new Constitution soon to be drafted in Nepal, as well as planning guidelines, by laws and development control regulations.

(c) *Orienting Financial Mechanisms Towards Risk Reduction & Risk Management:* Existing funding mechanisms for DRM are largely relief and response oriented. The program will review the relevant provisions governing allocation of calamity relief funds at national and district levels. The program will also explore different ways in which appropriate budgetary support can be provided to the national government, local administration and self-governing institutions for reducing disaster risk at all levels. The program will consider creating appropriate funding mechanisms to address long term risk reduction and mitigation activities. The program also expects to encourage appropriate risk transfer mechanisms, micro-insurance, and micro-finance mechanisms to build a culture of risk reduction and mitigation at community level. Some of the financial services may be used to provide incentives for hazard resistant construction or livelihood practices. Active engagement with private sector stakeholders including banks, and insurance companies is foreseen to be a key element of achieving real progress in this regard.

(d) *Training & Capacity Building with the Establishment of a National Training Institution:* A key first activity in DRM is to train those newly-appointed disaster managers responsible to conduct the DRM process at the national and district levels.

Disaster risk management requires a strong technical human resource base for achieving national disaster risk reduction and for enhancing program effectiveness. An important programme goal is therefore the development of DRM/DRR skills amongst government officials, professionals, NGO's, civil society and broader stakeholders while building capacity at national and local levels. The program will also conduct a detailed training and capacity needs assessment at national, district, and municipality levels as a precursor to the development of specific training programs, training aids, curriculum and literature for the diversity of target groups required. From this needs assessment national and local disaster management training programmes will be designed and implemented. Training capacity will be built through TFI courses.

(e) *Support Mainstreaming DRM & Climate Change Adaptation into Development Planning Process at all Levels:* Nepal is impacted by climate change and climate variability, partly evidenced by the increasing number, frequency, and intensity of hydro-meteorological disasters. As a consequence the susceptibility of local communities and their livelihood patterns is likely to increase further in coming decades. The programme will therefore seek to support the formulation and implementation of feasible and sustainable local level climate adaptation and risk reduction measures so sectors such as agriculture, water, environment, and health are better prepared to deal with the impact. It will also include the development of local-level climate risk management interventions helping communities to adopt sustainable farming, water use practices, alternative livelihoods and disaster preparedness.

5.5 Methodological Approach

The elaboration of this concept note, desired priority interventions/result expectations and preliminary action plan were undertaken using a literature review and focus group approach. From a gap analysis perspective the team identified result areas that were considered to be strategically important in the context of Nepal with respect to executing national policy and institutional support as broadly outlined in the initial Consortium mission visit. The focus group recommendations while comprehensive are however not exhaustive in nature.

Given the current country development context and the high frequency of vulnerable population exposure to recurring natural hazard events, ***the results identified in this note can easily and need-fully be pursued for a period extending for more than the three years envisaged by the Consortium. These results remain relevant for a programming period beyond such a time-line for any multi-year Comprehensive Disaster Management Programme***.

Bearing this in mind the team rapidly developed some criteria to filter the result expectations, in terms of which ones would be ***most strategically feasible, most potentially impactful, achievable, and of priority in the short, medium and longer terms***.

Result expectations were analyzed and scored by the focus group in relation to how: strategic/foundational or systems building; sustainable; influential (potential tipping effect); contributory to tangible risk reduction; politically supportable; feasible; implementable; extensive was their potential reach; benefits related to costs; duration (short, medium, long) likely to take; congruent with Nepal NSDRM and with Hyogo Framework of Action;

potentially "partnerable"; potentially synergistic; coordination easy; measurable; data rich or available;
This analysis is presented in the next section: "Expected Program Results."

5.6 Expected Program Results[32]

Expected program results are presented in the following matrices.

[32] Green represents strategic potentially impactful results, feasible in the short term (1-2 yrs)
Yellow represents strategic potentially impactful results, feasible in the medium term (2-3 yrs)
Pink represents strategic potentially impactful results requiring a longer term to achieve (3-3+yrs & beyond)

Table 7

Expected Outcome:
Flagship Area 5: Policy/Institutional & Legislative Framework for DRM Strengthened & Supported

Joint Programme Outcomes	Results/Outputs	Budget USD$	Indicative Activities	National, Local & International Partners
I. Institutional capacity building	1. Design of model national and district DRM offices (organogramme, functions, positions needed, job descriptions, enhancement of the NDO, establishment of all district DRM offices where needed. (in congruence with points 6 and 8 below.)	200,000		UNDP, GoN
	2. DRM Briefing materials, key messages & advocacy strategy for new Secretaries, Constitution Assembly members, & MOHA staff prepared, produced & delivered.	80,000	TBD	UNDP, IASC, MOHA, AIN, DPNet
	3. Sub-thematic Donor Group on DRM & DRR formed, functional agenda developed & routinely meeting	10,000		DFID, OFDA/USAUD, Norad, Danida, SDC, JICA, KOICA, AusAid, Finida, ECHO, CIDA, WB, ADB, Indian Embassy, Chinese Embassy
	4. National meta-database on disaster information holdings developed	750,000		CBS, NPC, MOHA, UNDP, OCHA, AIN, DPNet
	5. Line Ministry DRM focal points formalized incrementally into a secretariat & focal point model extended to districts, villages, municipalities & local levels Local government & district organizations strengthened	600,000		Ministries of Home Affairs, Local Development, Education, Agriculture and Cooperatives, Energy/Irrigation, Forest and Soil conservation, Environment/Science and Technology, Health and Population, Physical Planning and Works, NPC, WECS, PMOs
	6. Minimum national standards for hazard analysis, vulnerability & risk assessment approaches developed & established as mandatory	750,000	TBD	DMG, DWIDP, DHM, CBS, Municipalities, NPC, WECS, NGIIP, ICIMOD, OCHA, WFP, NRCS, UNDP
	7. MoHA disaster unit strengthening & facilitation in implementing NDRSM strategic priorities	500,000		UNDP, OCHA, IASC, AIN

Expected Outcome: **Flagship Area 5: Policy/Institutional & Legislative Framework for DRM Strengthened & Supported**				
Joint Programme Outcomes	**Results/Outputs**	**Budget USD$**	**Indicative Activities**	**National, Local & International Partners**
I. Institutional capacity building	1. National standards for spatial & temporal disaster information developed e.g. DANA surveys etc.	600,000		IASC, UNDP, AIN

Expected Outcome: **Flagship Area 5: Policy/Institutional & Legislative Framework for DRM Strengthened & Supported**				
Joint Programme Outcomes	**Results/Outputs**	**Budget USD$**	**Indicative Activities**	**National, Local & International Partners**
II. Policy formulation & legislative enactment processes strengthened and supported	1. From approved NDRSM strategy a NDRSM action/implementation plan is developed compatible with ongoing ISDR action plan activities being implemented at the moment of Strategy implementation)	1,000,000		MLD, MOHA, UNDP/IASC, AIN
	2. DRM & CCA inputted and mainstreamed into central government sector strategies & plans via line Ministry DRM focal points	600,000		MOEST, MOHA, MLD, DHM, UNDP, AIN, DPNet, WECS
	3. DRM & CCA inputted and mainstreamed into local government sector strategies & plans	600,000		MLD, DHM, MOHA, UNDP, AIN, DPNet
	4. NDRSM legislation (including DRM Act), DRM policy and others & regulations, by laws and implementation plans upgraded, harmonized & streamlined for consistency. Ensuring the Constitution is the umbrella document for DRM in Nepal. Designing and reflecting in the law emergency and disaster powers and mechanisms for the case of the declaration of a disaster.	1,000,000		MOHA, UNDP

Expected Outcome: **Flagship Area 5: Policy/Institutional & Legislative Framework for DRM Strengthened & Supported**				
Joint Programme Outcomes	**Results/Outputs**	**Budget USD$**	**Indicative Activities**	**National, Local & International Partners**
III. Financial mechanisms oriented towards risk reduction & management	1. Using minimum standard guidelines for hazard analysis, vulnerability and risk assessment approaches, VDC's seed (funding) capitalized for DRM/CCA implementation in their development projects	400,000		UNDP/IASC, AIN, National Platform, NRCS
	2. Ministry of Finance sensitized & trained in post impact macro-socioeconomic assessments. Design emergency funding and compensation procedures always according to legislation. Ways in which appropriate budgetary support can be provided to local administration for reducing disaster risk at local level explored	450,000		UNDP/IASC, AIN, National Platform, ADB, WB
	3. Precursor research & advocacy for harmonized, aid effective, DRM sector wide approach developed	100,000		MOHA, MLD, MPPW, Donors, UNDP, AIN, NRCS, DPNet, National Platform
	4. Micro-insurance policy & products developed in cooperation/partnership with private sector insurance entities & communities in need. Incentives for hazard resistant construction or livelihood practices developed	300,000		FNCCI, NCC, CNI, Insurance committee, NRB, Insurance companies, Bankers' Association

Expected Outcome: **Flagship Area 5: Policy/Institutional & Legislative Framework for DRM Strengthened & Supported**				
Joint Programme Outcomes	**Results/Outputs**	**Budget USD$**	**Indicative Activities**	**National, Local & International Partners**
IV. National training institution for training & capacity building established	1. Central & district level DRM training & needs assessment conducted	150,000		NRCS, MOHA, Line Ministries, IASC/UNDP,
	2. Design of national and district DRM training programmes. DRR/DRM/CCA modules developed and delivered in regular institutional courses (e.g. MOHA, Districts, police, army, customs, teacher training college, civil servant staff college)	350,000		ICIMOD Line Ministries/agencies, UNDP, OCHA, AIN, IFRC/NRCS
	3. Implementation of DRM Training programmes and delivery of training courses (existing and designed).	1,000,000		UNDP, GoN, IFRC/NRCS, OCHA, USAID.
	4. Nationally certified curriculum developed with recognized leading national training institution or university (Diploma or MSc. Program in DM/DRM	500,000		TU, KU, MoE, CDC, UGC,UNPD, UNESCO, ICIMOD
	5. Directed research scholarships in critical analysis of key national development/DRM issues developed & supported	250,000		KU, KU, PUs, ICIMOD, UGC
	6. DRR/DRM training programme for engineers, masons, planners & designers developed & implemented	350,000		NSET, DPNet, AIN, UNDP, UNESCO, ILO, CTEVT

Expected Outcome: **Flagship Area 5: Policy/Institutional & Legislative Framework for DRM Strengthened & Supported**				
Joint Programme Outcomes	**Results/Outputs**	**Budget USD$**	**Indicative Activities**	**National, Local & International Partners**
V. DRM & climate change adaptation mainstreamed & supported into development planning process at all levels	Methodology for building Natural Hazard & Climate Impact Analysis into existing mandatory Environmental Impact Assessment (EIA) processes developed & implemented	500,000		MOEST, MOHA, MOI, NPC, UNDP,
	DRM implemented, mainstreamed, capacity strengthened & monitored within planning & development plans of MOLD, DDC, municipalities & VDCs Feasible and sustainable community level climate adaptation and risk reduction measures implemented	400,000		MOEST, MOHA, MOI, NPC, MLD, UNDP
	Functional (rotating chairmanship) central level cooperation mechanism developed between MoHA (Disaster Desk) & MOEST (Environment Unit)	250,000		MOEST, MOHA, PMO, NPC, UNDP
	Total	$11,690,000		

5.7 Program Design & Implementation Plan

General Approach

The general approach for the implementation of the flagships that comprise the ISDR DRR Action Plan for Nepal is one that ensures that the Action Plan and its Flagships, components, subcomponents and activities, tasks are adequately designed and implemented as specific projects.

Therefore, for each flagship, its components or subcomponents, a specific project should be designed including impacts, outcomes, outputs, deliverables, budget, timeframe, etc.
For each specific project a Project Manager (international and/or national with experience in similar projects) should be hired for the life of the project itself and for the specific implementation of each one of the subcomponents, activities and or tasks, specific highly-qualified consultants/firms (international and/or national) with previous proven experience in the implementation of similar activities should be hired.

Transparency will be achieved through specific auditing processes and through evaluation of results by technical and/or steering committees in which ISDR consortium members, GoN, donors, UN organizations and specific consultants/firms with experience in auditing and evaluation of similar projects.

This approach will ensure goals and objectives are achieved in time and efficiently thus optimizing results and ensuring also that DR is effectively reduced.
This approach ensures that Project Managers and consultants will be 100% of their time dedicated to their tasks.

This approach should ensure also that all projects/flagship components being implemented are congruent and compatible and are implemented according to the timeframe designed and not haphazardly. All projects are part of the overall ISDR DRR Action Plan and NOT separate unlinked unrelated projects. This will not only optimize results but also the use of funds from donors.

Projects will be implemented in sequential order according to what would be designed in the final version of the ISDR Action Plan.
Other approaches assigning the management or implementation of any project or task to a staff member of any organization, particularly without adequate experience or assigned to many other activities/tasks would simply not work and would be a waste of time and money. The Action Plan and all our joint efforts would be, then, useless.

The design of all projects and their terms of reference would be undertaken also by experts (international and/or national) with experience in similar projects (regarding project management and regarding the technical area the project covers).

Institutional Capacity Building:
Under this component a number of short, medium and longer term institutional capacity building interventions are envisaged. Extending the capacity of the recently initiated national emergency operations centre as well as expansion of nodal EOC's at district level is considered important given the importance of communications and response systems before,

during and after disaster events. Standard operating procedures for how this system will work also have to be developed.
As a central focal agency for disaster response and relief issues, the MoHA will also need some capacity strengthening to oversee the central coordination and implementation the NSDRM and its identified priorities. This will allow the MoHA to guide and support other ministries, sector-specific agencies and local administration on DRM issues. Some level of support could also be provided for upgrading the equipment and facilities in the Ministry. UNDP has worked to develop an informal network of DRM focal points in key line Ministries. Incremental strengthening and formalizing of this network is also critical in the context of facilitating sector mainstreaming of DRM and improved inter-agency coordination.

In the prevailing political climate there is often frequent turnover or exchange of senior level Ministerial Secretaries as well as Constitution Assembly members. New officials often take time to get up to speed and have to be constantly re-oriented as to what is required to advance the DRM agenda, what are the DRM priorities, and systems and resources at their disposal particularly at a central level as well as from the Development Partners. This can slow-down progress in advancing the DRM agenda particularly in terms of time. In this environment, concise briefing materials containing key messages and advocacy would be a useful tool for briefing and sensitizing new officials.

Specific National and District DRM organizations should be created to work full time in order to conduct effectively the National and local DRM process. The capacity of the Ministry of Local Development, DDC's, VDC's and municipalities will also be augmented to address the needs related to promoting disaster preparedness and mitigation at local levels.

Some capacity building for greater coordination of central and local DRM program interventions is also required in optimizing the delivery and achievement of strategic DRM outcomes and results. The development and routine meeting around mutually agreed common agendas of a technical donor/development partner donor group on disaster risk management and climate change adaptation would be useful in building collaboration, reducing duplication, while enabling collective achievement and ownership of strategic DRM results.
Consideration will also be given to strengthening the interface between the international response system and the Government of Nepal particularly in the context of the UN cluster system. The recent experience of how the cluster system functioned in recent Nepal disaster events will be useful in feeding into the process of cluster strengthening and how cluster groups could potentially be institutionalized within government agencies.

Critical to effective institutional capacity building for DRM is some consistency in the way in which hazard, vulnerability and risk assessments are undertaken at various levels. Some minimal basic national guidance that is recognized and adopted would be useful in this regard.

Supporting Policy Formulation and Legislative Enactment Process:
Once the NDRSM is approved an action plan will have to be formulated to deliver on the Strategy's priorities. The various NDRSM instruments e.g. legislation, policy, plan, etc. will also have to be upgraded, harmonized/streamlined for consistency, as they may have been originally developed through separate processes and mechanisms at the national level. A consistency analysis is envisaged and options (pros & cons) for streamlining approaches

developed. Government would then be expected to decide on the content and preferred streamlining approach. The proposed DM act will help provide legal sanction to the institutional and policy frameworks at all administrative levels and will also help integration of risk reduction in various development activities.
Under this outcome area, it is also envisaged that DRM will be inputted and mainstreamed in both central government sector strategies, policies and plans as well as at the local government level Policies for such consideration include but are not limited to the environment policy, land use policy, national shelter policy and national urban policy. It is further envisaged that the program will help individual sectors to develop requisite guidelines and frameworks for mainstreaming DRR into their projects.

Under this component the program will also support the review of existing building by laws, development control regulations, planning acts.

Orienting Financial Mechanisms Towards Risk Reduction & Risk Management:
To shift incrementally from a response and relief orientation to a pro-active long term risk reduction and risk mitigation approach advocacy, sensitization and practical trial approaches are required in new development projects. In this intervention, the program expects to sensitize and train Ministry of Finance, NPC and Nepal Rastra Bank personnel regarding the importance of financing and facilitating pro-active risk reduction. It is envisaged that they will be exposed to macro-socio-economic assessments of disasters currently being globally practiced.
Research and an advocacy strategy aimed at national stakeholders around the need to invest in programmatic/sector wide DRM/DRR approaches will also be undertaken. It is further expected that using agreed standardized approaches for hazard, vulnerability and risk assessments, that village development councils will be capitalized on a practical trial basis to undertake pro-active risk reduction in new development projects, to demonstrate the importance of risk reduction (in combination) rather than relief alone as a disaster risk management strategy.
The program also expects to encourage the formulation of appropriate risk transfer mechanisms, micro-insurance, and micro-finance mechanisms to build a culture of risk reduction and mitigation at community level. This will involve market assessments of customer needs, as well as a review of domestic and international best practice products with a view to developing and testing micro-insurance and micro-financing products that might be useful in a Nepal consumer context.

The program will explore the possibility of re-orienting existing financial mechanisms or setting up new financial mechanisms to support DRM activities at the local level as well as the setup of financing mechanisms that may be addressed by Village Development Committees (VDC's) and the District Development Committees (DDC's) for DRM activities. The development of country level mechanisms to finance large scale recovery and reconstruction will also be explored. Such mechanisms could be utilized for recovery planning, coordination and rehabilitation as well as livelihood regeneration and shelter reconstruction.

Training & Capacity Building with the Establishment of a National Training Institution:
This intervention envisages a 6 prong approach including central and local level DRM training and needs assessment. Using this assessment as a platform and in consultation with key target groups, it is expected that DRM training modules will be specifically developed as part of regular institutional courses for civil servants, police, army etc. Working in

consultation and in partnership, specific programs tailored to the technical needs of engineers, masons, planners and designers will also be designed.

Once the training needs have been assessed by taking into consideration the risks and the status of disaster preparedness, a national and local DRM training program should be designed. Context specific national level training courses have to be designed by experts in disaster management training design and delivery rather than using training courses from other countries that do not reflect the real situation of Nepal in terms of risks, disaster response capacity and other factors such as socio-cultural issues.

A nationally certified curriculum developed with and implemented by a recognized leading national training institution or university will also be undertaken. Directed research scholarships where Nepali graduates research specific disaster risk management issues and problems pertinent to contributing solutions to national and local DRM issues, will also be supported. In this way locals also gain greater DRM technical capacity, knowledge, techniques, and further build a local cadre of expert professionals. Efforts will also be made to include DRM in the school curriculum.

Support Mainstreaming DRM & Climate Change Adaptation into Development Planning Process at all Levels:
This intervention is expected to proceed on several fronts.
Bringing the DRM community and the CCA community together to develop functional cooperation mechanisms and a practical mutual agreed agenda is pivotal to facilitating the mainstreaming of DRM and climate change adaption. It is envisaged that this will start at the central level between the MoHA and the MoEST, focal agencies for DRM and CCA respectively.

Developing a methodology for and building in natural hazard impact assessment and climate change impact assessment into mandatory, pre-existing national environmental impact assessment (EIA) processes is considered to also be an important entry point for the facilitation of mainstreaming of DRM and CCA into development planning processes.
Entry points and modalities for mainstreaming DRM and CCA within local government sector strategies and plans are to be identified by a technical working group with key mainstreaming results content identified by sector. Sector stakeholders will then receive training and then be expected to enable, pursue, and implement DRM results within their respective sectors.

5.8 Potential Implementation Risks & Mitigation Actions Required

All identified risks, with the exception of further political instability can be firmly addressed and surmounted in detailed program design, particularly if recommended mitigation actions are ably implemented.

If the mitigation actions are ably implemented, there will be potential for significant gain in scaling up the effort to improve disaster risk management and to reduce disaster risk, more comprehensively and holistically in Nepal.

Potential Risk	Mitigation Actions Required	Comments
Flagship quantum could exceed absorptive capacity of Government & NGO's to implement RISK LEVEL: HIGH	Expected results & commensurate delivery actions envisaged, should take this into account as well as diversifying channels of delivery. Increasing the level of programming at local government level is also a good option. Taking the approach described in section 9.0 will reduce/eliminate this risk.	South Asian countries are at different stages of DRM governance. Programming amount should correspond to the stage of governance in Nepal, Government's commitment & national context with respect to stage of development. Consideration should be given to extending the proposed program to a 5 year program.
Further instability in the country's political situation could significantly retard, slow or stop implementation entirely RISK LEVEL: HIGH	Continuous advocacy with the Country's political directorate regarding the importance of disbursement & implementation. Continuous frank & direct communication with donors & development partners about implementation challenges	This risk is a constant factor in contemporary Nepal.
Culture of low inter-ministerial and intra-ministerial dialogue may setback DRM coordination processes necessary in new policy development **RISK LEVEL: MODERATE TO HIGH**	Continuous advocacy, sensitization and fostering of cooperative & collaborative interventions	
National level resistance to move from project to more comprehensive multi-year program mode due to low capacity to develop and implement programs **RISK: MODERATE**	Comprehensive multi-year program developed should match the age and stage of level of country DRM development and capacity to yield reasonable results in the expected time frame Country ownership or sign off is required.	Given that this flagship would represent the first comprehensive multi-year DRM program for Nepal as it transitions away from smaller preparatory projects, it should be considered as a transitional or interim comprehensive multi-year DRM program and not a mature, idealized, full scale, comprehensive DRM program
Capacities & skills of potential implementation partners are assumed as good **RISK: MODERATE**	Capacity deficits will need to be pre-identified through audits. Capacities & skills of potential partners may have to be built further and consolidated in the transition from project to program mode	
Implementation partner arrangements and	Informally, pre-identify and pre-arrange implementation partner, contractual and	Preliminary (no guarantee) conversations could commence

contracts are not pre-arranged or in place prior to commencement of implementation, potentially delaying implementation **RISK: MODERATE**	working arrangements as far as is feasible and practicable.	with potential implementation partners if flagship funding appears feasible.