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Planning Policy for Natural Disaster Management with Context to India

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ABSTRACT:
Environmental approach to disaster risk reduction (DRR) is widely advocated as 2nd paradigm shift in disaster management, as it directly links with the livelihood of the people andsustainabilityoftheirresources.Thiscallsforemphasisonnaturalresourcemanagement, ecosystemservices,land-useandadaptationtoclimate-changewithinthestrategiesofdisaster prevention, preparedness and post-disaster relief and recovery process. Drought, cyclone, flood, landslide, tsunami, vegetation fire, pests and epidemics, etc. are major disasters associatedwithenvironmentalprocessesandnaturalresourcesystems.Strategicmanagement ofdisastersdependsonprudentdecisions,planningand enforcementofmitigationprovisions. Policy instruments are the 'tools' useful in formulation of policies and strategies and those in implementingpolicydecisions.Environmentalimpact assessments(EIAs)andEnvironmental Law are key instruments, with potential of significant role in different phases of disaster management. EIA tools broadly covers strategic and project EIA, Life-cycle Assessment, Audit, Risk Analysis and ResourceAccounting.

Keywords: Risk Management , Natural resources, Disaster, Project management

I. INTRODUCTION:

In view of the Hyogo Framework of Action (HFA), the UN-ISDR Global Joint Work programme for 2008-2009 sought to ensure that "national and local authorities are better equipped to protect environmental services in coastal areas, flood and fire-sensitive basins and mountain ecosystems". Hazards and disasters are two sides of the same coin; neither can be fully understood or explained from the standpoint of either physical science or social science alone; and are inextricably linked to the ongoing environmental changes – global, regional and local levels, including factors that interact to determine prospects of sustainable development .

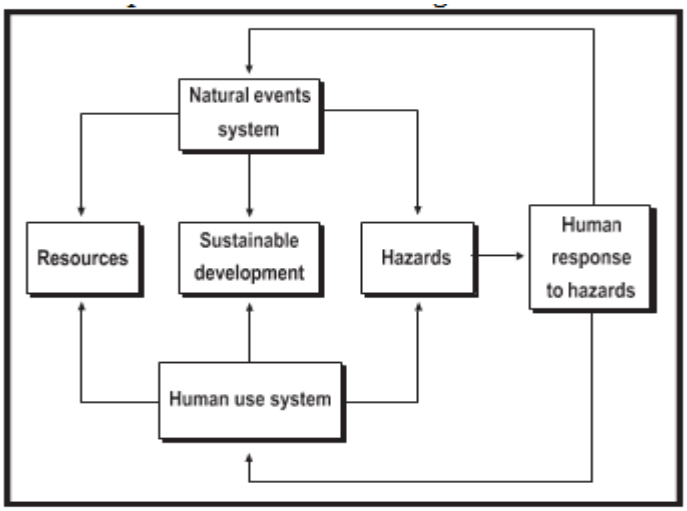

Figure 1. Environmental hazards and interface of natural events system with human use system

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Environmental approach to disaster risk management aims at utilizing environmental knowledge and practices in all stages of risk-cycle so as to reduce disaster's risk, impact and ensure sustainability in reconstruction and recovery. It starts with the understanding of the environmental basis of disasters, or in other words – recognizing disasters as 'environmental events.Human societies cannot be dissociated from the environment that they shape and which in turn influence their development and livelihoods. Engage environmental managers fully in natural disaster risk management mechanisms;

- Include risk reduction criteria in environmental regulatoryframeworks;
- Assess environmental change as a parameter ofrisk;
- Utilize local knowledge in community-based disaster riskmanagement;
- Engage the scientific community to promote environmental research andinnovation;
- Protect and value ecosystemservices;
- Consider environmental technologies and designs for structuraldefenses;
- Integrate environmental and disaster risk considerations in spatialplanning;
- Prepare for environmental emergencies;and,
- Strengthen capacities for environmentalrecovery.

In addressing the relationship between social and environmental vulnerability and the occurrenceofdisasters,Wilches-Chaux(1993)states:"Thereisnodoubtthosenaturalforces playanimportantroleintheinitiationofseveraldisasters,howeveritisnolongerthecasethat theycanbeconsideredthemaincauseofsuchdisasters. Thereseemtobethreefundamentals causesthatdominatethedisasterprocessesinthedevelopingworld,whichispreciselywhere theirincidenceisthelargest(IADB,1999)".

National Disaster Management Guidelines: Environmental Approaches			
Reference	**Flood Management Guidelines**	**Cyclone ManagementGuidelines**	**Drought Management Guidelines**
Environmental rights	Lives and livelihoods, Livelihood systems	Livelihood	Livelihoods, Alternative livelihood
Climate-change	Snow melt, GLOF, LLOF	Climate-change and sea level rise	Climate-change impact on drought and agriculture
Natural Resource Management	Catchment area treatment, Anti-erosion measures, Coastal protection, Carrying capacity of rivers and drainage, River-bank erosion, Sediment load from river catchments, Drainage congestion, Wetlands, Integrated water resource management, Environmental-health, Encroachment of waterways, Waste management	Coastal afforestation, Aquaculture, Coastal resources, Bio-shields, Mangroves, Shelterbelt plantations, Coastal flood plain management, Coastal erosion, Crop and livestock protection, Environmental-health responses, Shelterbelt plantation monitoring	Agriculture, Land resource management - Soil-moisture, Soil amendment, Integrated Nutrient and Pest management Water scarcity and management, Reservoirs and wetlands, Groundwater, Streams, Drought prone area programme, Desert development programme, Alternative cropping, In-situ conservation, Horticulture, Ecosystems, Forest management, Crop phenology, Coastal &marine resources, Pollution control

Environment Policy Documents and DDR

Instruments for environmental policy can be seen as the means for executing environmental objectives in project&policydesign.Morerestrictively defined "Instruments for environmental policy are structured activities aimed at changing other activities in society towards environmental goals" (Huppes and Simonis, 2003). The prime role of

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environmental policy instruments (EPIs) is in reducing the risk to manageable proportions. EnvironmentalImpactAssessment'isananticipatory mechanismforassigningquantitative valuestotheparametersindicatingthequalityofenvironmentbefore,duringandafteramajor activity, project or incident, thus allowing measures to ensure ecological compatibility and economic efficiency in decision making". Concept of Regional EIA, sometimes known as Country EIA or Cumulative EIA, facilitate the environmental assessment of activities in a defined administrative or ecological region, whereas EIA of policies, plans and programmes are called as 'Strategic Environmental Assessment (SEA)'. EIA, in pre-disaster prevention andmitigationphase,helpsinprecisedecisionsregarding planningriskreductionandchoices ofmitigationmethods,technologyandlocationsforactivities,whereasRapidEIAofdisasters (REIA) help ensure sustainability concerns in relief, reconstruction and recovery process (Gupta et al., 2002a).

INSTRUMENT	BRIEF DESCRIPTION/ EXAMPLES	ROLE IN DISASTER RISK REDUCTION
Strategic Environmental Assessment(SEA)	EIA of policies, plans and programmes	Mainstreaming DRR towards sustainable development with ecosystem approach, climate-risk mitigation and post-conflict recovery context (OECD, 2011).
Environmental Impact Assessment(EIA(s)	Regional EIA, Country EIA, Cumulative EIA, Carrying Capacity Based Planning Process	Anticipation of hazards, risk hotspots, vulnerability – spatial contexts; Projected mitigation and capacities; Residual risks for emergency response/plan
Life CycleAssessment (LCA)	Environmental impacts during different stages of life-cycle of a material or a major project	Prediction and forecasting of changing patterns of hazards and risk profiles over time to cause a disaster
Ecological-footprint	Human demand of natural resources and ecosystem services bearing to regeneration capacity	Anticipation of ecosystem fragility or biotic pressure on land & water resources that lead to hazards and aggravate disaster risks
Environmental Legislation	Policy Statements, Acts & Rules, Ordinances,Notifications, Standards and Codes,Treaties	Provides legal support for reducing hazard precursors, vulnerability causes; offers capacity and recovery potentials, health, livelihood and sustainability.

Environmental clearance of major developmental and industrial in India as per EIA notification (1994, 2006) under the Environmental Protection Act, 1986, specificallyrequires 9a)Environment Impact Assessment Report, (b) Environment Management Plan including a disaster Management plan, and (c) Rehabilitation plans (where ever necessary) for assessing the case. Environmental Impact Assessment Act 2001 of the Federal Republic of Germany, Article 2 of the Act envisages for identification, description and assessment of the direct and indirect impacts of a project on the (1) human beings, animals and plants, (2) soil, water, air, climate and landscape, (3) cultural heritage and other material assets, and (4) the interactions between the foregoing protected assets. EIA Act 2001 provides a useful tool in identification and assessment of futuristic impact on the drivers of disaster risks and is a reference within the related regulations (Federal Nature Conservation Act, 2002, Federal Water Act, 2002, Federal Building Code to EU Directives 2004). EIA Act also envisages for the planning procedure as an environmental assessment pursuant to the provisions of the Building Code applicable.

Role of Environmental Impact Assessment (EIA)

Disasters generate in the environment and cause environmental impacts either direct or indirect, and thereby, hamper socio-economic and health wellbeing of affected community. Environmental carrying capacity, conceptualized as an assemblage of (a) supportive capacity

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assimilativecapacityand(c)regenerativecapacity,offerslimitstoeconomicdevelopment in an ecological region (Gupta et al, 2002b). Environmental Assessments (EAs), therefore, of any kind and any levels are known to provide scientific and strategic insights on potential risks and vulnerabilities in the defined region, and thus, help in approach to disaster risk reduction. Millennium Ecosystem Assessment (MA), an exercise of global significance, itselfisanextendedapplicationofEIA,andisknownasa milestoneindisasterriskreduction worldwide

Role of EIA in Developmental Planning and Disaster RiskReduction

The frequency with which some countries experience natural disaster should certainly place disasterriskattheforefrontofdevelopmentplanners'minds.Forexample,Mozambiquefaces a regular cycle of droughts and floods: 1976-1978 (floods), 1981-1984 (drought), 1991-1993 (drought), 1996-1998 (floods), 1999-2000 (floods). It has been widely accepted now that it is not only the geography or ecology that generates disaster risk but developmental processes have shaped human vulnerability and hazards paving the way for disaster.. Primarily EIA's are designed to be 'anticipatory mechanism' and to be exercised well-before the actual actions and, thus, are while conceptualizing an action plan. There may be many types and forms of EIA into practice, for example:

- Strategic Environmental Assessment (EIAof Policies, Plans and Programmes)
- EIAofProjects(developmentalprojectslikewaterresources,highway,airport,tourism,housing complex,railway,etc.oranindustrialprojectlikemanufacturing,mining,food,dairy,etc.)
- Regional EIA (also known as Country EIA or Cumulative ImpactAssessment)
- CarryingCapacity(Assessment)baseddevelopmentalplanningprocess(Guptaetal.,2004).
- Environmental Risk Mapping Based Developmental Planning (Gupta et al.,2002c)
- Environmental-healthImpactAssessment(aspartofEIAorRiskAnalysis)(Guptaetal.,1999).

II. CONCLUSION & RECOMMENDATIONS

Integration of environment and disaster management framework holds the key for promoting the environmental approach for DRR. It shall require reforms and adaptation on legal, institutionalandimplementationframeworkofboth–environmentalgovernance,anddisaster management, at different levels of planning and action. Knowledge building and perception holds the key of attitudinal change.

Disaster Risk Reduction and Post-disaster Relief and Recovery needs to be introduced as a compulsory module within the higher education, research and awareness courses in the Universities, colleges and school curriculum in particular within the courses on environmental sciences and natural resources. On the other hand, the module on ecosystem-approach to DRR within disaster management training and sensitization framework needs to emphasize the role of legislation and in particular of environmental/ natural resource law and EIAs. Environmentally sustainabile mitigation option and the concept of 'greening disaster-response' and 'sustainable-recovery' need to be promoted within the framework of sustainabledevelopment,byintegratingSEAtothedevelopmentalplanningprocess.SEAandEIAscopeneed to necessarily include hazard-risk and vulnerability assessment within the assessmentframework.

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