PLANNING FOR RISK INFORMED DEVELOPMENT
Guidelines to the Grassroots

Abstract

The Government guidelines on the preparation of Gram Panchayat Development Plans (GPDPs) clearly outlines the significance of incorporating disaster and climate change related risks as part of the planning process. However, at the operational level, the capacity of the people drafting these plans are not yet strengthened enough to be including these components in the plans. Hence, it is important to bring the guidelines into practice for the preparation of GPDPs and build the capacity of the local governing bodies for better preparedness to and mitigation of disaster risks and building community resilience against disasters.

POLICY RECOMMENDATIONS

- *Integrate Disaster Risk Reduction (DRR), Climate Change Adaptation (CCA) and Ecosystem Management and Restoration (EMR) in Gram Panchayat Development Plans (GPDPs) for risk informed development operationally.*
- *Government Resolution (GR) for conducting inclusive participatory risk assessment of each community and public services in the GPs addressing the socially vulnerable and marginalized groups. With special attention for the meaningful participation of women, people living with a disability, youth, elderly and marginalized groups.*
- *Build a cadre of experts who can provide training and handholding support to the Panchayati Raj Institution (PRIs) members to prepare risk informed GPDPs.*
- *Incorporate DRR, CCA and EMR elements in training modules for preparation of GPDPs.*

Participatory processes for risk mapping for preparation of GPDP in Halara Gram Panchayat, Bhachau, Kutch.

Introduction

Disasters often interrupt the flow of development processes. They expose the lack of coping strategies and enhance the already existing social and economic problems in a given society. In the recent decade, the frequency, magnitude and intensity of disasters have increased manifold due to the impacts of climate change. Some disaster like floods and earthquakes, take place in a very short span of time and have devastating impacts on the rural livelihood and economy; followed by a long process of recovery and rehabilitation. The development process then stops and all efforts are put into building back what has been lost and damaged. People's lives are also lost, who may have been the only earning member of their family. These kinds of disasters have a visible negative impact on the society and development. Apart from these, there are slow onset disasters like drought and salinity. They may not be visible or have a negative impact in the present; however, they pose a severe threat for the future, in terms of their impact on agricultural productivity, water security, groundwater salinity and adverse impact on the ecosystem. Also due to over reliance on service infrastructure and unplanned development interventions, not only the frequency of disasters have increased but new risks are also created, especially around water security. Therefore, it becomes an imperative for including these concerns within the local level development planning.

Current Policy

Article 243G of the Constitution of India acknowledges Panchayats as institutions of local self-government and mandates them to prepare plans for overall economic development and social justice of the GP. As local government, Gram Panchayats are responsible for delivery of basic services to local citizens and address vulnerabilities of poor and marginalized ones. This can only be achieved through implementation of well thought out risk informed plans through efficient and responsible utilization of available resources. The Fourteenth Finance Commission (FFC) has provisions for such planning, given directly to the Panchayats, however, sources of funds for the GPDP are not limited to the FFC.

The guidelines for the preparation of GPDP released by the Ministry of Panchayati Raj (MoPR) in 2018 addresses a wide range of thematic areas to be covered in the GPDP, including DRR, CCA and EMR. As per the guidelines, the process of GPDP plan development comprises of a series of steps to be followed including creating environment for planning in the GP and needs assessment through PRA (mapping of risks) and collection of primary and secondary data. However in reality, only a few people prepare the plan for the entire GP without much community participation, while skipping the major steps of the process. In particular DRR, CCA and EMR components are not included because risk assessments are not being carried out.

The Disaster Management Act, 2005, had mandated for disaster management plans to be prepared at different levels, including incorporation of DRR measures at the GP level. Chapter XI, Section 61 of the Act, prohibits all forms of discrimination – be it based on gender, caste, community, descent or religion – in any activities related to disaster risk reduction, disaster relief or in humanitarian assistance to the affected people.

The National Disaster Management Plan, 2019, also outlines the importance the convergence of line departments for mainstreaming DRR, climate risks and ecosystem concerns into development agendas. Adapting to climate changes is one of the key objectives of the global frameworks like the Sustainable Development Goals (SDGs), the Sendai Framework for Disaster Risk Reduction (DRR) and the Paris Agreement (COP21) under the UN Framework Convention on Climate Change (UNFCCC). It has also been addressed in the National Policy on Disaster Management, 2009 and the PM's 10 point agenda.

The Issue

India has faced various types of disasters in the past and experienced widespread losses. The major disasters like 1984 Bhopal gas tragedy, 2001 Bhuj earthquake, 2004 Indian Ocean Tsunami, 2008 Kosi floods, 2013 Uttarakhand floods, 2017 Banaskantha floods, 2018 droughts, multiple instances of cyclones in 2019, in many of the Indian states to mention some, have had catastrophic impact on the lives of people. Apart from these, smaller disasters occur on and off every year. These not only become an obstacle to the development process but pull the process back as well. Disasters also have adverse impacts due to unregulated and unplanned development processes.

At the local levels, the Gram Panchayat Development Plans (GPDPs) may be seen as a tool for planning for local development through the lens of risk reduction. In the present context, the GPDPs are being prepared across India. According to the PlanPlus portal, for 2019-20, out of 2,66,882 Panchayats, 2,40,119 have prepared their development plans which were published in the portal. In Gujarat, 14,225 out of 14,292 GPs have prepared their plans for 2019-20. In 2017-18 almost all the GPs developed the GPDPs (14108/14514), however, only 417 plans were implemented. The main activity focus areas recorded in the portal according to activity count and fund allocation are - internal roads, drinking water, health and sanitation, social welfare and maintenance of community system. However, none of the plans had any component or lens of DRR, CCA and EMR.

In a study conducted by UNNATI in 100 GPs in 18 districts of Gujarat on the status of GPDPs in 2018, it was found that:

- GPDPs are mostly physical activities like road, sanitation and drinking water with FFC resources. The social welfare activities include compound wall of cremation ground. The revival of water bodies which is a priority area of Govt. of Gujarat are not included in GPDP. None of the plans were informed by DRR, CCA and EMR approaches.
- There is lack of adequate support to the GPs to develop qualitative plans.
- There is no mechanism at the block level to include no cost/low cost activities according to the PRI members.
- There is negligible capacity development training of the PRIs on preparation of GPDP.

Even small initiatives taken by the GPs as disaster risk reduction measures (like developing an early warning mechanism, deciding on evacuation points and interim shelters, regulating the cutting of trees in the GP, networking with local CSOs and government representatives, etc.) have proved to be vital in their development. However, in majority of areas, the word “development” still entails the improvement in the physical infrastructure only. The capacity of the ones preparing the GPDPs, that is, the PRI members and the revenue officer is very limited and they have not been made aware that these aspects are also to be part of the development plans.

UNNATI has been facilitating the preparation of risk-informed GPDPs in a few Gram Panchayats in the Bhachau block of Kutch district in Gujarat as pilots. One of the experiences from these has been shared in the following section.

INITIATIVE OF KANTHKOT GRAM PANCHAYAT, GUJARAT

In the year 2018 UNNATI, an NGO based in Ahmedabad undertook a pilot to facilitate the development of GPDP in Kanthkot Gram Panchayat of Gujarat integrating DRR, CCA and EMR with participatory approaches. The Panchayat consists of four hamlets characterized by a semi-arid drought prone landscape. The region has witnessed impacts of climate change. Rainfall patterns have changed in the past 25-30 years. The quantity of total rainfall has not changed much (mostly increased), but the downpour has become more sporadic and irregular.

Hazard Vulnerability Capacity Assessment (HVCA) was undertaken by the PRI with the community including creation of historical profiles of the past disasters, their frequency and intensity, sources of livelihoods, land use patterns, rainfall patterns, cropping patterns, agricultural practices, mapping of natural resources and their uses, types of cattle, types of diseases, etc. The PRI members paid a lot of attention to revival of the common property resources in the GP, including water, land and forests. This process brought about some significant observations, which are:

- Using the landscape approach the PRI members and the community recognized and planned to rejuvenate the defunct ponds, so that they can be sustained for a longer period of time. They have decided to work on, not just the water distribution system in the GP, but also on the sources of water, so that they do not have to face water scarcity in the future.
- For the whole catchment, a treatment plan (watershed development plan) was proposed to be formulated to combat erosion and biomass run off, that may be linked with various government schemes. Deepening and embankment (ogan) repair in ponds is included in the plan for alternative sources of water. Small embankments to be constructed to avoid wash outs and construction of more check dams which will prevent the problem of soil erosion, is included in the plan document.
- Along with water, the development of the common grazing lands for the cattle is on their development agenda, for which they have identified around 1000 acres of land. They have made special efforts to regain the livelihood of communities based on the forest land and its resources, which they had to change because of issues related to forest rights.

- Through the various PRA activities carried out in the GP, the impacts of climate change on the livelihoods of people were discussed on various occasions. Given the present drought situation in the area, sustainable cropping patterns and agricultural practices garnered lot of attention and discussion. Awareness generation about insurance schemes and their incentives and links with PM Fasal Bima Yojana is a part of the plan.
- The process of the GPDP brought out the prospects of how the government agencies, technical institutions like Indian Meteorological Department (IMD) and local weather stations may be roped in to initiate development activities in the GP and has been included in the plan by the Panchayat.
- Some core disaster risk reduction measures, like clearing the natural passage of water flow to avoid logging, upgradation and retrofitting of identified households with tile and sheet roof and linking the kachcha houses to PM Awas Yojana, was incorporated in the GPDP. The whole process of the preparation of the GPDP threw light on the importance of the natural resources in the development of a village and the services which they provide to the community that resides there. The process enabled the PRI members along with the community to think about reviving or maintaining these natural resources in a strategic manner, through a government mechanism in place.

Recommendations and way forward for preparation of risk informed GPDPs

Integrate DRR, CCA and EMR in GPDPs for risk informed development: As mentioned before, disasters, extreme events due to climate change and concerns regarding ecosystem have a direct correlation with development. The SFDRR talks about the building community resilience to increase the capacity of the community to cope with such situations better manner and leveraging resources for strengthening disaster governance. Community being the first responders in any disaster, the planning done at the local levels need to address the major and local risks so that they may be mitigated locally, instead of being dependant on outside agencies. Therefore, while preparing the GPDP it becomes extremely important these risks are addressed and related actions are converged with the developmental activities.

GR (Government Resolution) for conducting risk assessment of each community and services in the GPs: For integrating these elements in the GPDP, it is essential to map the hazards, vulnerabilities and capacities existing in the GP. To address the socially vulnerable and marginalized groups, it is important to ensure community participation during the planning process to understand their needs and the nature of risks that they might me exposed to. Therefore, there is a need to conduct the HVCA exercise to analyse the risk profile of the GP.

Build a cadre of experts: A resource group comprising of experts who can provide training and handholding support to the Panchayati Raj Institution (PRIs) members to prepare risk informed GPDPs. This resource group needs to be formed at the block level to be able to provide effective support to the PRIs. The Ministry/Department of Panchayati Raj and Rural Development have direct role to play for this. However, it is important here to mention that the GPDPs promote convergence between the different line departments. Hence, the block level resource group to be formed must include representatives of the various departments.

Incorporate DRR, CCA and EMR elements in training modules: As mentioned in the earlier point, the resource group to be formed will also have to be trained along with the PRI members on the process of preparation of GPDPs. For this purpose, training modules have to prepared that orients these people on why and how to integrate DRR, CCA and EMR aspects within the development planning and how it is beneficial for the whole community. This also needs to be taken up primarily by the Departments of Panchayati Raj and Rural Development respectively.

Acknowledgements and Publication Details

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Annex 1: A checklist for sectoral integration of IRM within GPDP

The checklist is in three sections **a. Business as usual approaches b. IRM incremental changes c. IRM transformative changes**

	Process For inclusion	Sectors					
		Infrastructure	Health & Education	Economic development	Social development	DRR	Natural Resource Management
Business as usual	PRA, FGD. HVCAs VDMP Mapping of resources and critical infrastructure Evaluating institutional and capacity needs Orientation on development programmes and mapping them	• DRR shelters - (temporary shelters, permanent (individual/ community level) • Raising foundation of houses, tube wells, toilets • Rainwater harvesting structures- Solid waste management units- • Sewage treatment plants -	• Health education (injury prevention, first aid, gender specific health trainings) • Gender sensitive trainings • WASH initiatives (hygiene promotion) • Preventing outbreak of epidemics and water borne diseases (cleanliness	• Promoting livelihood diversification ○ Animal husbandry, ○ Horticulture development ○ Pisciculture • Developing direct linkages with KVK for training • Development and improvement of irrigation systems • Better crop management • Using crop protection schemes	• Linkages with social welfare schemes • Pension and insurance schemes are adopted • Access to banks (Jan Dhan) • Social audit • Setting up SHGs • Adoption of energy efficient cooking stoves/ solar panels for electricity/bio-gas	• Structural measures (temporary dams, embankment strengthening and repairing) • Task force formation • Evacuation drills • Demarcation of evacuation areas • Timely dissemination of forecasts	• Watershed management and development • Soil conservation efforts • Green belt development (forestation/reforestation) • Protection of existing natural barriers and local ecosystem • Social and agro-forestry • Restoring and monitoring ecosystems

	Pilot studies	• Communication development (mobile and internet connectivity) • Construction of roads- without disturbing ecological balance • Public infrastructure (schools, hospitals)- Risk proof infrastructures(DRR) • Piped water supply- considering landscape sensitivity • Mason skill building -	drives, maintenance of water bodies) • Signboards and visualisations for health & Wash, Do's and Don'ts	• Access to credit, seeds and local markets • Value chain development • Sustainable agriculture practices are promoted		• Disaster response protocols • Pre-disaster storage of food banks, emergendy kits, fodder banks etc. SHGs ensure food/shelter security for people post events (including relief code of conduct and minimum standards known to the Panchayat) Non structural mitigation measures; awareness campaign; individual family/HH emergency plan	• Digging/construction of new ponds

						which is socially inclusive of vulnerable population; • Strengthening of village level institutions for community resilience building; linking with government flagship programs for DRR work	

IRM integration incremental change	HVCA includes ecosystem and climate vulnerability Landscape approach is adopted when planning interventions Identifying vulnerable community members and unique ecosystems Seasonal mapping of hazards	• Improved design standards and planning for roads, rails and other infrastructure so that hydrological connectivity is not lost & natural infrastructure is not built upon • Spatial planning: houses are built with land use planning in mind (not to be built in risk zones or environmentally sensitive	• School curriculum have courses running on IRM approaches: schools teach about emerging risks and the concepts of DRR, CCA, ERM for resilience • Regular vector control and vaccination programmes • Trainings are conducted for communities to assess current and future climate risks • Reviving traditional	• Climate smart agriculture is adopted using pilot plots • Awareness session and trainings on sustainable agriculture practices • Using climate information for crop cultivation • Integrated farming systems • Developing indigenous seed banks • Better access to development information • Building improved irrigation system to use water more efficiently	• Gender mainstreaming (men & women benefit equally from development processes) • Partnerships and linkages are made with government, knowledge institutes, private sector, media, CSOs	• Community based EWS is established with linkages upstream and downstream • CMDRR institutes are set up (VDMC) (Regional level hazard specific institute for capacity development/ local demonstrations of practices/ technology, etc.) • VDMPs include ecosystem management actions • Ensuring effective	• Integrated water resources management • Inflow and outflow of wetlands are maintained (Restoring hydro-connectivity) • Planting indigenous species • Bio-diversity registers • Removing invasive species • Community based natural resource management

		zones - *building by laws*	knowledge systems • Ensure well equipped health stations and availability of communication and transport facilities • Building adaptive capacities of community members focusing on maintaining and enhancing personal/community assets			risk communication	

	Participatory valuation of ecosystem services Develop water safety plans	• Houses are built using locally sourced material and use of indigenous technologies is promoted- transferring knowledge on indigenous practices to future generation, construction of houses considering intensity and frequency of local hazards • Disaster resilient infrastructure is developed					• Check dams • Groundwater recharge augmentation systems • Restrictions for ground water extraction • Sand dune fixation • Sustainable fishing and Coral reef restoration • Coastal zone management (wave attenuation, sediment trapping, protection of coastal wetlands)

		• Measures against the heat island effect through physical modification of built environment and improved housing and building standards					

IRM integration transformational change		• Risk screening: conduct environmental impact assessments for construction projects so that they do not result in loss or degradation of bio-diversity (risk sensitive public and private investments) • Constructed wetlands are developed to treat sewage • Treatment of waste water-	• Improved disease/vector surveillance monitoring • E-learning using IRM modules are developed • Preparing protocols for prevention of health epidemics	• Intercropping of adapted species (include both drought and flood resistant crops) • Permaculture is promoted and adopted	• Capacities of community members/organisations are mapped to provide local assistance • Establishing flexible governance with emphasis on youth empowerment	• Lowering embankments (Room for River) • Changes in operation of reservoirs and lakes is communicated downstream • Relocation of infrastructure built in sensitive zones • Transboundary water governance (River basin authorities, Transboundary watershed commission)	• Transboundary ecosystem restoration • Integrating grey with green and blue infrastructure

		through filtration (using shockpit and connecting to groundwater), for irrigation purpose, for sanitation in toilets.					

Term	Definition/description and source
Adaptation	In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate (IPCC)
Adaptive capacity	The combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities (IPCC) Builds the capacity of people to adapt to climate change impacts through maintaining and enhancing their asset/capital sets, addressing entitlements, encouraging innovation, giving greater access to information, establishing flexible governance/decision-making, related to biodiversity and ecosystem services (IUCN)
Agroforestry	The practice of integrating trees into agriculturally productive landscapes (World Agroforestry Centre)
Capacity	The combination of all the strengths, attributes, and resources available to an individual, community, society, or organization, which can be used to achieve established goals (IPCC)
Climate change	A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use (IPCC)
Climate change adaptation	The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate harm or exploit beneficial opportunities. In natural systems, human intervention may facilitate adjustment to expected climate and its effects *(*IPCC AR5)
Climate extreme (extreme events)	The occurrence of a value of a weather or climate variable above (or below) a threshold value near the upper (or lower) ends of the range of observed values of the variable. For simplicity, both extreme weather events and extreme climate events are referred to collectively as “climate extremes.“ (IPCC)
Climate risk management	An integrated approach that advances climate-sensitive decision-making. It focuses on development outcomes that are dependent on climatic conditions, such as in agriculture, water resources, food security, health, the environment, urbanism and livelihoods (UNDP)
Climate-smart agriculture	CSA contributes to the achievement of sustainable development goals. It integrates the three dimensions of sustainable development (economic, social and environmental) by jointly addressing food security and climate challenges. It is composed of three main pillars: 1) sustainably increasing agricultural productivity and incomes; 2) adapting and building resilience to climate change; 3) reducing and/or removing greenhouse gases emissions, where possible (FAO)

Community-based adaptation	A community-led process, based on communities' priorities, needs, knowledge and capacities, which should empower people to plan for and cope with the impacts of climate change (IIED)
Community-based natural resource and risk management	An approach that combines the sustainable management of natural resources and risks in a given area. It combines the concept of "co-management" of natural resources with community-based disaster risk reduction.
Desertification	Defined as land degradation in drylands, leading to a condition of significantly reduced fertility and water holding capacity. Desertification is a reversible condition of the earth's surface, as opposed to aridity, which is a climatic condition (UNCCD)
Disaster	A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources (UNISDR) Severe alterations in the normal functioning of a community or a society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic, or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery (IPCC)
Disaster risk	The likelihood over a specified time period of severe alterations in the normal functioning of a community or a society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic, or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recover (IPCC)
Disaster risk management	Processes for designing, implementing, and evaluating strategies, policies, and measures to improve the understanding of disaster risk, foster disaster risk reduction and transfer, and promote continuous improvement in disaster preparedness, response, and recovery practices, with the explicit purpose of increasing human security, well-being, quality of life, and sustainable development (IPCC)
Disaster risk reduction	Denotes both a policy goal or objective, and the strategic and instrumental measures employed for anticipating future disaster risk; reducing existing exposure, hazard, or vulnerability; and improving resilience (IPCC) The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events (UNISDR 2009, p. 10-11)
Drought	A period of abnormally dry weather long enough to cause a serious hydrological imbalance. Drought is a relative term, therefore any discussion in terms of precipitation deficit must refer to the particular precipitation-related activity that is under discussion. For example, shortage of precipitation during the growing season impinges on crop production or ecosystem function in general (also

	termed agricultural drought), and during the runoff and percolation season primarily affects water supplies (hydrological drought). A megadrought is a very lengthy and pervasive drought, lasting much longer than normal, usually a decade or more. (IPCC)
Ecosystem approach	Strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (CBD)
Ecosystem-based adaptation	Incorporates biodiversity and ecosystem services into an overall adaptation strategy to help people to adapt to the adverse effects of climate change (CBD) Uses biodiversity and ecosystem services as part of an overall adaptation strategy to help people and communities adapt to the negative effects of climate change at local, national, regional and global levels (UNEP) Any initiative that reduces human vulnerabilities and enhances adaptive capacity in the context of existing or projected climate variability and changes through sustainable management, conservation and restoration of ecosystems (IUCN)
Ecosystem-based disaster risk reduction	Sustainable management, conservation and restoration of ecosystems to reduce disaster risk, with the aim to achieve sustainable and resilient development (Estrella and Saalismaa 2013) Decision-making activities that take into consideration current and future human livelihood needs and bio-physical requirements of ecosystems, and recognize the role of ecosystems in supporting communities to prepare for, cope with and recover from disaster situations. Sustainable ecosystem management for disaster risk reduction is based on equitable stakeholder involvement in land management decisions, land-use-trade-offs and long-term goal setting. (IUCN)
Ecosystem services	The benefits people obtain from ecosystems, which have been classified by the Millennium Ecosystem Assessment as: *Supporting* services, such as seed dispersal and soil formation; *regulating* services, such as carbon sequestration, climate regulation, water regulation and filtration, and pest control; *provisioning* services, such as supply of food, fibre, timber and water; and *cultural* services, such as recreational experiences, education and spiritual enrichment (Millennium Ecosystem Assessment 2005)
Epidemics	
Exposure	The presence of people; livelihoods; species or ecosystems, environmental services and resources; infrastructure; or economic, social, or cultural assets in places that could be adversely affected (IPCC)
Flood	The overflowing of the normal confines of a stream or other body of water, or the accumulation of water over areas that are not normally submerged. Floods include river (fluvial) floods, flash floods, urban floods, pluvial floods, sewer floods, coastal floods, and glacial lake outburst floods (IPCC)
Flexible governance	Governance options and responses are constantly evolving as per requirements. Plans and decisions adopt flexibility
Food security	Occurs when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preference for an active and healthy life (FAO). Household level food security is complex, trans-boundary and

	multifaceted including biophysical, socio-economic, political, demographic, gender and other dimensions. In general, three key indicators are used to measure the level of food insecurity, namely: availability, access and utilization (UNCCD)
Gender mainstreaming	Gender mainstreaming is a globally recognized strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring, and evaluation of policies and programmes in all political, economic, and societal spheres. This is to ensure that women and men benefit equally from processes of development, and that inequality is not perpetuated.
Green infrastructure	Green infrastructure a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, green infrastructure is present in rural and urban settings. (European Commission)
Hazard	The potential occurrence of a natural or human-induced physical event that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, and environmental resources (IPCC) A climate hazard is an event caused by climate change or caused by natural variability in weather with the potential to cause harm, such as heavy rainfall, drought, a storm, or long-term change in climate variables such as temperature and precipitation (WWF) A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Hazards can include latent conditions that may represent future threats and can have different origins: natural (geological, hydrometeorological and biological) or induced by human processes (environmental degradation and technological hazards). (Hyogo Framework)
Impacts	Effects on natural and human systems. In this report, the term "impacts" is used to refer to the effects on natural and human systems of physical events, of disasters, and of climate change (IPCC)
Integrated water resource management	A process that promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems (GWP 2000)
Landscape Approach	Landscapes are distinct geographical areas or properties uniquely representing the combined work of nature and of man, illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (World Heritage Committee)
Landslide	A mass of material that has moved downhill by gravity, often assisted by water when the material is saturated. The movement of soil, rock, or debris down a slope can occur rapidly, or may involve slow, gradual failure. (IPCC)

Least developed country	A country that exhibits the lowest indicators of socioeconomic development, with the lowest Human Development Index ratings of all countries in the world.
Low-regrets adaptation options	Low-regrets adaptation options are those actions that could potentially deliver net socioeconomic benefits to local communities and ecosystems whatever the extent of future climate change. The low-regrets approach is an important part of EbA and focuses on maximizing positive and minimizing negative aspects of nature-based adaptation strategies and options. (definition adapted from a joint UNEP-UNDP-IUCN working definition of "no-regrets" adaptation)
Maladaptation	An action or process that increases vulnerability to climate change-related hazards. Maladaptive actions and processes often include planned development policies and measures that deliver short-term gains or economic benefits but lead to exacerbated vulnerability in the medium to long-term (UNDP). Maladaptation can also include trade-offs or benefitting one group at the expense of another.
Mitigation (of climate change)	A human intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC)
Mitigation (of disaster risk and disaster)	The lessening of the potential adverse impacts of physical hazards (including those that are human-induced) through actions that reduce hazard, exposure, and vulnerability (IPCC).
Multi-criteria analysis	A structured approach used to determine overall preferences among different alternative options, where the options accomplish several objectives that may not always complement one another. In MCA, desired objectives are specified and corresponding attributes or indicators are identified. The measurement of these indicators is often based on a quantitative analysis (through scoring, ranking, and weighting) of a wide range of qualitative impact categories and criteria.
Permaculture	Is the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems
Resilience	The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions (IPCC) The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (UNISDR) Theoretical advances in recent years include a set of principles that have been identified for building resilience and sustaining ecosystem services in social-ecological systems. The principles include maintaining diversity and redundancy, managing connectivity, managing slow variables and feedbacks, fostering complex adaptive systems thinking, encouraging learning, broadening participation, and promoting polycentric governance systems (Biggs et al. 2012).

Spatial planning	A method used to influence the future distribution of activities in space (European Commission 1997). It goes beyond traditional land-use planning to integrate and bring together policies for the development of land-use, along with other policies and responses that influence the use of land (Office of Disaster Preparedness and Management, UK 2005). Spatial planning is critical for delivering economic, social, and environmental benefits by creating more stable and predictable conditions for investment and development, by securing community benefits from development, and by promoting prudent use of land and natural resources for development (WWF 2013).
Storm surge	The temporary increase, at a particular locality, in the height of the sea due to extreme meteorological conditions (low atmospheric pressure and/or strong winds). The storm surge is defined as being the excess above the level expected from the tidal variation alone at that time and place. (IPCC)
Sustainable land and water management	The adoption of land use systems that, through appropriate management practices, enables land users to maximize the economic and social benefits from the land while maintaining or enhancing the ecological support functions of the land resources. SLWM includes management of soil, water, vegetation and animal resources. It involves a holistic approach that integrates social, economic, physical and biological assets. SLWM encompass other approaches such as integrated natural resource management, integrated water resource management, eco-agriculture and sustainable forest management (SFM), and many facets of sustainable agriculture, agriculture (GEF 2011).
Synergies	Linking processes in a way that increases the effects of the sum of the joint activities beyond the sum of individual activities, and thus making efforts more effective and efficient
Vulnerability	The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity or susceptibility to harm and lack of capacity to cope and adapt (IPCC AR5) A function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity. In EbA the ecosystems and their vulnerabilities are included in the analysis together with the vulnerability of communities (WWF 2013). The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard (UNISDR)