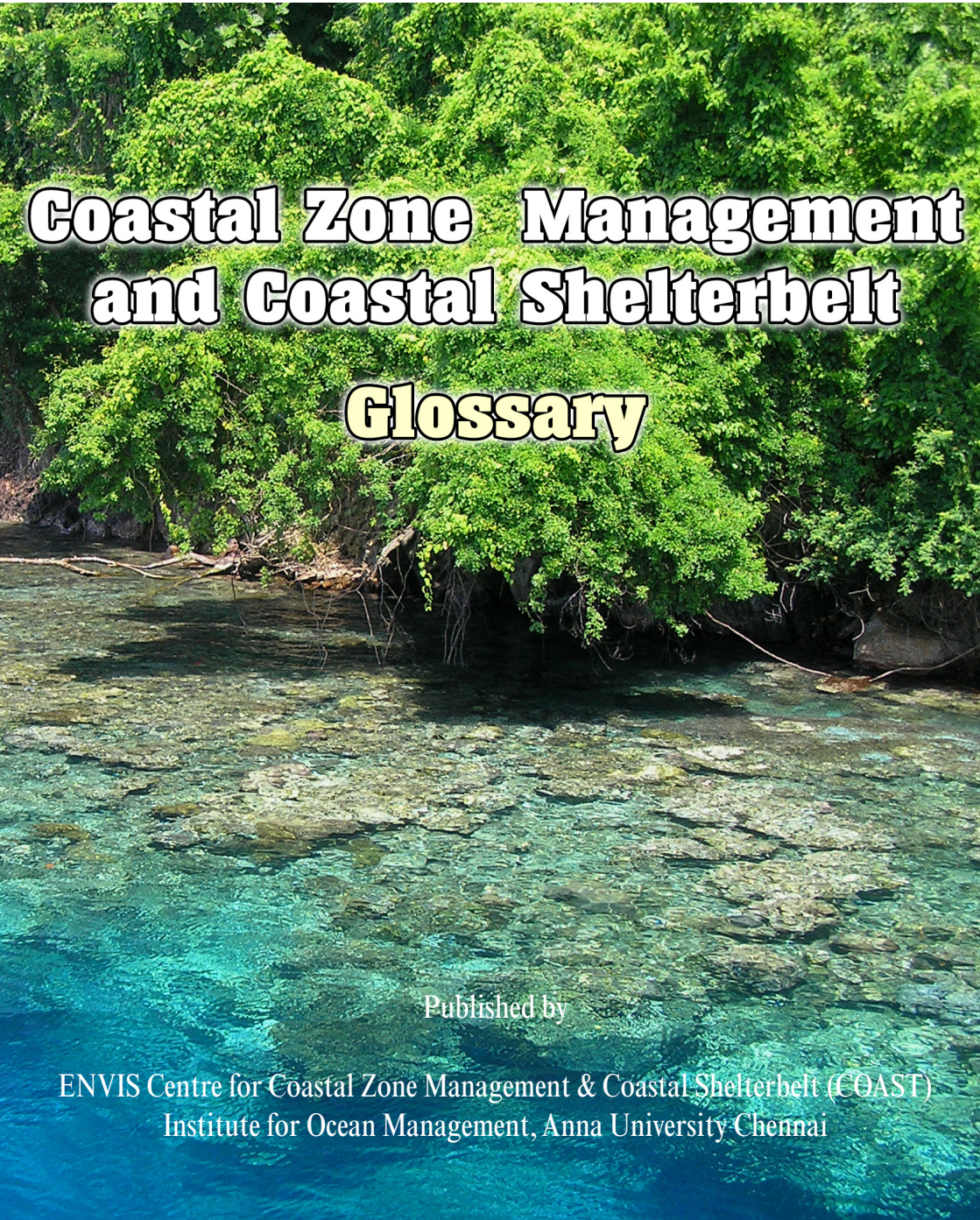

Coastal Zone Management and Coastal Shelterbelt

Glossary

Published by

ENVIS Centre for Coastal Zone Management & Coastal Shelterbelt (COAST)
Institute for Ocean Management, Anna University Chennai

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A

Abiotic
the non-living component of the environment; not pertaining to life or living organisms.

Acceptable Risk
A risk, which, for the purposes of life or work, everyone who might be impacted is prepared to accept assuming no changes in risk control mechanisms. Action to further reduce such risk is usually not required unless reasonably practicable measures are available at low cost in terms of money, time and effort.

Accretion
The addition of new land to the shoreline through the action of natural forces depositing water- or airborne material or by reason of an act of man such as the accretion formed as a result of groin or breakwater construction, or beach fill deposited by mechanical means; also defined as the process of gradual and imperceptible

Adverse ecological effects
Changes that are considered undesirable because they alter valued structural or functional characteristics of cosystems or their components. n evaluation of adversity may consider the type, intensity, and scale of the effect as well as the potential for recovery.

Aerobic
Living or active only in the presence of oxygen; taking place in the presence of oxygen.

Algal bloom
An overgrowth of algae in water that can shade out other aquatic plants and use up the water's oxygen supply as the plants decompose; blooms are often caused by pollution from excessive nutrient input.

Alternative livelihoods
Jobs offered to people who are displaced from their current jobs because of resource conservation programs.

Anoxic
Devoid of free oxygen.

Anthropogenic
Effects from the influence of human beings on natural systems.

Apron
Layers of stone, concrete or other material to protect the toe of a structure such as a seawall.

Aquaculture
The cultivation of fish, shellfish, and/or other aquatic animals or plants, including the processing of these products for human use.

Aquifer
A geologic stratum that contains water than can be economically removed and used for water supply.

Armor levee
The armor levee is a levee covered with an armor so that it is not

Armor
A marine engineering term that means providing structural protection for shorelines; e.g., bulkheads, seawalls etc.

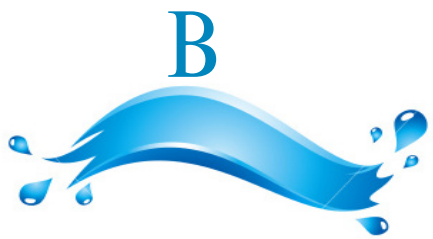
Artificial reef
Any marine habitat constructed for the purpose of attracting marine species or enhancing marine resources to improve fisheries; usually made of terrigenous substances such as used auto tires, concrete rubble, old ship hulls, automobile bodies, etc.

Assessment endpoint
An explicit expression of the environmental value that is to be protected, operationally defined by an ecological entity and its attributes. For example, salmon are valued ecological entities; reproduction and age class structure are some of their important attributes.

Assessment
The analysis and transformation of environmental data into policy-relevant information that can assist decision-making and action.

Asset Pentagon
The Asset Pentagon is an important component in the SL framework. It is a visual representation of information about people's livelihood assets.
It brings to life important inter-relationships between the various assets.

Asset Status
This refers to an individual's or group's access to livelihood assets. A change in Asset Status may involve an increase or decrease in access to livelihood assets or a change in the composition of the livelihood assets to which there is access.
at or near the crest of the beach, to resit erosion, usually timber.



Backfill
Material used to build up and consolidate the land behind a seawall or similar structure.

Backshore
The accretion or erosion zone, located landward of the line of ordinary high tide, which is normally wetted only by storm tides; a narrow storm berm (ridge of wave-heaped sand and/or gravel) or a complex of berns, marshes, or dunes landward of the line of ordinary high tide.

Backwater effect
The rise in water surface elevation caused by some obstruction such as a narrow bridge opening, buildings or fill material that limits the area through which the water must flow. Also referred to as"heading up".

Barrier islands
Elongate seafront islands of sand formed by the action of the sea and having an elongate lagoonal or estuarine embayment behind them.

Barriers to entry
Refers to the obstacles facing potential newcomers to a market. Typical obstacles include: the high level of skills and/or investment required to enter the market, bureaucratic/regulatory obstacles, cultural/social obstacles, action taken by established firms to discourage new-entrants etc.

Base floodplain
The floodplain that would be inundated by a 100-year (one percent (chance) flood.

Baseline study
An inventory of natural community or environment to provide a baseline-a measure of its condition at a point of time-often done to describe the status of biodiversity and abundance against which future change can be gauged (usually development driven).

Basin
The total area from which surface runoff is carried away by a drainage system. Other comparable terms are "drainage area","catchment area", and "watershed".

Beach head
Ridge, cliff, dune or sea defence forming the landward limit of the

Beach Management
Management of a beach as a coastal defence with a pre-determined standard of protection, using combinations of beach recharge, recycling, re-profiling, beach control structures and a programme of monitoring.

A process of replenishing a beach; it may be done naturally, by manipulating long-shore drift, or artificially by the

deposition of imported materials. It is a natural or artificial placement of material, usually sand and sometimes including suitable dredged material, on or near a beach for the purpose of expanding an existing beach or replenishing an eroding beach.

Beach profile
The intersection of the surface plane of the beach with vertical planes; may extend from the top of the dune line to the seaward limit of sand movement.

Beach recharge
Mechanical addition of imported sediment to a beach, also known as Beach replenishment/ nourishment.

Beach
A zone, or strip, of unstable unconsolidated material (e.g., sand, gravel) along the shoreline that is moved by waves, wind and tidal currents.

Bench mark
A fixed physical object or mark used as reference for a vertical datum; a tidal bench mark is often near a tide station to which the tide staff and tidal datum are referred.

Benefit-cost analysis
A procedure that evaluates the desirability of a program or project by weighing the benefits against the costs

Benefit-cost ratio
The ratio of benefits to costs. It should be calculated using the present values of each, discounted at an appropriate accounting rate of interest. The ratio should be at least 1.0 for the project to be acceptable. Inconsistent benefit-cost ratios may arise because they are dependent on arbitrary accounting conventions.

Benefits
Those positive quantifiable and unquantifiable changes that a project will produce.

Benthic
Pertaining to, or living on or in the bottom of the sea; upon or attached to the sea bottom (as opposed to pelagic)

Berm
A ridge of sand or gravel deposited by wave action on the shore just above the normal high water mark.

Bioaccumulation
The uptake of substances- e.g. heavy metals or chlorinated hydrocarbons- leading to elevated concentrations of those substances within marine organisms.

Biochemical Oxygen Demand (BOD)
A measure of the amount of dissolved oxygen required by biochemical

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processes to oxidize organic wastes in water.

Bio-erosion
The process by which biota erode environmental structure; e.g., the effects of drilling, grazing, and burrowing animals that can lead to slow disintegration of coral reefs

Biogenic
Produced by the action of living organisms.

Biological diversity (biodiversity)
The variety of faunal and floral species living within a certain habitat; also the social advocacy of protecting species and saving them from extinction.

Biomass
The total mass of living matter, usually within a given area or volume of environment

Biosphere reserve
A designated resource area featuring multiple use management systems whereby nature protection and uses for farming, forestry, fisheries, etc. are accommodated (note: an international system of such reserves is endorsed and guided by UNESCO).

Brackish water
A dilution of fresh water by the sea; brackish water may be defined as containing between 5 and 30 parts per thousand (ppt) of dissolved solids.

Breakwater
An artificial offshore structure aligned parallel to shore usually to provide protection of the shore from large waves. It is a structure protecting a shore area, harbor, anchorage, or boat basin from waves; defined in the State Navigation Law as a structure located within the shoreline of a body of water for the purpose of providing protection from wind and wave action.

Breastwork
Vertically faced or steeply inclined structure built parallel to the shoreline, broken when a flood occurs and water overflows

Buffer area
A protective, often transitional, area of controlled use-in coastal management, a peripheral zone separating a developed area from a protected natural area.

Bulk head
A wall erected parallel to and near the high water mark for the purpose of protecting adjacent uplands from waves and current action.

Bypassing
Hydraulic or mechanical movement of sand from the accreting up drift side to the eroding down drift side of an inlet or harbor entrance.

C

The limit to the amount of life, or economic activity, that can be supported by an environment; the reasonable limits of human occupancy and/or resource use.

Characterization of ecological effects
A portion of the analysis phase of ecological risk assessment that evaluates the ability of a stressor(s) to cause adverse effects under a particular set of circumstances.

Characterization of exposure
A portion of the analysis phase of ecological risk assessment that evaluates the interaction of the stressor with one or more ecological entities. Exposure can be expressed as co-occurrence or contact, depending on the stressor and ecological component involved.

Chemical Oxygen Demand (COD)
A measure of the amount of oxygen required to oxidize (with a chemical oxidant) the amount of organic and oxidizable inorganic compounds in water. Note: both COD and BOD (see above) test biological demands on oxygen resources.

Coastal baseline
A constructed, geo-specific, line from which the distance to the edge of the Territorial Sea of a country is plotted.

Coastal defence
General term used to encompass both coast protection against erosion and sea defence against flooding.

Coastal processes
Collective term covering the action of natural forces on the shoreline, and nearshore seabed.

Coastal protection
Works or management operations intended to control coastal erosion.

Coastal squeeze
The effect when hard defences (including beaches fixed in position by control structures) interrupt the natural response of the shoreline to sea level rise, restricting landward retreat and resulting in loss of the intertidal habitat.

Coastal vanes
curved structures moored to the seabed, designed to change the direction of part of the wave.

Coastal waters
Littoral waters that contain a measurable quantity or percentage of seawater (e.g. more than 0.5 parts per thousand).

Coastal woodland
area of coastal trees and large shrubs located behind the beach, also referred to as coastal forest zone.

Coastal Zone Management (CZM)
A governmental process for achieving sustainable use of resources of the coastal zone whereby participation by all affected economic sectors, governmental agencies and non-government organizations is involved; unified or integrated coastal zone management when the management actions of the various stakeholders are formally unified and community participation is emphasized.

Coastal zone
A zone comprising coastal waters (including the lands there under) at the adjacent shorelands; the zone strongly influenced by both sea and land and including smaller near-coast islands, transitional and intertidal areas, wetlands(mangroves and marshes) and beaches.

Co-management
The process whereby authority for management is shared between communities and higher levels of government also“community based management”or“collaborating management”.

Commons
Publicly owned areas of land or water, often managed by government as a public trust for the people; common property

Conceptual model
A conceptual model in problem formulation is a written description and visual representation of predicted relationships between ecological entities and the stressors to which they may be exposed.

Consequence
In relation to risk analysis, the outcome or result of a hazard being realized.

Conservation
The political/social/economic process by which the wise use of resources is exercised and environments are protected.

Contingency plan
A set of countermeasures planned in advance to mitigate damage from an accident (oil spill, cyclone, or etc.).

Corriolis effect
The deflection relative to the earth's surface of any object moving across or above the earth, caused by the earth's interial force-an object moving horizontally along the earth's orbit is deflected to the right in the northern hemisphere, to the left in the southern.

Cost-benefit analysis
An analysis of the cost effectiveness of different alternatives in order to determine whether the benefits outweigh the costs.

Cost-effectiveness
Minimizing the costs of achieving a given (e.g. environmental) objective/ target; a "second-best" efficiency criterion, often used when a full cost-benefit analysis is not feasible.

Counter-measure
Action or measure taken to reduce risk. Can be in form of design, operational or maintenance procedures.

Critical habitat
see "ecologically critical area" below

Cross-sectoral links
The connections between different sectors, such as agriculture, health, infrastructure, etc, particularly, the way in which livelihoods span these sectors.

Cumulative impacts
Environmental impacts caused by multiple human activities; that is, the combined environmental impacts that accrue from a number of individual actions, contaminants, or projects, whereby actions which may each be acceptable individually have a significant impact in combination.

D

Datum (vertical)
For marine applications, a base elevation used as a reference from which to reckon heights or depths. It is called a tidal datum when defined in terms of tidal phenomena and is based on a 19 year tide cycle (in the USA)- the datum is referenced to a fixed point typically known as a bench mark.

Decision maker
The person or organizational unit that decides on a course of action in relation to the safety of a dam on the basis of a range of considerations which may include a risk assessment.

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Delphi method
A technique for obtaining subjective judgmental values through iterative estimations by a group of experts

Detached Breakwater
A breakwater without any coastal connection to the shore.

Dikes and Levees
Dikes are typically earth structures (dams) that keep elevated water levels from flooding interior lowlands.

Disaster
A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.

Dissolved Oxygen (DO)
The quantity of oxygen dissolved in a unit volume of water; expressed as milligrams per liter (mg/L) or parts per million (ppm).

Dredging
The excavation of sediments and other material from aquatic areas for the purpose of maintaining adequate depths in navigation channels and berthing areas, as well as for other purposes.

Dune face
The seaward face of a dune system where coastal processes may cause erosion or accretion.

Dunes
Accumulations of sand in ridges or mounds landward of the beach berm formed by natural processes and usually parallel to the shoreline.

Dunes
Accumulations of windblown sand on the backshore, usually in the form of small hills or ridges, stabilised by vegetation or control structures.

E

Early Warning
The provision of timely and effective information, through identified institutions, that allows individuals exposed to a hazard, to take action to avoid or reduce the risk and prepare for effective response. Early warning systems include of three primary elements (i) forecasting of impending events, (ii) processing and dissemination of warnings to public authorities and population, and (iii) undertaking appropriate and timely actions.

Eco-development
A process of socio-economic development in which the sustainable use of environmental resources has priority.

Ecological risk assessment
An ecological risk assessment evaluates the potential adverse effects that human activities have on the plants and animals that make up ecosystems. The risk assessment process provides a way to develop, organize and present scientific information so that it is relevant to environmental decisions. When conducted for a particular place such as a watershed, the ecological risk assessment process can be used to identify vulnerable and valued resources, prioritize data collection activity, and link human activities with their potential effects.

Ecologically Critical Area (ECA)
An area of highly concentrated biological activity of a type that is especially valuable for maintaining biodiversity and/or resource productivity; an ecologically sensitive area (ESA).

Economic Appraisal/Analysis
Economic analysis is an essential tool in project and programme appraisal. It involves the techniques of cost-benefit analysis which compares the total costs of the project/programme to the total stream of benefits flowing to society. It assesses whether the returns are sufficient to justify investing funds. It may also include financial appraisal which assesses the financial viability of the project/programme from the perspective of specific participants (e.g. Sustainable livelihoods guidance sheets whether the returns for individuals and businesses are sufficient incentive for their participation). Macro-economic analysis provides insights into the impact ofcurrent macro policy on the livelihoods of different groups and the possible effects of proposed policy changes.

Economic Shocks
see Shocks.

Economic Sustainability
It is usually associated with the ability to maintain a given level of income and expenditure over time. It can be defined in relation to expenditure by individuals, households, projects, programmes, government departments, countries etc. Maintaining a given level of expenditure, necessarily requires that the income/revenue which supports that expenditure should also be sustainable over time. In the context of the livelihoods of the poor, economic sustainability's achieved if a minimum level of economic welfare can be achieved and sustained. Economic sustainability is one of a number of dimensions of sustainability that also include environmental sustainability, institutional sustainability and social sustainability.

Economy
Acquiring human and material resources at the appropriate quality and quantity at the lowest cost.

Ecosystem
The complete ecological system operating in a given geographic unit, including the biological community and the physical environment, functioning as an ecological unit in nature.

Ecotone
The transition or border area lying between two different ecological communities, as between a marsh system and a forest system.

Ecotourism
Tourist activity attracted to environmental resources and based, usually, on a conservation theme.

Effluent
the outflow of a sewer, industry pipe, or other waste discharge.

Embankment
A bank protecting land from flooding.

Empowerment
Occurs where people take greater control over the decisions, assets and Policy, Institutions and Processes that affect their livelihoods.

Entry point
An Entry Point refers to the area or activity in which intervention efforts are initially directed. Examples include: capacity building, support to micro-credit, investment in infrastructure, a watershed programme, efforts to change policy etc.

Environmental checklists
One of a number of tools that can be useful in SL Analysis. Environmental checklists contain recommended issues and factors to ask about to gain a better understanding of the relationship between the livelihoods of the poor and their environment.

Environmental Impact Assessment (EIA)
Detailed prediction of the impact of a development project on environment and natural resources with recommendations as to acceptability of the project, need for minimizing/ eliminating/offsetting adverse effects, and a management plan to accomplish these countermeasures; a generic term for all types of impact assessment is Environmental Assessment (EA).

Environmental management plan
A plan that describes specific conservation actions that will be undertaken during project planning, construction, operation, and maintenance to lessen the effects of the project on the environment and to ensure that sustainable development is achieved; it includes real time and retroactive monitoring of project effects.

Environmental Risks
Risks to natural ecosystems or to the aesthetics, sustainability or amenity of the natural world.

Environmental sustainability
Achieved when the productivity of life-supporting natural resources is conserved or enhanced for use by future generations. By productivity we mean its ability to produce a wide range of environmental services, such as the supply of food and water, flood protection, waste management etc. Environmental sustainability is one of a number of dimensions of sustainability that also include, institutional sustainability, economic sustainability and social sustainability.

Equity
Criterion that may entail modifying a political decision so as to achieve a particular distribution of incomes in the economy through, for instance, subsidies to public transport for low income groups or to achieve regional development objectives.

Escarpment
A more or less continuous line of cliffs or steep slopes facing in one general direction which are caused by erosion or faulting.

Estuary
A semi-enclosed littoral basin (embayment) of the coast in which fresh river water entering at its head mixes with saline water entering from the ocean. Estuaries are of particular ecological value and significance because they provide important natural values concerning, for example, fish and wildlife habitat, flood protection, and maintenance of water quality.

Eutrophication
The process of enrichment of water which leads to excessive growth of algae and other aquatic plants from the introduction of an over supply of nutrients such as nitrates or phosphates.

Exclusive Economic Zone (EEZ)
The maritime zone adjacent to and extending 200 nautical miles beyond the baseline from which the territorial sea is measured-internationally authorized by the Third United Nations Conference on the Law of the Sea; the coastal state has sovereign rights to explore, exploit, conserve and manage the natural resources in this zone.

Exposure profile
The product of characterization of exposure in the analysis phase of ecological risk assessment. The exposure profile summarizes the magnitude and spatial and temporal patterns of exposure for the scenarios described in the conceptual model.

Exposure scenario
A set of assumptions concerning how an exposure may take place, including assumptions about the exposure setting, stressor characteristics, and activities that may lead to exposure.

Exposure
The contact or co-occurrence of a stressor with a receptor.

External environment
A very general term that refers to the environment outside a person's immediate influence. Within the SL framework trends, shocks, and seasonality are part of the External Environment. Many policies, institutions and processes (PIPs) may also be treated as part of the external environment, although people may have more influence over some of these than over trends, shocks and seasonality. External shocks: Shocks emanating from the external environment.

External support
Support provided from outside, e.g. government support for a village community, or donor support for a government department etc.

Extreme Event
Event, which has a very low annual exceedance probability (AEP). Sometimes defined as an event beyond the credible limit of extrapolation and therefore dependent on the length of record and the quality of the data available.

F

Fault Tree Analysis
A systems engineering method for representing the logical combinations of various system states and possible causes which can contribute to a specified event (called the top event).

Feedback
Responses to consultation and requests for opinions of stakeholders.

Filling
Elevating the land surface with artificial deposits using excavated, dredged, or waste materials.

Financial capital
Financial Capital is a category of livelihood assets. Within the SL framework, it is defined as the financial resources that people use to achieve their livelihood objectives.

Flank protection
Angled section of wall at the end of a shore protection structure, for example a seawall or revetment.

Flood plains
The area of shore lands that is subject to frequent storm flooding and is often defined by the statistical probability of flooding; e.g., 1% ("100-year flood") or 5% ("20-year flood").

Flood Proofing
One of the most common flood proofing measures is the elevation of homes.

Flushing time
The time required to replace the water in a basin and therefore to remove or reduce (to a permissible concentration) any dissolved or suspended contaminant in an estuary or harbor.

Focus Groups
Groups of local government electors chosen either at random or in order to produce balanced samples. They meet facilitators or interviewers, usually in groups, and act as sounding boards, regarding the delivery of issues

Foreshore
The intertidal part of a beach or the part of the shorefront lying between the beach head (for upper limit of wave wash at high tide) and the ordinary low water mark that is ordinarily traversed by the uprush and backrush of the waves as the tides rise and fall.

G

Gabion
The wire netted blocks of medium-sized pieces of hard rock. Expensive and can be ugly.

Geographic Information System (GIS)
Computer-assisted systems that can input, store, retrieve, analyze and display geographically referenced information and enhance the analysis and display of interpreted geographic data.

Geomorphology
The science that applies the principles of physiography and geology to address the form and configuration of the land and submarine features of the earth's surface and the changes that take place in the evolution of landform.

Geotextile
Synthetic or natural fabrics used in engineering to separate layers of granular material.

Geotube
A long fabric cylinder filled with sediment used as a wall to retain sediment behind

Governance
The form and quality of government systems – structure, power, effectiveness, efficiency, rights and representation.

Greenbelt
A strip of vegetation, usually along a transition zone boundary, which separates one type of resource area from another. It is a linked system of natural areas along the shoreline of a watercourse or body of water, often including public easements, open space land, and public access walkways. A greenbelt typically provides a natural, protective buffer area between the upland and aquatic area, conserves valuable natural resources, and may provide opportunities for passive recreational use.

Greenhouse Effect
Heating of the Earth from the increase in the gases such as CO2, methane, CFCs, etc., that make up the atmospheric envelope that surrounds the globe; term coined by the scientist Svante Arrhenius in the late 1800s.

Grey dune
Well-vegetated fixed dune with mosses, lichens, grasses and herbs.

Groin
Elongate structure of large rock, concrete, or woodpiles and planks, built perpendicular to the shoreline in order to intercept long-shore drift of sand and reduce localized erosion. It is also a shore protection structure usually built perpendicular to the shoreline and intended to trap littoral drift or reduce erosion of the shore.

Ground truth
Ground level direct observations made to verify interpretations from remotely sensed data.

Groundwater Drainage
Groundwater drainage, or bluff dewatering is a common practice used to rapidly drain ground and surface waters away from a bluff in order to eliminate or reduce bluff failures initiated by groundwater seepage.

Groyne bay
The beach compartment between two groynes.

H

Halocline
An abrupt vertical change of salinity with depth, usually from fresher to saltier water occurring within a rather narrow horizontal layer; it shows on sonar as a sharp discontinuity and has important effects on distribution of life in the ocean ("pycnocline").

Hard Defenses
A general term applied to impermeable coastal defense structures of concrete, timber, steel, and masonry, which reflect a high proportion of incident wave energy.

Hazard
Threat; condition, which may result from either an external cause (e.g. earthquake, flood, or human activity) or an internal vulnerability, with the potential to initiate a failure mode. A source of potential harm or a situation with a potential to cause loss.

Headland
Hard feature (natural or artificial) forming local limit of longshore extent of a beach.

Hedonic pricing
Valuation technique, which infers a value for environmental quality from rent or property price differentials.

High Tide Line
The line or mark left upon tide flats, beaches, or along shore objects that indicates the intersection of the land with the water's surface at the maximum height reached by a rising tide. The term includes spring high tides and other high tides that occur with periodic frequency, but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm. The high tide line is a higher elevation than the mean high water line.

High Water Line
The intersection of the plane of mean high water with the shore; the shoreline delineated on nautical charts prepared by the National Ocean Service is an approximation of the high water line.

High water
The maximum elevation reached by the rising tide; mean high water is the average of such tidal elevations.

Hinterlands
The land away from the coast which influences the coast including plains, hills, watersheds, water courses, etc (the "uplands").

Human capital
Human Capital is a category of livelihood assets. It represents the skills, knowledge, capacity to work, and good health that together enable people to pursue different livelihood strategies and achieve their livelihood outcomes. At a household level human capital is a factor of the amount and quality of labour available. This varies according to household size, skill levels, education, leadership potential, health status, etc. Human capital is necessary to be able to make use of the other four types of livelihood assets

Human factors
Human factors: Human factors refer to environmental, organizational and job factors, and human and individual characteristics that influence behaviour in a way which can affect safety.

Hydrology
The science dealing with the properties, distribution, and circulation of water on earth.

I

Impact assessment
The evaluation of ecological effects to determine their impact on human needs, environmental, social and economic (see also "environmental impact assessment" above).

Indicator
A measurement that can be used to assess the condition, status or trends of an ecological resource. The term is widely used in water resources management programs, but has many different interpretations. It is preferable in risk assessment to avoid using the term indicator and instead use the more specific terms measure of effect, measure of exposure, and assessment endpoint, as appropriate.

Infrastructure
Usually the publicly constructed support system for a community including roads, electricity, communications, water, sewage, etc.

Initial Environmental Evaluation (IEE)
The initial environmental assessment of a development activity at the project feasibility phase in order to provide early identification of potential environmental impacts and to determine whether a full EIA will be necessary.

Integrated Coastal Zone Management (ICZM)
Integrated coastal zone management (ICZM) is a dynamic, multidisciplinary and iterative process to promote sustainable management of coastal zones. It covers the full cycle of information collection, planning (in its broadest sense), decision making, management and monitoring of implementation. ICZM uses the informed participation and cooperation of all stakeholders to assess the societal goals in a given coastal area, and to take actions towards meeting these objectives. ICZM seeks, over the long-term, to balance environmental, economic, social, cultural and recreational objectives, all within the limits set by natural dynamics. 'Integrated'in ICZM refers to the integration of objectives and also to the integration of the many instruments needed to meet these objectives. It means integration of all relevant policy areas, sectors, and levels of administration. It means integration of the terrestrial and marine components of the target territory, in both time and space. *See also: Coastal Zone Management*.

Integrated regional development planning
Large-scale development planning for a region which incorporates all salient planning parameters including economic, socioeconomic, environmental and others.

Intertidal zone
The transition zone between the sea and the land, often defined as the zone that lies between mean higher high water and mean lower low water lines.

Issue analysis
The exploration, definition, and evaluation of the basic resource management issues to be faced in an ICZM program.

Iterative Process
A process involving the continual refinement of goals and objectives as new knowledge and questions generated by investigation and analysis feed back into the investigative cycle. See also Process Approach

J

Jackson Turbidity Unit (JTU)
The standard unit used in measuring the turbidity of a water sample; originally defined in terms of the depth of water beyond which a candle flame cannot be clearly distinguished.

Jetty
A structure projecting out into the sea, usually at the mouth of a harbor or river intersecting the coast, for the purpose of protecting a navigation channel or harbor, or to influence water currents; often built in pairs along both sides of an entrance channel. Generally, a structure on an open coast extending into a body of water; designed to prevent shoaling of a channel by littoral materials and to direct and confine stream or tidal flow; defined in the State Navigation Law as a structure located within the shorelines of a body of water for the purpose of controlling currents usually to prevent filling in of a channel. Jetties are built at the mouths of rivers or tidal inlets to help deepen and stabilize a channel.

L

Lagoon
(i) A semi-enclosed littoral basin with limited fresh water input, high salinity, and restricted circulation; lagoons often lie behind sand-dunes, barrier islands, or other protective features; (ii) the shallow waters lying between a coral ridge and the shore.

Land use planning
Planning for allocations for use of the regional (or national) land resources to achieve a strategic objective, often for sustainable use of a particular resource (water resources, fisheries, wildlife) or to meet certain social equity or economic objectives.

Land Use
The character and condition of the use of land and which may be described in terms of general categories, such as"residential","commercial", "industrial", and"open space", or with reference to the specific use or development of a specific site; also, a reference to the ways in which a community or area makes use of its natural resources.

LANDSAT
An unmanned earth-orbiting NASA (National Aeronautical and Space Administration) satellite that transmits multi-spectral images (0.4-1.1 micrometer range) of the electromagnetic spectrum to earth-receiving stations; the digital data and/or images produced are used to identify earth features and resources.

Leeward coast
coast sheltered from the waves.

Levee
A barrier constructed to contain the flow of water, prevent flooding, or to keep out the sea

Littoral drift
The movement of sand and other material by littoral (long shore) currents in a direction parallel to the beach along the shore; usually wind driven. The sedimentary material moved in the littoral zone under the influence of waves and currents.

Littoral Transport
The movement of littoral drift in the littoral zone by waves and currents, including movement parallel to the shore (long-shore transport) and movement perpendicular to the shore (onshore-offshore transport).

Littoral zone
In coastal engineering, the area from the shoreline to just beyond the breaker zone; in ecology the littoral system extends farther and is divided into eulittoral and sublittoral zones, separated at a depth of about 50 meters.

Littoral
Pertaining to the shore, especially of the sea; coastal.

Livelihood assets
A key component in the SL framework, they are the assets on which livelihoods are built, and can be divided into five core categories (or types of capital). These are: human capital, natural capital, financial capital, social capital, and physical capital. People's choice of livelihood strategies, as well as the degree of influence they have over policy, institutions and processes, depends partly upon the nature and mix of the assets they have available to them (see Livelihoods Asset Pentagon). Some combination of them is required by people to achieve positive livelihood outcomes – that is, to improve their quality of life significantly on a sustainable basis. No single category of assets on its own is sufficient to achieve this, but not all assets may be required in equal measure. It is important to note that a single asset can generate multiple benefits. For example, if someone has secure access to land (natural capital) they may also be able to get better access to financial capital, as they can use the land both for productive uses and as security for a loan.

Livelihood components
Refers to the different elements of the SL Framework.

Livelihood goals
The objectives pursued by people through their livelihood strategies. Closely related to livelihood outcomes. Livelihood outcomes: Livelihood Outcomes are the achievements – the results – of livelihood strategies.

Livelihood strategies
The term used to denote the range and combination of activities and choices that people make in order to achieve their livelihood goals.

Livelihood Strategies include
how people combine their income generating activities; the way in which they use their assets; which assets they chose to invest in; and how they manage to preserve existing assets and income. Strategies may reflect underlying priorities, such as to diversify risk. Livelihood Strategies are diverse at every level. For example, members of a household may live and work in different places, engaging in various activities, either temporarily or permanently. Individuals themselves may rely on a range of different income-generating activities at the same time, and are likely to be pursuing a variety of goals.

Livelihood(s)
One could describe a livelihood as a combination of the resources used and the activities undertaken in order to live. The resources might consist of individual skills and abilities (human capital), land, savings and equipment (natural, financial and physical capital, respectively) and formal support groups or informal networks that assist in the activities being undertaken (social capital).

Livelihoods analysis
see SL Analysis.

Local Agenda 21
A strategy to protect the local environment, communities and its people developed from the Rio Earth summit.

Local Interest Groups
Groups or bodies of people with a specific interest in a service or outcome.

Logical framework (log frame)
A tool that is commonly used to design, manage and evaluate projects and programmes. A Logical Framework

(log frame) defines what an intervention will do, what it will deliver, the impact it is expected to achieve, and the contribution of that impact to higher-level objectives (such as poverty elimination). It mentions all the indicators that will be used to monitor progress and outlines how information on indicators will be collected. It also outlines how the external environment is expected to shape project impact.

Long-shore current
A current, created by waves, which moves parallel to the shore, particularly in shallow water, and which is most noticeable in the surf or breaker zone; littoral drift current.

Long-term impact: An impact lasting for an unspecified or extended period of time.

M

Macro Policy
Macro Policy is policy, which affects the whole country. It is concerned with monetary, fiscal, trade and exchange rate conditions as well as with economic growth, inflation and national employment levels. It is distinct from micro policy, which only affects particular sectors, districts, neighborhoods or groups.

Mangroves
Any of the many genera of trees that are capable of living and growing in salt water or salty soils; often includes the rich biological community that is supported by the mangrove forests or fringing strips of mangrove.

Marina
A water dependent facility, the main function of which is to provide boat dockage and related services for recreational vessels as a commercial enterprise or in association with a private club. Marina facilities are often operated in conjunction with boatyard facilities.

Marsh
Area of soft, wet, or periodically inundated land, generally treeless, and usually characterized by grasses and other low growth.

Master plan
The operational CZM plan which defines rules, resources, conservation issues, performance standards, authorities, objectives, use rights (permitted uses), development restrictions, participation, coordination mechanisms, permit/EIA

conditions, protected areas, setbacks, staff, training, etc.

Matrix
An organizational structure that uses functional supervisors as well as project

Mean High Water (MHW) Line
A tidal datum; the arithmetic mean of the high water heights observed over a specific 19-year Metonic cycle (the National Tidal Datum Epoch). Proposed work and structures seaward of the mean high water line are subject to Federal regulatory authorities carried out by the U.S. Army Corps of Engineers and to State and local regulatory authorities as well. In general, most land and water areas seaward of the mean high water line are subject to the Public Trust Doctrine. The mean high water line also marks the seaward boundary of the jurisdiction of a municipality's planning and zoning authorities.

Mean Low Water (MLW) Line
A tidal datum; the arithmetic mean of the low water heights observed over a specific 19-year Metonic cycle (the National Tidal Datum Epoch).

Mean sea level
The average height of the sea; a datum, or "plane of zero elevation", established by averaging hourly tidal elevations over a 19 year tidal cycle or "epoch" and corrected for curvature of the earth which is the standard reference for elevations on the earth's surface.

Measure of effect (measurement endpoint)
A change in an attribute of an assessment endpoint or its surrogate in response to a stressor to which it is exposed.

Measure of exposure
A measure of stressor existence and movement in the environment and its contact or co-occurrence with the assessment endpoint.

Measurement endpoint
See "measure of effect."

Micro Policy
Micro Policy is policy, which only affects particular sectors, districts, communities, villages, neighborhoods or groups. It is distinct from macro policy, which affects the whole country.

Mitigation
Measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.

Mitigation
The elimination, reduction or control

of the adverse environmental impacts of a project, including countermeasures against negative environmental impacts of development.

Mixing zone
A limited water area surrounding a point of pollution discharge where the restriction on amount of contaminants is waived to allow dilution to take place before the contaminant reaches the water body at large.

Modeling
An investigative technique using a mathematical or physical representation of a system or theory, often to test the effect of changes of system components on the overall performance of the system, and often applied to address water quality and shoreline change questions.

Mud flat
An area of fine silt usually exposed at low tide but covered at high tide,

Multiple use
The concept of providing for multiple activities for particular areas or resources by managing them for sustainable resource use.

N

Natural Hazards
Natural processes or phenomena occurring in the biosphere that may constitute a damaging event. Natural hazards can be classified by origin namely: geological, hydro-meteorological or biological.

Nature synchronous
Development that is in synchrony with natural forces; engineering design that coincides with natural processes, rather than resisting or confronting them.

Nephalometric Turbidity Unit (NTU)
The measure of light penetration in seawater or another liquid used in electronic turbidity meters which corresponds closely to the Jackson Candle, or Jackson Turbidity Unit, because all instruments are calibrated to the equivalent of: 1 mg/L of SiO_2 = 1 NTU.

Net Present Value (NPV)
The difference between the present value of the benefit stream and the present value of the cost stream for a project. The net present value calculated at the Banks discount rate should be greater than zero for a project to be acceptable.

Non-use Value
The value that people hold for an environmental resource, which is not attributable to their direct use of the resource for commercial or recreational purposes. Otherwise known as intrinsic value.

Nourishment
The process of replenishing a beach. It may be brought about naturally, by long shore transport, or artificially by the deposition of dredged materials.
Nurture (or nurturing) area
Any place in the coastal zone where larval, juvenile, or young stages of aquatic life concentrate for feeding or refuge; also a "nursery area".

Nutrient
Any substance assimilated by living things that promote growth, including any number of organic or inorganic compounds (nitrogen and phosphorous are important examples) used by plants in primary production.

O

Objectively verifiable indicators
Refers to measurable indicators that will demonstrate whether or not objectives specified in the Logical Framework have been met. used in monitoring and evaluation. occurring in sheltered estuaries or behind shingle bars or sand spits.

Offshore breakwater
Structure parallel to the shore, usually positioned in the sea, that protects the shore from waves.

Oligotrophic
An aquatic environment typified by a low amount of nutrient; the opposite of "eutrophic".

Opportunity cost
A term from multiple use economics that means the value of options that is lost (excluded) because of choosing one particular mode of use.

Organic detritus
Suspended small organic particles, usually of vegetative origin.

Outputs
Typically used in relation to the Outputs of a project or programme and linked to measurable indicators of project/programme impact, such as agricultural yields, number of visits by health workers, area of land brought under irrigation, number of teachers trained, legislation revised, trade agreements implemented etc. Outputs are an important element in the Logical Framework.

Overlay mapping
Superimposition of several theme maps to spatially analyze environmental resources and development modes, particularly useful in studying the interactions between various components of land use.
Oxidation pond: A man-made lake or body of water in which wastes are treated, mostly by bacterial consumption; a sewage treatment lagoon.

D

Participation
Occurs when decision-making and development activities are participatory.

Participatory Activities
see participatory.

Participatory Development
see participatory.

Participatory Methods
These are methods that are used to encourage people's participation in the processes of identifying/ analyzing livelihood opportunities and problems, setting priorities and planning, implementing solutions, and monitoring and evaluating changes and impacts. They are very important for understanding livelihoods and are designed so as to promote learning and empower people in their dealings with external agencies and institutions.

Participatory
The quality of an approach to development and/or government in which the underlying principle is that the key stakeholders (and especially the proposed beneficiaries) of a policy or intervention are closely involved in the process of identifying problems and priorities and have considerable control over the related activities of analysis, planning and the implementation of solutions. To facilitate this approach there are a variety of participatory methods or techniques that can be used.
Partnerships: Refers, in the SL Approach, to Partnerships in the development process.
Pelagic: capable of living any place from top to bottom in the oceanic water column; not restricted to living at the bottom.

People-centered approach
An approach that involves a focus on people

People-centered
Sustainable poverty elimination will be achieved only if external support focuses on what matters to people, understands the differences between groups of people and works with them in a way that fits in with their current livelihood strategies, social environment and ability to adapt.

Perched Beach
Beach or fillet of sand retained above the otherwise normal profile level by a submerged dike or sill.

Pier
A vertical structure that support the spans of a bridge. Pier structures are sometimes referred to as jetties.

Pile
Long, heavy section of timber, concrete or metal driven or jetted into the earth or seabed as support or protection.

Pile, Sheet
Pile with a generally slender, flat cross section driven into the ground or seabed and meshed or interlocked with like members to form a diaphragm, wall, or bulkhead.

Pocket beach
A beach located between two headlands

Point source pollution
pollution that is discharged from a fixed location such as the end of a pipe.

Policy, Institutions and Processes (PIPs)
A key component in the Sustainable Livelihoods Framework combines Policies, Institutions and Processes (PIPs) because the three are closely inter-related contextual fators that have a great effect on all aspects of livelihoods.

Policy
One of the components of Policy, Institutions and Processes (PIPs), Policy can be thought of as a course or principle of action designed to achieve particular goals or targets. These tend to be broader and less specific than those of the programmes and projects used to implement Policy.

Pollutant
A contaminant that in a certain concentration or amount will adversely alter the physical, chemical, or biological properties of the environment-includes pathogens, heavy metals, carcinogens, oxygen-demanding materials, and all other harmful substances, including dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, and industrial, municipal, and agricultural wastes discharged into coastal waters.

Polluter pays principle
Political/economic principle stating that polluters should pay the full environmental costs of an activity. Some experts extend the principle to state that users that should pay the full social costs of an activity, but this is not universally accepted.

Pollution
The man-made or man-induced alteration of the chemical, physical, biological, or radiological integrity of an aquatic ecosystem.

Post project evaluation
A procedure to review the performance of a project with respect to its original objectives and the manner in which the project was carried out.
potentially active beach.

Present value (PV)
The value of a stream of benefits or costs when discounted back to the present time.

Primary production
The amount of plant life produced in a given area or environment

Primary waste treatment
A process that removes material that floats or will settle in sewage, accomplished by using screens to catch the floating objects and settling tanks for heavy matter, and often including chlorination; removes of about 30% of BOD and less than half of metals and toxic organics.

Probability
The likelihood of some event occurring.

Problem formulation
The first phase of ecological risk assessment, which includes a preliminary description of exposure and ecological effects, scientific data and data needs, key factors to be considered, and the scope and objectives of the assessment. This phase produces the risk hypotheses, conceptual model and analysis plan, around which the rest of the assessment develops.

Process approach
An approach to interventions in which broad objectives for change may be identified and agreed but the exact means by which these objectives will be achieved may, at the outset, be unknown and unknowable. Such interventions are approached in an exploratory mode. Implementation takes place in successive, defined, iterative stages with future activities being planned in the light of results gained as implementation proceeds.
Processes: One of the components of Policy, Institutions and Processes (PIPs). 'Processes' attempts to capture the dynamic element of policies and institutions and avoid a 'snapshot' approach. It refers to how things are done rather than what is done. It also refers to the ways policies and institutions change and/or interact with broader processes of change.

Program
A programme is a set of activities designed to achieve a specific purpose. The term may describe a mix of projects, training and capacity building, budgetary support and policy dialogue. A programme may focus on a region – such as southern Africa –, a country, or an area within a country. It may be multi-sectoral or focus on a single sector.

Project Scope
The range of activities and issues addressed by a project.

Project
A project is a discrete funding package, comprising an activity or set of activities that can contribute to – but not necessarily achieve on its own – a particular development objective.
Protected area: a natural area of land or water set aside by governmental action, as a right of ownership, to protect its resources from degradation.

Q

Qualitative Risk
An analysis, which uses word form, descriptive or numeric rating scales to describe the magnitude of potential consequences and the likelihood that those consequences will occur.

Quantitative Risk
An analysis based on numerical values of the potential consequences and likelihood, the intention being that such values are a representation of the actual magnitude of the consequences and the probability of the various scenarios which are examined.

R

Rapid Rural Assessment (RRA)
A procedure for gathering and analyzing information about community socio-economic conditions preparatory to making development decisions; where community participation is a priority; also "Participatory Rural Assessment" (PRA) or "Rapid Coastal Assessment" (RCA).

Red tide
A massive "bloom" of dinoflagellate microscopic organisms that may produce neurotoxins such as paralytic shellfish poisoning (PSP) that infest marine organisms and humans that eat them; may kill fish and pollute the air with irritating substance; red or reddish brown discoloration of the sea.

Regulatory Agency
Usually a government ministry, department, office, directorate or other unit of government entrusted by law or administrative act with the responsibility for the general supervision of the safe design, construction and operations of structures or facilities, as well as any entity to which all or part of the executive or operational tasks and functions have been delegated by legal power.

Remote sensing
The acquisition and processing of information about a distant object or phenomenon without any physical contact; often done from satellites.

Replenishment zone
An area within a coastal reserve designated and managed as a non-exploitation sanctuary to enhance replenishment of fishery stocks.

Reserve (nature or resource reserve)
An area designated for protection (and restoration) of environmental resources, as a right of governmental ownership, which requires limitation of exploitive use.

Responsive and participatory
Poor people must be key actors in identifying and addressing livelihood priorities. Outsiders need processes that enable them to listen and respond to the poor.

Retaining wall
Wall built to hold back the earth.

Retreat
A coastal land use strategy whereby structural development is withdrawn from the coast to a designated setback line farther inland.

Revetment
A structure built to protect the shore from erosion, usually constructed from stones laid with a sloping face.

Riparian
Pertaining to the banks of rivers and streams, and sometimes also wetlands, lakes, or tidewater.
Riprap: A layer, facing, or protective mound of stones placed laterally to prevent erosion, scour, or sloughing of a structure or embankment; also, the stone so used.

Riprap
A blanket of appropriately sized stones extending from the toe of slope to a height needed for long term durability.

Risk analysis phase
A phase of ecological risk assessment consisting of two main parts: 1) characterization of ecological effects— evaluating the ability of a stressor(s) to cause adverse effects under a particular set of circumstances, and 2) characterization of exposure— evaluating the interaction of the stressor with one or more ecological entities.

Risk analysis
The use of available information to estimate the risk to individuals or Risk Analysis Used interchangeably with Risk Assessment. It is the use of available information to estimate the risk to individuals or populations, property or the environment, from hazards. Risk analyses generally contain the following steps: definition of scope, hazard identification, estimation of probability of occurrence, consequence identification, and risk estimation.

Risk assessment
The overall process of identifying and analyzing risks. The process of characterizing hazards within risk areas by analyzing them for their potential mishap consequences and probabilities of occurrence, and combining the two estimates to reach a risk rating.
Risk characterization phase: A phase of ecological risk assessment that integrates the exposure and stressor response profiles to evaluate the likelihood of adverse ecological effects associated with exposure to a stressor. Lines of evidence and the adversity of effects are discussed.

Risk characterization
Description of the probabilities and

consequences of a hazard, including the uncertainties in the estimates.

Risk communication
An interactive process of exchange of information and opinion among stakeholders; often involves multiple messages about the nature of risk or expressing concerns, opinions, or reactions to risk messages or to legal and institutional arrangements for risk management.

Risk estimation
Ideally, the conclusions of the risk characterization phase expressed as some type of quantitative statement (e.g., there is a 20% chance of 50% mortality under the circumstances assessed), but often expressed as a qualitative statement (e.g., there is a high likelihood of mortality occurring).

Risk Evaluation
The stage at which values and judgment enter the decision process, explicitly or implicitly, by including consideration of the importance of the estimated risks and the associated social, environmental, and economic consequences, in order to identify a range of alternatives for managing the risks.

Risk Management
The process, by which assessed risks are mitigated, minimized or controlled through engineering, management or operational means. This involves the optimal allocation of available resources in support of group goals. The process of evaluating and selecting action alternatives in response to risk assessment findings. It is the systematic application of management policies, procedures and practices to the tasks of identifying, analyzing, assessing, mitigating and monitoring risk.

Risk
Combines both the consequence and probability to prove and evaluation of the significance of a hazard scenario. Measure of the probability and severity of an adverse effect to life, health, property, or the environment. In the general case, risk is estimated by the combined impact of scenario, probability of occurrence and the associated consequence. In the special case, average risk is estimated by the mathematical expectation of the consequences of an adverse event occurring, that is, the product of the probability of occurrence and the consequence, combined over all scenarios.

Rock Protection
A simple revetment comprising one layer of rock.

Rubble
Loose, angular, waterworn stones along a beach.

Runoff
That part of precipitation, snow melt, or irrigation water that runs off the land into streams or other water bodies, including coastal waters; it often carries pollutants from the land into the receiving waters.

S

S

I

continuously flooded by brackish or salt water to a shallow depth, usually characterized by grasses and other low plants (but not trees); lands transitional between terrestrial and aquatic systems where saturation with water is the dominant factor controlling plant and animal communities and soils.

Sample surveys
This is a tool for investigating the characteristics of a particular population – the population may be one of households, individuals, farms, villages, animals or any other unit of study. To facilitate the investigation a sample of the population is surveyed and studied. Usually, though not always, the sample is selected at random to increase the chances of it being representative of the whole population.

Sand bar
Accretionary deposit of sand formed across a river mouth or bay by wave action and joined to the shore at both ends.

Sand Bypassing
Sand bypassing is the hydraulic or mechanical movement of sand, from an area of accretion to a down drift area of erosion, across a barrier to natural sand transport.

Sand
Sediment particles, mainly of quartz, with a diameter of between 0.062mm and 2mm, generally classified as fine, medium, coarse or very coarse

Sandbag
Cloth bag filled with sand or grout and used as a module in a shore protection device

Satellite imagery
Visual representation of energy recorded by remote sensing instruments. These imageries are taken by satellites

using various sensors that record electromagnetic energy associated with an environmental phenomenon or feature

Scour Protection
Protection against erosion of the seabed in front of the toe

Sea defence
Works or management operations intended to prevent coastal flooding

Sea level rise
The increase in elevation of the sea caused by the Greenhouse Effect which results from heat expansion of the ocean waters and meltdown of the Polar ice caps; recognized by the writer Jules Verne nearly a century ago.

Seasonality
Seasonality is a key element in the vulnerability context. It refers to seasonal changes, such as those affecting: assets, activities, prices, production, health, employment opportunities etc. Vulnerability arising from seasonality is often due to seasonal changes in the value and productivity of natural capital and human capital (through sickness, hunger etc). The poor are often more vulnerable to these changes than wealthier groups.
Seawall: A wall built parallel to the shore, and designed to halt shoreline erosion by absorbing the impact of waves.

Secchi disk
A disk about 20cms (8 in) in diameter with a four-part propellor design of alternating black and white triangles painted on its surface; it is lowered with a rope fastened at its center to measure vertical transparency of the water (via the depth of its"disappearance") secondary layers), frequently used around Guernsey to reduce erosion at headlands.

Sector
Programs that focus on specific sectors such as health, education, agriculture, infrastructure, transport etc. Sector programming is an increasingly popular approach with donors, as a way to help partner governments with their work across a sector, rather than in specific projects. Donors'sector programmes usually include budgetary support for on-going government activities.

Sectoral
Relating to specific sectors such as health, education, agriculture, infrastructure, transport etc.

Sector-wide approaches
The prioritization of sector programming as a key intervention used by international development agencies.

Sediment: Particulate material, both mineral and organic, that is in suspension, being transported, or has been moved from its site of origin by the forces of air, water, gravity, or ice, including material deposited in a loose, unconsolidated form on the bottom of a water body. The term dredged material refers to material that has been dredged from a water body, while the term sediment refers to material in a water body prior to dredging.

Sedimentation
The process of transportation and deposition of particles onto the bottom of a body of water.

Semidiurnal Tide
A tide with two high and two low waters in a tidal day with comparatively little diurnal inequality.

Sensitivity analysis
The analysis of the possible effects of adverse changes on a project. Values of key variables are changed one at a time, or in combinations, to assess the extent to which the overall project result, measured by the economic net present value, would be affected. Where the project is shown to be sensitive to the value of a variable that is uncertain, that is, where relatively small and likely changes in a variable affect the overall project result, mitigating actions at the project, sector, or national level should be considered, or a pilot project implemented.

Sensitivity indicator
The ratio of the percentage change in NPV to the percentage change in a selected variable. A high value for the indicator indicates project sensitivity to the variable.

Setback
A perspective linear space which is often specified in shoreline management programs, to separate development sites from natural areas or to remove structures inland away from the danger of sea storms or erosion
Shoal: A detached elevation of the sea bottom, comprised of material that is not rock, that may endanger surface navigation. Also, to become shallow gradually; to cause to become shallow; to proceed from a greater to a lesser depth

Shocks
Shocks are a key element in the vulnerability context. They are usually sudden events that have a significant impact – usually negative – on livelihoods. They are irregular and vary in intensity and include events such as natural disasters, civil conflict, losing one's job, a collapse in crop prices for farmers etc.

Shore-lands
The dry side of the coastal zone; low-

lying areas that are affected by coastal waters through flooding, air borne salt, or other marine processes.

Shoreline Management
The development of strategic, long-term and sustainable coastal defense and land-use policy within a sediment cell

Short-term impact
An impact occurring for a specified and limited amount of time.

Sills / Perched Beaches
Construction of a low retaining sill to trap sand results in what is known as a "perched beach," one that is elevated above its original level.

Silt curtain
fine, meshed material suspended in the water to prevent silt escaping from a construction site.

Situation management
coastal management programs that focus on particular problems or areas, rather than the whole coastal zone of a country; geo-specific or issue-specific coastal management programs.

Social analysis/appraisal
Investigation of social structures and relations. In the SL Approach it is used to provide information on the relevant characteristics of poverty, vulnerability and social exclusion.

Social cost-benefit analysis
Systematic estimation of all costs and benefits of a project that is relevant to society. Includes both technological externalities and pecuniary externalities, as long as the latter are not merely redistribution of income.

Social costs
The sum total of internal and external costs.

Social impact assessment (SIA)
Prediction of social effects on from environmental changes caused by any of a variety of economic development types.

Social resources
see Social Capital

Social sustainability
An initiative is socially sustainable if it rests on a particular set of social relations and institutions, which can be maintained or adapted over time. One of a number of dimensions of sustainability that also include economic sustainability, institutional sustainability and environmental sustainability.

Socioeconomic monitoring
Tracking of key indicators that characterize the economic and social state of a human community

Socioeconomic
A word used to identify the importance of factors other than biology in fishery management decisions. For example, if management results in more income fishing, it is important to know how the income is distributed between small and large boats or part-time and full-time fishermen.

Soft defences
Usually refers to managed beaches, saltmarshes or mudflats that provide protection to the shoreline, but may also include rock structures which dissipate waves rather than opposing them. cf. Hard defences

Soft Structure
Coastal structure composed of geotextile material rather than steel, rock, or concrete

Special habitat
An area of highly concentrated biological activity of a type that is especially valuable for maintaining biodiversity and/or resource productivity; an ecologically sensitive or critical area or habitat.
Stakeholder analysis: Stakeholder analysis involves a) identifying key stakeholders in relation to any initiative: i.e. groups who have a similar interest (or 'stake'), and which differs in some way from others' interest b) analyzing the perspective of the key stakeholder groups: their role, views, needs, etc. and their relationship with other stakeholder groups.

Stakeholder
A person (or entity) having a vested interest in decisions affecting the use and conservation of coastal resources.
Stakeholder: A person or group that has an interest in, or concern for, a certain activity.

Storm surge
A rise of sea elevation caused by water piling up against a coast under the force of strong onshore winds such as those accompanying a hurricane or other intense storm; reduced atmospheric pressure may contribute to rise.
Storm Surge: A rise above normal water level on the open coast due to the action of wind stress on the water surface.
Storm surge resulting from a hurricane also includes that rise in water level due to atmospheric pressure reduction and wind stress.

Strategy plan
The first stage in coastal planning

whereby the basic national strategy for ICZM is decided, including analysis of issues, needs, goals, objectives, and equities.

Stressor source
An entity or action that releases to the environment or imposes on the environment a chemical, physical, or biological stressor or stressors.
Stressor: Any physical, chemical, or biological entity that can induce an adverse response (synonymous with agent).

Stressor-response curve
A graphic, quantitative representation of the relationship between a stressor (such as a pesticide concentration in the water column) and an ecological effect (such as mortality of a given fish species if exposed to different concentrations of the pesticide).

Stressor-response profile
The product of characterization of ecological effects in the analysis phase of ecological risk assessment. The stressor-response profile summarizes the data on the effects of a stressor and the relationship of the data to the assessment endpoint.

Structured checklists
A list of questions that an interviewer will seek answers to in the course of an interview. Interviews involving structured checklists tend to be less formal and more open-ended than those conducted by an enumerator using a questionnaire.

Subsidence
Sinking of the earth surface (downward local mass movement) often caused by excessive groundwater removal or by settling/compacting of fill. supervisors to manage the same people, depending upon the assignment.

Suspended load
Amount of particulate matter moving in suspension in water.

Suspended solids
Particles suspended in water by hydraulic motion forces-such as upward components of turbulent currents and colloidal suspension-including, e.g., sediment and organic detritus.

Sustainable Livelihood (SL) Analysis
The analysis of livelihoods using the core principles of livelihood analysis.

Sustainable livelihood
A livelihood is sustainable when it is capable of continuously maintaining or enhancing the current standard of living without undermining the natural resource base. For this to happen it should be able to overcome and recover from stresses and shocks (e.g. natural disasters or economic upsets).

Sustainable livelihoods approach
An approach to development in which people's livelihoods are the focus of attention and which adopts the core principles of the sustainable livelihoods approach.

Sustainable livelihoods framework
DFID's sustainable livelihoods (SL) framework is its version of a visualization tool that has been developed to help understand livelihoods. It is intended to help users think through the different aspects of livelihoods, and particularly those factors that cause problems or create opportunities. Other organizations have developed similar SL frameworks that compliment DFID's. The SL framework can be divided into five key components: the Vulnerability Context, Livelihood Assets, Policy, Institutions and Processes, Livelihood Strategies and Livelihood Outcomes. The SL framework gives an impression of how these factors relate to each other. Indeed the links between them (arrows in the framework) are also critical, reflecting how people convert assets to activities, or how policies, institutions and process affect the key components. The framework aims to stimulate debate and reflection, which should result in more effective poverty reduction. The framework does not attempt to provide an exact representation of reality. It is a simplification and it should be adapted for use in any given circumstance. Real livelihoods are complex and varied, and can only be properly understood through direct experience.

Sustainable livelihoods guidance sheets
The more detailed guide to DFID's Sustainable Livelihoods approach on which these distance-learning materials are based.

Sustainable use
Practices that ensure the continuance of natural resource productivity and a high level of environmental quality, thereby providing for economic growth to meet the needs of the present without compromising the needs of future generations.
Sustainable/ sustainability: Something is sustainable when it can continue into the future, coping with and recovering from stresses and shocks, while not undermining the resources on which it draws for existence. These resources may be natural, social, economic or institutional, which is why sustainability is often analyzed in four dimensions: economic sustainability, environmental sustainability, institutional sustainability and social sustainability. Sustainability does

not imply that there is no change, but that there is an ability to adapt over time. Sustainability is one of the core principles of the sustainable livelihoods approach.

Swamp
A wetland community characterized by woody vegetation – usually trees and shrubs that in combination rise higher than six meters from grade level.

T

Brackish water coastal aquaculture pond

Thatching
Covering of brushwood laid down to protect dune grasses and help trap sand.

Thermocline
A sharp vertical temperature gradient in the water whereby the temperature changes rapidly with depth (usually decreases)-occurring within a narrow horizontal layer, it shows on sonar as a sharp discontinuity and has important effects on distribution of life in the ocean.

Tidal Current
The alternating horizontal movement of water associated with the rise and fall of the tide caused by the astronomical tide-producing forces.

Tidal Cycle
Elapsed time between successive high and low waters.

Tidal Prism
The volume of water entering an estuary during an incoming tide; in other words, the difference between the volume of water in an estuary at high tide and the volume of water at low tide.

Tidal Range
The difference between successive high and low waters; the period of comparison can range over a week, month, year, or other time period.

Tidal Wetlands
Wetlands subject to the ebb and flood of the tide, defined by the State Tidal Wetlands Act, officially delineated on maps prepared by the Department of Environmental Conservation, and including the following ecological zones: intertidal marsh; coastal shoals; bars and flats; littoral zone; high marsh or salt meadow; and formerly connected tidal wetlands.

Tide
Periodic rise and fall of the ocean surface and connecting bodies of water resulting from the gravitational attraction of the moon and sun acting upon the rotating earth.

Tideflat
An unvegetated intertidal area (usually mud or sand).

Tidelands
The area of land covered by the ebb and flow of the tide; the area that lies between the higher high water mark and lower low water mark (see"intertidal zone").

Tie Rod - Steel
rod used to tie back the top of a bulkhead or seawall. Also, a U-shaped rod used to tie Sandgrabber blocks together, or a straight rod used to tie Nami Rings together.

Transactions Costs
The costs associated with making, monitoring and enforcing agreements/ transactions/contracts etc. The agreements may be formal or informal and transaction costs may be incurred before and after an agreement is made. A large proportion of the costs are associated with acquiring information about the nature of an agreement (e.g. the quality of goods or services being transacted) and the reliability of other parties to the agreement. Transaction costs are incurred gaining information or commitments in order to reduce risks of loss in a transaction.

Trends
Trends are a key element in the vulnerability context. They can have either a positive or a negative effect on livelihoods and involve changes that take place over a longer period of time than is the case with changes brought about by shocks or seasonality.

Tsunami
A shallow water progressive wave, potentially catastrophic, caused by an underwater earthquake or volcano that can rise to great heights and catastrophically inundate shore lands.

Turbidity
Reduced water clarity resulting from the presence of suspended matter; also a measure of the amount of material suspended in the water.

Turbidity
A state of reduced clarity in a fluid caused by the presence of suspended matter.

U

Upland: Land areas sufficiently inland from the shoreline so as to have limited interaction with the sea.

User charge
A charge levied upon users for the services rendered or goods supplied by a project.

V

vegetation is an effective and inexpensive way to stabilize dunes and protect marshes.

Vulnerability Context
A key component in the SL framework, the Vulnerability Context refers to the shocks, trends and seasonality that affect people's livelihoods – often, but not always, negatively. The key feature of all the factors within the Vulnerability Context is that they are not controllable by local people in the immediate or medium-term. Vulnerability or livelihood insecurity resulting from these factors is a constant reality for many poor people.

Vulnerability
The degree of loss to a given element or set of elements within the area affected by a hazard. It is expressed on a scale of 0 (no loss) to 1 (total loss). Also, a set of conditions and processes resulting from physical, social, economic, and environmental factors, which increase the susceptibility of a community to the impact of hazards.

W

to laterally transfer loads against the structure and hold it in a straight alignment.

Water table
The upper surface of groundwater; that level below which the soil is saturated with water.

Watershed
The geographically defined region within which all water drains through a particular system of rivers, or other water bodies; watershed are defined by "watershed divides" (high points or ridges on the land) and includes hills, slopes, lowlands, floodplains and receiving body of water.

Wave period
Time period of the passage of two successive crests (or troughs) of a wave past a specific point.

Wave refraction
The process by which a wave moving in shallow water at an angle to the bed contours is changed in direction.

Weep hole
hole through a solid revetment, bulkhead or seawall for relieving water pressure

Weir or Sills
Log, boulder, or quarrystone structures placed across the channel and anchored to the streambank and/or bed to create pool habitat, control bed erosion, or collect and retain gravel.

Wetlands
Low-lying vegetated areas that are flooded at a sufficient frequency to support vegetation adapted for life in saturated soils, including mangrove swamps, salt marshes, and other wet vegetated areas (often between low water and the yearly normal maximum flood water level).

White Paper
A report produced by the British Government setting out its proposals for, and providing information on, a particular policy issue, such as international development. The goals and directions of the British Government's policy on international development are laid down in the 1997 White Paper on International Development. This is now built upon in the 2000 White Paper II.

Willingness to accept (WTA)
The minimum amount of compensation consumers would be willing to accept for foregoing units of consumption.

Willingness to pay (WTP)
The maximum amount consumers are prepared to pay for a good or service. WTP can be estimated as the total area under a demand curve. Changes in WTP can occur when the demand curve itself shifts because of changes in income or in the prices of substitute goods.

Without and with project
The future situation without a proposed project and the future situation with the proposed project. The difference

between these two situations constitutes the impact of the investment, policy change, or capacity building activities. To be distinguished from the situations before and after a project that do not allow for expected changes without the project.

Z

Zone of influence

An area adjacent to the coastal zone, which influences the condition of it's resources and for which a mechanism is created for coordination with a Coastal Zone Management program.

Zoning

A system of designating areas of land or water to be allocated to specific (often exclusive) uses; the division of a particular area into several zones, each of which is scheduled for a particular use or set of uses.

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