New Earth Nation

INTEGRATED BIODIVERSITY CONSERVATION PLAN (IBCP)

OVERVIEW

Conservation Vision

New Earth locations are recognized across the world as true Earth Sanctuaries where the rich biodiversity of the world is protected and provided with the ideal conditions to flourish. New Earth communities and complexes are planetary exemplars of harmonious, peaceful and joyful coexistence between conscious human beings and the natural kingdoms; a global model for stewardship where communities satisfy both human needs and those of indigenous flora and fauna. This vision was made possible as a result of careful planning, development and the operationalizing of advanced holistic communities, retreats and institutes.

New Earth has successfully integrated the best known practices that address all potential causes of adverse development related impact. In the spirit of global responsibility, New Earth has left a legacy through which to ensure that all nearby regional landscapes and worldwide ecosystem resilience has been positively impacted. This legacy also included continuous educational support to all community inhabitants from the New Earth Institutes thus ensuring that any newly emerging conscious practices were immediately adapted into daily community life.

The depth of biodiversity present at every New Earth venue, including the vast networks of protected lands donated by conscious individuals, are the global guarantee for prosperity and abundance for many generations to come.

Context

The dominant paradigm of the old-world-order is one in which human beings, by being the dominant species on earth, have greater rights to existence than all other species. This corrupt version of reality also provided the human race with the self-appointed right to control all resources in the world, ensuring eventual dominion over all life.

Fauna, flora and entire ecosystems have become a monopolized commodity, with environmental destruction and the resultant loss of biodiversity considered to be nothing but a simple externality; the necessary cost of progress. The old-order's materialistic, fragmented and self-centered approach has resulted in the degradation, fragmentation and depletion of habitats, the accelerated loss of biodiversity, and the pollution of all physical forms and of the world itself[1]. Due to the interdependence of nature, a domino effect begins, setting into motion the accelerated decline of remaining ecosystems and the services they provide.

Less than 2% of Earth can be considered as not being under the control of man (i.e. without any type of infrastructure).

Neither the 2010 biodiversity CBD's target, nor any of the sub-targets of significantly reducing the rate of biodiversity loss by 2010 were met globally. Neither the biodiversity losses, nor the pressure on biodiversity show any signs of reduction; far from that, they continue to increase and biodiversity worldwide is declining at an alarming rate, as species in all groups, whose trends are known, are being driven closer to extinction (CBD, 2010; UNEP, 2009). "Most direct drivers of degradation are currently staying constant or growing in intensity"[2] (UNEP, 2009, p. 14). "There is a

[1] From domestic parasites to hormonal changes and cancer, these conditions are not exclusive to human, and human-made environments, they are equally present in nature, and the effects of anthropogenic pollution, have been seen in wildlife, long before they were seen in man (hormonal and gender changes in frogs, birds poisoned by mercury from contaminated spiders, cancer in whales and tortoises; the list is endless).

[2] Among the main anthropogenic drivers of change (UNEP, 2009, CBD 2010, MEA, 2005) are found:

- Changes in land use and cover

high risk of dramatic biodiversity loss and accompanying degradation of a broad range of ecosystem services if ecosystems are pushed beyond certain thresholds or tipping points" (CBD, 2010, p. 10). Humans are causing the largest mass extinction on earth since the extinction of the dinosaurs. Previous mass extinctions were due to natural causes, but this extinction is man-driven and it is only man who can do anything about it. This begins by acknowledging and taking responsibility of his actions, and for the impact these actions have on all the Earth and the creatures that inhabit it.

If this trend continues, the biosphere will be so impoverished that it will take Earth above five million years to recover an equivalent degree of biodiversity to that which it had before man's industrial revolution (Myers, 1993). According to the global Living Planet Index (LPI), since 1970, biodiversity has declined worldwide by 30%, reaching in tropical climates up to 60% (CBD, 2010). Biodiversity is lost up to and approximately 1,000 times the natural rate, and only over the last 50 years, 15 out of 24 ecosystem services have been degraded and exploited; it is certain ecosystems services worldwide are also in decline (Lenzen et al., 2012, Worldwatch Institute, 2012, Ramirez, 2011, MEA, 2005). If genetic and species diversity is "... allowed to become extinct, options for future survival and adaptation are being closed down forever" (CBD, 2010 p. 52), resulting in the heart-breaking enfeeblement of the world.

"Biodiversity is the basis for evolution and adaptation to changing environments, making it essential for survival of life" (IAIA, 2005, p. 2). Everything changes, everything evolves, the world evolves, species evolve, and human beings evolve, following natural adjustments that occur gradually over time. Less complex species (e.g., virus, bacteria, insects) adjust to the environmental changes faster, and evolve faster than more complex species (e.g., amphibian, mammals, humans). Humans have caused so much change, in such an alarmingly short time. The immensity of this change is so vast and varied that the biodiversity and ecosystem losses are resulting in global changes whose inextricable interactions have the potential of changing the biosphere in cataclysmically unexpected ways.

If we do not reverse this trend, future generations will be forced to live in a frail world entangled in a web of scarcity. The bountiful world as we knew it will become but a distant memory.

Rationale

- All nature kingdoms have the same right of existence as human beings do.
- Healthy human beings and societies, as well as the abundance in their lives, is dependent on all of nature’s kingdoms, their health and abundance, and in the balance of the natural world (i.e. perfect interactions and harmonious changes within the whole).
- If biodiversity and ecosystems functions and processes (which depend upon biodiversity) are lost, the possibilities for long term survival of the human species diminish at the same level as these losses.
- All beings, all aspects of the universe, play a crucial role in the intricate web of life. It is not because human beings have lost their connection with these, that interactions within the whole cease to exist or operate. Separation between species, habitats, all nature and human beings is an illusion in absolute and relative terms.
- Sustainability[3] at its base, rests on the conservation of biodiversity worldwide, not solely on the wise use of environmental resources used to satisfy humankind's desires and needs. Sustainability entails the

- Habitat loss and degradation
- Harvest and resource consumption
- Overexploitation
- Habitat change
- Climate change
- Species introduction or removal
- Invasive alien species
- Overexploitation and unsustainable use
- Excessive nutrient load and other forms of pollution
- External inputs (e.g. fertilizer use, pest control, irrigation)
- Technology adaptation and use
- The synergistic and chained effects resulting from the above, plus the interaction of these with natural, physical, and biological drivers (e.g. evolution, volcanos).

protection of Earth's natural capital by limiting the use of resources to what the Earth has the capacity to renew periodically. It is by preserving its capital, and restricting consumption to the surplus, that life and its process will be preserved for years to come.

- Full spectrum sustainability in alignment with the United Nations Millennium Development Goals requires the implementation of appropriate process that will assure that NEP will not cause environmental losses that will further exacerbate biodiversity and ecosystem's decline at a local, regional and global scale.

IBCP's Principles:

- **Integrity and transparency.** New Earth developments are designed in alignment with New Earth values and principles. The design and implementation of IBCP and any of its components (e.g. offsets, training) and communication of its results should be undertaken transparently with the utmost integrity.

- **No-net-loss.** New Earth will ensure that all potential adverse impacts are addressed and will result either in no-net-loss or preferably in a net gain of biodiversity, by adhering to the mitigation hierarchy (i.e. avoid, minimize, mitigate, offset).

- **Long-term results.** All components of the IBCP will be based on an adaptative management approach so as to deal with an ecosystems' dynamic nature. This will include the integration of monitoring and evaluation activities to assure results in the long term or in perpetuity.

- **Life Cycle and Ecosystem Approaches.** Decision making and the evaluation of environmental impacts adhere to a life cycle approach[4] and adopt an ecosystem perspective.

- **Precautionary Approach.** The precautionary principle is applied to any situation where biodiversity might be threatened and when there is insufficient knowledge to either qualify risks or implement effective mitigation.

- **Outcomes.** The design and implementation of IBCP should translate to the achievement of conservation outcomes above to what would have occurred if New Earth participants wouldn't have entered/altered a site. The site's natural conditions should never worsen due to impacts by New Earth developments throughout their lifecycle. Ideally there will be significant improvement soon after development has completed with definite increases in environmental quality occurring over time. New Earth will also ensure that developments do not generate any leakages.[5]

- **Participatory and equalitarian approach.** New Earth is an initiative for the people of the world by the people of the world, thence as appropriate to each IBCP's component, key stakeholders will be encouraged to participate in New Earth's conservation initiatives (e.g., communities' inhabitants, local experts, local indigenous communities), and rights and responsibilities will be shared in a balanced, equitable and fair manner among all stakeholders involved. This equitable sharing is the foundation for fostering long lasting partnerships centered upon an attitude of goodwill towards all life.

- **Scientific and pragmatic approach.** IBCP follows a scientific approach and integrates best known practices worldwide in a holistic way that best serves both humankind and nature, in consideration that these are

[3] Sustainability is not limited to eco-efficiency and the use of 'green technologies' that pollute less, and result in less waste (e.g. energy power, waste management, water treatments), neither it is limited to the efficient and green production of natural resources aimed at satisfying human needs (e.g. permaculture, high-performance agriculture, organic agriculture, FSC certified forestry).

[4] "A life cycle approach promotes improving entire systems, not single parts of systems, by avoiding decisions that fix one environmental problem but cause another unexpected [...] life cycle thinking helps avoid shifting problems from one life cycle stage to another, from one geographic region to another and from one environmental medium (air, water or soil) to another"(UNEP, 2004 p.8).

[5] Displacing harmful activities to other locations.

interdependent.

- **Rigour.** IBCP is an informed and documented process that integrates science, best practices, and sound decision making. This includes a cycle of continuous improvement in its main model. IBCP employs accurate, appropriate, and multi-disciplinary approaches.

- **Ancestral knowledge.** When available, IBCP's processes are informed by traditional ecological knowledge of local communities (e.g., First Nations, indigenous populations).

Conservation Long term goals:

- To ensure that New Earth developments result in zero gross negative impact on listed species (e.g., at risk, endangered, threatened, vulnerable, special concern) throughout their entire life cycle.

- To ensure zero-net-losses (i.e., not-net-losses) of environmental values (e.g., species, habitats) caused by project development and community/retreat/institute operations (e.g., accidental take of species, overexploitation of local resources, grabbing of protected areas within the land, negative impacts of change in land cover).

- To ensure the conservation of the three levels of biological diversity (ecosystems, species and genes[6]) and related systems[7] (process, structures, and functions) at New Earth sites while considering site location and condition, overall regional landscape, type, state and status of the local ecosystems, the number and status of species present, their requirements at a site and landscape level, as well as potential opportunities to increase ecosystems' resilience at a larger scale (e.g. green corridors, protected areas, buffer zones), and any other current conservation challenges or issues (e.g. invasive species).

- To ensure the restoration of the natural environments, where these have previously been destroyed, degraded and impoverished (e.g., agricultural land, deforested land, decertified land), at New Earth sites, in consideration of the overall regional landscape, current conservation challenges, and the factors having the potential to increase ecological resilience.

- To ensure zero-net-losses and consistent conservation gains over time at New Earth sites through the support directly provided by New Earth Institutes, aimed at guiding communities in areas such as resources management, species management, introduction and removal of species, management of alien invasive species, permaculture and biodiversity conservation alignment, and for the implementation of effective community-based participatory management.

- To ensure net and measurable contributions to the local and global state of the environment as a result of the increasing number of New Earth Communities and complexes in tandem with New Earth protected areas and sites worldwide.

Organizational conservation related objectives:

- To raise the profile of the New Earth Sanctuary by integrating exemplar biodiversity protection and management.

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[6] “In the simplest of terms, biological diversity is the variety of life and its processes; and it includes the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur” (Keystone Center, 1991).

[7] Examples of ecosystem's services are: pollination, seeds dispersal, drought/floods mitigation, nutrients cycle, erosion protection.

- To raise the profile of retreats as privileged ecotourism destinations, where natural environments are preserved and indigenous wildlife/flora are present.
- To strengthen public image – focusing upon attraction rather than promotion.
- To ensure the genetic diversity necessary to secure the provision of natural resources (e.g., food, medicinal plants) to communities.
- To ensure the resilience of ecosystems that provides residents a high quality of life.
- To further raise New Earth's investment profile, as socially and environmentally responsible.
- To increase synergistic cumulative positive impacts that NEP brings to the world.

New Earth Nation's Integrated Biodiversity Conservation Model (IBCM)

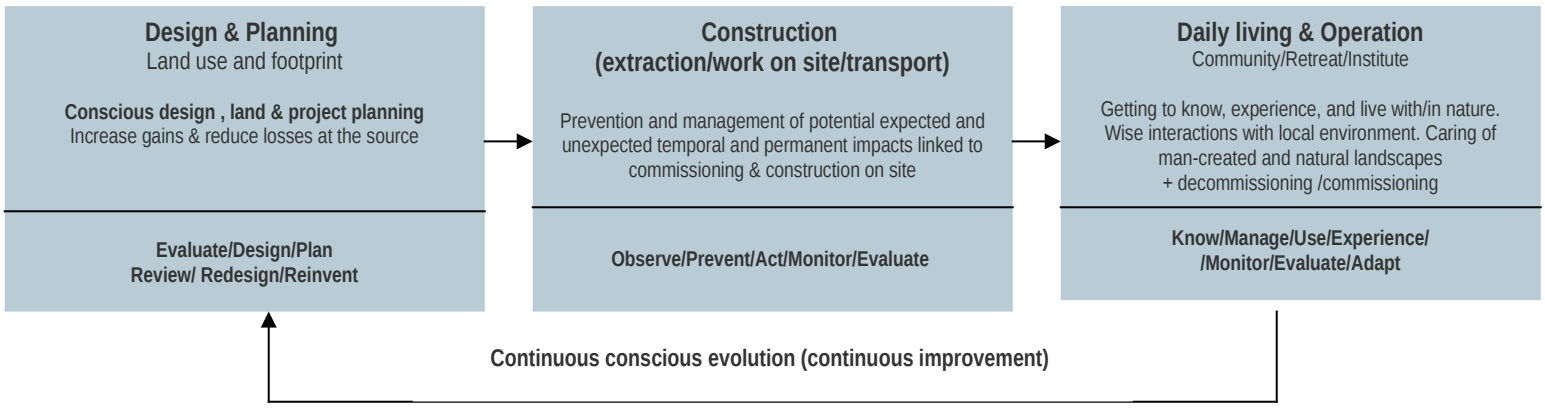
New Earth's IBCM is a model that holistically integrates the best practices in the fields of conservation, sustainability, environmental management and environmental ethics. This follows a Life Cycle Approach (LCAP) which ensures that New Earth developments are a true human example of *full spectrum* sustainability. IBCM addresses under one umbrella concept, the various sources of anthropogenic impacts on natural values (e.g. biodiversity, ecosystems) that trigger all known losses. The implementation of such a model, is possible thanks to (1) all core values and principles governing New Earth initiatives, (2) New Earth's holistic approach that address all main critical issues being faced by humankind, (3) to the framework and structures set in place by New Earth that will return the sovereign rights to all women and men of the world and hence, the opportunity to reclaim their place as the ultimate stewards of the Earth.

The IBCM is more than an impacts prevention and management system that deals with drivers and issues in a fragmented manner; rather due to its holistic approach, it is more than the sum of its parts. It can be considered a change catalyst that is purposed to restore conscious awareness to human beings along with their innate capacity for the wise caring of the natural environments that will sustain and nurture their lives for generations to come.

The IBCM follows a holistic LCAP which is drawn from design, from cradle to grave, to the everyday living within all communities, retreats and institutes. This LCAP extends to include the evolutionary path of all New Earth residents and the transformation within their respective communities over time.

The day will come when every man, woman and child upon this sacred sweet Earth will know without any assistance, with absolute certainty, the course to follow. As the free sovereign beings we were always intended to be, all humanity will live in harmonious coexistence with the kingdoms of nature with no significant adverse impacts upon the natural environment. At that moment, the IBCM will not longer be necessary, and will cease to operate. A simplified and shortened version of New Earth developments' Live Cycle (LC) is depicted below.

Figure 1. Simplified NEP's developments' Life Cycle



The graphic above represents a simplified and shortened version of New Earth developments life cycle. By following a LCAP, New Earth seeks to identify opportunities and risks linked to its developments and design, proceeding all the way to the everyday living in the communities. This will also include the eventual decommissioning /re-commissioning of any facilities (e.g., for water purification and power generation) at the end of their life cycle. From the extraction of raw materials on site or elsewhere (e.g. mineral aggregates, binders, bamboo, water) all the way to their final treatment, disposal, or/and waste management. A LCAP requires approaching developments as a continuum of life cycles, using Life Cycle Thinking (LCT), and Life Cycle Assessments (LCAP) where appropriate, which correspond to the qualitative and quantitative aspects of a LCAP.

Risk management and environmental assessments will be applied across the development's life cycle. This will be done by following a precautionary approach to identify and analyze all potential adverse impacts to activities known for potentially contributing to losses in biodiversity and other environmental values.

"Effective action to address biodiversity loss depends on addressing the underlying causes or indirect drivers of decline" (CBD, 2010, p. 11). NEP developments realize and respect that all man-made products and artificial environments have a life cycle, similar to living organisms (e.g., origin, reproduction, death). These life cycles are composed of six basic stages, which for New Earth translate to the following:

A. **Design and planning** (e.g., architectural design, complex design, allocation of areas, infrastructure choices),

B. **Raw material extraction and processing** (e.g., raw materials from site, or elsewhere, fuel used),

C. **Manufacturing and construction work** (e.g., manufacturing of construction materials, the construction of facilities/homes, land conversion from natural to permaculture, or other),

D. **Packaging and distribution** (e.g., transport of materials, handling of materials on site),

E. **Use, maintenance and operation** (e.g., of buildings, infrastructure, green areas, natural areas, community practices), and

F. **End-of-life** (e.g., reuse, recycling, decommissioning, waste management).

LCT is incorporated into decision making at all levels and at each stage. "A life cycle approach means we recognize how our choices influence what happens at each of these points so we can balance trade-offs [...] A life cycle approach is a way of thinking which helps us recognize how our selections are one part of a whole system of events" (UNEP, 2004, p. 6). While New Earth's IBCP integrates a LCAP in all decision making, this will mainly rely on LCT; whilst LCA will be used solely when risk assessments show that potential impacts are high enough to justify the use of this approach, which is expected to be minimal. Nonetheless, New Earth will make use of any reliable environmental indicators, scientific data and reliable information publicly available in cases where a quantitative approach is required.

In some instances this may be used as a substitute for LCA[8].

Assessments are performed at two levels. The first assessment focuses upon the overall development model (i.e. prototype) in order to reduce impacts at the source. This is performed once at the beginning and at any time new factors requiring changes in design and planning are to be considered as part of the continuous improvement process. This first assessment will allow New Earth to design, plan and develop all the New Earth development's components and supporting processes to appropriately address identified impacts of all types and magnitudes.

The second assessment is specific to the development model (e.g. blueprint) in relation to each site. In both cases assessments follow a LCAP. Having two levels of assessment in place allows New Earth to have the best and most efficient overall development model possible. These assessments enable New Earth to have the necessary processes for risk and environmental impacts management in place along with an overall action plan flexible enough to adjust New Earth's development model at each of the six stages of the cycle for specific site conditions, ecosystem challenges, regional factors, and contingencies. The second assessment is an environmental impact assessment that follows a LCAP.

Most New Earth sites will be located in or close to natural areas. While some developments will be situated in agricultural zones, some others will be located on land with high environmental values (e.g. Amazon rainforest), and others possibly on land whose environmental values are considerably lower (e.g., desert zones). Each case comes with its own unique set of challenges and risks. But in all cases, new developments can result in environmental impacts, which will differ in magnitude and in nature depending on each site's condition, complex design, location, local ecosystems, and overall landscape. New Earth developments have the potential of generating significant adverse impacts on biodiversity and ecosystems if these are not appropriately addressed throughout all stages of each development's life cycle on site. However, if properly addressed, these will not only result in not net losses but instead contributing to the improvement and protection of the natural environment on site.

Assessment of Potential Negative Impacts on Site & LCAP

"Habitat loss and degradation create the biggest single source of pressure on biodiversity worldwide" (CBD, 2010, p.55). The development of New Earth Communities entails a change in land-use and thus running the risk of potential destruction, degradation and fragmentation of natural habitats. These are but some of potential repercussions that could occur at the landscape and regional levels, depending on location, ecosystems status, and site size. Furthermore, construction activities themselves can have negative impacts on biodiversity and habitats that can be either temporary or permanent. Additionally, permaculture choices and practices within the communities in complicity with the operation of the retreats and institutes can have additional impacts on these as well. The potential impact is largely dependent on specific habitat conditions, species, and the level of public awareness surrounding the knowledge of their natural environment. Also taken into consideration is the local culture, lifestyles and daily practices of each community.

While the first LC based assessment is made on paper, the second assessment is made in relationship to the circumstances of each site and the specific conditions of each development (e.g., land size, site type and condition, complex size and composition, socio-cultural aspects). Once again, potential impacts are assessed following a LCAP, given that developments have the potential to exacerbate the decline of biodiversity and the impoverishment of ecosystems at any of the stages of their life cycle. The proper management of environmental impacts on site starts with the right knowledge and information. Hence, information regarding all pertinent variables applicable to a site is mandatory prior to performing any environmental impact assessment that will result in adjustments in order to avoid and minimize impacts. An example of potential impacts identified for a given site is presented in figure 2. This example seeks to clarify the concept, hence this does not represent the level of analysis and problem solving required.

[8] This is mainly due to the fact that LCA are not readily available for all products and services and performing them is costly and thus at this time cost prohibited for New Earth. If environmental specialists with expertise in LCA join the group at a later that date, LCA could be set for specific components for which such analysis will prove to have added value and be necessary.

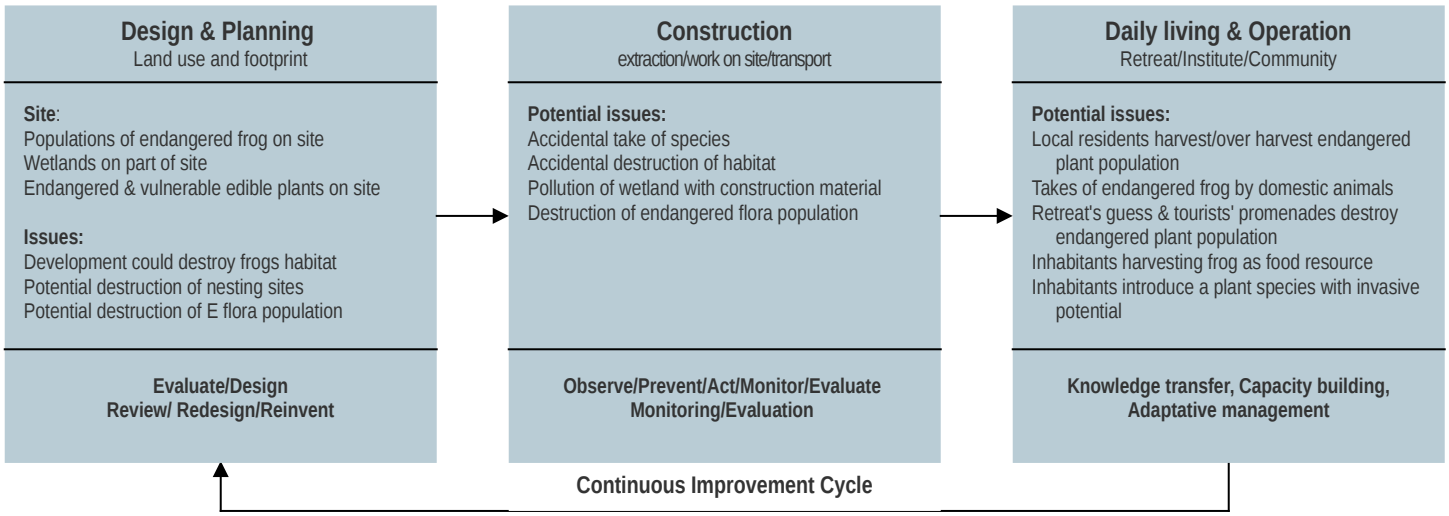


Figure 2. Impacts throughout the development's Life Cycle

Biodiversity, Habitats, Ecosystems, and Landscapes

"Biodiversity is the variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part. It includes diversity within and between species and diversity of ecosystems. Diversity is a structural feature of ecosystems, and the variability among ecosystems is an element of biodiversity" (MEA, 2003, p.10). Hence, the biosphere's biodiversity is present at three different levels, (1) genetic level, (2) species level; and (3) ecosystems level; plus it also occurs at three systemic levels: (1) composition, (2) structure and (3) functions. Impact assessments are required then to take into consideration the developments' potential impacts on all these. The following is a list that serves as an illustration of the information required to properly analyze in-situ conditions[9]. The analysis of this information will serve to identify potential risks and will give New Earth a portrait of potentially required adjustments that will help guide the impact assessment and identify the required level of analysis.

- Species present (e.g. fauna, flora).
- Number of species present
- Populations size
- The status of species present
- Species' phenology and requirements
- Recovery strategies,
  action and management plans for listed species present
- Invasive species present
- Drivers of decline (for listed species)
- Watercourses on site
- Type of ecosystem
- Status of the ecosystem
- Overall landscape composition
- Landscape at a regional level (e.g. level of fragmentation)
- Current drivers of land conversion
- Site, topography
- Site, land cover
- Regulatory framework (e.g. environmental law)

[9] The conditions where genetic resources exist within ecosystems and natural habitats (CBD, Art. 2).

Biodiversity levels:

- **Ecosystems** are complex adaptive systems whose patterns at higher levels surge from localized interactions and selection processes acting at lower levels (Levin, 1998). An ecosystem is a dynamic complex of plant, animal, and microorganism communities and the nonliving environment, interacting as a functional unit. Humans are an integral part of ecosystems (MEA, 2003. p.49)
- **Species** is the principal unit of evolution, the segregation of genetic variability of nature into discrete packages separated from each other by reproductive barriers that prevents the production of too great a number of disharmonious incompatible gene combinations hence ensuring superior viability (Mayr ,1996).
- **Genotypes** is the genetic makeup of a cell, organism or individual, the genetic constitution usually with reference to a specific character (Hartl, 2001).

- **Composition**: what biological units are present and how abundant they are (AIAI, 2005)
- **Structure** (or pattern): how biological units are organized in time and space (AIAI, 2005)
- **Function**: the role different biological units play in maintaining natural processes and dynamics (AIAI, 2005)

Data Sources

Various types of data and information sources will be used. These include both scientific and traditional. New Earth will consult scientific sources (e.g., scientific journals, proceedings, working papers), and other authoritative sources (e.g, conservation and environmental organizations). Where available and appropriate New Earth will try to access and will graciously welcome the input from local indigenous communities whose ancestral knowledge about species variation, phenology, behaviour, population size, landscape features, at the required level of analysis, might help better avoid, minimize and manage potential risks while increasing possibilities of success. Some of the information required for analysis purposes is readily available, from secondary sources, while others will need to be obtained directly on site (e.g., surveys, inventories). Some examples of data and information sources are:

National conservation plans for listed species:

- Governmental agencies
- The national red list
- Local botanical gardens
- Local institutions
- Local research centres or universities

Databases:

- Birdlife International
- IUCN Red List
- WDPA Protected Planet
- AZE
- Ecolex
- Sampled Red List Index for Plants
- Sampled Red List Index

Environmental Impact Assessment

Conservation challenges cannot be properly addressed unless they are wisely acknowledged. This confirms the importance of performing an Environmental Impact Assessment (EIA). The objective of an EIA is to ensure that potential adverse impacts of developments have been anticipated, addressed and integrated into the decision making process, so that the mitigation hierarchy be rightly applied (IAIA, 1999). Governments require companies to compensate for the adverse impacts their projects and developments have on the environment, hence mitigation activities are generally the result of EIAs. A Life Cycle Environmental Impact Assessment (LCEIA) will be performed prior to starting the specific designing and planning process for the development of each community so that the LCEIA feed these processes with the objective of avoiding and minimizing all potential damage on environmental values at the source. LCEIA, as all other components of the IBCP, is guided by the same harmonious principles (e.g., integrity and transparency, no-net-loss, long-term results, life cycle, and ecosystem approach).

LCEIA Process

- **Preliminary Screening.** A preliminary screening starts with information gathering at the time when discussions with landowners begin, not when the NEP is 'ready' to start development. Due to this initial screening, New Earth starts building a portrait of the potential challenges involved while making a reasonable assumption of the appropriate size of the complex in consideration of conservation matters. This process results in a better estimate of real options and costs. Additionally, New Earth is better positioned to create awareness among landowners and to better manage the decision making process at that state. Plus NEP will be able to anticipate the magnitude and nature of organizational resources required to carry out the LCEIA and the other components of the IBCM. This will include the knowledge regarding what type of specialists should be involved with each project. This is a basic step in preparation for the LCEIA.

- **Screening**. This is used to determine the type, scope and depth of LCEIA necessary. Biodiversity screening criteria is used in order to establish whether important biodiversity may be affected or not. Preliminary surveys are carried out at this time. The depth of the LCEIA will depend on the number, nature, range, status, rarity of biodiversity and ecosystems, and as well as on the type, magnitude, nature, duration, timing, and irreversibility of the threat. The higher the threat and the higher the rarity and value of the ecosystem, the more comprehensive and complete the assessment. Environmental values present are mapped and further evaluated. As an example, impacts on fish breeding grounds, bird nesting sites, wetlands, rare habitats, groundwater recharge areas, at risk species, and sites adjacent to protected areas will trigger an in-depth LCEIA.

- **Scoping.** Here the terms of reference for the LCEIA are defined, which comprises the issues to be studied and methods used. Options for avoiding and minimizing risks start to be explored at this time. The output is a scoping report that address: (1) description of the specific project (e.g. footprint size, composition, community size), and the components that can potentially have an impact on biodiversity; (2) baseline conditions and anticipated trends in biodiversity; (3) analysis of risks and opportunities for biodiversity (e.g. NNL, mitigation); (4) expected changes on biodiversity (e.g. species, ecosystems, genotype), in composition, structure and function, resulting from the development project; (5) temporal, and spatial scale of influence (e.g. connectivity, cumulative effects); (6) required data and information to support decision making, and potential gaps; (7) possible measures to apply the MH to mitigate temporal and permanent impacts (e.g. losses, damage); (8) regulatory framework; (9) available guidelines that could be applied; and (10) identification environmental values of particular importance for local stakeholders.

- **Assessment.** Here the main opportunities and risks for biodiversity, at the ecosystem, species and gene level, considering seasonal features, are taken into account; and composition, structures and functions, all in reference to the baseline situation, are identified, quantified, and analyzed in detail. The integrity of ecosystems and the essential services they provide to humanity are both taken in consideration. Among the aspects to consider are impacts on: genetic diversity of species, listed species (and the strategy recovery plans, or action plans if already developed, their risk of decline or extinction), species richness or composition, potential changes in habitat (e.g. quality, organization), ecosystems processes, services and functions and the risk of invasion by alien species. This is done by considering opportunities for betterment (e.g., habitats' connectivity, consolidation), following an ecosystem approach and taking into consideration direct and indirect drivers of change (e.g. land conversion, vegetation removal, emissions, disturbances, genetically modified organisms, community living, socio-political, technological). Thresholds are also identified along with the cumulative and synergistic effects being taken into account (e.g. repeated impacts in space or time). The cause-effect chains are identified and the consequences of impacts on biodiversity and the costs of restoring to baseline conditions determined and explained.

- **Mitigation Options and Planning**. The study of alternative actions should adhere to the mitigation hierarchy: avoid (or prevent), minimize, mitigate (e.g., restore, rehabilitate), and compensate (offset). Possible actions should be prioritized in that order. Offsetting is not a license for land grabbing or destroying habitats. The LCEIA should amplify the perspective and the possibilities to enhance biodiversity. The LCAP avoid leakages - risks that NEP export or relocate problems elsewhere (Hughes & Flintan, 2001). When impacts on biodiversity are irreversible and too high, compensation is not possible and thus development should not proceed.

- **Reviewing.** Seek collaboration with experts and specialists. In cases where potential impacts on biodiversity are significant, New Earth will have action plans peer reviewed by experts in the specific areas of concern (e.g. wetlands, migratory birds, freshwater habitats, aquatic ecosystems, endangered species).

- **Decision Making.** With the objective of achieving no-net-loss and preferably gaining significant benefits, options should be balanced and decision making should be based on an ecosystem approach with a long term perspective held firmly in mind. The persecutory principle should be applied in cases where there is high risk of irreversible losses of highly valued, critical, rare ecological values and when there is insufficient information available. Decisions should consider that biodiversity losses eventually translate to detrimental losses in human wellbeing. Suitable solutions are to be sought to balance tradeoffs with gains obtained across time throughout the LC of the community, retreats, and institutes.

- **Management Plan.** Goals and objectives (e.g. specific biodiversity gains and betterment of conditions, limits of acceptable change) should be clearly stated along with action plans. The management plan is drafted to include monitoring, evaluation[10] and auditing whenever possible. Given that biodiversity responses to perturbations caused by anthropomorphic stressors[11] and New Earth developments remain uncertain, it is essential to monitor in the long term. The management plan will vary depending on in-situ conditions, impacts, mitigation activities and expected biodiversity responses but in all cases will incorporate adaptive management. Given the nature of New Earth developments (i.e. conscious communities) and privileged type of locations, participatory management is the preferred option. All these will ensure that the mitigation hierarchy is implemented effectively and the requisite goals attained. Figure 3 shows a diagram depicting the adaptative participatory management cycle.

Community Living and Operations (Communities, Retreats, & Institute) - Important Considerations

There is need to conserve biodiversity in both natural and man-made systems since genetic diversity is being lost in both natural ecosystems and man-systems for crop and livestock production (CBD, 2010). While the domestication of wild populations is not recommended under industrial operations due to well known problems (e.g., parasite management and contamination of wild populations by managed bees from farming operations), it is possible to expand crop's diversity with the use of wildlife friendly food production systems. An example of this would be the use of permaculture, working to incorporate suitable native species that will serve the community and increase ecosystem's resilience. An alignment is required between permaculture practices and conservation also to avoid the unintentional introduction of species potentially invasive to the local environment.

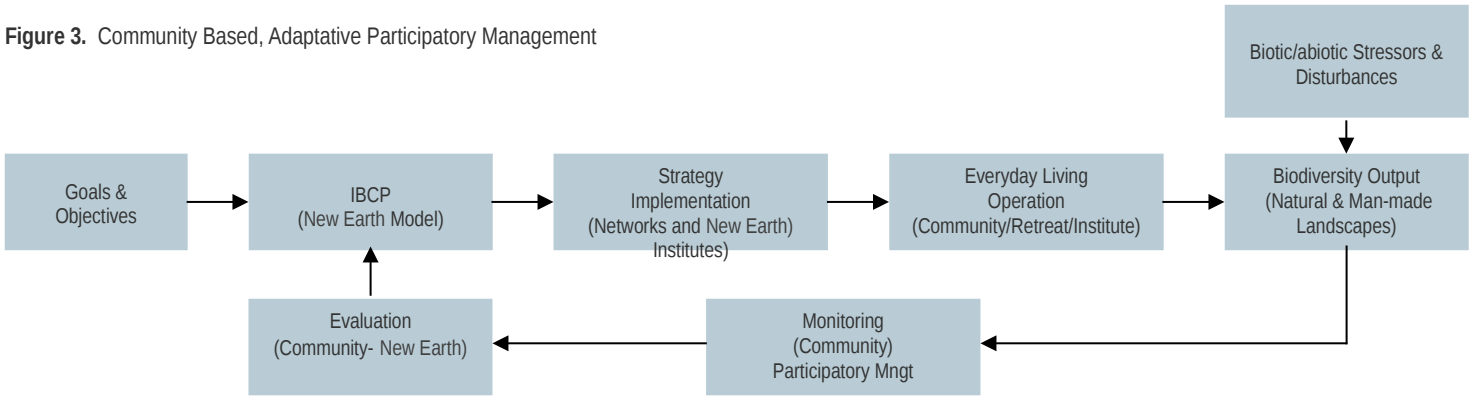
Community-Based Biodiversity Conservation (CBBC) is necessary since inhabitants and operators at each venue can unintentionally cause adverse impacts on biodiversity throughout time. There is need to increase awareness while building capacity to ensure that the community is keenly aware of the local natural environment. It is essential that the community occupants are familiarized with the local fauna and flora in order to sustainably harvest any natural resources and to participate in stewardship actions aimed at improving natural biodiversity on site. This is particularly important when most inhabitants come from urban environments. This will foster people's connection with the natural world, serving to deeply enrich their lives.

Community Based, Adaptative Participatory Management (CBAPM) is implemented thanks to NEP Institutes, ensuring that NEP's communities count with the right amount of information and knowledge to actively participate in the development of their communities across time (e.g. educating kids and adults, building capacity).

[10] "Without monitoring of the species/ecological communities that a project may be seeking to protect or to enhance the sustainable use of, there can be little reliable evidence to show the impact of such activities" (Smith, Hughes, & Swiderska, 1998, p.11)

[11] For instance, climate change is changing already the phenology of different species and creating a mismatch between species that depend on each other for survival (e.g., plants and pollinators).

Figure 3. Community Based, Adaptative Participatory Management



The Mitigation Hierarchy

The MH is a sequence of activities addressing all impacts aimed at ensuring no net losses while preferably striving for a net gain of biodiversity. As with any sequence, the order is of great significance. Impacts with the potential of adversely affecting biodiversity irreversibly in combination with impacts on land with rare high environmental values should be avoided altogether. If this is the case, the project should not proceed. Lesser impacts should be minimized to the highest degree possible, hence alternative solutions should be sought to minimize any losses. Once this is accomplished, the remaining impacts should be reversed; meaning biodiversity on land should be restored to its original state or bettered. Finally, any impact that couldn't be avoided, minimized or mitigated should be effectively offset. The offset must be commensurate among others to the number, nature, range, status, and rarity of the environmental values being impacted while taking into consideration any opportunities for enhancement. For visualization purposes, Figure 4 shows an example of how potential impacts can be addressed throughout the development's life cycle by applying the MH. Note, that such example does not represent the level of analysis and problem solving required but illustrates some of the mitigation options possible.

"a. **Avoidance**: measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure in order to completely avoid impacts on certain components of biodiversity.

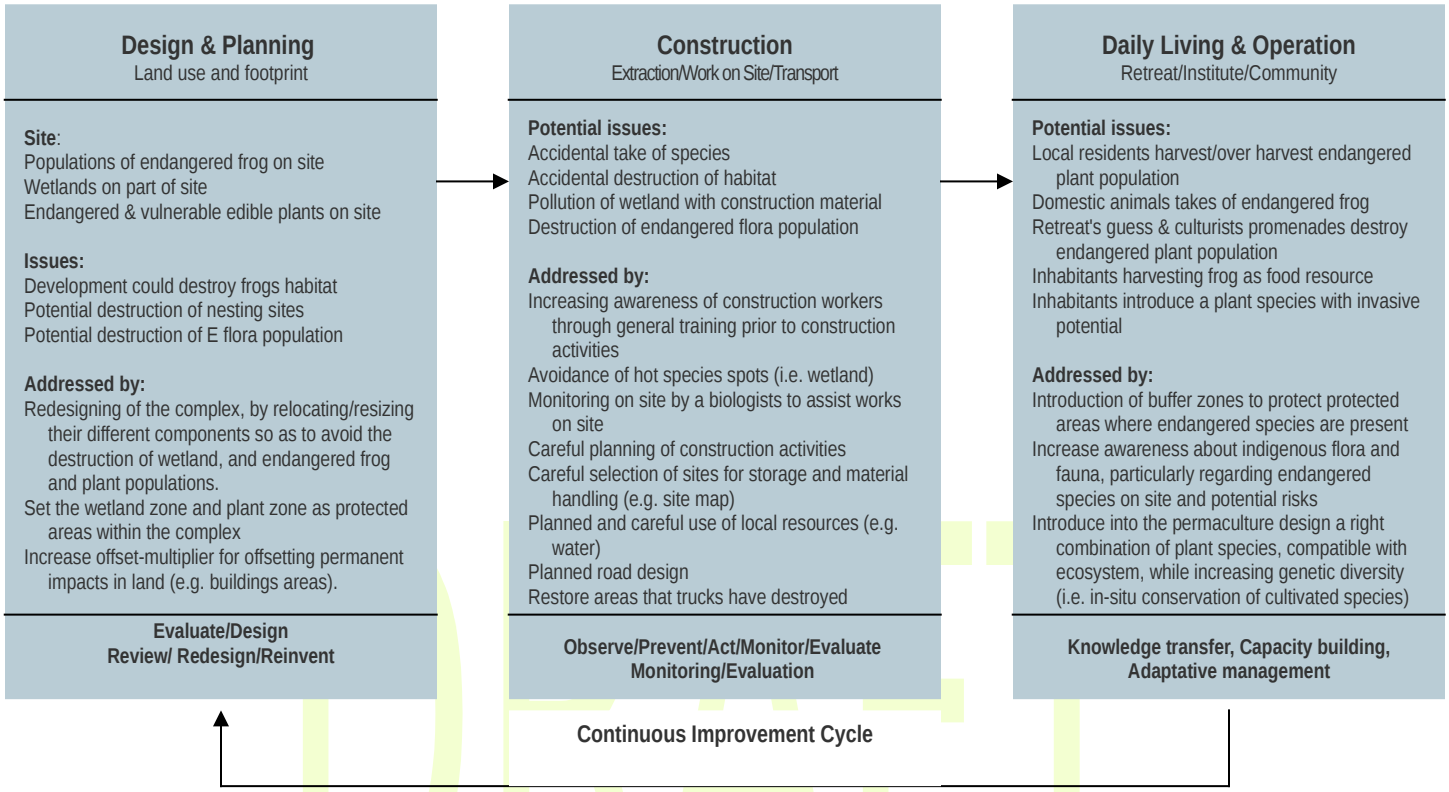
b**. Minimisation**: measures taken to reduce the duration, intensity and/or extent of impacts (including direct, indirect and cumulative impacts, as appropriate) that cannot be completely avoided, as far as is practically feasible.

c. **Rehabilitation/restoration**: measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/ or minimized.

d. **Offset**: measures taken to compensate for any residually significant and adverse impacts that cannot be avoided, minimised and /or rehabilitated or restored in order to achieve no net loss or a net gain of biodiversity. Offsets can take the form of positive management interventions such as restoration of degraded habitat, arrested degradation or averted risk thus protecting areas where there is imminent or projected loss of biodiversity"

The BBOP (2012, p.7)

Figure 4. Addressing Impacts Throughout the Development's Life Cycle



Additional Principles for Offsets

For offsets, as for any other components of the IBCP's, the same principles are followed. However, offsets require adherence to an additional set of principles, which are described below:

- **Offset limits:** Areas with high environmental values, highly vulnerable, and hosting listed species are considered irreplaceable and hence cannot be offset. These should be protected at all costs.
- **No-net-loss:** Offsets are designed and implemented to achieve measurable conservation outcomes expected to result in no net loss and preferably in a net gain of biodiversity.
- **Adhesion to the mitigation hierarchy:** Offset of impacts on biodiversity and other environmental values is applied solely for residual adverse impacts, only after New Earth has avoided, minimized and mitigated any possible impacts on-site. Thence, offsetting is used as the last recourse. An offset ratio (i.e. compensation ratio) is used specifically to each project according with in-situ conditions, nature and magnitude of impacts (e.g., specific land conversion for each area).
- **Offsetting by principle.** After mindful application of the mitigation hierarchy (e.g., after careful design and planning of each development, and construction on-site), offsetting by principle is applied to all built areas, which are by principle net losses of natural habitat. An offsetting ratio is used according to each site's specific situation.

- **Compensation ratio[12]:** : An Offset Compensation Ratio (OR) is used to offset all adverse impacts comprising of factors such as: land's environmental values, number and status of species present, vulnerability, habitat type (i.e. rarity), site's conditions and defensibility, landscape context[13], nature and magnitude of impacts and the gap in land use conversion; all while following an ecosystem approach.

Offset Ratio

Offset ratios, also called multipliers, specify the exchange rate at which the negative impact must be offset by New Earth in consideration of equivalence. Hence each hectare of habitat destroyed could be replaced by two, three or more hectares of quality habitat, adjusting thus for differences in the ecological value and conditions between the offset and the affected species and habitats. Impacts on endangered species, and strategic zones, where there is significant uncertainty call for the use of conservative compensation ratios (Garcia-Lugo, 2013).

A simplified method consistent with NNL for calculating the compensation ratio that New Earth will apply to offset impact and scale its complexes (i.e., community, retreat, institute model) will be developed specifically for New Earth based upon the factors listed above. This will be supported by applying the best known practices and available science (e.g., landscape equivalency analysis, robustly fair offset ratios, habitat equivalency analysis) while garnering the best available data from recognized resources. Scientific based compensation ratios should depend on risks, ecosystems and type of offset project (Carroll et al., 2008). There fore, the area disturbed, the type of disturbance (e.g. specific change in land use), its duration (e.g., limited to construction work, or permanent) and magnitude will all be considered for offsetting purposes. The OR will serve to determine the maximum area built on a site thus the maximum change in land use (e.g., built areas, permaculture areas). Since New Earth is a project for the people by the people, there are various ways New Earth could offset; for instance, it could give the opportunity to conscious people to donate land with the sole purpose of nurturing and protecting it. It could also receive land with the purpose of restoring it to a pristine state. Based on the IBCP's and offset's principles described herein, New Earth has to develop the best offset solution that will deliver the highest biodiversity gains. This development must be in complete alignment with its strategic planning, core principles and demonstrated values.

A conceptual graphic of the MH is found in Figure 5. This shows how anticipated impacts should be avoided, minimized, mitigated and then offset according to the environmental values present on site. In the case where the biodiversity on site is highly important, rare, and irreplaceable, it is critical to avoid any impacts to the maximum extent possible. All impacts should be limited in relation to the total land area. Furthermore, any offset should be a multiplier of the impact in direct accordance with the same factors. In the case where the land contains environmental values that are low and largely distributed the limitations to build on that land are reduced and the offset ratio lowered. This is in view of the fact that impacts will not translate into irremediable critical losses of biodiversity. That being said, the project should still continue to avoid any negative impacts to the highest degree possible. As a result, New Earth complexes in areas where biodiversity and environmental values are highly valuable will be smaller in size, in direct proportion to the land area available in comparison to the complexes located in areas where biodiversity is low and highly distributed in the region. In the case where land is located in degraded areas (e.g., industrial agricultural zones, deforested areas) where New Earth will restore the site partially or completely and where conservation gains are evident, the offset ratio will be the lowest; unless, the restoration and protection of more land could help increase the resilience of habitats at a larger scale or the interconnectivity between habitats (e.g., green corridors). This activity ensures that New Earth adheres to its goal to positively affect the resilience of ecosystems at the highest level possible (e.g., regional). In Figure 5, brown areas represent impacts that could not be avoided (e.g., homes & other buildings, since buildings destroy the habitat on which are built), and green areas above the zero impact line, represent the corresponding offsets.)

[12] Land with high environmental values (e.g., Amazon forest) is offset at a higher ratio (e.g. 5X), than land with low environmental values (e.g., desert, land where industrial farming has been practiced, deforested areas), which is offset at a lower ratio (e.g. 1X). Land exposed to higher level of pressure (e.g., for land use changes, exploitation) will require a higher ratio, than land exposed to less level of human pressure (e.g. agricultural zoning with stringent regulation limiting potential conversion).

[13] This should include a full range of biological, social and cultural values of biodiversity.

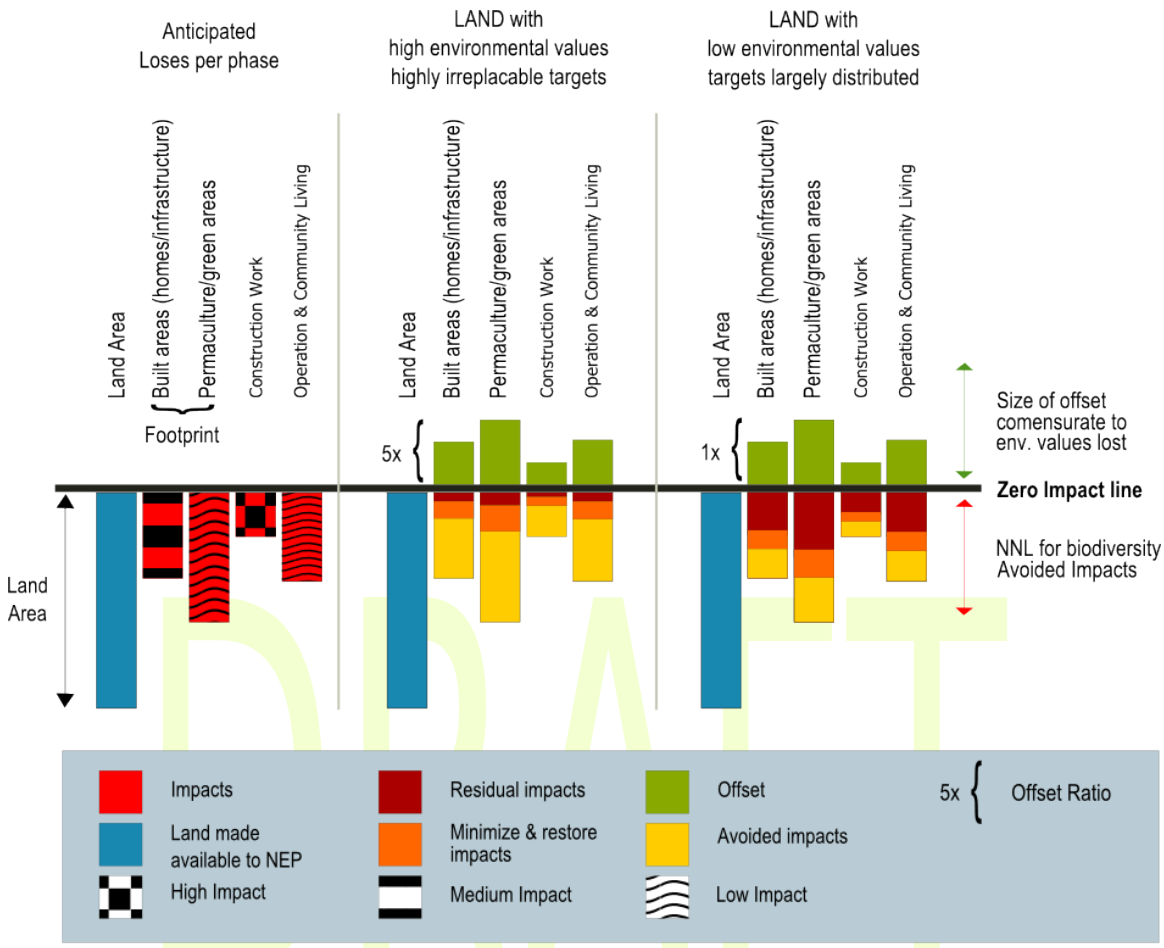


Figure 5 .- Mitigation Hierarchy. Conceptual Graphic.

Closing Notes

New Earth's IBCP is designed to enrich and restore natural environments that foster human and planetary well being. It plants the seeds required for a new world to rise, where people of the world connect back to nature.

New Earth's IBCM provides the foundation and necessary means for a conscious humanity to take back its role as Earth's steward in order to live in sincere harmony with other sentient beings and the kingdoms of nature.

New Earth venues provide protected environments for both the development of a conscious humanity and for the harmonious evolution of all native species on Earth. These dynamic communities are purposed to secure a sustainable future for all life centered upon goodwill, prosperity and lasting peace.

Bring conscious awareness and knowledge to the people of the world,
to help them
remember the inherent love for all living creatures on Earth.

This love is unconditional and is given in simple recognition and appreciation for
who we ARE and what we bring to each person we touch.

As one stream of evolving life, we are raised into the freedom of share opportunity,
to birth a New Earth of infinite sustainability.

And so it is.

Glossary

Adaptative Management. This is the "... systematic acquisition and application of reliable information to improve natural resource management over time.[...]. This approach can establish cause-and-effect relationships and point the

way toward optimal strategies. Adaptive management has been promoted as essential to management under uncertainty." (Wilhere, 2002).

Biodiversity. It is"...the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems." (IAIA, 2004, p. 2)

Biodiversity Offsets. Biodiversity Offsets are aimed at restoring biodiversity values. Their main objective is to ensure that there is no net loss and preferably a net gain on environmental values, in particular biodiversity related (e.g., species composition, habitat structure, ecotypes, eco-zones, ecosystem services and functions). Hence, although these are usually linked to animal, plant species and their habitats, these are also used to offset environmental values, such as wetlands, depending on the environmental protection policies in place (Garcia-Lugo, 2013).

Environmental Impact Assessment. This is "[...] the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made" (IAIA 1999, p.2).

In-situ Conservation. "[...] the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties (CBD, Art. 2)

Integrated Conservation and Development Project. "It is an approach that aims to meet social development priorities and conservation goals and therefore is based on the linkages between the social setting and the natural environments" (Worah, S. 2000, p. 8), and is primarily used in the case of developments located near protected areas (Hughes & Flintan, 2001, p.4), and areas with high environmental values.

Land Grabbing. The International Land Coalition's Tirana Declaration defines 'land grabbing' as acquisitions or concessions that are one or more of the following: in violation of human rights, particularly the equal rights of women; not based on free, prior and informed consent of the affected land users; not based on a thorough assessment, or are in disregard of social, economic and environmental impacts, including the way they are gendered; not based on transparent contracts that specify clear and binding commitments about activities, employment and benefits sharing; not based on effective democratic planning, independent oversight and meaningful participation (Blomley et al., 2013 p. 2).

Life Cycle Thinking. This is a conceptual framework and a tool that considers the cradle-to-grave implications of actions, processes, services, and products. With this approach responsibility is greater, where there is greater control, and responsibility is shared across the value chain. It is based on the acceptance that responsibility cannot be limited to activities in which companies are only directly involved, but that is expanded to include the entire life cycle of the product process or services beyond sector-based analysis hence to integrate wider implications of our activities (SETAC, 1997).

Mitigation Hierarchy. "The mitigation hierarchy is the logical, sequential framework in which impacts are avoided, minimized, remediated and any residual impacts offset. Adherence to the mitigation hierarchy is central to biodiversity offsetting" (ICMM IUCN 2013, p.10).

Offsets. An offset counterbalances or compensates for something else with some measure of equivalence. These are activities aimed to provide a public good that are motivated, in part, to compensate for activities that diminish the same good whether done voluntarily or required by regulation (Garcia-Lugo, 2013).

Offsets compensation ratios. This specify "[...] the exchange rate at which the negative impact must be offset by the compensation project in consideration of equivalence. For instance, each hectare of habitat destroyed could be replaced by two, three or more hectares of quality habitat, adjusting thus for differences in the ecological value and conditions between the offset and the affected species and habitats. Conservative ratios can be applied where developments affect species at risk, or strategic zones, where there is significant uncertainty in the measurement of biodiversity debits and credits and long-term offset success is uncertain (e.g. wetland restoration). [...] When using ratios, it should be considered that different species require different evaluations. Programs can use compensation ratios with the aim of achieving net conservation gains, or a way to assure at least no net losses" (Garcia-Lugo, 2013).

Precautionary Principle. "The precautionary principle is becoming an established guideline for policy makers tackling environmental problems. In salient respects, it applies to biodiversity more than to any other environmental problem. This is because the mass extinction gathering force will, if it proceeds unchecked, not only eliminate half or more of all species. [...] there is a super-premium on applying the precautionary principle to the biotic crisis in a manner expansive enough to match the scope and scale of the problem." (Myers, 1993, p.74).

Precautionary principle. "[...] It is an approach to uncertainty, and provides for action to avoid serious or irreversible environmental harm in advance of scientific certainty of such harm [...]" (Cooney, 2004, p. 10).

Protected area. This is a"[...] geographically defined area which is designated or regulated and managed to achieve specific conservation objectives" (CBD, Art. 2).

Tipping points. These are situations of major concern, since refer to the point when an ecosystem experiences a shift to a new state that result in significant and large changes in biodiversity, services and functions at a regional or global scale. Changes that can either be self-perpetuating (e.g., enchained changes that perpetuate and worsen the situation), trigger an abrupt shifts in ecological states, generate long lasting perturbations, or changes that are difficult to reverse, or be irreversible and are difficult to manage if there are time lags between drivers (CBD, 2010). The higher the degradation the higher the risk that tipping points will occur in the future.

Acronyms

CBBC	Community-Based Biodiversity Conservation
CBD	Convention on Biological Diversity
BBOP	Business and Biodiversity Offsets Programme
CWM	Community Wildlife Management
EIA	Environmental Impact Assessment
ICDP	Integrated Conservation and Development Plan
IBCM	Integrated Biodiversity Conservation Model
IUCN	The World Conservation Union
LC	Life Cycle
LCEIA	Life Cycle Environmental Impact Assessments
LCAP	Life Cycle Approach
LCAP	Life Cycle Assessment/Studies
LCT	Life Cycle Thinking
LFM	Life Cycle Management
M&E	Monitoring and Evaluation
NNL	Not-Net-Loss
OR	Offset Ratio
PA	Protected Area
PPAs	Private Protected Areas

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