

# Protection of Biodiversity through Creation of Worldwide Hotspot Economic Zone System

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## Abstract

Developing countries, containing most of the world's high biodiversity regions, are experiencing rapid population growth. Consequent threats to biodiverse habitats, such as industrialization and predatory agricultural and forestry practices, lead in an increasing measure to spiral of degradation due to poverty-environment nexus, culminating in irreversible extinction of species. Traditional assistencialist instruments for nature protection do not cover the increasing extinction risks. There is a critical need to combine intelligent market based instruments with assistencialist approach, that would link fight against poverty with protection of endangered nature in a sustainable way under strategically designed institutional umbrella. This paper proposes and calls for a major concerted international effort edificating an autonomous economic system of biodiversity hotspots, consisting of a set of incentives, rules and innovative mechanisms economically favouring those poor who actively undertake conservationist effort, forming a robust international system of Hotspot Economic Zones.

## Keywords

microfinance, funding, FX risk, guarantee, credit bureau, e-finance, development

## I. Introduction

Modern human domination of the biosphere alters ecosystems and erodes biodiversity (Sanderson et al. 2002). Unsustainable consumption and poverty in the tropics are ravaging wild nature, viewed as one of the chief causes of environmental destruction and produce biodiversity crisis, having the irreversible extinction of species as its gloomiest consequence. Poverty affects environment by forcing poor people to degrade environment, by encouraging countries to promote economic growth at the expense of environment, and by inducing societies to downgrade environmental concerns, failing to channel resources to address such concerns [1]. A fraction of Earth's land surface, 2.3 percent, is covered by intact remnants of the 34 biodiversity hotspots, which harbor over 50 percent of the world's total endemic plant species, 77 percent of the world's total number of terrestrial vertebrates and 29 percent of the world's freshwater endemic fish species [2]. 70 percent of the original habitat extent of the hotspots according to estimates had been lost in the past three decades (Mittermeier et al. 1998). People most critically dependent upon ecosystem services unfortunately often live where the biodiversity crisis is at its peak (McNeely and Scherr 2001). An estimated 1.1 billion people, and 60 percent of the world's poorest inhabitants, live in these biodiversity hotspots. In 19 of these, population is growing more rapidly than in the world as a whole (Cincotta and Engelman, 2000). Some 300 million people live in forested areas and another 200 million live around them, most of them poor. [3] Currently, 146 major cities are located in or directly adjacent to a hotspot. Of those cities, 62 have more than 1 million inhabitants (Cincotta and Engelman, 2000).

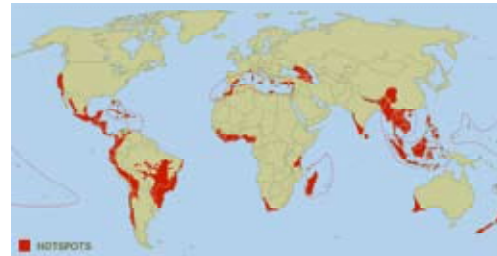


Fig. 1: Hotspots

The hotspot inhabitants are often obliged to employ practices that compromise ecosystem integrity, as environmental resources belong to the rural poor's most valuable assets. Although the exact linkage between poverty and environment degradation remains unexplored, a dual causality between poverty and nature exploitation is considered mostly probable. [4] Consequent species extinctions have further implications for economic and social development, as at least 40 per cent of the world's economy and 80 per cent of the needs of the poor are derived from biological resources. [5] Most hotspots, albeit rich in resources, thus do not achieve economic development, with people living in miserable and not improving conditions (Dickson 2003) [6]. Besides, the socio-economic pressures on hotspots exploitation is increasing, as households in hotspot countries are becoming smaller and more numerous, resulting in greater per-capita resource consumption and increased pressure on biodiversity (Liu et al. 2003). Innovative financing and microfinance approaches could become a tool for poverty alleviation and sustainable protection of biodiversity, conditioning the transfer of value to hotspot communities by fulfillment of preset conditions, addressing both poverty alleviation and biodiversity conservation. Several creative initiatives are on the verge of becoming part of the mainstream, market based sustainable conservationist effort, such as mitigation banking and offset programs, environmental mortgages and biodiversity payments or environmental derivatives. However, if the mentioned initiatives, despite their ingenuity, are not positioned within a robust, economic framework, propelled by genuine market forces, they will not grow into significant contributions to hotspot conservation and will stay isolated enterprises without major impact. The intention of this paper is to propose creation of self financing worldwide Hotspot Economic Zone system, in order to harbor a variety of innovations under one institutional umbrella, holistically summing up philanthropic, market based and governmental initiatives. These consist of sustainable instruments, as well as mutually complementing mechanisms of directed assistencialist support, incorporated into one single strategy. The proposed HEZs include selected local populations, under the key condition that certain conditions helping to preserve biodiversity are met, complementing, but not extruding the current economics relationships ruling in the hotspot economies.

## II. Framework of Hotspot Economic Zone System

### A. Definitions of the framework: Hotspot Economic Zones

Hotspots economic innovations need to be integrated into a structural concept similar to the concept of Special Economic Zone (SEZ), sometimes denominated as tax free zone, bonded area or "zona franca". Concept of „zona franca“ means a area with relaxed jurisdiction with respect to the country of location, a geographical region with economic and other laws differently oriented than a country's typical or national laws, which may be suspended inside the zone. The SEZ category covers a broad range of specific zone types, including Free Trade Zones, Export Processing Zones, Free Zones, Industrial parks or Industrial Estates, Free Ports, Urban Enterprise Zones or others.

Most common, free port, is a special customs area with favorable customs regulations, created to give duty free opportunities to companies, which in the end boost local economy by attracting more trade, under the allowance of states where the areas was located. The concept, which can contain sub-zones within its boundaries, had worked extremely well in the past, giving a boost to economies by encouraging trade with their neighbors. Areas such as Zona Libre Colon or Hong Kong have become one of the most important business platforms, developing state of the art logistics and insurance and banking industries. According to World Bank 2007 estimates, there were more than 3,000 projects taking place in SEZs in 120 countries worldwide. Unlike traditional SEZs or industrial parks, HEZs consist of a set of complementary rules and mechanisms offered to those local poor inhabitants and microentrepreneurs that voluntarily act according to the local needs, creating an alternative authority exercising influence upon local economics, but in no way elbowing the current market mechanics. The HEZ structures thus do not substitute national laws, as it happens in traditional SEZs, but create a virtual network of secondary standards, that bring economic benefits to those who voluntarily accept the proposed rules. Instead, HEZ is a set of financial and economical privileges, partially funded from global and partly from internal sources described later and applicable to those, who perform according to rules pre-set by HEZ Strategic Committee. The HEZs are denominated in terms of geographical location and apply to those, who execute long term subsistence activities in the defined regions. The target members of HEZ are clearly defined by their potential adverse impact on biodiversity, and in the majority are formed by adult populations and their families that present a nature exploitation risk in the areas of their livelihoods.

### B. Control and organization mechanisms applied in HEZ

#### 1. HEZ governance

The HEZ system is managed by HEZ Strategic Committee, a statutory organ and international body of the advocates of the HEZ system, which decides upon general strategy, planning, codes of conduct, implementation of new products, lobbying and communication towards world's public. HEZ Strategic Committee is a tip of architecture consisting of a voted board of directors, who represent multilateral organizations, state representatives, NGOs and local movements, forming part of the membership base. The members of HEZ composing the HEZ assembly are institutions concerned with hotspot biodiversity, represented by their delegates with a voting right. Formally,

HEZ system is an international cooperative, with members being shareholders with limited extent of shareholdership per member. All the bodies within the system, with exception of the Monitoring Authority, Development and Research and Strategic Committee, are sustainable and produce revenues, that cover the costs and in excedents are reinvested into growth of the mechanism.

#### 2. HEZ Monitoring Authority

HEZ Monitoring Authority is the key element of the structure, providing data from field on the state and progress of the biodiversity habitats, filling an information gap. Currently, no single organization centralizes the acquired knowledge on total number of species in extinction, level of deforestation and socio-economic progress, and periodically presents it to the world public on-line, as per incoming inputs and updates.

#### 3. HEZ Sustainable Financing Authority

HEZ Sustainable Financing Authority is dedicated to microfinance and financing of sustainable projects. HEZ Sustainable Financing Authority consists of several element: an investment fund, financed by HEZ own capital as well as by external sources, investment advisory providing rewarded services to members of HEZ as well as to external bodies, developer of new financial products such as alternative energy microcredit and promotor of innovative projects in search of capital.

#### 4. HEZ Stock Exchange

The goal of the HEZ Stock Exchange is to form a prestigious international marketplace devoted to trading with environmental and social liabilities transformed into marketable assets, as well as linking capital with the all variety of HEZ related causes. The HEZ Stock Exchange provides additional market space for the existing, mostly national environmental stock exchanges, and is modeled according to the general stock exchange criterias. In difference to the current environmental stock exchanges, HEZ Stock Exchange is owned by its members in form of a cooperative, with the profits of HEZ Stock Exchange becoming a major source of funding for the HEZ initiative, allowing public to trade carbon credits, credits for environmental projects, air and water quality, biodiversity derivatives and other environmentally supportive products, but also allowing the marketplace to make informed decision about the projects to fund.

#### 5. HEZ Certification Authority

HEZ Certification Authority roughly corresponds to what is the Clean Development Mechanism (CDM) defined in the Kyoto Protocol, in the carbon trading sector, designed to certify emission reduction projects. In the case of HEZ, its Certification Authority investigates and registers interested offset and mitigation projects, entities interested in emission reductions, new participants in the HEZ stock exchange trading , as well as provides EIAs to HEZ members as well as external bodies.

#### 6. HEZ Insurance and Guarantees

HEZ Insurance and Guarantees provides insurance and guarantees to HEZ projects, whether for investments by Sustainable Financing Authority or to external investors on commercial terms.

## 7. HEZ Development and Research

The HEZ Development and Research produces scientific analysis of the initiative and focuses on development of new measurement, indexation of species, investment, monitoring and insurance products, with scientific output.

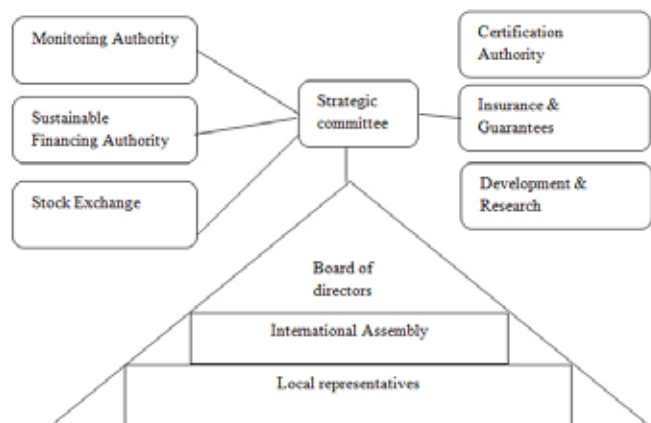


Fig. 2: The proposed HEZ mechanism

## III. Innovative mechanisms used within the HEZ framework

### A. New taxonomy: creation of new types of interest rates

Private capital in search for appreciation, decides on base of traditional measures on return on investment, expressed by financial interest, which is base for other conventional scores such as ROI or ROE. Qualitative measures, simplifying the social and environmental impact of the investment and quantifying of the impact to a generally accepted, simple criterion, are non-existent. The absence of the adequate taxonomy, reflecting the current state of human development, is one of the obstacles why the private markets do not interact with philanthropic sector more frequently. It is indispensable to form a set of new definitions, such as „social impact interest rate“, „extinction risk reduction interest rate“ or „environmental impact interest rate“, as these will popularize the concepts and provide to those decision takers used to work in market based environment, better leads to what non-financial impact will be caused by the investments.

### B. Biodiversity offsets and mitigation banking

The biodiversity offset concept proposes barter exchange standards, through which unavoidable harm to nature caused by developers or industrial producers, is compensated through adequate protection or restoration of similar habitat elsewhere. The mitigation banking concept rests on the biodiversity offset principle described above, only adds measurement and placement of a monetary value on biodiversity value, allowing the supply and the demand to meet in private markets. The "habitat hectare" or 1 acre of a wetland have been defined as the trading currencies of the concept in the past.[7] The activity of trading in "habitat hectares" represents the principal contents of biodiversity banking, analogical to carbon emissions offset trading with metric tons of carbon-dioxide equivalent. A number of risks associated with biodiversity offsets have been identified, such as abuse by private companies or authorities to allow for environmentally too damaging developments to be considered appropriate, or lack of credible standards on biodiversity offsets and lack of certification norms. Therefore, mainstreamisation of such concept must be subjected to

stricted analysis prior to launch and authorization of new products.

### C. Environmental and biodiversity derivatives

In essence, environmental derivatives traded on stock exchanges, are higher development stage of mitigation banking. At present, there is only one environmental derivative traded internationally and massively, which is "carbon credit", with several other air pollutants traded in marginal volumes. Carbon may become the world's biggest commodity market, and it could grow in the future into the world's biggest market overall.[8] Unlike stock options, environmental derivatives are not based on an "underlying asset". "Air pollutant credit" is the "right to pollute" sold by those less-polluting companies to those that did not reduce emissions to lie within the norm set by Kyoto Protocol treaty. Unlike price of traditional derivatives, the prices of the environmental derivatives therefore rely more on the definitions passed by respective parliaments than on corporate margins, input costs or technical ratios. Environmental derivatives could result in a more efficient allocation of resources and creation of tradition of limits, trading habits, inclusion of market based mechanisms as well as transference of the extinction risk, but the regulation would have to provide private decision-makers with clear signals, in order not to induce volatility currently observed in carbon trading markets, caused by the lack of standard pricing tools.

### D. Microfinance environmental mortgages

Microfinance successfully reduces vulnerability, diversifies sources of livelihoods, and supports the adoption of new technologies. In turn can reduce the damage of the poor, who destroy their livelihoods in exchange for satisfaction of short term benefits. Environmental mortgages combine a performance-based conservation scheme with a microfinance approach of economic development. Conservation organizations are expected to develop funding programs to offer lines of credit to communities or MFIs active in hotspot areas, providing cheap capital, as long as community's environmental assets stay preserved, thus serving as a capital price collateral. Environmental mortgages meld innovative microfinance approach with incentives that encourage environmental stewardship, linking a lending program focused on livelihood improvement to the quality of an environmental asset, resulting in long-term incentive for stewardship. [9]The concept is not in use in practice yet. As a good example of the financing of activities in Hotspot Zones could serve financing of nature-protecting agrotourism, with the potential of tourism, currently being third major sector in volume of sales worldwide, is manifest.[10]

### E. Biodiversity payments

Biodiversity payment include payments for ecosystem services, restricted land easements, and performance-based payments for biodiversity preservation, in form of conditioned donations. The latter, such as paying directly for breeding bird success, is the most direct and cost-effective way to protect an environmental asset. Incentive payments, however, are short-term payments that rely on an unsecure external, long-term paternalist funding and provide no guarantee for protection of an environmental asset, nor build up sustainable development linked to poverty alleviation.

## F. Indexation of endangered species and aid conditioning

The HEZ network fundraising effort may permit to convince to channel part of the Official Development Aid, to a fund focused on a higher form of assistencialist help than very specific biodiversity payments, concentrated on major development projects, in collaboration with the local political representatives. Within this concept, the species in danger of extinction, are to be kept periodically monitored and indexed. The information, accessible in a public registry, will allow to observe the development of the extinction or restoration of species in time. The regions with better ratio of species preservation will be allowed to obtain a higher proportion of the development aid fund, channeled as a percentage from the Official Development Assistance flows, to concrete regions. Thus, the local political representation, e.g. on federal statal level, will be directly interested in the species protection.

## G. Tariff and customs bilateral agreements with States

Farming to feed the growing human population is one of the chief causes of extinction [10]. HEZ system will not function efficiently, if those practicing eco-friendly agriculture and production, will not be allowed to trade their products in international markets with a preferential treatment by protectionist outlet markets, that do not distinguish between currently widespread biodiversity degrading productive techniques and ecological production. Unless agricultural practices are improved, habitats and species will continue to disappear, which is likely if there are not export advantages to the eco-friendly producers. Therefore presentation of the topic to international arena must be one of the priorities of the HEZ initiative. A concerted institutionalization of HEZ will undoubtedly spark interest of public creating pressures on the political state representatives to agree on a consideration of a global secondary market with HEZ eco-friendly products, once these are directly tied to survival of endangered species.

## H. Centralized monitoring

Currently, global monitoring of endangered species is a fragmented initiative of a plethora of different organizations, that perform disconnected, sometimes duplicated effort in monitoring different species according different methodologies, in different rhythms. Centralized monitoring, making systematic use of the myriads of information flows and step by step forging monitoring standards, incorporating the splinters into one, publicly accessible, periodically updated planetary map on the biodiversity conservation development, provides HEZ with a key instrument upon which decisions can be based. Also, failed environmental projects, must be included into one single library accessible to the mankind.

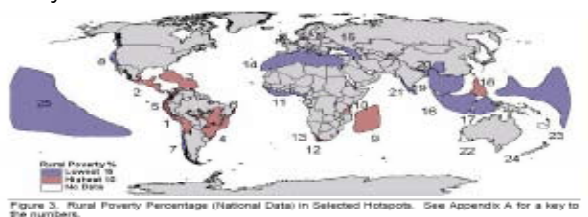


Fig. 3: Poverty in hotspots

## IV. Conclusion

Meeting the needs of the impoverished and conserving biodiversity are two interwoven processes, as well as traditional

assistencialist and newly implemented market based methods of fight against poverty. Both realms are currently under scrutiny of separate players, only recently searching for ways of communication. Conservation and economic development must find a way how to work on a united platform, despite tradition of fragmented, differing and splitted, uncoordinated proceedings. Creation of a united global trust of Hotspot Economic Zone, measured integrally as a one unit in one development context, aligned with needs of affected human populations, focusing on linkage of hotspot economic interests with their biodiversity needs, may be the way forward, in the quest for saving of the last islets of unharmed wilderness on the Planet and saving the remnants of biodiversity as the only way of how to input a system into a deceleration of extinction of species.

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