

ZEI “Zero Environmental Impact” Treaty a Full Environmental Compensation Mechanism for International Projects

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In the complex network of international environmental regimes, funds are the last and most scarce components agreed upon by the parties. Moreover, donor countries commonly resist the imposition of a specific funding mechanism for each treaty (Porter 2000). International and regional financial institutions, such as the World Bank Group, the regional developing Banks¹ (RDBs) or the International Monetary Fund (IMF), normally behave conservatively as distant outsiders, cold and impenetrable observers. However, because those institutions manage the funds available for developing countries they can play an important role in promoting the worldwide application of clean technologies and environmentally friendly production processes.

The Global Environmental Facility, embedded inside the World Bank structure with two additional implementing agencies (UNEP and UNDP-United Nations Development Program) is an insufficient and flawed mechanism for helping developing countries pursue a sustainable development agenda (Environment Defense 2002). Voluntary and market-oriented approaches such as the Clean Development Mechanism of the Kyoto Protocol and the recently launched Greenhouse Gas Emission Allowance Trading Scheme of the European Union (EU-EATS) are alternative financial solutions that could be effective and reliable aspects of treaties, although these are only palliative solutions unable to arrest the main economic forces driving the massive destruction of the environment (World Resources Institute 2003).

While UNEP is promoting sustainable strategies for the new century, the World Bank and other financial institutions, especially those called Export Credit Agencies (ECAs), are financing infrastructure projects that will affect the environment in the next 20 years. In many cases, some ECAs and RDBs are used intentionally by recipient governments to avoid and also undermine the World Bank environmental conditionality (Gutner 2002). Recently, the World Bank has rejected a recommendation to phase out all investments in fossil fuels over the next eight years. This recommendation was made by an independent panel appointed by the World Bank, which also recommended investment in renewable energies, rather than to continue with the \$US 300-500 million annual loans in support of oil and mining industrial activities in the developing countries (World Bank 2004).

Another policy of the World Bank that delays the application of clean technology is well described by Clive Harris, when he recommends the use of low-cost technologies to help “poorer or unserved consumers” (World Bank 2003). He gives the example of the power sector in Cambodia “...where around 600 entrepreneurs run small systems powered by diesel generators and supply 5% of national electricity consumption.” The World Bank is relaxing its own rules, including its environmental safeguard policies and adopting local regulations in poor and underdeveloped countries in order to eliminate regulatory barriers within the approval process of a project. How can we create an alternative mechanism to induce the voluntary application of more stringent environmental standards and regulations on a global scale? The main purpose of this paper is to answer this question.

The Role of International Lending Institutions in the Promotion of Sustainable Development Processes

Normally, international lending institutions are conservative organizations that regard environmental issues as part of the effects rather than as essential to the meaning and purpose of an investment project. In the best cases, environmental issues are incorporated in the institutional policies regarding sustainable development as transversal topics subordinated to financial and economic priorities. These institutions see the deterioration of the environment as an inevitable externality that can be reduced but cannot be completely avoided.

In international projects, environmental costs are assumed locally and international profits are assumed globally, in accordance with “free trade” principles. In other words, the externalities of a power plant, a dam, or a highway are part of the environmental burdens on the local population. The economic interests of foreign investors, technology providers, or interlinked financial institutions are unaffected by this concern. According to the actual rules of many international lending institutions, it is possible to finance petrochemical plants or electricity utilities anywhere in the world if local governments and populations accept them, regardless of global and long-term climatic or carcinogenic impacts.

Local governments enable actions that cause global environmental impacts in many ways. Some of these are an absence of specific environmental regulations, lax emissions standards, sovereignty claims, shortage of funds, or dictatorship decisions. Institutions such as the WBG and RDBs may apply their own environmental assessment procedures, but this methodology still allows projects to proceed without mitigation of global impacts by applying only local regulations and adjusting their policies to local capabilities and desires.

Transnational corporations (TNCs) are usually willing to participate in projects supported by international lending institutions if their business risks are covered by legal and financial guarantees. These are almost always granted by government officials and politicians with short-term political goals. In the past decade, 132 developing countries joined the rush to privatization promoted by the IMF and the World Bank Group. In this period, the private sector assumed the operation or construction of more than 2,500 infrastructure projects with investments totaling \$750 billion (World Bank 2002; World Resources Institute 2003).

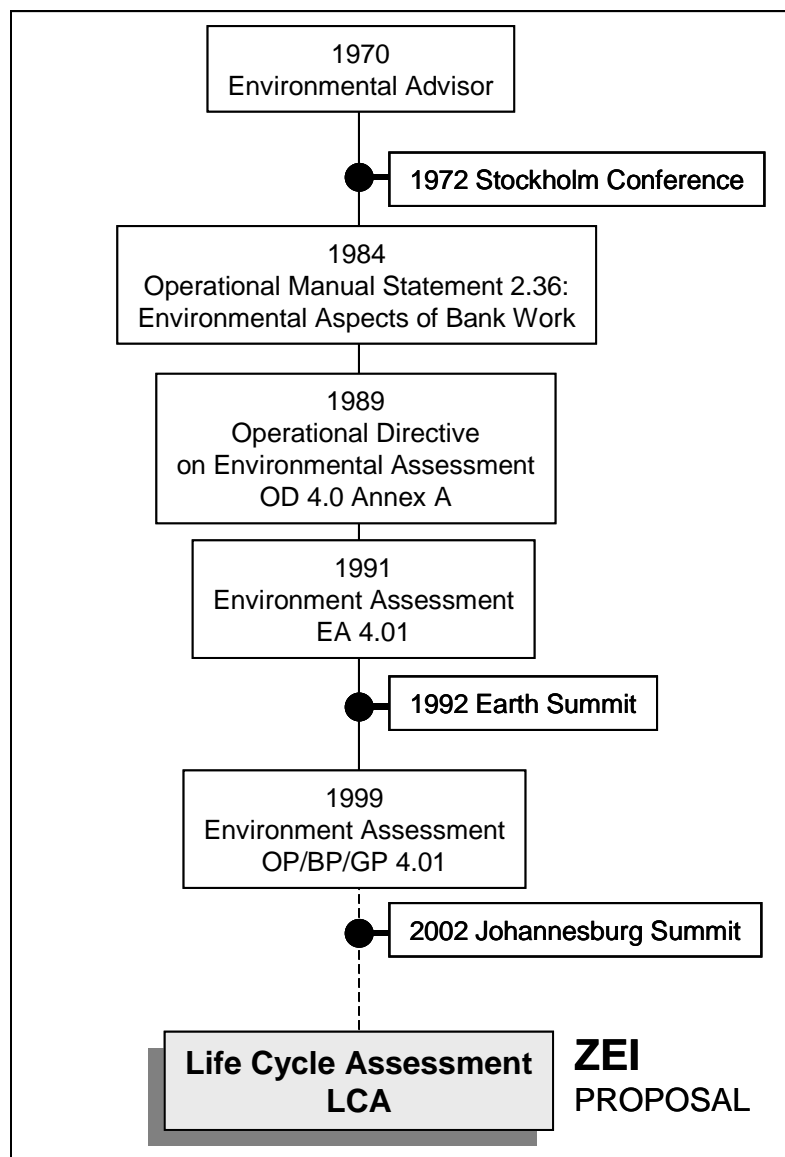
In an average year of the last decade, the WBG, the European Bank for Reconstruction and Development (EBRD), the US Overseas Private Investment Corporation, and the US ExIm Bank supported fossil fuel projects with lifetime emissions of 2,892 megatons of carbon. This amount is eight times the amount of emissions that could be reduced every year under the best scenario of the Kyoto Protocol Clean Development Mechanism (Hampton 2000).

The most influential international lending institution is the World Bank Group. Many environmental regimes and initiatives rely on its funds and use its procedures to approve projects. But the WBG is working on both sides, on high environmental impact projects and on environment and natural resources projects, spending for the latter 13 percent of its overall lending (World Bank 2003). The WBG applies a standard Environmental Assessment (OP/BP 4.01) to all its members, including co-financed projects under the Prototype Carbon

Fund (PCF) and the Global Environmental Facility (GEF), as part of its operational policies and procedures. The Environmental Assessment had been reviewed twice since the Rio Summit and is one of the 10 environmental and social safeguard policies of the WBG.

Many international NGOs have denounced the participation of the WBG in very aggressive energy, mining, water, transport, and industrial projects that are causing significant environmental degradation with the complicity of local governments and Northern TNCs (Halifax Alliance 2004). The WBG has also been criticized for incorporating new environmental approaches in its policies and procedures very slowly. There have been constant, perhaps intentional, delays between the adoption of environmental protection procedures and the international environmental declarations and treaties. (See Figure 1.)

Figure 1.² Environment Assessment Evolution in the World Bank³



It was not until 2001 when the WBG issued its environment strategy, a policy statement recognizing the necessary links between its actions and international environmental regimes and organizations. Despite the fact that the WBG declared itself to be part of the UN family, it doesn't assume "family ties" with UNEP. For example, it stated that its relation is an "Institutional engagement ... a framework for dialogue and coordination of activities... but do not involve structured programs and specific commitments." Furthermore, the WBG stated that the GEF is a corporate partnership that "... can generate strong benefits but may also present high operational risk" (World Bank 2001).

Nevertheless, according to the environmental assessment guideline issued in 1999, the "World Bank does not finance project activities that contravene country obligations under relevant international environmental treaties and agreements." This statement is very consistent with the overall environmental policy of the WBG: "The Bank Environment Strategies call, first, for an accountability framework that is client-centered, acknowledging that our core responsibility is to support sustainable development in our client countries" (World Bank 2001).

The WBG has 184 member countries each represented by a Board of Governors appointed by each country. The World Bank Group Boards of Executive Directors are responsible for conducting the day-to-day business of the World Bank. The Board is composed of 24 Directors, who are appointed or elected by member countries or by groups of countries, and the President who serves as its Chairman.

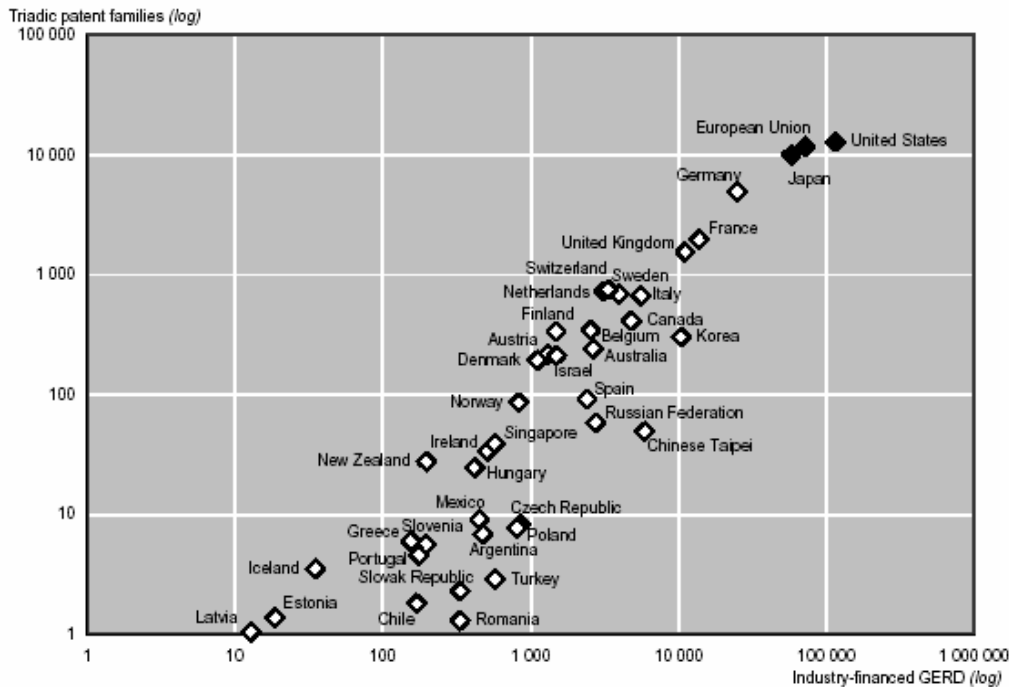
The five members with the largest numbers of shares, currently the United States, Japan, Germany, France, and the United Kingdom, appoint five Executive Directors. These five country donors have more than 37 percent of the voting power in the WBG. In the global context, they are the home economies for 73 of the world's top 100 nonfinancial TNCs (UNCTAD 2004), accounting for 83 percent of all new technological innovations measured by the triadic patent families in 2000 and industry-financed R&D expenditure (OECD 2004), and have major, active military power.

The environmental policies and safeguards of the WBG have been evolving with the influence of the foreign environmental policies of its main donors, the northern countries. This paper proposes the incorporation of new market-oriented methodologies and policies that are currently applied by TNCs and governments in northern countries to induce full environmental compensation in international projects. The objective of the proposal is to improve the environmental assessment procedure of the World Bank Group using two initiatives supported by the United Nations Environmental Program (UNEP), the zero emissions concept and life-cycle assessment. New investment projects financed by the WBG would not be approved if zero emissions technology is not applied or if their global environmental impacts are not effectively offset through meaningful compensation.

Figure 2⁴. Triadic Patent Families⁵ and Industry-Financed R&D⁶, 1991-2000 Average

R&D expenditures lagged by one year

Selected countries/economies



The Zero Environmental Impact Concept

In the last 30 years UNEP has been generating, abridging, and promoting many initiatives to crystallize the idea of sustainability (Moomaw 1997). From the “polluter-pays principle” to the “zero emission” concept are among the alternatives to reshaping such things as industrial activities, agricultural products, and municipal services.

Different zero-impact policies have been implemented in the industrial sector as well as by governmental environmental institutions. The most well known concept is zero emissions, which can be defined as production without any associated waste. Scientists and engineers may contend that this concept violates the fundamental laws of thermodynamics. However, many self-defined free thinkers and environmentalists, like Gunther Pauli, the founder of the Zero Emissions Research Institute at the University of the United Nations, believe that “the search for zero emissions will lead to greater efficiency and greater growth in the economy... [and] must be the goal of Cleaner Production efforts” (Pauli 2000).

Most importantly, this concept, and the policies and programs called zero emissions initiatives, attempt to emulate natural processes. They use holistic approaches mimicking ecosystems in which all energy and materials are recycled. Emissions from one industry become inputs to other industrial processes in a cascade effect and a close loop cycle so that there are, finally, zero discharges into the environment. In some cases, zero emissions initiatives are related to research and the development of clean technologies, such as the

electric car, but others encourage organic production such as coffee farming without chemicals.

In 1994, the United Nations launched a zero-emissions research program focused on new technological breakthroughs for industrial systems, emphasizing symbiotic flows: one sector's waste becomes another's input. From 1999 onwards, this program has evolved into the UNU/Zero Emissions Forum (ZEF) with international components mainly in Japan where over 150 representatives from Japanese business, local governments, and academia are participating.⁷

Ambitious examples abound. In the US there are two zero emission coal-fired power plants under construction (ZECA and FutureGen) funded by the government and industrial corporations. In New Zealand 45 percent of the local councils have adopted a zero waste policies. In Norway, Statoil is working with zero risk and zero environmental hazards to the environment in its refineries and offshore platforms. In Japan, many industries located at the Hachioji industrial park are achieving zero emissions certifications according to the new ISO-14000 standards series. Starbucks is selling certified organic coffee from Latin America. Many environmental NGOs are deeply involved in ecotourism businesses with zero impacts to the local ecosystems all around the world.

From a historical perspective, the zero goals represent the next phase in the evolution of the management of technological, urban, and production systems, including natural ecosystems assisted but also affected by human inputs such as the protected areas. It is important from now on to find synergies among approaches to sustainability, constructing new arrangements of strategies and tools that have emerged in addition to zero concepts, such as Cleaner Production, Factor 4/10, Life Cycle Assessment, Natural Step, and Pollution Prevention. The goal is to understand how these and tools now in the pipeline relate to each other and can collectively combine from different sectors, countries, and international institutions to reach higher stages of sustainability.

Life Cycle Assessment:

A Comprehensive Tool for Global Environmental Policies

Many analytical tools to assess and regulate human activity have been adopted by almost all the international institutions and countries of the United Nations.) We have certified tools, ranging from environmental impact and risk assessment (EIRA) procedures to life-cycle assessment (LCA), to calculate and evaluate environmental problems related to biodiversity, climate change, acid rain, ozone depletion, or global pollution with toxic substances. Some of these monitoring and evaluation tools are applied successfully in cap-and-trade programs to reduce airborne pollutants in North America, Europe, and Asia.

Perhaps the most illustrative experience and powerful idea to develop and apply as an ultimate technological solution to environmental problems is the Californian policy to introduce zero-emission vehicles to the US automobile market. Despite the fact that a life-cycle analysis of the electric car could indicate that this type of vehicle is "clean" only if the electricity is generated using renewable energy sources, in the end, the zero-emission vehicle initiative creates a global network of new markets, multinational automobile and fuel corporations, politicians, environmentalist organizations, research initiatives, and local governments working toward a common goal.

More comprehensive policies can be designed at the global level to stimulate the research, development, and application of clean technologies and products. Nevertheless, new international environmental regimes will not contribute if there is no autonomous financial mechanism to promote the participation of and liaison among academia and the private sector.

For example, the Sequestration Program at the Department of Energy (DOE) can be seen as a billion-dollar initiative to pave the way toward ratification of the Kyoto Protocol by the United States. As soon as US energy corporations develop their own technologies to deal with CO² emissions, they will be willing to participate and even accelerate the GHG reduction goals at global levels. Creating a business case for carbon capture and sequestration technologies in the American private sector is an intuitively strong solution. China is doing a similar R&D program using state universities and next year Europe will launch a carbon market to stimulate industrial participation. How can the rest of the world apply those new technologies if developing countries lack the money, financial mechanisms, and emissions standards to support them?

Applying Life Cycle Analysis in the WBG Environmental Assessment

A technology-centered approach can help to design a new environmental and financial treaty and to avoid perverse incentives applied by the WBG and other financial institutions. The goal can be reached in different steps, first, by having a compulsory link between environmental treaties and the rules and technical procedures of the WBG. Second, the WBG should redefine its environmental assessment guidelines to include new and well-known approaches such as LCA (a research initiative supported by UNEP and the World Business Council for Sustainable Development).

As part of the United Nations system, the Board of Governors of the WBG must make the decision to adopt the goals of all the environmental international regimes, not only those that are relevant according to the pragmatic criteria of the WBG officials in each project. If that were the case, for example, from 16 February 2005 the WBG could not have been able to finance new power plants and oil projects that will increase the carbon dioxide goal emissions of the 128 parties legally bound by the Kyoto Protocol. It is not clear how to technically define which projects comply with this policy.

The traditional EIRA methodologies cannot provide sufficient information to identify complex and global ecological compensations. They intentionally focus on environmental categories at the local and regional levels. Their goal is to minimize and mitigate environmental impacts with activities financed as part of a project. In some rare cases, the mitigation actions are part of the commitments of local governments to assure the viability of the project and respond to the worries and social demands of the population. It is assumed that environmental losses are inevitable.

Table 1. Life Cycle Assessment Categories and International Environmental Regimes

Categories	Relevant Environmental International Regimes	Compensation Mechanism
Global Warming	UN Framework Convention on Climate Change and Kyoto Protocol	Global Environmental Facility
Ozone Depletion	Vienna Convention and Montreal Protocol for protection of the Ozone Layer	Montreal Protocol Fund
Ecotoxicity	Persistent Organic Pollutants Treaty Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	Basel Protocol on Liability and Compensation
Human Toxicity Human health cancer Human health noncancer Human health criteria pollutants	Persistent Organic Pollutants Treaty Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	Basel Protocol on Liability and Compensation
Acidification/ Eutrophication	Convention on Long/Range Transboundary Air Pollution Convention on Environmental Impact Assessment in a Transboundary Context	
Resource Depletion	International Tropical Timber Agreement Regional Convention for the Management and Conservation of the Natural Forest Ecosystems and the Development of Forest Plantations	
Water Use	International Convention for the Prevention of Pollution of the Sea by Oil Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses	Fund for compensation for oil pollution damage
Biodiversity depletion	Convention on Biological Diversity and Cartagena Protocol on Biosafety	Global Environmental Facility

References: Barret 2003; Norris 2003; UNEP 1996

The next and maybe the most obvious step in the EA procedures of the WBG is the application of life-cycle assessment, defined by the UN as a decision support tool that supplies information on the environmental effects of all the stages of a product's life cycle. This information can be used by governments and by companies as well as by NGOs and individual consumers when making decisions related to products.

LCA is product-technology-oriented and integrative, using scientific data and quantitative indicators. Today, LCA is widely practiced in the industrial sector supported by a UNEP initiative and the tool is rapidly incorporating social and economic dimensions. Table 1 shows how results of an LCA fall into global environmental impact categories. It is also significant that the ISO 14040 has included a series of international standards for LCA since 1997, increasing the confidence of the scientific and business community in the tool (Baumann 2004).

The tool augments the comprehensiveness of the analysis and can lead to solid compensation decisions during the approval of international infrastructure projects in the WBG. The LCA tool is essential in achieving sustainability because it follows flows of energy and resources beyond the geopolitical and sectoral boundaries of the project, identifying the global environmental burdens it might impose. However, the adoption of this tool inside the WBG could be a long bureaucratic process. This could be remedied by a mandate from the Governors to the Board of Directors.

The Governors of the WBG represent almost all the international environmental regimes. The difference among them is the amount of their economic contributions (public funds) to the treasury of the Bank that give them a proportional vote in the internal decision process. How can they agree to use those public funds only for demonstrably sustainable projects?

Addressing Global Externalities with LCA

The challenge to internalize external costs in international projects can be addressed with LCA because this tool involves quantitative methods developed in cost-benefit analysis methodologies. LCA helps to detect environmental impacts from "cradle to grave" and measures their global implications with normalized indicators or global environmental impact units. In the EPS2000 life-cycle impact assessment method, the monetization of the damages is calculated in environmental load units comparable to Euros using present cost and "willingness to pay" and extracting future costs for health and natural resources categories. The Eco-indicator 99 method uses Disability Adjusted Life Years (DALY) as damage units to estimate costs of environmental impacts; the WHO and the WBG evaluate health statistics with this indicator (Goedkoop 2004).

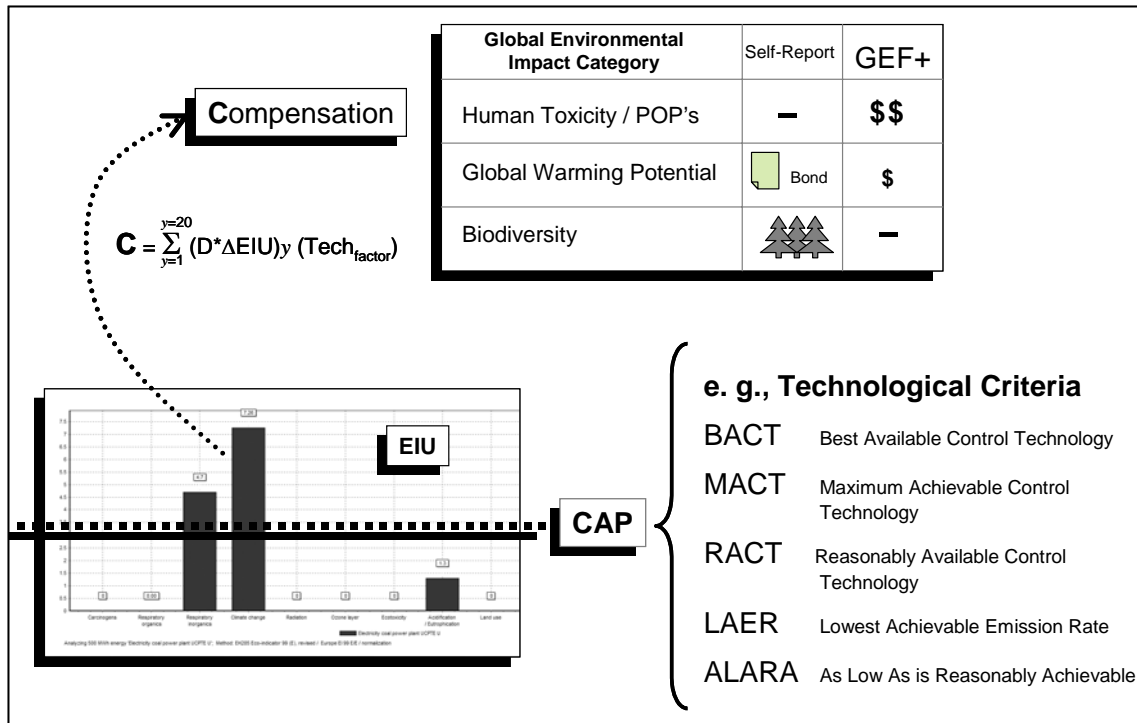
These indicators or units can be read in financial analysis as externality "adders" and can be used as discount rates in the cash-flow calculations of a project. For example, because there is substantial progress in estimating the monetary value of the public health and global warming externalities of energy systems (Pearce 2001), it is possible to apply a premium rate over the time period of any such international project if its emissions are below a maximum limit or cap established by UNEP.

Pursuing a zero environmental impact level in international projects, UNEP could progressively define a cap by applying different technological criteria, such as BACT-NEEC

(Best Available Control Technology-Not Entailing Excessive Cost), ALARA (As Low As is Reasonably Achievable), or other criteria currently used in the European Community or the US Environmental Protection Agency. Continuing with the example of the energy system, the BACT criteria applied to a power plant project in the next two decades would imply the selection of zero emissions technologies such as Integrated Gasification Gas Combined Cycle (IGCC) power plants or others now under research and development in the FutureGen initiative of the US government. The ALARA criteria could lead us to the application of Natural Gas Combined Cycle (NGCC) power plants without carbon capture and sequestration. The technological premium rate of the latter would be lower than the ZEI alternative.

If the project produced environmental impact units in the Global Warming category above the cap established by the UNEP (Figure 3), the owners must pay an environmental impact

Figure 3. LCA Compensation Scheme



compensation (**C**), according to the amount of its loan or debt (**D**) with the WBG, the exceeded (ΔEIU), the number of years of the loan (**y**), and its specific technological premium rate (**Techfactor**). The following theoretical formula could be an example:

$$C = \sum_{y=1}^{y=20} (D * \Delta EIU)_y (Tech_{factor})$$

A good numerical example of this procedure is the methodology currently applied by the Swiss Association for Environmental Sound Electricity (VUE) to certify “green electricity.” Using an LCA approach, the VUE established a threshold limit for existing plants equal to 50 percent of the environmental impact in Eco-Indicator 99 (Hierarchist version) micro-points of a NGCC power plant. Then, the cap was set as 13,950 EI99(H) micro-points/kWh. In comparison, a conventional coal-fired power plant in Europe has 28,000 points and wind energy farms have an average of 5,350 points (Jungbluth 2000).

Despite other global pollutants that can be estimated in a life-cycle assessment in this type of facility, a NGCC plant in the US produces an average of 622 grams of CO_{2e}/kWh of greenhouse gases (Meier 2002). Taking 50 percent of the exceeded amount of GHG for a 1,000 MWh power plant, the economic compensation **C** would be approximately €2.2 million in carbon bonds valued in the European market at February 2005 prices.

If the World Bank finances the power plant in a developing country (non-Annex I in the UNFCCC⁸) it can request every year a proportional part of that compensation to feed the GEF or ask for a guarantee of the future purchase of the bonds in the market in order to authorize the loan accordingly with the amount of debt **D** acquired with them. The calculation of the compensation would consider a technological premium rate **Techfactor** of 1.0 considering that the NGCC plant is in this example the benchmark. For a wind energy plant the **Techfactor** could be 0.38 as the BACT alternative and 2.0 for the business-as-usual coal option.

In this scheme, compensation for environmental impacts will have an economic value that must be used to address the global environmental and health damages created by the project. Discounting the proportional allocation for local environmental impacts, the compensation can be paid directly every year during the repayment period of the loan to the WBG to increase the amount of funds of the Global Environmental Facility. In the energy production example, compensation for acidification/eutrophication, ecotoxicity, and other LCA categories can also be discounted from the project if the project is improved with remediation and restoration actions.

There are many economic valuation uncertainties about, for example, the real cost of endemic species affected by a project, the value of a human life-year lost, or the future value of unexploited natural resources depleted due to the marginal ton of greenhouse gases emitted by a power plant. Uncertainty is intrinsic to decision making and could be managed statistically as risk or sensitivity, in the same way the financial system deals with sovereignty risk in project financing or in the stock market.

The environmental compensations and the financial costs associated with them may also be distributed among the different phases and participants of the project, from exploration to long-term operation and decommissioning. It is important to link and constrain those compensations to the financial structure of the project and to the loan and guarantees provided by the WBG. The compensations can have country tags, for example, if a project's impacts affect local ecosystems with globally regulated pollutants (e.g., persistent organic pollutants or POPs). For climate change, ozone layer depletion, or unquestionably global environmental issues untagged compensations are preferable and can be distributed homogeneously among the different projects supported by GEF.

The ZEI Treaty

It is true that “the North-South conflict will not be resolved by doling out additional money or making new technologies available on favorable terms” (Susskind 1997). New pragmatic mechanisms must emerge from the financial sector to internalize in each project its environmental costs from “cradle to grave.”

To be consistent with the principles of the Rio Declaration and with the sustainable development policies of the most important international lending institutions, public international funds cannot be used anymore in projects that will increase global environmental burdens. This statement has to be formally accepted by all the countries of the United Nations system or at least by the country members of the WBG, thus establishing a new international environmental regime.

It is unacceptable that TNCs export low technology solutions to developing countries by unregulated means when they are applying and requiring ISO14000 standards in their home country operations, including those involving foreign providers and business partners. They are taking advantage of, and gleaning profits from, both local advantages (e.g., lower air pollution emission standards in developing countries) and global open markets and financial resources. A full environmental compensation mechanism must be devised to alleviate, in a reasonable period of time and proportion, all negative and global impacts caused by international infrastructure and economic development projects.

The main objective of the ZEI initiative is to create a global mechanism, market-oriented and voluntary, to make sure that international funds are being applied to promote sustainable projects. The mechanism should offset the resistance of northern countries to adopt the principle of additionality and to face global environmental issues in developing countries (Najam 2004).

The effectiveness of the treaty will pivot on one condition: International funds from the WBG should be loaned only for ZEI projects or projects with full environmental impact compensations. The time frame for the application of this condition can vary from one LCA environmental impact category to another. Also, UNEP cap limits can be scheduled to allow the development and application of new technologies in the environmental impact categories with less technological development, such as ecotoxicity or biodiversity depletion (Table 1).

This core financial mechanism of the ZEI Treaty is voluntary because there is no mandate to use WBG funds in any project in any country. It is technological and market-oriented because it allocates public international funds to support sustainable projects at the frontier of knowledge and innovation and to promote competitiveness among TNCs. It is flexible because compensations can be made through emissions-trading regimes, direct payment, or with remediation actions included as part of the project.

Treaty-Making Process

This treaty can be initiated by the UN in coordination with the World Bank Group and the International Monetary Fund. This is appropriate because the mission of the WBG is to

fight poverty and improve the living standards of people in the developing world and its millennium development goal is to ensure environmental sustainability.

The design of a new EA procedure for the WBG that would include LCA tools requires a series of technical meetings and high-level political negotiations. The approval of the main conditionality of the treaty and its financial mechanism requires a UNEP summit that would engage all the industrialized countries and developing countries in the ZEI initiative that are currently financing unsustainable projects with international loans.

Financial Caucus Negotiation Phase

The design the EA/LCA procedure will require a financial caucus negotiation phase (Figure 4). The WBG, the IMF, and many of the RDBs have similar and linked structures. The five countries with the largest number of shares in the first two institutions will lead the caucus. As was mentioned before, the five countries are: USA, Japan, Germany, France, and UK. If they approve the principles, procedures, and financial mechanism of the ZEI initiative, the other developed and the developing countries will be more willing to negotiate the terms and conditionality of the initiative. The WBG will need a mandate from its Board of Directors to incorporate the components of the ZEI initiative in its daily financial operations.

UNEP, assisted by the scientific groups (Sc) involved in the UNU/ZEF and UNEP/LCA programs, may start the technical negotiations by calling for a series of regional and global LCA seminars. The main seminar task will be the preparation of a technical proposal for a comprehensive and global LCA methodology, focusing on the normalization and weighting steps, especially the regional monetization of global environmental damages (Baumann 2004). All the environmental agencies and technical divisions of the stakeholders in the future ZEI treaty must be invited.

The international scientific community involved in the LCA initiative supported since 1999 by UNEP must take part in the meetings to give advice and provide evidence of environmental threats. This scientific group and the International Organization for Standardization ISO may also help UNEP define the cap limits to calculate the compensation values. It is important to mention that the **Techfactor** will have to be adjusted periodically to reflect both more stringent environmental policies as they are adopted in the recipient countries and the cost-benefit or cost-effectiveness of technological innovations.

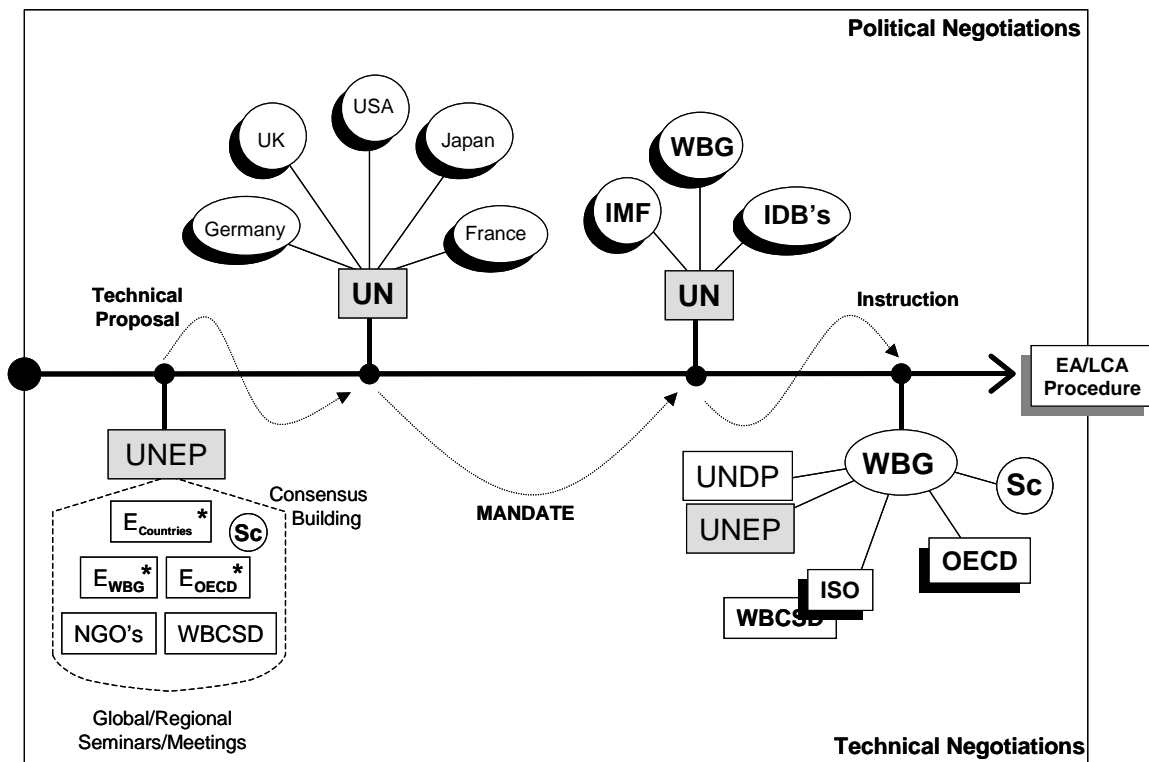
In this first technical step, representatives of the environmental ministries from the transitional and developing countries would raise their concerns about the ZEI initiative. In fact, the cap mechanism of the treaty could increase the cost of the loans and its conditionality could limit the type of the projects the WBG could finance. However, the LCA approach should improve the allocation of the costs of the environmental components among the participants in the international projects by internalizing the cost of environment protection measurements and reducing the financial burdens for the developing countries. Also, the conditionality of the ZEI treaty will improve competitiveness in the clean production markets and will accelerate the application of new technologies, lowering their cost in the global market.

The main opposition to the ZEI initiative will come from the heavy industries (e.g., oil, chemical, or cement companies) and from some transitional and developing countries with important amounts of unexploited oil and mineral resources. These countries include Russia, China, and India which have high economic growth rates, are rapidly building their industrial infrastructure, or have country clients and partners without stringent environmental regulations (e.g., the partnership between Iran and Russia in support of Iran’s nuclear power generation plan). Nevertheless, those industries and countries cannot block the preparation of the technical proposal in this step and they do not have enough voting power in the WBG to create a boycott of the initiative.

After the technical proposal is ready, the president of the UN General Assembly and the executive director of UNEP will lead the negotiation among the five dominant countries, maintaining conversations with the heads of the state and their relevant ministers. Because the WBG has a diffuse governance structure (Gutner 2002) a top-down procedure will be required to move the internal machinery of the WBG. The first caucus should include the presidents and Board of Directors of the WBG, the IMF, and the most important RDBs (Latin America, Asia, Africa, and Europe). In all likelihood, the appointed directors of the five dominant countries receive a mandate from their respective governments to negotiate the ZEI initiative inside the Board of Directors and the Board of Governors of the WBG.

The next step will be the direct instruction of those boards to the WBG and the GEF staff to redefine the EA guideline (OP/BP 4.01) and produce a new set of EA/LCA procedures in the following sectoral areas of the group: energy and mining, transportation, agriculture, industry and trade, water, sanitation and flood protection, and environment and natural resources.

Figure 4. Caucus Negotiation Phase

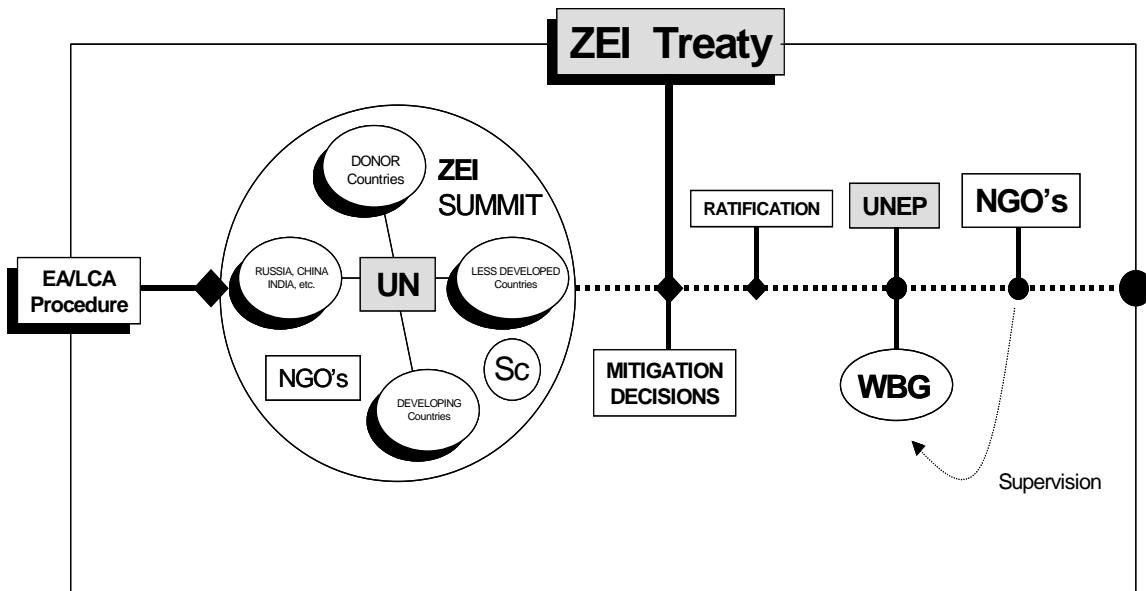


* Environmental Ministries and Divisions

Treaty Negotiation and Application Phase

An international summit could be designed to present and initiate the negotiation process of the treaty among the member countries of the UN system and the WBG. The ZEI summit must be convened by the UN to present a draft of the treaty, prepared with the principles, conditionality, and financial mechanism of the ZEI initiative and the EA/LCA procedures proposed by the WBG to the financial community (Figure 5).

Figure 5. Treaty Negotiation and Application Phase



The main objectives of the summit will be to define the criteria to set the cap limits for each global environmental impact categories, to validate the monetization values of the EA/LCA procedure, and to approve compensation procedures through the GEF. In the North-South conflict for additional economic resources, the compensation mechanism of the ZEI treaty must be viewed and designed as a fair tradeoff between the parties involved in international projects. Any scheme to address global environmental problems must deal with issues of “free riders” and asymmetric regimes (Zartmann 1996).

The international negotiation of the ZEI treaty may take many years; however, the financial caucus negotiation should catalyze the process. The industrialized countries with their TNCs will assume a major portion of the costs of the global environmental externalities, internalizing those expenditures in the financial structure of the projects before a WBG loan is accepted by a developing countries. The ZEI treaty will not generate important amounts of additional money to help the countries of the South; the main contribution of the treaty is moral: Its mechanisms are designed to enable developing countries to share in the efficiency gains realized by the TNCs in the commercial application of new sustainable production technologies. It is an intrinsic and definitive change in the rules of the WBG. From this perspective, the developing countries should have no serious objections to the ZEI initiative.

The participation of NGOs trusted by all parties is crucial to the operational phase of the treaty; these independent institutions will supervise the compensation mechanism. They will oversee WBG loans and the application of the funds deposited in the GEF following the ratification of the ZEI treaty.

Conclusions

Several scenarios and results spun off by the application of the ZEI treaty may be predicted:

1. Governments of developing countries will reduce the common practice of either not issuing new environmental standards or lowering environmental regulations to attract foreign investments. They will have the option of international ECAs credits. Further financial and political pressure will be imposed upon them by citizens who care about the environment.
2. The financial support and guarantees of the WBG will motivate TNCs to accelerate the application of zero environmental impact technologies and to invest more in R&D programs aimed at new markets for these technologies.
3. The WBG will improve its environmental assessment procedure and reduce its portfolio of projects with negative environmental impacts while increasing the funds available for sustainable projects.
4. The cost of new zero environmental impact technologies will fall and the transfer of clean technologies from the North to the South will increase.
5. International public funds will no longer be used for environmentally dubious projects that bring political pressure and criticism the WBG and the TNCs.
6. Regional and international lending institutions as well as ECAs will adopt and improve the EA/LCA procedure of the WBG in the medium term.

The WBG and UNEP have leading discussion and initiative in many environmental areas. However, they have failed to introduce environmental considerations into the mainstream of the global economic and financial policies. The ZEI treaty and its full environmental compensation mechanism for international projects place sustainability issues at the core of these policies. The proposal is a necessary and definitive step in the development of the sustainable development agenda of the UN system.

Notes

¹ RDBs are the Inter-American Development Bank, the African Development Bank, the Asian Development Bank, the European Bank for Reconstruction and Development, the Caribbean Development Bank, etc.

² Elaborated with information from The World Bank Group web site (<http://www.worldbank.org>) retrieved on November, 2004.

³ Not all the projects financed by the WBG need an EA. The WBG uses the following three categories to signal the appropriate level of EA for any given project accordingly with

its environmental impacts: **Category A:** A full EA is needed, including public disclosure and public consultation. **Category B:** EA is required, but its scope corresponds to the limited environmental impacts of the project. **Category C:** No EA is required.

4. OECD, 2004. Compendium of Patent Statistics.

⁵. Patents all applied for at the EPO, USP TO and JPO. 1999 and 2000 figures are estimates.

⁶. Gross domestic expenditure on R&D (GERD) financed by industry, million 1995 USD using purchasing power parities (average over the period 1990-1999).

⁷. The United Nations University Zero Emissions Forum (UNU/ZEF) is under the direction of Prof. Motoyuki Suzuki, Special Programme Adviser of the UNU. ZEF Japan forms a subdivision of UNU/ZEF, and is a Japanese network dedicated to promoting Zero Emissions. Dr. Hiroyuki Fujimura, also Honorary Chairman of Ebara Corporation, chairs ZEF Japan. Both are based in UNU headquarters in Tokyo.

⁸. Non-Annex I countries are those signatories of the United Nations Framework Convention on Climate Change (UNFCCC) without target commitments to reduce their greenhouse gases emissions.

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