



The Macroeconomic Connection: Monetary and Fiscal Policies for Sustainability in Latin America

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INTRODUCTION

The driving forces that put pressure on the environment and the natural resource base are under the influence of macroeconomic policies. Monetary and fiscal policies, for example, determine growth rates and the direction of structural changes in every economy. These economic policies condition the actions of all economic agents, from the largest corporations, to the smallest household. They help shape decisions about technology choice and resource management at the micro level. This is why the importance of macroeconomic policies on environmental stewardship and in shaping environmental change cannot be ignored.

Even the International Monetary Fund recognizes that macroeconomic policies are critical in deterring or avoiding patterns of growth that damage the environment.¹ The Stern Review on the Economics of Climate Change (www.hm-treasury.gov.uk) provides yet another example of how macroeconomic policies are receiving more attention in environmental debate.² Yet, little research has been done on the precise ways and transmission mechanisms through which these policies affect the environment. It is possible that this lack of attention arises from the fact that the transmission mechanisms don't always appear to be clearly identified. Also, the chain of events linking macroeconomic policies to their impacts on the environment may appear to be long. Typically, only the proximate causes of the environmental damage are seen (for example, slow investment rates that prevent clean technologies from being introduced or social

¹ See Factsheet, September 2005 (www.imf.org).

² Chapter III on "The Economics of Stabilization" discusses the effect of the discount rate on mitigation costs. The analysis in this chapter has attracted strong criticism by economists arguing the discount rate is very low and this biases the conclusion in favor of heavier investments in mitigation today (see Nordhaus, William. (2006), "The Stern Review on the Economics of Climate Change", <http://nordhaus.econ.yale.edu/SternReviewD2.pdf>; and Dasgupta, Partha (2006), "Comments on the Stern Review's Economics of Climate Change", <http://www.econ.cam.ac.uk/faculty/dasgupta/STERN.pdf>). The interesting point that emerges from this critique is that discount factors are affected by the interest rate and thus monetary policies are a critical component of the debate.

marginalization and poverty that may lead to the destruction of traditional production systems), while the ultimate causes (tight monetary and fiscal policies causing slow growth and inequality) are seldom considered. Another possible explanation for this lack of attention is the state of flux in which macroeconomic theory finds itself today, making it difficult for applied economists to rely on solid theoretical references.

It is ironic that although the environmental implications of trade agreements and trade flows have been recognized as critical for the environment, there has been a general failure to acknowledge that trade liberalization is only part of a more general policy package. Monetary and fiscal policies, as well as financial deregulation and openness to capital flows, together with exchange rate and credit regulations, are the pillars of this policy mix, and together they define an open economy model. In spite of this, the importance of this policy package for environmental stewardship has not been adequately addressed. This project aims to redress this state of affairs by analyzing the main issues in the intersection between macroeconomics and the environment.³

This groundbreaking action-oriented research will concentrate on macroeconomic policies in five Latin American countries: Argentina, Brazil, Costa Rica, Ecuador and Mexico. This group of countries provides in itself a mosaic of environmental problems and issues that is highly relevant to IUCN's mandate: from illegal and industrial logging practiced under unsustainable resource management patterns, deforestation and loss of biodiversity, overuse of aquifers, soil erosion and loss of fertility, to over exploitation of fisheries and irresponsible activities in the extractive industries. Some of the problems present in the region have world wide repercussions (witness the effects of deforestation in the Amazon River basin on global climate change). Three of the five countries in this project are megadiverse (given their share of the

³ The importance of macroeconomic policies for the environment has been partially addressed through studies on the effects of stabilization and structural adjustment policies (see for example the work of WWF Macroeconomics Program Office). But these studies have centered on poverty alleviation and have not analyzed monetary and fiscal policies, for example, and their impact on the environment. In the realm of finance for environment, there are several important studies on the performance of debt for nature swaps. These operations touch upon macroeconomic issues as the discount factors utilized may affect a country's credit rating and costs of sovereign borrowing. However, once again the role of macroeconomic policies has not been addressed in these studies. Another example of how the environment and macroeconomic policies are related is provided by cases of the so-called 'Dutch disease' in which exchange rates and the trade balance are affected by the inflow of foreign currency as a result of discoveries of natural resources (the term arose as a reference to the decline of manufacturing industries in The Netherlands as a consequence of exchange rate appreciation after the discoveries of the North Sea oil fields in the late sixties). Finally, several theoretical constructs on environmental and ecological economics also relate to macroeconomic aggregates (for example, Robert Costanza and Charles Perrings have developed aggregate models of natural resource management). Economic aggregates are also present in constructs such as the environmental Kuznets curve (EKC) dealing with environmental degradation in relation to per capita income. However, the role of macroeconomic policies in managing aggregate variables has remained largely unattended.

world's surface they host a significant percentage of the world's species): Brazil, Ecuador and Mexico.⁴ This project will be the first to examine how economic policies at the macro level are affecting conservation efforts in the context of megadiversity. Thus, the project also touches upon one of the most pressing problems of our times, namely the mass extinction that is being driven by (among other causes) loss of natural habitats.

Furthermore, these countries involve different approaches to macroeconomic policies and diverse patterns of integration in the world economy. Argentina has had a certain amount of success in redefining its macroeconomic posture after the severe crisis of 2001, while Ecuador is currently struggling to find an alternative development strategy. Brazil is a large, fast growing economy with well defined policies designed to provide endogenous technological capabilities in a wide spectrum of activities (from biotechnology and deep sea oil exploration to aerospace industries). Costa Rica is a small country that has been hailed as an example of environmental stewardship, but where potent economic forces have caused serious environmental damages. Mexico followed a strict open economy approach with strong trade liberalization and financial deregulation fifteen years ago, but GDP still grows at very slow rates. The country is experiencing rapid declines in proven oil reserves and reductions in migrants' remittances, two problems that will force drastic changes in macroeconomic policies. Brazil and Mexico will participate as invited guests in the G 8 + 5 summits in Heiligendamm, Germany (June 2007). Issues of natural resource governance are high on the agenda of this important summit.

This document has the following structure: the **first** section describes the general rationale of the project and provides more background information on its relevance today. The **second** section focuses on the objectives of the project. The **third** component describes briefly the structure of the project. The **fourth** part centers on the main lines of inquiry considered in this project. It also describes why these lines of inquiry are highly relevant in Latin America. The **fifth** section briefly discusses the methodology and phases of the work plan. The **sixth** section describes the main outputs and deliverables expected from the project; it also contains a description of the main outreach activities and how they are expected to strengthen IUCN's and CEESP's profile in the region. The **sixth** section describes the calendar of our work. The **seventh** and final section presents the general budget for the project.

⁴ Twelve countries harbor about 60%-70% of the world's living species: Australia, Brazil, China, Colombia, Democratic Republic of Congo, Ecuador, India, Indonesia, Madagascar, Malaysia, Mexico and Peru.

BACKGROUND AND RATIONALE

Macroeconomic policy comprises monetary and fiscal policies, exchange rate regulations, credit and financial markets regulations, balance of payments measures (including the deregulation of the capital account), and in some instances, policies that regulate wages (and the wage norm). Also, the development of interdependent financial markets has made capital mobility and the reversal of capital flows a crucial frame of reference of macroeconomic policy.⁵ Thus, through changes in the money supply, the prime or inter-bank interest rate, the wage norm, exchange rates, fiscal revenues and public expenditures, macroeconomic policies determine the dynamics of aggregate consumption and investment, economic activity, the general price level, employment, productivity, production strategies and choice of technology, and, of course, resource management practices of all economic agents.

Macroeconomic policy impacts on the environment take place through a complex but effective process. Consequences for logging, mining, oil and gas industries, as well as fisheries are particularly important because these activities are close to the natural resource base and their activities impinge directly on the integrity of ecosystems. In addition, when these sectors are dominated by State-owned firms, their role in providing non-tax fiscal revenues (as well as in bridging the currency gap) is a potent driving force behind changes in technology and usage rates that can make all the difference between adequate environmental stewardship and deterioration of resources. In the case of manufacturing industries and the transportation sector, macroeconomic policies also have serious implications for emissions' mitigation and abatement, thus bringing new implications for the debate on global climate change.⁶

In addition, macroeconomic policies also have important repercussions on many sectors and dimensions of the environment that rely on public funding to fulfill their objectives. An important example is the case of natural protected areas, biosphere reserves and funds for environmental remediation, monitoring and conservation. In many countries, natural protected areas are a fundamental policy instrument for biodiversity conservation, but in times of fiscal

⁵ The collapse of the Bretton Woods system brought about significant variations in exchange rates as a matter of routine and new opportunities for profits in the financial sphere. Because trading in international markets involved new risks and portfolio diversification required free capital mobility, deregulation of international capital flows became necessary. Today, the expansion of the financial sector (especially in the world's currency markets) dwarfs the value of trade flows. The importance of portfolio investments is a key trait of the global economy today and their impact on people's livelihoods and productive strategies has been recognized. Unfortunately, the connection with the environment has not been adequately studied.

⁶ Aguayo, Francisco (2005), "Stepping off the Hydrocarbons Regime: the Challenge of Technological Transition for Latin America", *Proceedings of IPCC Expert Meeting on Industrial Technology Development, Transfer and Diffusion*, IPCC-Working Group III, Technical Support Unit, Bilthoven, The Netherlands. Professor Aguayo is with the Science, Technology and Development Program (El Colegio de México).

constraints, typically they occupy a secondary role and the required funding is not available. In addition, agricultural policies are negatively affected by the same curtailment of fiscal expenditures. For example, income deficiency payments (accepted by the Uruguay Round Agreement on Agriculture and now by the World Trade Organization and critical components of trade liberalization) respond to the rationale of fiscal policy rather than to the objectives of free trade. Their evolution in real value terms depends on the priorities of fiscal policies; if fiscal revenues are insufficient to generate a primary surplus, fiscal authorities may allow these income deficiency payments to fall behind inflation and thus, drop in real terms. This will put extra pressure on natural protected areas surrounded by localities with high social marginalization.

In a sense, macroeconomic policies embody a sort of “implicit environmental policy” that frequently contradicts the objectives of explicit policies for the environment. This is why lack of attention to macroeconomic policies can and will undermine efforts at understanding the root causes of environmental degradation. It also weakens our ability to orient policy-making in directions more consistent with the World Conservation Union’s mandate and more generally with the needs of sustainable development in general. This 3I-C proposal is designed to fill this gap and to launch a new set of initiatives that will advance healthy environmental stewardship through sound macroeconomic policies.

The 3I-C Fund is a mechanism to help IUCN adapt to a changing world and guide the course of future programmatic work. The Fund is designed to catalyze innovation, promote integration, generate information and stimulate communication. This project meets all of the criteria of the 3I-C Fund. It aims to fill an important gap by innovating in the way IUCN deals with macroeconomic policy making and its relevance to the Union’s mandate. It will promote integration and new partnerships between CEESP, the regional offices in Latin America and the Secretariat through the office of the Senior Economic Advisor. The project will generate valuable new information on the policy packages that shape the economic forces behind environmental degradation in a critical region in the world. The relevance of this analysis for other regions in the world is an important contribution that can strengthen the role of IUCN in debates on global environmental governance. Finally, the project will stimulate communication within IUCN and with other stakeholders by opening new spaces for debate and collective thinking about macroeconomic policy making and the future of humankind.⁷

⁷ It is important to note that the core innovative component of this project is mostly overlooked in the agenda of the World Conservation Union. Although in several instances the Union’s mandate is directly concerned with

OBJECTIVES

The project's objectives are the following:

First, to identify and analyze the effects of macroeconomic policies on various environmental dimensions such as biodiversity, forests, aquifers, soils, genetic resources, atmospheric pollution, solid waste and toxic waste management, etc. The scope of this project covers monetary, fiscal, credit, exchange rate policies, as well as current account liberalization and financial deregulation, as well as instruments to control wages and effective demand.

Second, to examine how macroeconomic policies constrain or strengthen environmental policies. This will be done in relation to policies that relate to the different environmental dimensions mentioned in the previous point (particularly important will be the analysis of effects on policies related to natural protected areas and biosphere reserves).

Third, to examine ways and means to improve green national accounts and their role in macroeconomic policy-making. The project will place special emphasis on the analysis of how macroeconomic policies with predominantly short term priorities (like price stabilization) can be redesigned to take into account the signals of green national accounts.

Fourth, to strengthen the role of the World Conservation Union in engaging a more meaningful dialogue with multilateral economic institutions and international development agencies, such as the International Monetary Fund, the World Bank Group and the Basle Committee on Banking Supervision, in defining new pathways to make macroeconomic policies harmonious with the objectives of sustainable development.⁸ It will also help advance IUCN's presence in Latin America in general, and especially in the five countries participating in the project. The project will also contribute to promote the presence of CEESP in the region and enhance its influence. Every country team will be expected to organize a seminar that will help disseminate the results of the analysis and establish contact with policy makers and organizations that will directly benefit from the results of our research.

economic aggregates, references to macroeconomic policies and transmission mechanisms are basically absent in IUCN's action programs. This project is a contribution to redress this situation as it is designed to provide critical inputs for future policy work and to the draft 2009-2012 program. It may also help address some of the issues raised by the *The Future of Sustainability* initiative.

⁸ The International Monetary Fund already recognizes there are important links between the IMF's core macroeconomic responsibilities and the environment. This project will provide an opportunity for IUCN to take this one step further and establish the groundwork for closer cooperation with the IMF.

We expect that this initiative will stimulate communications within IUCN and with the policy-making community about environmentally-friendly macroeconomic policies and national accounting systems that can serve as a reference for sustainable development strategies. These objectives dovetail with the overall workplan of TEMTI, as well as with the work on valuation of environmental services of IUCN's Senior Economic Advisor.

STRUCTURE OF THE PROJECT

This project will be carried out by research teams in five Latin American countries: Argentina, Brazil, Costa Rica, Ecuador and Mexico. We expect the five country teams to tackle most, if not all, of the lines of inquiry that are described in the following section. These lines of inquiry are intended to provide a general framework for our analysis and to ensure that we will be able to identify regional trends and carry out meaningful comparisons. However, the project will not impose the same rigid research agenda on every country team. Rather, each team will strive to go beyond this list of research priorities and identify other issues that may be country specific. The Chair of TEMTI and members of the Steering Committee will consult on a regular basis with every team in order to provide assistance and advice on how to proceed with our analysis.

The country lead investigators are the following:

1. Argentina: Alan Cibils (Centro Interdisciplinario para el Estudio de Políticas Públicas, Buenos Aires; affiliated to the Center for Economic and Policy Research, CEPR, Washington D.C.)
2. Brazil: Sergio Schlesinger (FAASE, Rio de Janeiro)
3. Costa Rica: Carlos Murillo R. (Universidad de Costa Rica, former Vice Minister of International Trade)
4. Ecuador: Pablo Samaniego, SUR-IUCN
5. Mexico: Marcos Chávez M. (Science, Technology and Development Program, El Colegio de México, Mexico City)

The project's principal investigator and project supervisor is Alejandro Nadal, chair of TEMTI and full professor at El Colegio de México in Mexico City. He is responsible for monitoring and supervising the country level studies, providing advice and guidance to the research teams in each country. Also, he will produce a comprehensive literature review and analytical survey on the relation between macroeconomics and sustainability, a synthesis report with the comparative analysis of the whole enterprise and several dissemination reports.

We expect to have at the end of the project a series of five country level analyses. Besides supervising the research, the Chair of TEMTI will also prepare a synthesis report based on the main findings of the country level analyses. The five country teams will meet in Quito at the beginning of the project to discuss the general framework of our research, the lines of inquiry, methodology and outreach strategy. Towards the end of the project's lifetime, the country teams will once again meet in Quito to present the project's main results. We will strive to obtain funding to carry out this second conference towards the end of the project to present the main findings and discuss results with policy makers, colleagues from academia, and, above all, with representatives from conservation and grass roots organizations already associated with IUCN or interested in our work. An advance of the final project report and policy recommendations will be ready to be presented at the World Conservation Congress in Barcelona in October 2008.

LINES OF INQUIRY

One of the project's starting points is that macroeconomic policies vary between countries because there is no "one-size fits all" policy package. Thus, the project does not have a centralized and rigid framework for research by the five country teams. The list of lines of inquiry provided here should be seen as a reference that needs to be checked by every country team, as well as the author of the synthesis report.

1. Economic baseline: The first task is to identify the baseline conditions of the economic structures in the five countries: per capita GDP, growth or stagnation, sector composition of GDP (fast and slow growth sectors), inflation, real interest rates, balance of payments, public and private debt, foreign direct investment and portfolio investments, aggregate employment and by sectors, income distribution, poverty, etc. Each team will strive to identify trends in the main economic indicators (both at the aggregate level, as well as in the structural components of aggregate accounts at the sector level). The key trends in national accounts will be analyzed: investment, savings and consumption. The teams will also identify the key indicators in macroeconomic policies: evolution of money supply (including M3), interest rates, financial intermediation, fiscal revenues (tax and non tax), public spending.

2. Environmental baseline: The study will also take into consideration how the five countries' main environmental problems have evolved during the past decade. This will be done through the revision of specialized literature and official agencies' assessments of trends in each country: deforestation, depletion of natural resources (oil, fisheries, etc.), pollution, soil

erosion, overexploitation of aquifers, etc. Also, the teams will identify the main environmental policies in each country and the remedial actions that are being undertaken to redress environmental degradation. Each team will identify trends rather than focus on a static picture of environmental conditions.

3. Crisis and recovery: The study will examine the origins and nature of the crises that have afflicted each economy in the recent past, as well as the ensuing adjustment and recovery programs. Almost all of the five countries have experienced financial and economic crises in the recent past. The most severe were perhaps the crises in Argentina (2001), Ecuador (1999) and Mexico (1994-1995). Brazil also experienced a severe financial crisis in 1997. These crises led to very stringent recessive stabilization policies which left in their wake a great number of bankruptcies and unemployment, at precisely the same time that interest rates were skyrocketing and inflation became runaway phenomena. This had ripple effects on the entire economy, as households had to default on their debts and the non-performing loans of banks augmented, leading in some cases to a systemic crisis of the banking sector. Unemployment and poverty worsened with severe negative impacts on natural resource management at various levels.⁹

4. Monetary policy: each team will identify the strategic objectives of monetary policies. It is expected that in all five countries, the main objective of monetary policy changed during the past twenty five years and moved from full employment (and growth) to stabilizing the general price level (control of inflation). Thus, tight monetary policies have been the norm for almost two decades in most of the region. Within this general pattern, the five countries selected for this study offer a wide spectrum of monetary experiences (including severe crises) over the past twenty years. Today, there are important recent changes in Argentina and, to a lesser extent, in Brazil. The situation in Ecuador is rapidly evolving to a new monetary policy stance (after undergoing some of the changes that Argentina has experienced). Mexico stands by its firm commitment to a rather orthodox monetary policy. Some of the changes respond directly to questions of financial deregulation and capital flows, a point to which we turn below. Country teams will consider the following items: money supply and credit, GDP evolution and

⁹ Our own research has documented some of the linkages of this adjustment policies with increased environmental stress. Some examples are the following: a) in the agricultural sector agents may have to put more pressure on their land and water resources in response to income reductions; b) in the public sector, State-owned firms are subordinated to the dictates of the ministry of finance as tax revenues fall (due to the economic slowdown) and servicing the public debt becomes a priority and new financial requirements arise (bailouts of the banking system); c) fiscal policy is redirected to generating a primary surplus to cover financial charges, with resulting cuts in public expenditures for all real sectors of the economy.

inflation, real interest rates, investment (non residential net fixed capital formation), unemployment, effects on real wages, etc. The main effort here is to unravel the transmission mechanisms leading from changes in monetary policy and affecting the real sectors of the economy, and then examining the environmental implications. One hypothesis that needs to be examined relates to the effects on investment in capital intensive large scale infrastructure projects and in the extractive industries, where environmental impacts are important. Choice of technology is critical in these large projects (transition to alternative technologies will take a long period of time) because of long maturity periods. Interest rates are important determinants of the present value of expected returns and may introduce important biases in choice of technology.

5. Deregulation of the capital account of the balance of payments: capital flows and their effects. The open economy model is not only related to trade liberalization, but more importantly, to financial deregulation. Once the main components of the capital account are deregulated, capital mobility becomes a reality, with funds freely investing in banks and non-bank financial institutions (securities, insurance, franchises, etc.). The flow of portfolio investments has important repercussions on monetary policies and on exchange rate policies. As soon as the capital account is opened, the ability to pursue an independent monetary policy (in the sense of using interest rates and the money supply in a counter-cyclical mode if so desired) is compromised. Interest rates will respond more to the need of stabilizing portfolio investments than to growth, aggregate demand and employment considerations. On the other hand, exchange rates will respond more to the needs of capital flows and free convertibility will be accompanied with stability in currency parity (exchange rates cease to be critical instrument to redress trade imbalances). We already know that these forces affect growth, investment and employment, but we need to examine how they also affect resource management strategies.

Financial liberalization has important implications for monetary policy. Some of these implications affect the consistency between policy instruments. For example, capital flows affect the money supply and need to be sterilized if a tight monetary policy is to be maintained. On the downside of this, sterilization can be costly and it also implies that interest rates are prevented from falling, preventing the adjustment mechanism of the open economy model to operate (capital inflows are maintained with potential disastrous effects on the exchange rate). The research will examine the costs of sterilization, the policy alternatives and the effects on resource management and the environment.

An important point to be developed pertains to continuing trends to further deregulate the banking and financial sector (a line of inquiry to which we return below). The project will analyze how these trends can be made compatible with social responsibility and environmental sustainability. In order to proceed towards the design of a healthier regulatory framework, the project will consider how the Basle Committee for Banking Supervision (part of the Bank for International Settlements) can extend and develop further its concern with the social and environmental complexities of project finance.¹⁰ Its Policy Development Group (charged with the task of identifying and reviewing emerging supervisory issues and developing policies that promote a sound banking system and high supervisory standards) may provide a solid foundation to consider social responsibility and environmental sustainability as pressing emerging supervisory issues.

6. Exchange rate policy and inflation: Typically, efforts to control inflation in Latin America have relied on exchange rate overvaluations which have led in the recent past to important imbalances and in some cases, to crises in the external accounts. When exchange rates are adjusted (through sudden and significant devaluations), inflation has increased dramatically. The project will explore how exchange rate policies conditioned by capital account deregulation affect resource management decision making as well as technology choice and investments in activities such as agriculture and livestock, as well as in industries close to the natural resource base (such as mining, oil and gas, pulp and paper, logging, etc.).

7. Deregulation of the financial and banking system: In most Latin American countries deregulation of the banking system has implied changes in capital reserves and other elements of prudential financial management. This is important because banking is an activity with very high financial leverage. Liberalizing capital reserve conditions has led in the past to systemic failures of the banking system during times of crisis and to costly bail out schemes that affect the composition of fiscal expenditures. Deregulation has also led to high costs of financial intermediation and banking services costs. Finally, this has also been associated to the elimination of compulsory rules and guidelines for the allocation of loans at the sector level. All of this has created in some cases a strong bias in favor of speculative investments in

¹⁰ In so-called project finance the lender considers the revenues generated by the project, both as the source of repayment and as security for the exposure. This type of financing typically involves large installations with strong environmental impacts, such as power plants, mines, chemical plants and large infrastructure projects. The borrower is usually an entity that is not permitted to perform functions other than developing, owning, and operating the installation. Thus, repayment depends primarily on the project's cash flow and on the collateral value of the project's assets.

detriment of productive allocations of capital. Also, at the sector level, credit for agriculture has been the first to suffer deep cuts, jeopardizing the ability of farmers to modernize and introduce environmentally friendly technologies. The project will examine how this is affecting environmental stewardship. Other effects potentially harmful to the environment are related to modes of financing large infrastructure projects, as well as large and capital intensive investments in extractive industries.

8. Fiscal policy (tax and non tax fiscal revenues): the aggregate tax burden in Latin American countries is low by international standards, so it is not surprising that expanding the tax base has become a priority for all Latin American economic authorities, but this has been carried out in a variety of ways. In some cases increased rates in income taxes for higher income brackets have been introduced, while in others the preferred mode of increasing tax revenues is through value added taxes notwithstanding the debate on the regressive nature of these taxes. This may have strong environmental implications because this affects income distribution and may put an undue weight on lower income strata. Already poverty and social marginalization is pervasive in Latin America, and regressive tax systems reinforce patterns of unequal income distribution. The structure of tax revenues is an important driver of environmental change as households (and firms) respond by adapting their pattern of technological change and resource management. The teams will analyze this relation between fiscal structure, poverty and environmental change. In addition, we will examine the impact of non-tax fiscal revenues on the environment. This line of inquiry has at least two important components. The first is related to impacts on inequality and poverty, as in the case of tax structures,

9. Fiscal policy (expenditures): Since the debt crisis of the eighties, most Latin American countries have implemented fiscal policies aimed at producing a primary surplus in order to generate resources to cover financial charges.¹¹ In the context of slow growth and uncertainty this has been done not through expanding the tax base and fiscal revenues, but by severe curtailments of public expenditures. This has affected key sectors such as health, education, housing, infrastructure and R&D capabilities. It has affected the capacity to invest in environmental conservation and remediation of damages (as witnessed by some countries' environmental national accounts, to which we return below). When this fiscal policy stance is

¹¹ The question of financial charges and their relation to the environment goes back to the debt crisis in the eighties. The issue of debt for environment swaps which was initially recognized as a tool to solve the debt crisis and improve environmental stewardship, was first recognized in the eighties. Today, the foreign public and private debt has adopted a different structure in most Latin American countries (creditors have changed), but the impact of the debt burden on the environment is stronger than ever.

coupled with a zero deficit goal for the entire economic balance (i.e., the primary account plus financial charges) in order to cover financial requirements of the public sector, tougher cuts in expenditures are introduced.

This effectively leads to a distortion of public spending as resources are diverted from the real sectors of the economy to the financial sector. From the perspective of environmental policies, resources that could be used to promote sustainable resource management practices, conservation and research are simply not available.¹² One important aspect of fiscal policy is the question of the so-called focused programs to combat poverty. As fiscal resources were diverted to service debt, programs to alleviate poverty became standard in many government budgets in Latin America. These programs have important repercussions on resource management schemes of poor people. Our research will also consider the effects of this on the environment and on environmental policies (for example, for biodiversity and protected areas, etc.). Finally, the question of subsidies needs to be tackled. As is well known, subsidies frequently have critical implications for the environment and resource usage rates. The project will analyze the most important forms of subsidies, their impacts on the environment and ways and means to replace them with other environmentally-friendly policy instruments.

10. Green national accounts: In many Latin American countries a system of green national accounts has already been set up and is being continuously improved.¹³ These green accounts consider the cost of environmental degradation and the depletion of natural resources. From this perspective, they may provide the foundations for a more realistic assessment of the future prospects of economic growth.¹⁴ The country teams will examine how these green national accounts are being developed and how they are being used, striving to identify ways and means to improve their accuracy and rigor. More important, the project will focus on a critical question: how can green national accounts be used by macroeconomics policies as a key

¹² It is ironic that in the late eighties, as projects involving debt for nature swaps were being implemented to free resources in debtor countries for conservation, fiscal policies were redirecting resources from conservation to pay financial charges.

¹³ It is well known that national income accounts (i.e., measures of GNP or GDP) fail to recognize the importance of environmental degradation and natural resource depletion. A country can deplete soil fertility or cut down its forests, making itself poorer and vulnerable, but that would still count as growth. Even activities engaged in cleaning up environmental pollution would enter national accounting as growth. Although many countries have now national income accounts that estimate the impact of environmental deterioration and natural asset depletion, these systems are still not a reference for long term development strategies. This project will examine how national environmental accounts are being implemented in the five countries, how they can be improved and how macroeconomic policies can be redefined to take into account the main indicators of these accounts.

¹⁴ Net national product (NNP) is defined as $NNP = GDP - FCC$, where FCC is fixed capital consumption. The ecological net national product (ENNP) is then obtained as follows: $ENNP = NNP - EC$, where EC stands for environmental costs. In some cases, a weak sustainability assumption is explicitly made.

reference for attaining goals of sustainability that are both environmentally friendly and socially responsible.

11. Policy recommendations: A final line of inquiry will focus on the relevant policy recommendations emanating from our analyses. These policy recommendations will cover the entire spectrum of macroeconomic policies. One key question that needs to be addressed pertains to the relation between national environmental plans and macroeconomic policies (as well as sector level development plans, notably in agriculture and the extractive industries). The country teams and the synthesis report will address the question of how to integrate sustainable development goals with macroeconomic policy objectives. The diverse time horizons involved in this will receive particular attention. Our analysis will also extract policy recommendations for the IMF, the World Bank and the Basle Committee for Banking Supervision.

METHODOLOGIES

This is ground breaking research and designing a unified methodology is a challenging task. Each country's macroeconomic posture may be different, and the relative importance of policy instruments will vary. In some cases, trends in fiscal expenditures may be critical, while in other countries, exchange rate policies may be the central component of their macroeconomic policies. Also, environmental problems can be region specific. For example, in one country deforestation may be the central issue, while genetic erosion may be the key environmental problem in another. This heterogeneity in our field of analysis explains why we need to deal with several different countries in this research. The project will look at countries that have different backgrounds in the evolution of macroeconomic policies, as well as different environmental histories. This will enable us to draw lessons about the effects of these policies on environmental sustainability.

Each country team will carry out a set of common tasks during the course of our research. The first step is to identify the main components of macroeconomic policies that appear to have repercussions on environmental stewardship. The second step will unravel the transmission mechanisms leading from these macroeconomic policies to different types of economic agents and environmental dimensions. The third step will be to link these macroeconomic policies with specific environmental impacts. These tasks need to be adapted to each country's specific conditions.

Research methods will rely on the review of the relevant literature, documentary and statistical data. As much as possible, official primary data (for example, on money supply or on fiscal accounts) will be gathered, collated and utilized in our analyses (in contrast with data that is reported in secondary sources).

Each country team will strive to use information stemming from published data and reports from international organizations (such as the UN Economic Commission for Latin America and the Caribbean, ECLAC). The teams will also rely on data and published analyses from official sources when dealing with environmental information. In addition, secondary information will be gathered from various sources, such as reports from international organizations and academic publications. Also, small focus group discussions will supply valuable insights and solid information for the project.

During the project's lifetime we will carry out our analysis through standard quantitative and econometric techniques, and model building will be attempted when data allows for time series analysis. Where possible, in order to test the robustness of our hypotheses linking macro policies and environmental change we will apply time series, regression and sensitivity analysis. Also, where data availability is adequate, time series and sensitivity analysis will be used to search for evidence of structural change and variations in trends in the use and depletion of natural resources. In cases where data sets will not allow for adequate use of time series analysis we will rely on rigorous interpretation and qualitative analysis.

The PI will examine the relationships between macroeconomic and environmental indicators at the regional level (five countries). It is important to note that, in spite of the heterogeneity of specific policies in the five countries covered by the project, important streaks of common features mark the macroeconomic posture of most Latin American countries. We have already noted some of the most important ones in previous sections. This is something that may facilitate international (and even inter-regional) analysis and comparisons. To make progress in this line of analysis, and where time series data is adequate, we will carry out panel analysis. Because panel analysis integrates time series and cross-section analysis, we will explore how this can be expanded to other countries or the whole region.

It is important to note that at the beginning of the project we will hold a meeting where all country teams will discuss the lines of inquiry and methodology. This will enrich the contents and scope of our research. The objective is to make sure that as much as possible, the

information that is gathered allows for some minimum homogeneity and compatibility requirements that are important for the comparative component of the project. We will also discuss how the project can help promote IUCN's agenda in the region.

Throughout the project, the country teams will engage in what is expected to be a fruitful dialogue with policy makers, private sector and civil society organizations. The principal investigator will maintain constant communication with the country teams through e-mail and telephone. Together with IUCN-SUR, the PI is seeking additional funds from other sources to allow for travel and face to face meetings with each local team as the project evolves.

OUTPUT, DELIVERABLES AND OUTREACH

The project will produce five country studies and a synthesis report that will draw the main lessons from the country level research. Each country study will contain individual sections for the components of macroeconomic policies, but they will also include an analysis of the interdependent effects of the policy components examined in the project. The project's principal investigator will assist the country teams in the analysis and in preparing the final country level reports. These will also include a statistical annex depicting the main traits of each country's economy, as well as an annex with the data and analyses describing the country's main environmental problems.

Early outputs from the PI's office will include a literature review on the relationship between macroeconomic policies and sustainability. It is important to point out that we have already carried out a preliminary review of the literature and we have found that the relationship between macroeconomics and the environment remains largely unattended. We observe that poverty and structural adjustment and their implications for the environment are mentioned in several articles and books. However, monetary, financial and fiscal policies (the core of macroeconomic policy-making) and their effects for environmental stewardship have failed to capture the attention of researchers. A survey article on the relevant literature will be prepared by the PI and will be submitted to a scientific journal (with peer review) for publication. It is expected that this will contribute to put the core theme of this project squarely in the mainstream of rigorous scientific research. Two more accessible or user-friendly versions of this article will also be published for widespread dissemination within IUCN and other organizations. We will seek publication in CEESP's *Occasional Paper Series*.

The synthesis report will be prepared by the principal investigator and will not only cover the country studies, but will go beyond them and discuss how this fits in the region's experience, as well as the implications for macroeconomic policy making in general. The synthesis report will also take into account some of the main trends in the evolution of macroeconomic theory and its implications for redefining policies for sustainability. A critical component of the project's output will focus on proposals for policy change and further action-oriented research with strong potential for support from foundations, international and national government agencies.

A report with preliminary findings will be presented to the World Conservation Congress in Barcelona, October 2008. The national and international seminars and workshops will help disseminate results, strengthen IUCN's presence in the region, and enhance its influence with governments and with international development agencies.

This project proposal within the I3-C initiative will actively involve IUCN's SUR regional office South America, the regional office for Mesoamerica (ORMA), the Commission for Environmental, Economic and Social Policies (CEESP), as well as the Secretariat through the office of its Senior Economic Advisor. We have already established communications with all of these offices concerning this initiative. It is proposed that IUCN Commission on Environmental, Economic and Social Policy (CEESP) take the lead role in this initiative through its Theme on Environment, Macroeconomics, Trade and Investment (TEM TI). Throughout the project's life and beyond we will of course strive to link efforts with other IUCN Commissions, and especially with the World Commission on Protected Areas (WCPA) due to the strong intersection between fiscal policies and financing schemes for NPA's. The PI will strive to obtain wide dissemination of research results and insights through publications in academic and policy relevant journals, as well as TEM TI's web page.¹⁵ The final research reports, as well as this synthesis, will be submitted to a suitable editorial company for publication in book form.

¹⁵ As member of the editorial board of *World Development* and *Global Environmental Politics*, as well as the scientific advisory board of *International Environmental Agreements* journal, Alejandro Nadal will promote special issues with the papers produced in this project. In addition the papers will also be published in the CEESP *Occasional Papers Series, Policy Matters* and other journals.