# Introduction

As the title indicates, this book intends to explore the contribution of natural resources to economic development. The main geographical focus will be on the so-called "developing world," i.e. the low and middle-income countries of Africa, Asia and Latin America. There has been increased interest in the application of natural resource economics in these countries, now that it has been recognized that the environment is not a "luxury" for economic development but contains natural "capital" fundamental to growth and development in poorer economies.

Most economic texts and monographs do not address the role of natural resources in economic development in much detail. This is unfortunate, as the environmental problems faced by developing countries are considerably different from those occurring in industrialized economies. Many rural populations depend on the direct exploitation of natural resources, for agriculture, livestock raising, fishing, basic materials and fuel, both to meet their own subsistence requirements as well as to sell in markets for cash income. The lack of basic water supply, sanitation and other infrastructure services suggests that increased public provision of resource-based services is highly valued by many households. Rapid land use change has meant that many natural environments and habitats are disappearing quickly, with the result that critical ecological resources and functions are being disrupted or lost. Growing populations have further increased the demand for natural resource use and conversion. Finally, for many low and middle-income economies resource-based development and primary commodity exports are the main engines for growth and long-term development.

In short, this book begins with the premise that how natural resources are used for economic livelihoods and development in the low and middle-income countries of Africa, Asia and Latin America is fundamentally different from other economies of the world. Or, as the quote at the beginning of Chapter 8 from Partha Dasgupta (1993, pp. 269 and 273) puts it: "People in poor countries are for the most part agrarian and pastoral folk . . . Poor countries are for the most part *biomass-based subsistence economies*, in that their rural folk eke out a living from products obtained directly from plants and animals".

Ultimately, this book is about the actual and potential contribution of natural resources to the *sustainable economic development* in such economies. Natural resources are clearly central to this process: many low and middle-income economies are highly dependent on the exploitation of their "natural capital" to secure the needs of the present generation as well as to develop and meet the needs of future generations. However, the evidence presented throughout this book indicates that increasing economic dependence on natural resources in today's low and middle-income economies is associated with poorer economic performance. This poses an intriguing paradox: why is it that, despite the importance of natural capital for sustainable economic development, increasing economic dependence on natural resource exploitation appears to be a hindrance to growth and development in today's low and middle-income economies?

Historically there appear to be many examples of successful resource-based development, which would suggest that this paradox appears to be unique to the current era. In fact, one could argue, as the historian Walter Prescott Webb (1964) first proposed in analyzing the exploitation of the world's "Great Frontier," that much of the 500 years of global economic development has been characterized by a pattern of capital investment, technological innovation and social and economic institutions dependent on "opening up" new frontiers of natural resources once existing ones have been "closed" and exhausted. Such development was so successful, particularly during the Golden Age of Resource-Based Development (1870–1913), that some of the early theories in development economies, such as the staples thesis and the vent-for-surplus theory of trade, took it for granted that natural resource abundance, trade and growth were mutually reinforcing (Innis 1930 and 1940; Myint 1958; Watkins 1963).

However, with the benefit from hindsight afforded by the present era, we now know that, simply because a developing economy or region is endowed with abundant natural resources, the country may not necessarily end up exploiting this natural wealth efficiently and generating productive investments. Or, as Wright (1990, p. 666) suggests: "there is no iron law associating natural resource abundance with national industrial strength".

Several theories have been proposed to explain why increasing economic dependence on natural resources in today's low and middle-income economies is associated with poorer economic performance. One popular explanation is the *resource curse hypothesis*, i.e. the poor potential for resource-based development in inducing the economy-wide innovation necessary to sustain growth in a small open economy, particularly under the "Dutch disease" effects of resource-price booms. Other theories have suggested an *open access exploitation hypothesis*, i.e. trade liberalization for a developing economy dependent on open access resource exploitation or poorly defined resource rights may actually reduce welfare in that economy. Finally, some economists have proposed a *factor endowment hypothesis*. The abundant natural resources relative to labor (especially skilled labor), plus other environmental conditions, in many developing regions have led to lower economic growth, either *directly* because relatively resource-abundant economies remain specialized for long periods in primary-product exports or *indirectly* because some factor endowments generate conditions of inequality in wealth and political power that generate legal and economic institutions inimical to growth and development.

As suggested in this book, it is likely that these three hypotheses could be complementary rather than competing in their explanations as to the poor economic performance of resource-rich developing economies. It is possible that the processes outlined by all three hypotheses could operate simultaneously, and even interact, to militate against "sustainable" natural capital exploitation in low and middle-income economies: resource endowments (broadly defined) may shape institutions, and institutions in turn affect the management regime of natural resources (open access, rent-seeking and other failures) and both influence the long-run performance of the economy (the resource curse).

However, this book also argues that these three hypotheses focus mainly on explaining only two "stylized facts" concerning natural resource use in low and middle-income economies, namely the tendency for these economies to be resource-dependent (in terms of a high concentration of primary product to total exports), and for increasing resource dependency to be associated with poor economic performance. None of the current hypotheses address two additional and equally important "stylized facts": development in low and middle-income economies is associated with land conversion, and a significant share of the poor population in low and middle-income economies is concentrated in fragile lands.

Thus this book offers another perspective on the resource-development paradox, which could be termed the *frontier expansion hypothesis*. The starting point for this hypothesis is the two stylized facts of resource use in developing countries that are often overlooked in the current literature on the role of natural resources in economic development: namely, the tendency for resource-dependent economies to display rapid rates of "frontier" land expansion, and for a significant proportion of their poorest populations to be concentrated in fragile areas. From this pattern of development several conclusions emerge. First, in many developing countries much frontier land expansion occurs in order to absorb the rural poor. Second, policy and market failures in the resource sector and land markets, such as rent-seeking behavior and corruption or open-access resource exploitation, contribute further to the migration of the rural poor to the frontier and excessive land conversion. Finally, as a result, frontier-based development in many poor countries is symptomatic of a pattern of economy-wide resource exploitation that leads to insufficient reinvestment in other productive assets of the economy, and thus does not lead to sustained growth. There is clearly a "vicious cycle" of underdevelopment at work here: frontier land expansion and resource exploitation does little to raise rural incomes and reduce poverty in the long run, and results in few efficiency gains and additional benefits for the overall economy.

The consequence is that such frontier-based development and resource exploitation in many present-day low and middle-income economies often falls far short of the minimum conditions for attaining sustainable development. What little rents have been generated from this development process have not led to sufficient investments in other productive assets and in more dynamic sectors of the economy. Instead, many poor economies exhibit a "dualism within dualism" economic structure characterized by continuing dependence of the overall economy on mainly primary product exports, a large proportion of the population concentrated on fragile land, and a high degree of rural poverty. Any resource rents that are earned from frontier "reserves" are often reinvested in further land expansion and resource exploitation. The frontier remains an isolated enclave, and there are very little economy-wide efficiency gains and benefits. In addition, this process tends to be inequitable. The resource rents accrue mainly to wealthy individuals, who have increased incentives for "rent-seeking" behavior that is in turn supported by policy distortions that reinforce the existing pattern of allocating and distributing natural resources. The poor are therefore left with marginal resources and frontier land areas to exploit, further reducing their ability to improve their livelihoods, and of course, to generate and appropriate significant rents.

This book could end with these rather pessimistic observations. However, that would be neither fruitful nor helpful to anyone interested in encouraging successful resource-based development in today's low and middle-income economies. Instead, this book addresses an additional, very pertinent question: Is there some way in which policies and institutions in developing countries could be modified to change their current pattern of resource-based development from a "vicious" to a "virtuous" cycle? The short answer is "yes," but not without difficulty. This requires achieving four important long-run goals:

- Reinvesting resource rents in more productive and dynamic sectors of the economy, which in turn are linked to the resource-exploiting sectors of the domestic economy.
- Developing political and legal institutions to discourage rent-seeking behavior by wealthy investors in the natural resource sectors of the economy.
- Instigating widespread reform of government policies that favor wealthier investors in markets for valuable natural resources, including arable land.
- Targeting additional policies and investments to improve the economic opportunities and livelihoods of the rural poor, rather than relying on frontier land expansion and urban migration as the principal outlet for alleviating rural poverty.

Achieving the first goal requires fostering resource-augmenting technological change, frontier-mainstay integration and economy-wide knowledge spillovers. On available evidence, this seems to be a tall order for many present-day low and middle-income economies. As discussed in the concluding chapter, however, there are three countries – Botswana, Malaysia and Thailand – that may provide instructive examples as to how this might be accomplished. As for the other three objectives, achieving them will mean overcoming pervasive policy, market and institutional distortions that, on the one hand, encourage problems of rent-seeking and corruption, especially in frontier resource-extractive activities, and on the other, perpetuate inequalities in wealth and rural poverty. Attaining these objectives will clearly be a tall order for many low and middle-income economies. Yet, in failing to do so, these developing countries will perpetuate being trapped in the "vicious cycle" of unsuccessful frontier land expansion and resource exploitation that is symptomatic of underdevelopment rather than sustainable economic development.

In addressing the above themes, this book is clearly not examining some important areas in which natural resources may interact with global economic development.

One such area is the global scarcity of biological diversity, key ecological services and unique natural assets that are leading the international community to place greater value on the conservation of certain natural resources in developing countries, such as tropical forests, wildlife and their habitat, mangroves and wetlands, coral reefs and, of course, biodiversity.

However, this particular natural resource problem and the economic approach to its resolution is fundamentally different from the themes addressed in this book. As I have argued elsewhere, economists usually depict the current disincentives to conserve the world's remaining biological diversity as a problem of *global market failure* (Barbier 2000). A country may have a biological rich natural asset that is, or may potentially be, producing benefits of global significance, but as there is no market or any other institution at the global level to enable the country to "capture" this value, it is unlikely to consider these global benefits in its decision whether to conserve, exploit or develop the asset. That is, unless a country receives compensation in some form for the management of its stock of biodiversity to provide values of global significance, then the country has little incentive to do so. Creating such an incentive mechanism essentially involves explicit recognition at the international level of a host country's right to "sell" global benefits and the creation of the institutional means for this to occur. This could happen through various mechanisms, such as the ratification of a comprehensive international biodiversity agreement that embodies payment or exchange mechanisms for providing these global benefits or through bilateral and multilateral payment and financial schemes that allow the host country to receive compensation from the international community for conserving specific global biodiversity benefits.

Originally, I intended to discuss the theory as well as recent developments of such international mechanisms and institutions in this book. However, I have not done so principally for two reasons. First, it would have added at least two chapters to an already long book. Second, since the problem of global market failure concerning transboundary biodiversity and other natural resource benefits does diverge somewhat from the main themes addressed in this book, this problem is best explored in a separate book altogether.

A second issue that is not addressed by this book is whether "fundamental inequalities" in the existing "world economic order" are further perpetuating the poor economic performance of resource-dependent developing economies. This view is discussed to some extent in Chapter 2, which is referred to as the doctrine of "unequal development." As noted in the chapter, the failure of primary product exports to provide the "engine of growth" for developing economies in the post-World War II era led some authors to conclude that there was something inherently wrong in the "core-periphery" trading relationships underlying the pattern of trade and international division of labor characterizing the world economy. According to this view, the core-periphery trading relationship benefits overwhelmingly the industrial core states of the world economy at the expense of the primary-producing and exporting developing economies, thus creating an inherent tendency for international inequality to increase. The result is that, whereas the core industrial states in the world economic system continue to develop and grow, international trade fails to spread development to the periphery. Instead, the periphery is trapped in a perpetual state of underdevelopment and remains specialized in the production and export of primary products.

This view is still very prevalent today, and features in many critiques of the failure of "globalization" to generate benefits to poor countries and the poor within those countries. Many of these critiques focus on averting financial crisis in the developing world and on reforming the international economic "world order" – the system by which the international economic and financial system are governed – in order to make globalization more humane, effective, and equitable for poorer countries. Even prominent mainstream economists, such as Joe Stiglitz (2003), have criticized globalization from the latter perspective, arguing that globalization could be a positive force for alleviating poverty and fostering development provided that the main institutions that govern globalization – The International Monetary Fund, the World Bank and the World Trade Organization – reform their operations and overall strategies for assisting poor countries.

This book does not address the above debate concerning the pros and cons of globalization and its implications for resource use and development in low and middle-income economies. Some readers may consider this a serious omission. However, I have several reasons for not addressing the globalization debate. First, a serious discussion of how reforms of the world trading system and key multilateral institutions would lead to improvements in the economic development of poor economies is clearly a separate topic for another book (such as the one by Stiglitz (2003)). Second, before one can examine how proposed reforms might affect natural resource exploitation and the prospects for sustainable economic development in poor countries, one must first explore and understand this resource-development relationship more fully. That is the objective of this book, which, as I have noted, appears to be the first to explore this relationship in such detail. Third, from a more pragmatic perspective, with the exception of possible debt alleviation for poor economies (which I wholeheartedly endorse), the prospects of major global economic and financial reforms are not good over the short and medium term. This implies that developing countries must take the existing world economic order as "given", and cannot expect much help from the international community in terms of changing existing trading rules, financial mechanisms and lending institutions to improve either access to markets, the availability and the terms of foreign aid, or the conditions for loans and grants. Although I wish this were not the case, I would also argue that the lack of widespread reforms of international economic and financial conditions should not be an excuse for developing countries to "do nothing". Instead, as emphasized in this book, the key to successful resource-based development appears to be sound policies and favorable institutions, especially those aimed at attaining the "virtuous cycle" growth path of reinvesting resource rents, developing sound policies and institutions and lessening a "dualism within dualism" economic structure. Although more favorable international conditions would surely make this task easier for developing country governments, there is clearly a substantial policy and reform agenda that these governments could undertake themselves in order to transform current patterns of natural resource exploitation and use within their countries.

The ten chapters of this book comprise three parts. Part One, which consists of the first four chapters, provides a broad overview of the role of natural resources in economic development. The objectives of these introductory chapters are to understand better the degree of dependence of low and middle-income countries on natural resource exploitation and to examine further the key paradox concerning the role of natural resources in economic development. Why is natural resource exploitation not yielding greater benefits to the poor economies of the world? This paradox is explored both through a historical review of resource use and development and through examining current theories explaining the under-performance of today's resource-abundant economies. An important conclusion to emerge from this discussion and analysis is that frontier-based economic development still plays an important role in the economies of many developing regions, and this in turn is symptomatic of the inefficient and unsustainable way in which natural resources are used in present-day economic development. This argument leads directly to the *frontier expansion hypothesis* as an explanation of the resource-development paradox.

A key feature of frontier-based development is widespread land use change. Equally, water resource use and allocation is changing rapidly in developing countries as a result of increased economic and population growth. Part Two of the book, comprising Chapters 5, 6 and 7, explores in more detail the economic factors underlying rapid land and water use change in low and middle-income countries, and illustrates the issues with case study examples. Understanding the factors underlying these two important processes of resource use within developing countries is in turn important for devising appropriate policies and reforms to mitigate the economic losses caused by these processes.

Part Three of this book consists of Chapters 8, 9 and 10 and is concerned with developing economy-wide policies and reforms to encourage sustainable resource-based development in low and middle-income economies. The contribution of Chapter 8 is to draw the link between two types of "dualisms" found in developing economies: their "resource dependency" within the world economy and the tendency for the rural poor within these economies to be "trapped" in a poverty-environmental degradation cycle. The chapter concludes by identifying how developing countries break out of this pattern of development and ensure that natural resource exploitation does confer sustained growth and poverty alleviation. Chapters 9 and 10 elaborate further on the necessary policies, institutions and reforms that are required. For instance, Chapter 9 demonstrates that it is at least *theoretically* possible to break this vicious cycle through reinvesting resource rents in more productive and dynamic sectors of the economy, which in turn are linked to the resource-exploiting sectors of the domestic economy. Chapter 10 continues this analysis by providing further discussion and illustrative cases indicating what type of complementary policy and institutional reforms are needed. This is accomplished through a broad overview of these reforms and a review of the lessons learned from three present-day examples of successful resource-based development: Botswana, Malaysia and Thailand.