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Introductory Chapter: Economics, Natural Resources and Sustainable Development

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1. Introduction

Economics, which has evolved into set of principles that define rational behavior of various stakeholders, is the fountain for achieving sustainable development-appreciable level of social and economic well-being of the people that is inter-generationally balanced. Effective governance, resource endowments, and demography are complementary factors that need to be properly coordinated based on sound economic principles to underpin the process of sustainable development. The division of economics into microeconomics and macroeconomics has gained prominence in economic theory, but the distinction is mainly about whether analysis and economic decision-making focus on individual economic agents such as households and firms (microeconomics) or activities of the overall economy relating to such indicators as national income, employment, and government policies (macroeconomics). In practice, the microeconomics and macroeconomics intertwine such that the conditions of the overall economy influence the decisions of individual economic agents and in turn, the performance of the economy depends on the activities of individual economic agents. Essentially, all economic agents, at both micro and macro level of economic analysis, act in accordance with rational economic principles to optimize outcomes that collectively provide the basis for attaining economic growth and sustainable development.

As a demonstration of the essence of economics, in terms of both micro and macro, empirical analysis of various economic activities relating to emerging sustainable development issues, undertaken by different authors, is compiled and presented in the chapters of this book. This

introductory chapter, however, provide overview of the essence of economics in the context of theory, philosophy, and principles that guide decision-making of economic agents with the coordination function of government to foster sustainable development. The remainder of this introductory chapter is classified into three sections. The section that follows focus on the nexus of economics and sustainable development, followed by the analysis of natural resource use for economic growth and implications for sustainable development. The concluding section articulates the imperativeness of effective governance in achieving sustainable development despite the existence of sound economic principles to guide economic agents.

2. The nexus of economics and sustainable development

The essence of economics is the well-being of the people, which is formulated as the maximization of social welfare function (SWF). Economic activities lead to transformation of natural resources into consumable/usable goods and services, in other words, production of goods and services, create income earning job opportunities for achieving best outcomes of SWF. However, as more intense economic activities push up the SWF, it generates environmental drawbacks such as pollution that tends to affect social welfare negatively. Besides, the exhaustibility of natural resources imposes limits on the extent to which economic activities could be intensively undertaken.

Thus, economics recognizes that apart from direct welfare benefits (income, consumption, etc.), there are positive and negative externalities-unintended consequences arising from economic activities. For instance, economic activities could give rise to positive externalities such as backward and forward linkages, learning-by-doing, and technological progress. It could also give rise to environmental challenges such as pollution and associated adverse health and social adversities in form of negative externalities. Rational economic principles require that policy formulation and implementation leads to chain of economic activities to generate growth while minimizing adverse effects arising from natural resource utilization. Hence, the most critical factor in achieving sustainable development lies in the proper management of the complex interactions among various forces within the economic, political, and social environment.

3. Natural resources, economic growth, and sustainable development

Natural resource utilization, pollution, and other environmental considerations have become critical to the possibilities of long-run economic growth and by extension sustainable development. The effect of natural resources on society is as old as human activities as the environment inserts itself between nature and society. Economic activities (production, exchange, and consumption) generate environmental problems while the depletion of scarce renewable and nonrenewable natural resources raise concerns about the sustainability of economic rents from the exploitation of natural resources. Sustainable development, a steady state long-term economic and social well-being, hinges on economic growth “a long term rise in capacity to supply increasingly diverse economic goods to its population; this growing capacity is based on advancing technology and the institutional and ideological adjustments that it demands” [1].

Natural resources have a double-edge effect on economic growth, in that the intensity of its use raises output, but increases its depletion rate. Natural resource is a key input in the production process that stimulates economic growth. However, the depleting character of natural resources coupled with diminishing returns of factor input implies that dependence on natural resource utilization is not an optimal strategy for sustainable growth. By extension, intensive utilization of natural resources undermines sustainable development. Natural resources have limited direct economic use in satisfying human needs but transforming them into goods and services enhances their economic value to the society. Through the mix of productive activities by different sectors of the economy, transformation of natural resources into usable goods and services occurs to propel the overall economy to achieve sustainable growth that forms the basis for sustainable development.

The productivity of factors of production has positive relationship with absorptive capacity. Technological inter-connections among various sectors of the economy could evolve from structural and spatial interdependence of the production processes of the sectors. The rational response to incentives leads to increase in the level of activities of sectors of the economy in a self-reinforcing manner. The expansion of activities in the various sectors of the economy is mutually self-stimulating to provide opportunities for economies of scale that translate into lower per unit cost of production.

The temptation for rent-seeking behavior could undermine the efficient use of the natural resources to stifle economic growth and weaken the possibility of positive externalities. The use of rents derived from natural resource extraction to facilitate complacent consumption¹ at the detriment of real production leads to the expansion of nontradable sector activities while tradable sector activities such as manufacturing shrink. This give rise to the “Dutch Disease”², which is a chronic source of slow growth due to the absence of “backward and forward” linkages among sectors of the economy [2]. The manufacturing sector, with a sound service sector for support, is a vital source for economic growth through learning-by-doing, as such should have a pivotal link with natural resource sector to stimulate real productive activities that propels the economy toward sustainable growth and development. Ideas that emanate from production processes is the driving force for generating high levels of growth [3] to form the bedrock for sustainable development.

As the essence of sustainability is to maintain a given level of social welfare at a constant level [4], six key conditions are prerequisites. These are nondeclining consumption (utility), maintaining (constant) production opportunities over time, nondeclining natural capital stock, maintaining a steady yield of resource services, stability and resilience of the ecosystem through time, and the development of capacity for consensus building. These sustainability conditions require efficient management of resources as well as ethical and moral standards, which makes the crucial role of government in coordinating economic, social, and political activities imperative for achieving sustainable development.

¹This refers to a consumption pattern that is disconnected from economic activities of a given economy as such does not stimulate further economic activities of the economy.

²The “Dutch disease” is an economic phenomenon in which a sharp increase in the output and revenue of one product in an economy has adverse repercussions in other sectors of the economy. There are variant models of the “Dutch disease” syndrome, all of which demonstrates that the existence of large natural resource sectors, or booms in these natural resource sectors, will affect the distribution of employment throughout the economy as wealth effects pull resources in and out of other sectors of the economy. The disease is most pernicious when the revenue of the product that started the problem reverses itself, and the economy is left high and dry with an inappropriate composition of output.

4. Conclusion: governance and sustainable development

Economic activities thrive with the existence of basic infrastructures and the rule of law that guarantees property rights (patents and copyright laws). In addition, human capital formation, which is the bedrock upon which all aspects of economic growth processes are hinged, requires to be nurtured by services that are provided by nonprofit making principles. Furthermore, natural resource sectors, around which many economic activities revolve, require legal and institutional framework based on robust institutional principles [5].

These essential services (provision of infrastructure, the rule of law, and human capital formation) are nonexcludable public goods; and therefore, not the function of economic agents that aim to maximize profit. It is imperative for government to undertake the crucial function of providing essential services as well as coordinating the activities of economic agents to ensure alignment with strategies for achieving sustainable development. A responsible government will ensure the formulation and implementation of policies for equity inter-generational balance in economic and social welfare for the benefit of both current and future generations, a *sine qua non*, for sustainable development. In conclusion therefore, even though economics is the fountain of human activities, effective governance, through the proper functioning of institutions and the implementation of robust policies, is crucial for achieving sustainable development.

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