FOREST ECONOMICS, FROM THEORY TO SUSTANAIBLE APPLICATIONS

Tunduc Adrian*

*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea; Romania, e-mail: atunduc@uoradea.ro; **adrian.tunduc@icloud.com**

Abstract

The present paradigm regarding the forests, from an economic point of view, has to swift drastically in order to keep the sustainability of it.The existing forest economic models, rooted in sustained yield timber management systems and neo-classical economic framework, are subject to many limitations. Social, economic, and ecological features of sustainable forest management (SFM) are different than that of sustained yield timber management. Hence, the economics of SFM will be based on different economic principles. The two main requirements of the economics of SFM are the economics of multiple equilibria, and a consumer choice theory that incorporates heterogeneity of agents, context specific and dynamics of preferences, distinction between needs and wants, and the subordination of needs. These requirements will need the extension of the boundaries of forest economics. Five basic principles—principles of 'both–and', 'existence', 'relativity', 'uncertainty', and 'complementarity' will work as a foundation, and the economic principles, developed by evolutionary, institutional, ecological economists and economists from other new streams of economics, will be the useful tools to extend these boundaries.

Key words: Pollution, forest economics, health, sustenability, theories, change of paradigms

INTRODUCTION

Deforestation process represents a major negative impact of land all over the world. These changes are often presented as a battle between economic, social and environmental forces. "Forest Economics" shows that economics has a crucial role in forestry. The author tries to explain by examining the influence of profit-maximizing on the way in which foresters take decisions on harvesting timber, planting forests and the management of crops. Another part of this paper considers silvicultural decision-making. It proceeds from optimal rotation determination, via selection of spacing and thinning regimes, to crop improvement and protection decisions, and choice between silvicultural systems. Although is concerned largely with the rationale and applications of cost-benefit analysis. It considers in detail both the evaluation of the social benefits and costs of forestry, and the pricing of factors of production in developing economies. The paper concluding section discusses the role of forestry in the generation of national and

regional employment, in state involvement in forestry, in world timber prices and the interpretation of forestry policy at local level.

MATERIAL AND METHOD

Forest economic models based on the neo-classical framework are subject to serious limitations. The emergence of a new forest management paradigm in the last two decades has further amplified these limitations (Toman et al., 1996).

The new forest management paradigm has transformed forest management from timber management to forest ecosystem management, from sustained timber yield management to sustainable forest management (SFM), and from forest management by exclusion to management by inclusion of user groups, and is commonly known as SFM.

The limitations of forest economic models have resulted in the severance of links between these models and social perceptions and practices of forest management.

The gap between theoretical models and practices has roots in mainstream economics itself. Many economists have observed multi-dimensional limitations of the neo-classical paradigm resulting in low 'evidence theory ratio' (Holmstrom and Tirole, 1989). However, the economics profession, as a whole, has been re-examining and challenging almost every basis of the neo-classical thought to reduce this gap. For example, experimental economists, such as Camerer(1997), Rabin(1998) and Camerer and Thaler (1995), have been working to get a clear picture of decision making by 'Homo-sapiens' as against 'Homo-economicus' agents. Many economists have proposed alternative economic frameworks that overcome some of the limitations of the neo-classical paradigm and incorporate some features of behavioral patterns of 'Homo-sapiens' observed by experimental economists. Evolutionary economics has challenged the concepts of maximization in an uncertain environment and a single competitive equilibrium; institutional economics has incorporated institutions in economic analysis; many branches of economics, such as ecological economics, socio-economics and post-Keynesian economics, have challenged the concept of mono-utility, static preferences, and a maximizing rational agent. Game-theoretic models have been developed to understand and explain co-operative, non-cooperative and strategic behaviors of people in diverse settings, and agent-based models have incorporated heterogeneous agents, changing preferences, and non-maximizing behaviors in economic models. However, no significant attempt has been made in the field of forest economics to incorporate the concepts

and principles emerging from these new economic thoughts. Thus, it is now the turn of forest economists to respond to new challenges of forest management by extending the boundaries of forest economics beyond neo-classical economics. This paper has two main objectives: 1. to demonstrate basic limitations of the models, dominant in forest economics, and usefulness of emerging economic thoughts to overcome these limitations; 2. to establish the relevance of emerging economic thoughts to the economics of SFM, and to provide some basic principles for the economics of SFM.

CONCLUSIONS

This paper tries to make an awaresness about the classic way of viewing the forestry sector.The concept of SFM is the reflection of social, economic, and environmental conditions of the late twentieth and early twenty-first century, which are quite different from the conditions of nine-teenth and early twentieth century. Management principles and silviculture of SFM are quite different than the management principles and silviculture of forest management based on timber-yieldregulation. Similarly, the economic principles ofbSFM need to be reflective of social, economic,and environmental conditions of twenty-first century and management principles and silviculture of SFM. The silviculture of the Faustmann formulabcontinues to have a direct application for plantation forestry, but not to the SFM. As demonstrated in this paper, existing forest economic models,including Faustmann's formulation, must be refined, and some new economic theories and models must be developed to incorporate the features of SFM. The two dominant requirements of the economics of SFM are the economics of multiple equilibria, and a consumer choice theory that incorporates context specific and dynamic preferences, heterogeneous agents, distinction between needs and wants, and subordination of needs. These two requirements are beyond the boundaries of neo-classical economics. The boundaries of forest economics will have to be extended

REFERENCES

1. Tunduc A., Studii privind perspectivele utilizarii marketingului electronic in bio-economia agricola si dezvoltarea rurala din regiunea de nord-vest a Romaniei, Studii post-doctorat de bioinginerie comparata si biotehnica ecologica, Academia Romana, Institutul National de Cercetari economice "Costin C. Kiritescu", Centrul de Studii si Cercetari pentru Biodiversitate Agrosilvica " Acad.David Davidescu", 22 mai 2017;
2. Eliason, B. and Y.Y. Lee (eds.) (2003). *Integrated Assessment of Sustainable Energy Systems in China*, Kluwer Academic Publishers, Dordrecth, The Netherlands Larsen, B. 2004;
3. Cost of Environmental Damage in Colombia: A Socio-Economic and Environmental Health Risk Assessment. Prepared for the Ministry of Environment, Housing and Land Development of Republic of Colombia;
4. Markandya, A. and M.L. Tamborra. 2005. Green Accounting in Europe: The GARPII Project, forthcoming, Edward Elgar, Cheltenham;
5. Mrozek, J. and Taylor, L. 2002. What Determines the Value of Life? A Meta Analysis. Journal of Policy Analysis and Management. Vol 21 (2): 253-270;
6. The Theory And Application Of Forest Economics, Price Colin, Published January 1st 1989 by Blackwell Publishers