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Environment and Financial Markets

We propose to put the environment into financial markets. We shall explain how to do it, and why the financial approach is practically the only one able to stop and invert environmental degradation. We shall concentrate on deforestation, which is the largest environmental problem in the third world, and explain how to start the project and what kind of optimization problems should be solved to ensure the optimal use of environmental funds. Examples with numerical solutions are included.

We argue that practical solutions for the environmental degradation are in short supply. Most of the increasingly complex models set off different opinions about their applicability. Models should be well specified. It means that inputs should be observed or estimated. This requirement is hard to meet in environmental studies. Thus, the efficient global environmental decision-making becomes very difficult. Moreover politicians often tend to justify their decisions by inappropriate theories. This situation leads to proliferation of ineffective studies and waste of resources.

Nowadays, financial institutions cooperate in the creation of the financial markets following what is called Merton's spiral (Merton & Bodie, 1995). We shall propose to apply this approach in the solutions of some of the environmental problems. It could result in more transparent transfer of funds and the involvement of everybody concerned. Also we can expect that the transparency could stem in an increment of this funds.

Our approach is based on a positive involvement of holders of "good" bought or, in the first stage, obtained for free. We will show that, in a natural way, three kinds of optimization problems crop up:

1. Individual agent problem
2. Local optimization problem
3. Global optimization problem.

We explain how the solution of these problems, and application of proposed methodology could improve the current environmental situation.