Renewable resources play essential roles in developing countries as both productive inputs and trading commodities. Therefore, the rapid depletion of renewable resources has raised a lot of concerns about how to effectively manage these resources in order to improve economic development and sustain growth. This paper aims to provide a theoretical model to explore how resource management regimes contribute to the development, welfare and growth of a resource-based economy. Resources are incorporated in a tractable model of endogenous growth driven by horizontal innovation, in terms of product-variety expansion, and vertical innovation, in terms of in-house R&D to reduce marginal cost. The model is tractable in that it yields a complete, analytical characterization of the path of utility and the associated welfare level. This property is exploited to compare two cases of renewable resource management: open access and full property rights. The first case involves a common property problem in which agents ignore the long-term resource viability; the second fully internalizes the dynamics of the resource stock.

Analysis shows that if the regeneration rate is too low, the tragedy of the commons occurs. Specifically, the stock of renewable resource converges to zero and the economy collapses. If, instead, the regeneration rate of the renewable resource is sufficiently high, the steady-state growth rate of the economy is identical across the two management regimes. The reason is that there is no scale effect, that is, the steady-state growth rate of the economy does not depend on the labor or the resource endowment.

However, the development path on which the economy transits from the developing stage (no R&D activity) to the developed stage (positive R&D activity) depends on the resource management regime. In particular, a developing economy under full property rights will cross its development threshold prior to one under open access. This threshold depends on the market share faced by each manufacturing firm. When it becomes sufficiently large as a result of the decline in the number of manufacturing firms over time, there will be an incentive for the remaining firms to engage in R&D activities. Given the same number of manufacturing firms, the economy under full property rights enjoys a larger market share than under open access due to higher income per capita. Therefore, the development threshold will be reached sooner under full property rights. In other words, the economy will start engaging in R&D activities sooner and more quickly accumulate knowledge, which is the source of long-run growth.

Moreover, once the economy is already engaged in R&D activity, switching from full property rights to open access is welfare reducing due to two effects. The first is through the price of the harvest good. Though the economy initially enjoys the lower price of the harvest good, the price gradually increases as the resource becomes scarcer. Secondly, the competitive household instantaneously loses the resource income and thus spends less on manufacturing goods. This decreases the incentives for manufacturing firms to engage in R&D and results in a temporary deceleration of the growth rate of TFP relative to the baseline case of full property rights. The economy therefore experiences a cumulative loss of TFP relative to the baseline, which is the novel feature of our model of endogenous innovation. This mechanism has interesting and wide-ranging implications for the role of resources in development and growth.