

## **Ecological Modernization and Environmental Innovation: What Role for Environmental Regulation?**

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### **Abstract**

Technological Environmental innovation (TEI) has been taken to be a critical means to achieve both economic gain and environmental performance at the same time in the Ecological Modernization Theory (EMT). The adoption of EI can not only reduce emissions and the consumption of resources but also improve the eco-efficiency to bring about better competitiveness. This is a double benefit for the environment and corporate businesses. Nevertheless, many factors can hinder the adoption of EI. The purpose of this paper is to investigate the factors conditions that govern the firms to adopt TEI and the role of environmental regulation in stimulating the industry to engage in TEI. It has been a dominant conception in the EM literature that traditional environmental policy should increasingly be replaced by market-based and voluntary measures, because the Traditional Environmental Regulatory Approach (TERA) are taken as less effective in creating favourable conditions for environmentally sound practices and behaviour than the market-based and voluntary measures. Although incentive-based and voluntary measures are useful and valuable tools, the success of such approach depends, to a certain extent, on the willingness of firms to commit to TEI and the removal of barriers such as uncertainty, negative externality, spillover problem, information asymmetry. Without the regulatory pressure, when faced with TEI that requires the devotion of more firm resources, firms can easily delay or ignore the adoption of TEI, even if the TEI is profitable in the long run. The new environmental regulatory approach (NERA) is therefore put forth to better address the issue. The basic rationale underlying NERA is to capitalize on the benefits that environmental regulation can bring in terms of stimulating TEIs, while reducing the negative impacts that traditional C&C regulation has brought in terms of preventing companies from searching for innovative solutions and achieving outstanding environmental performance. This is done by replacing traditional environmental regulations with new environmental regulations that are innovation-oriented, and are properly-designed and implemented with the following regulatory characteristics being taken into account: innovation-orientation, goal-setting, stringency, flexibility, certainty, consistency, innovation-oriented, participatory, capability-enhanced, which carry the potentials to induce the favourable innovation conditions for firm-level TEIs. The NERA also implies the need for the regulatory component to be mixed with the market-based and voluntary components that offer additional incentives, facilitate innovation capabilities, and change managerial perceptions and receptivity towards technology change. On the one hand, the regulatory component of the NERA guarantees that firms are motivated to continuously search for new TEIs to meet the constantly tightening standards. On the other hand, the incentives and voluntary component facilitates firms to improve various innovation conditions to achieve superior environmental performance.