



ECONOMY AND ENVIRONMENT PROGRAM FOR SOUTHEAST ASIA

POLICY BRIEF

TEARING A STRIP OFF THE PAPER INDUSTRY: THE CASE FOR POLLUTION LEVIES IN CHINA

According to a recent study in China, the pollution levy policy that the country has pursued since the early 1980s has been helpful in improving both environmental performance and economic efficiency. The research, by Jintao Xu, a fellow at the Center for Chinese Agricultural Policy, focused on the Chinese paper industry. As well as giving the green light to pollution levies and recommending that they be continued and developed, Xu's research also lends weight to the ongoing government policy which has shut down small, overstaffed and poorly performing companies. This policy, according to Xu, has been effective in improving both environmental and economic performance.

Xu's undertook his study against a background of increasing industrial growth and worsening pollution in China - a situation that has prompted strong calls for improvement from the government and other sectors of society. For example, President Jiang Zemin announced in March 1999 that any enterprise not in environmental compliance by the year 2000 would be closed. However the government's environmental concern is coupled with a pragmatic desire for economic development. A key question has arisen: how severe a constraint is environmental legislation such as the anti-pollution policy on development? Moreover, the government has used both standards and charges to help control pollution; the relative merits of each is a topic of continued debate.

In light of these issues Xu set out to investigate the impact of government economic reforms on the environmental and economic performance of the paper making sector. The paper making sector has seen double-digit growth since the late 1970s and is the source of ten percent of China's industrial wastewater emissions

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and one-fourth of its chemical oxygen demand. Overall it is the country's largest source of rural environmental pollution. The most important policy milestones Xu investigated included the government's 1982 imposition of a series of levies on air pollutants, on wastewater and on the concentrations of three pollutants contained in wastewater. These levy rates were reassessed in 1989 and increased in 1992. Other milestones: The government's 1996 closure of 1000 small paper mills and the instigation of a ruling that all papermills with an annual capacity of less than 5,000 tons should be closed due to their highly polluting nature.

To counteract a dearth of information at the firm and industry level, Xu carried out a survey of 34 paper mills. This was combined with mill-level production data from the Council of Light Industry. Data was collected for the two representative provinces of Fujian and Yunnan for the period 1982-94. This period of analysis incorporates most of the period of industrial reform. All pollution data came from firm-level accounts collected by local environmental agencies.

Fujian is an industrial and coastal province that, among China's 32 provinces, ranks in the mid-upper level in paper production. China's largest newsprint and its largest sack and kraft mills are in Fujian. These plants have been the subject of considerable government intervention due to their importance to national supply. Yunnan is an inland province with no large paper mills but a couple of medium-sized operations. Most mills in Yunnan, and the rest of the country, use agricultural residues and other locally available non-wood fiber resources. Xu employed a number of sophisticated mathematical approaches to analyze how different variables such as capital, output prices, technology, size of the mill, labor and the pollution charge levies affected the environmental and economic performance of the plants. His analysis shows that China's system of pollution levies has decreased environmental emissions and that higher levies give better environmental performance. Xu therefore concludes that these economic incentives work. However, he highlights evidence that shows that the levies have not been great enough to induce even the most modern mills to adopt modern pollution control technology. To get an indication of how high the levies would have to be to force technological change, Xu points to a nationwide survey in the late 1980s which shows that the levy could be doubled.

As for the economic impact of the pollution levy, Xu's research shows that it has helped increase the production efficiency in the most technologically advanced mills, although it has not had a similar effect in smaller, less developed plants. This adds fuel to the supposition that increasing the levy will induce the adoption of more modern pollution technologies by those mills capable of using that technology.

Xu's assessment of the impact of the size of China's paper mills and the level of staffing highlights the fact that, in comparison with the paper industry in North America and Europe, China's paper industry is notable for the large number of small capacity mills. In the course of twenty years of industrial reform many small mills (known as township and village enterprises or TVEs) have begun production. They became a primary concern of the country's pollution policy in the 1990s.

Xu's research shows that the government's moves to reduce the amount of surplus labor should have the desired effect of increasing both mill productivity and improving environmental performance. This adds further weight to the government's small mill closure program. His evidence suggests that growth in mill capacity is associated with a decline in pollution and that the expanding number of small papermills is associated with an increase in pollution.

In general, Xu's finding back up the policy initiatives of the government. In particular they underline the importance of economic instruments in the implementation of pollution control.

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*The full text of this study is available as an EEPSEA Research Report:
China's Paper Industry: Growth and Environmental Policy During Economic
Reform - Jintao Xu*

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