

Environmental performance for the long term industrial competitiveness: A system dynamic study of Chinese Cement Industry.

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In the developing countries where the supply is usually in shortage and prices are usually distorted, short-term profits of the industry alone can create a wrong perception of its productivity. On the contrary, environmental performance, which can be composed without little impacts of price system, can serve as one of the major reliable indicators of the industrial competitiveness. Large amount of emission of pollution indicates a waste of raw material, a potential of low labor productivity and external conflicts. In the long run, heavy polluting companies usually lose its competitiveness. However, the indicator of the environmental performance is largely ignored due to strong popular misconceptions that a trade-off between the environment and economic development is unavoidable and that the nominal profit of the industry is over-emphasized of as the industrial productivity indicator. When the polluting industries are forced to improve the production efficiency because of the market competition in the long run, the overall social welfare loss has been very high. Not only surrounding residents have been suffering by the pollutants and the consumers are forced to pay high prices, the producers can be forced out of the industry.

Chinese cement industry has traditionally been identified one of the major industrial polluters. When some environmental regulations are enforced and complaints from the damaging residents endangers the continue production, some end-point treatment facilities are selected by majority of cement factories although two relative clean and efficient technologies innovating the production process are available: the dry-production process and the non-bag package of the end product. The expansion of the cement production capacity has still been relying on the traditional technologies: wet-production process and bag package of the end product. Competitiveness of the cement industry declines and cement industry becomes a new problem in the face of globalization of Chinese economy.

A system dynamic model is introduced to search the operational policies to effectively use the indicators of environmental performance in cement industrial development.