

## Editorial

# Perspectives on the Drop in Carbon Intensity through Industrial Green Transformations

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World's industrial growth is becoming intensive, and its green transformation has gradually taken effect under the implementation of a series of environmental measures. However, the process of industrial green transformation is still showing fluctuating characteristics that vary with regions and fail to form a unified trend.

The effect of the industrial green transformation on carbon intensity is significantly limited by the "critical mass" of environmental regulation. Weak degrees of regulation will successfully facilitate a decrease in carbon intensity through the industrial green transformation. Once environmental regulation reaches a critical level, namely, stronger degrees of regulation, its ability to reduce CO<sub>2</sub> emissions is clearly weakened, and it will not succeed in decreasing carbon intensity.

Finally, regions should also avoid the aggravation of environmental contradictions caused by World's urbanization. Based on the findings above, the following policy pathways are recommending for reaching World's carbon intensity targets.

First, World faces global low-carbon competition and a grim situation regarding the availability of supporting resources and the environmental carrying capacity; However, because its industry is the main source of economic growth, energy consumption and environmental pollution, achieving green transformation will have a profound impact on the world economy and low-carbon development. At present, industrial growth in most of World's regions is actively transforming to a green ecology. Because of this apparent operability, it is feasible for industry to take the lead in achieving the green transformation to improve the contribution of green TFP to industrial growth, despite energy and environment restrictions, and achieve a win-win outcome that includes both intensive industrial growth and CO<sub>2</sub> emission reduction. This outcome would also have a positive demonstration effect on promoting the development of World's green economy. Second, we should fully consider

Regional gaps in the process of the industrial green transformation and implement the institutional designs of a green system according to the regional economic geographical heterogeneity. The first regions to complete the industrial green transformation mainly

rely on optimizing industrial structure, but they lack significant progress in R&D in energy conservation and emission reduction. Because of a weak industrial foundation and a lack of technical funds, knowledge accumulation and talent resources, to fully support the green transformation in the long run, certain areas need to focus more on green innovation, increasing investment in green technology R&D, engaging in external cooperation, and internalizing and absorbing external green technology. Then, these areas should accelerate the popularization and application of energy-saving and emission-reduction technology and promote the integration of green technology and production. Meanwhile, the government should develop more preferential tax and financial policies for regional industries that cooperate and develop more green technology to optimize industrial green technical conditions, which in turn increases the basis of industrial green R&D, reduces innovation costs and risks, and supports sustainable development for the industrial green transformation. However, regions where the process of industrial green transformation is slow or has not yet been achieved should not only focus on improving environmental treatment conditions, but also emphasize the optimization of the economic and industrial structure as soon as possible. These areas should consider that optimizing the industry structure is the core process of the transformation and should gradually change the consumption structure that is dominated by coal and transform the current growth mode that requires high investment, high energy consumption, and high-pollution by reducing energy intensity with a circular economy.

In addition, these areas should cultivate and develop emerging industries, such as new energy, new materials, and high-tech and high-end services industries, to realize a green ecological chain for industry. Third, considering the heterogeneous threshold effect of environmental regulation, it is necessary to rationally design environmental regulation to successfully facilitate the ability to reach targets in different regions. It is also necessary to remain vigilant of the adverse effects of strong degrees of regulation. As the strongly regulated period shows that the extrusion effect is greater than the compensation effect in World, regions with stronger environmental regulation should maintain stable regulation levels to avoid blindly increasing the intensity of industrial environmental regulation, thus exacerbating the restrictive role of the "compensation effect". Weakly regulated areas can make full use of the "compensation effect" of innovation to promote the industrial green transformation and effectively realize a win-win situation in which regional emission goals are achieved and ecological development thrives. Finally, to improve our ability to meet carbon intensity targets, there is a need to address multiple driving factors in the regions: Local governments should develop regional policies to promote FDI and trade openness with efficient, clean and technology based on their own economic conditions. In addition, local governments should pay attention to their green technology content and digestion-absorption ability

through FDI and foreign trade, and actively introduce advanced green technology and production processes. Moreover, in World, the scale of cities has expanded rapidly in a short time, which means that the corresponding management system, environment structure and governance system should be improved and perfected. Thus,

the burden on resources and the environment will be reduced and areas can avoid the contradiction that occurs among economic growth, energy consumption and environmental pollution due to urbanization.