

NEW TECHNOLOGICAL PATTERN REBOUND EFFECT FORECASTING

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The modern mechanism of natural management and environmental protection can cause delayed reaction of the economy on ecological issues while changing technological pattern in long-run if it is oriented only on current economic structure.

According to Glazyev S. overcoming the crisis and economic growth tempo acceleration must rely on transformation from raw material export to innovative type of development, achieving the nanotechnology wave of technological pattern [1]. Life cycle of such pattern can be graphically described by S-shaped logistic curve and consist of three phases illustrated on figure 1.

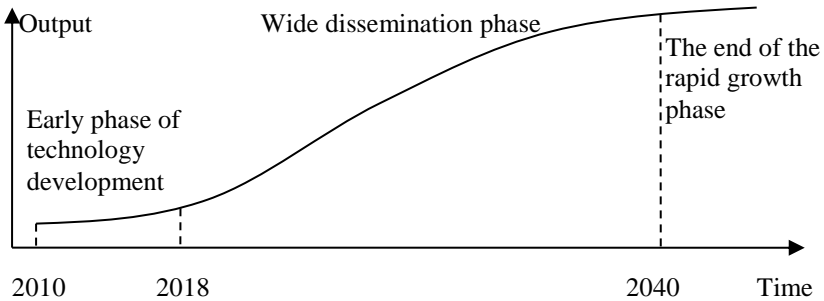


Figure 1. Nanotechnology pattern by Glazyev S. [1]

It should be expected that implementation of new technologies will be connected with natural management system transformation by changing of structure of raw resources utilization, environmentally harmful processes and their consequences. The development of single technology is likely to be connected with its efficiency improvement, its end product price reduction, economical growth and consumer welfare increase.

In this context the probability of rebound effect rising becomes considerable. In general it should be expected that the greater the difference between the current consumption level of single nanotechnology product and its saturation level, the greater the expected value of rebound effect. The main explanation of this phenomenon is linked to opposite directions of micro and macroeconomic development vectors, enclosed in Khazzoom-Brookes postulate: improving of resource utilization efficiency at the micro level leads to higher level of its consumption at the macro level, than in the absence of such improvement [2].

The second phase of new technological pattern which dates back to 2018–2020 can be considered as a phase with the greatest potential danger for economic and ecological interest balance.

For the produces efficiency improvement means price reduction without changing the scale of production, the release of working capital. There are two possible ways for redistribution of this capital: the extended production of final product or/and diversification of production. Both ways mean the enlargement of resource utilization.

For the consumer the effect will be similar. As the income increase it encourage him to raise the level of consumption of a new technology product, or, in the case of saturation, to diversify consumption, causing the appearance of a rebound effect for the product of nanotechnology or for other products.

The beginning of wide dissemination phase of a new technological pattern is foreseen in the early 2020. Before the beginning of this phase or on its certain time interval the possible negative consequences of the new technological pattern may be implicit, but ignoring possible trends can lead to significant impacts that have to be considered.

References:

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