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BEST AVAILABLE TECHNIQUES AND NATURAL CAPITAL MANAGEMENT

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Introduction

Development of industrial and larger scale agricultural production is unavoidably associated with the transformation of natural resources into forms that can be consumed to satisfy human needs. Besides that, production processes lead to emissions of pollutants into the environment. Depletion of natural resources and environmental pollution cause the natural capital decrease. Natural capital is the world's stock of natural assets that yields a flow of valuable ecosystem goods or services into the future. To manage natural capital at the national and international level, it is necessary to provide for the minimisation of negative impacts of economic activities as well for the conservation of natural resources in the best possible and economically reasonable way.

Table 1. Environmental Modernisation Costs in Russia

№	Data Sources	Costs
1	**Environmental modernisation cost** evaluated by "Harmonisation of Environmental Standards II" project (2009). Economic assessments made for several industrial branches.	About € 80 ÷100 billion
2	**Environmental modernisation cost** suggested by the Draft Concept of Transforming to BATs and Implementing Modern Technologies in Russian Industries (published by Ministry for Industry and Trade of the Russian Federation in 2015)	10,4 trillion Roubles or € 170 billion
3	**Prevented environmental damage** assessment based on values reported by CAFE (€ 120 to € 385 per year per person), urban population of Russia - 107.07 million people, and a five year (2016-2020) environmental modernisation plan	€ 64 ÷ 206 billion

Research

To design a development strategy for any region or country, it is utmost important to understand the value of the interrelatedness of the natural capital with other forms of capital, to realise that the natural capital is 'built into' social and economic processes. Most forceful arguments in this field were given by the US economist Simon Kuznets in the 1950s. (fig. 1)

Ecosystem services consist of flows of materials, energy, and information from natural capital stocks which combine with manufactured and human capital services to produce human welfare. For the entire biosphere, the value was estimated to be in the range of US $16–54 trillion per year, with an average of US $33 trillion per year.

To evaluate costs of air pollution, we have to consider expenses associated with medical insurance payments and work incapacity losses, maintenance costs of hospitals, etc. Besides human health issues, we have to take into account impact of pollution on natural ecosystems, economic entities and cultural sites.

To prevent pollution and thereby to minimise losses, Best Available Techniques (BAT) was put forward as a powerful environmental regulation instrument. In the EU, BAT has been effectively used to minimise environmental impact since 1996. In Russia, BAT based legislation was passed in 2014.

Undeniably, implementation of BATs will require significant governmental and private investments. Assessing these investments on the basis of various data, we have come to quite comparable results (see Table 1). More over, BAT based modernisation costs do not exceed prevented damage caused by exclusively air pollution, not taking into consideration water and soil pollution. Therefore it is possible to conclude, that internalisation of 'external costs' by means of implementing BATs in key economic sectors, should be beneficial for the society. As a result, Russia will obtain modernised industry and agriculture and get opportunities to conserve its natural capital.

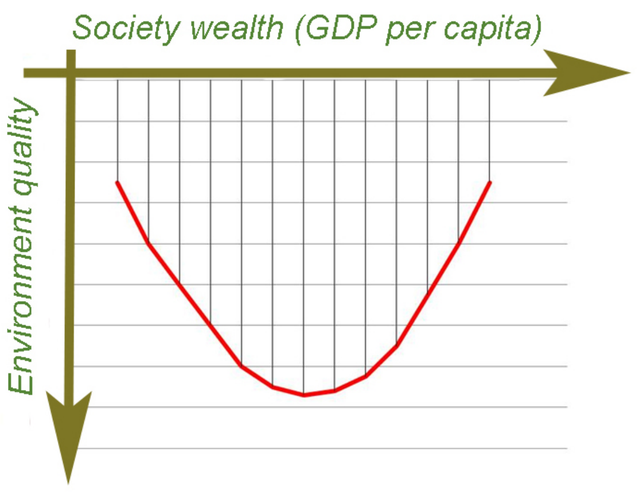

Figure 1. Natural Capital Concept

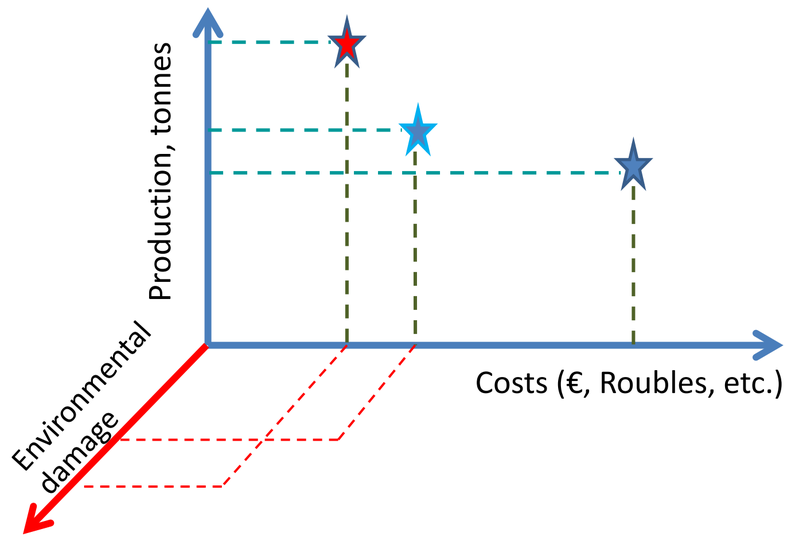

Figure 2. BAT Concept

Results

1. Figures, received by means of external costs caused by air pollution evaluation, are comparable to the estimated modernisation costs suggested by the Ministry for Industry and Trade. It is necessary to point out that we assessed only external human health costs associated with air pollution. Consideration of other damages will enlarge prevented damage figures.
2. Compared to gross domestic product (GDP) of Russia, which was equal to 71 trillion Roubles in 2014, costs of transferring Russian economy to BATs amount 7.3 – 14.6 % of GDP. Compared to annual withdrawal of capital from Russia (roughly 4 % of GDP in the period of 2008-2013) environmental modernisation costs do not look outrageous.

Conclusion

Russia is a country rich in natural capital. Still, extensive use of natural resources and significant environmental pollution caused by industrial and agricultural activities lead to the deterioration of its natural capital and to substantial 'external costs'. Internalisation of external costs has to become a strategy to rebalance the social and environmental dimension with the purely economic one, leading to greater environmental sustainability of the country. One of significant steps of this strategy is associated with environmental modernisation based on the reform of the overall permitting system and implementation of Best Available Techniques at larger industrial and agricultural enterprises. BATs can become a powerful tool for managing polluters, minimising emissions, internationalising 'external costs' and thereby conserving natural capital. Since the Constitution of the Russian Federation guarantees to its citizens the fundamental right on the protection of heath, environmental modernisation of Russian economy based on BAT has to be considered as one of the most important national objectives.