

***ECONOMIC AND LEGAL FOUNDATIONS OF THE
PUBLIC TRANSFORMATIONS IN CONDITIONS OF
FINANCIAL GLOBALIZATION***

Monograph

*edited by Doctor of Economic, Professor,
Academy of Economic Sciences of Ukraine
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The financial aspects of social sphere and banking sector have been analyzed. The assessment of legal framework for the regulation of economic relations in the state has been conducted. The priorities for the European integration of the domestic business entities as well as the problems of accounting standardization have been outlined. The common guidelines to improve accounting policies and support real economy have been suggested.

The publication is targeted at scholars, economists in banking sector, specialists in financial regulatory authorities and business entities, students.

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Green production: theory and modern practices¹

Abstract. The paper devoted to analyses of the main features to develop the green production. Thus, the authors systematized the main definitions and terms and approaches to define green production. Under this research, the authors highlighted the deferent point of views between to define green productions. Authors explained the evolution of the green production definition. In the beginning, the green production is analyzed in the framework of the specific approach to reducing industrial environmental impact from companies. Then, the concept of green production was developed under the Rio Conference in 1992. Therefore, the results of the analysis showed that a wide range of definitions and terms of green production could be explained by the aims of production and point of views. In the paper, the authors proposed to define green production as a cleaner production (CP) according to the United Nations Environment Programme (UNEP). Besides, green production was included to the Sustainable Development Goals 2030. Therefore, cleaner production defined as the strategy to combine two main concepts: environmental protection and improvement of resource productivity. The authors allocated the main features, principles the key issues of cleaner production. Thus, authors proved that the main principles of clean production should be: efficiency; leadership and organizational support; sustainable, measurable, accountable, replicable, and time-sensitive energy efficiency goals; robust tracking and measurement system; demonstrated results through the effective

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communications. The results of analysis allow identifying the most attractive (for investors) examples of clean production. In conclusion, in the paper, on the basis of the foreign experience, the authors systematized the main benefits, perspectives, and barriers to developing cleaner production. Therefore, the main barriers to implement cleaner production among companies were: resistance to change; lack of information, education, communications, finance; orientation on short-term goals; perception of risk; difficulty to receive access to innovation cleaner technology; gaps in legislation and accounting systems.

Keywords: cleaner, production, goals, green, economy.

Cleaner production is an integral, necessary component for achieving sustainable development. By eliminating or reducing waste at the source, economic development can continue to occur, but in a more environmentally sustainable manner.

Cleaner production is a specific approach to reduce industrial environmental impact. The origin of the approach is to be found in the American company 3M. In 1975 3M initiated its 3P-program: "Pollution Prevention Pays" program. The philosophy of the program was that any waste produced during the production process is to be regarded as a misallocation of input materials. The 3M-3P-program was designed to work through the inputs of the employees. Employees were encouraged to report options that could reduce waste and emissions and could save money at the same time. The company promised that any option that would reduce costs would be implemented and the employee would receive a reward for reporting the option. In this way, 3M was able to reduce considerable amounts of waste and considerable amounts of costs at the same time (DIELEMAN, 2007).

The concept of CP was developed during the preparation of the Rio Conference. UNEP (United Nations Environmental Program) developed in 1991 the often-cited definition, where CP defined as the continuous application of an integrated preventive environmental strategy to processes, products, and services to increase efficiency and reduce risks to humans and the environment. It was meant to reduce the environmental impact of industry and built among others on ideas from the 3P concept (pollution prevention pays). Whereas sustainable development is a goal for a wide array of target groups (population, consumers, businesses, among others), CP is directed to business, industry (processes, products) and service. The original definition points primarily to technical aspects: CP strategies are fundamentally concerned with operations, environmental sustainability and

maximization of waste reduction, recycling, and reuse at the enterprise level, and are thus microeconomic in scope” (Khalili, 2015).

Dealing with environmental problems caused by industry in the 1970s put emphasis on pollution abatement, treatment of emissions and effluents using so-called end-of-pipe techniques before releasing to the environment. The costs of the control of industrial pollution and of monitoring compliance with the even more stringent legal requirements increased continuously and for industrialized countries typically reached 0.8 to 1.7% of the GNP over the period 1972-1986. During the second half of the 1970s, the concept of low and non-waste technologies emerged, and the emphasis shifted to pollution prevention rather than pollution treatment. (El-Kholy, 2002). After that, according to the 1st European Roundtable on Cleaner Production Programmes, 1994 CP was specified as the conceptual and procedural approach to production that demands that all phases of the life cycle of a product or of a process should be addressed with the objective of prevention or the minimization of short and long-term risks to humans and the environment. A total societal commitment is required for effecting this comprehensive approach achieving the goal of a sustainable society. The (Fresner, 1998) identified CP as a preventive strategy to minimize the impact of production and products on the environment. The principal actors are the companies, which control the production processes. They are influenced strongly by their customers and politics.

From another point of view (Yaacoob and Fresner, 2006) CP is a preventive, company-specific environmental protection initiative. It is intended to minimize waste and emissions and maximize product output.

Glavic and Lukman (2007) describe CP as a systematically organized approach to production activities, which has positive effects on the environment. These activities encompass resource use minimization, improved eco-efficiency, and source reduction, in order to improve environmental protection and to reduce risks to living organisms. It can be applied to processes used in any industrial sector and to products themselves (cleaner products). Andotra (2015) proposes to define CP with the accounting the business activity features: CP is a preventative approach to managing the environmental impacts of business processes and products. CP uses changes in technology, processes, resources or practices to reduce waste, environmental and health risks; minimize environmental damage; use energy and resources more efficiently; increase business profitability and competitiveness, and increase the efficiency.

This the technical vision on cleaner production at the local, company level scale illustrated by Khalili, (2015): “Cleaner Production (CP) strategies are fundamentally concerned with operations, environmental

sustainability and maximization of waste reduction, recycling, and reuse at the enterprise level, and are thus microeconomic in scope”. The scientists from the Kaunas University of Technology Lithuania (2017) characterize CP as a preventive, integrated continuous strategy applied to products, processes, and services, to enhance efficiency, which improves environmental performance and reduces costs.

The definition of European Commission (OECD, 2018) defines cleaner technologies as technologies that extract and use natural resources as efficiently as possible in all stages of their lives; that generate products with reduced or no potentially harmful components; that minimize releases to air, water and soil during fabrication and use of the product; and that produce durable products which can be recovered or recycled as far as possible; output is achieved with as little energy input as is possible. It should be underlined that targets of CP also are in the process of evolving. According to L. Hens, C. Block at al., 2017 the focus is on three aspects:

1. While originally the approach was mainly applied contributing to sustainable development in the production sector, involving the service and administrative sectors, next to the decision makers points to its relevance for a broader societal realization of sustainable development. Monitoring and assessment instruments should be adapted to this new and evolving context.

2. This widening towards sustainable development has far-going consequences. The main one is the dilution of the environmental targets. More and more environmental quality and responsible use of resources is not anymore, a target by itself. As an element of sustainable development, it becomes embedded in a wider strategy addressing also economics and social aspects. At the policy level quality of life (QoL) targets, of which environment is the part, move on the forefront.

3. The widening of the targets also manifests itself at a strategy level. Originally, business and industry had to cope with the effects of major calamities. They reply was first negating the issue by moving the attention towards other aspects as jobs. Following acceptance of their undercooled attention for environmental issues, they installed environmental (including energy and resources) management. This illustrates the defensive the strategy during the first post Second World War decades. Embracing environmental management fundamentally changed this strategy: It allowed industry acting in a proactive way on environmental challenges. The approach allowed going beyond legal compliance and performing better on energy consumption and pollution than prescribed by the permits. This provided the sector a much more reliable perception in the environmental and sustainability debate. This fundamental move might provide a guideline for other sectors. Agriculture, forestry, and fisheries e.g. should leave their

environmental impacting perception behind and opt for sustainable food production methods.

For promoting a better understanding of cleaner production among companies the nine guiding principles were formulated. Principles of CP adopted by Veleva and Ellenbecker (2001) from the Lowell Center for Sustainable Production):

1. Products and packaging are designed to be safe and ecologically sound throughout their life cycles; services are designed to be safe and ecologically sound.

2. Wastes and ecologically incompatible byproducts are continuously reduced, eliminated, or recycled.

3. Energy and materials are conserved, and the forms of energy and materials used are most appropriate for the desired ends.

4. Chemical substances, physical agents, technologies, and work practices that present hazards to human health or the environment are continuously reduced or eliminated.

5. Workplaces are designed to minimize or eliminate physical, chemical, biological, and ergonomic hazards.

6. Management is committed to an open, participatory process of continuous evaluation and improvement, focused on the long-term economic performance of the firm.

7. Work is organized to conserve and enhance the efficiency and creativity of employees.

8. The security and well-being of all employees is a priority, as is the continuous development of their talents and capacities.

9. The communities around workplaces are respected and enhanced economically, socially, culturally and physically; equity and fairness are promoted.

Implementation of Cleaner Production principles will be effective in the case when a company has strong habits of core practices and principles. According to (Prindle, 2010) the best corporate strategies for introduction cleaner production are:

- Efficiency is a core strategy.
- Leadership and organizational support are real and sustained.
- The company has SMART (Sustainable, Measurable, Accountable, Replicable, and Time Sensitive) energy efficiency goals.
- The strategy relies on a robust tracking and measurement system. The organization puts substantial and sustained resources into efficiency.
- Energy efficiency strategy shows demonstrated results.

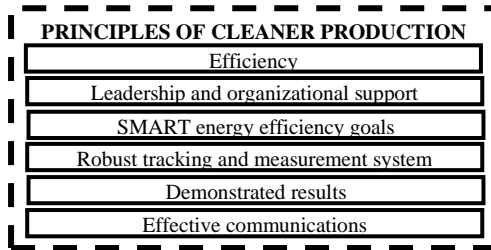


Figure 1 – The main principles of cleaner production at companies²

The results of the best cleaner production allow to allocate the most attractive examples of cleaner production:

1. A reduction in the quantity of material or energy consumed in manufacturing a unit of product.
2. Certain forging techniques reduce the amount of material required to make the product while also reducing machining energy and waste.
3. A reduction in the hazardous material required to extract a unit of mineral in metallurgical processes.
4. Pre-aeration of ore in water increases the efficiency of gold extraction, thereby reducing the use of cyanide.
5. A reduction of materials used in a product Lightweight bottles and small caps for water bottles.
6. A reduction of air emissions, wastewater, and solid waste generated in the production of a unit or product.
7. Resource efficiency as pollution prevention, as in the case of recycling water to achieve zero discharge.
8. A reduction of water and energy use in hospitality services.
9. Water-efficient showers and toilet appliances; low energy illumination.
10. A reduction of energy use in low-income housing by using green building design.
11. Energy-efficient orientation to maximize the amount of light entering housing units, and shading to minimize the use of A/C.

Many reasons may be held accountable for the rate of implementation of cleaner production. Some explanations used in the evaluation studies are “a lack of capabilities”, “a lack of resources”, “a lack of management commitment”, and “a lack of an appropriate institutional framework”. Some reasons focus on processes inside companies, others in the institutional environment around companies. Each of them can be

² Developed by the authors on the basis (Prindle, 2010)

looked at as reasonable explanations for the rate of implementation that is lower than initially expected. The explanations are however partial (Dieleman H. and Cramer J., 2004).

Cleaner Production assessment is one of the specific Cleaner Production diagnostic tools. This is a systematic procedure for the identification and evaluation of Cleaner Production options for the companies that are launching a Cleaner Production project. The methodology allows us to identify areas of inefficient use of resources and poor management of wastes in production.

The aim of the assessment phase is to collect data and evaluate the environmental performance and production efficiency of the company. Data collected about management activities can be used to monitor and control overall process efficiency, set targets and calculate monthly or yearly indicators. Data collected about operational activities can be used to evaluate the performance of a specific process.

Indicators of cleaner production address all three dimensions of sustainable development – environmental, social and economic. The indicators of CP are developed mainly for production facilities, and they aim to address all key aspects of production – energy and material use (resources), natural environment, community development and social justice, economic performance, workers, and products. The indicators of CP have the following main objectives: educate business about cleaner production; inform decision-making by providing a concise information about the current state and trends in a company/facility performance, environmental programs; promote organizational learning; provide organizations with a tool to measure their achievements toward cleaner production goals and targets; allow for comparisons between organizations' performance in the environmental, social, occupational and economic aspects of their production; provide a tool for “cross-checking” organization's mission and reporting results to interested stakeholders; provide a tool for encouraging stakeholder involvement in decision-making (Veleva et al., 2001).

On the base of the (White and Zinkl, 1998; Dow 1999) Veleva and Ellenbecker suggest twenty-two core indicators. These are chosen to measure common issues for all production facilities, such as chemical releases, energy use, water use, hazardous and non-hazardous waste, work-related accidents and injuries, charitable contributions. The system of proposed indicators includes the next indicators: freshwater consumption, materials used, energy use, percent energy from renewable sources, kilograms of waste generated before recycling, global warming potential, acidification potential, kilograms of persistent, bioaccumulate and toxic

chemicals used, costs associated with EHS (environment health and safety) compliance, Rate of customer complaints and/or returns, Organization's openness to stakeholder⁵ involvement in decision-making process, Community spending and charitable contributions as percent of revenues, Number of employees per unit of product/dollar sale, Number of community-company partnerships, Lost workday injuries and illness case rate (LWDII), Rate of employees' suggested improvements in quality, social and EHS performance, Turnover rate (or average length of service of employees), Average number of hours of employee training, Percent of workers who report complete job satisfaction, Percent of products designed for disassembly, reuse or recycling, Percent of biodegradable packaging, Percent of products with take back policies in place.

In the last years, cleaner production has led to a paradigm shift in environmental management at the level of stakeholders, industries, businesses, and financial institutions, as well as local governments and communities. However, there have been a number of barriers to the promotion and adoption of cleaner production.

According to the guidance of Getting to Green – a Sourcebook of Pollution Management Policy Tools for Growth and Competitiveness (Ahmed, 2012) barriers arise from a combination of the following factors, any of which can impede the uptake of CP:

- companies' lack of focus on CP;
- lack of awareness of cost savings from CP and hence reluctance to invest upfront costs;
- lack of technical ability to identify CP projects and develop these into profitable projects;
- perception of the risk of implementing a technology that may be outside the industry norm;
- lack of access to finance, although many CP investments require relatively modest sums.

From the other side in the paper (United, 2018) the experts systematized 10 barriers to promote and adopt of cleaner production (figure 2).

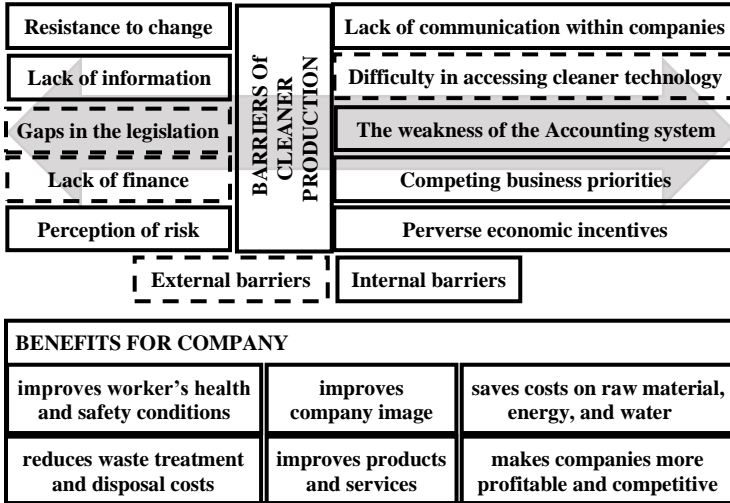


Figure 2 – The main barriers and perspectives to implement cleaner productions among companies³

Thus, the first key barrier is resistance to change. Many stakeholders have an attitude to follow business as usual and not adapt to change. Any change is considered as unwarranted, risky and not necessarily profitable.

Therefore, lack of information, expertise, and adequate training. Many a time, the stakeholders are interested in the concept of cleaner production but are unable to put it in practice, due to information gaps and lack of technical assistance.

Besides, the most difficult barriers are lack of communication within enterprises. At times, a stakeholder gets interested in cleaner production and has the necessary skills or expertise. However, the stakeholder is unable to communicate the concept and its benefits to the top management. This creates a barrier to implement cleaner production.

A significant impediment to the adoption of cleaner production is the emphasis of enterprises on short-term profitability. Since enterprises are judged by markets and investors principally on short-term performance, they have difficulties in justifying some of the investment in cleaner production processes and technologies, even when there are demonstrably attractive long-term financial returns.

³ Developed by the authors on the basis (Ahmed, 2012; United, 2018; Pimonenko et al., 2018)

Cleaner production involves possibilities for process modification, equipment replacement or product/packaging redesign. Some stakeholders view this as risky, especially if the technology is not proven, or the product is not tested in the market.

Investment in new, cleaner technology is a major decision for enterprises to undertake. In addition to the substantial costs of new technology, there are several potential external barriers, which may discourage or prevent enterprises from updating their existing plant and equipment. These can include the complexity of new technology, the level of technological specificity (cleaner technologies may be hard to transfer from one user to the other), etc.

It should be underlined, that the gaps in the accounting systems provoke the failure to capture environmental costs and benefits. Accounting systems and project appraisal procedures very often fail to take adequate account of environmental impacts, risks, liabilities and associated costs (which are not easily quantifiable to start with). Because of these limitations, the stakeholder is often unable to place environmental performance in the business perspective and therefore fails to fully appreciate the economic benefits of practicing cleaner production.

The analysis of the foreign experience showed that the implementation of cleaner production technologies has been hindered by a lack of access to finance. Banks, government investment agencies, corporate finance departments, venture capitalists, and other sources of risk capital for the industry either discriminate against or do not have the competence to evaluate applications that concern cleaner production programmes, thus severely

A lack of orientation in the existing national policy and regulatory framework towards cleaner production is one of the major impediments to the adoption of the cleaner production strategy. Conventional regulatory approaches have in many cases proved to be counterproductive to the uptake of cleaner production. By assuming that the regulators are in the best position to determine appropriate action, regulations may engender an attitude of complacency on the part of the management.

Economic subsidies for business resource inputs may be a significant disincentive to cleaner production. For example, to the extent that governments subsidize the price of energy and water or the prices of relatively polluting fuels, through subsidies, they will diminish the financial benefits of cleaner production.

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