

Innovation Day at COP24/ Poland joins the global trend of transformation towards CE – circular economy; key role of innovation

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Poland joins the global trend of transformation towards the circular economy (CE), thus implementing the Paris Agreement. The key role in this process is played by innovation. This change requires the involvement of, apart from public administration, also, *inter alia*, the industry and non-governmental organisations. The Innovation Day at COP24 is dedicated to participation of these three groups and mainly to the role of innovation in the process of transition to CE.

The circular economy means departure from acting according to the rule “take, produce, throw out”. In the CE model, raw materials are used in the economy as long as possible, their value is maximised, the amount of generated waste and emissions is minimised and if they are generated, they are managed in the optimum manner in economic and environmental terms. To some extent, they are given a new life.

- The modern world faces many interrelated challenges, including climate change, depletion of non-renewable resources, urbanisation, globalisation, growing population and level of consumption. The economic development is inevitably linked to the use of natural resources but it cannot any longer have a negative environmental impact in a form of waste and emissions to the atmosphere, water and soil – argues Minister Jadwiga Emilewicz.

- According to estimates, the global population in 2050 will be 9.8 billion, which means the increase by about 30% in the next 30 years. Also, to meet the needs of the growing global population, the extraction of raw materials necessary for production of consumer goods is growing. It is anticipated that – provided that existing trends are maintained – in 2050 the amount of raw materials acquired on a global scale will be about 8.5 times higher than in the 70s of the 20th century – indicated Deputy Minister Marcin Ociepa.

As explained by Jan Filip Staniłko, Director of the Innovation Department at the Ministry of Entrepreneurship and Technology: *- If future generations are to be able to meet their development needs, we need to immediately redesign the economic development model. The point is to minimise the environmental pressure in a form of acquired resources and emitted contaminants. A prerequisite to create a low-carbon and sustainable economy both in the world and in Poland is to adopt a new development model.*

Government actions

Actions for transition towards CE are one of the ways in which we implement the Paris Agreement. To this end, we prepared a Road map of transformation towards the circular economy. Its priorities are the sustainable industrial production and consumption, bioeconomy and new business models. Their implementation will be served by appropriate conditions, *inter alia*, legal for the functioning of companies in the CE model. Public administration will introduce them in the incoming years. This will be accompanied by broadly defined education and promotion of the CE issue among the Polish society.

Currently, the Ministry of Environment is carrying out a pilot programme on CE in non-urbanised areas. Within its framework, the commune of Wieluń encourages its residents to selective packaging waste collection using special devices with a mobile app. In addition, it is planned to resume the GreenEvo project – Accelerator of Green Technologies. Its objective is the international transfer of Polish technologies conducive to the environmental protection and economic development.

A key role in transformation towards CE will be played by innovative technologies. Therefore, the Ministry of Entrepreneurship and Technology has initiated the creation of the National Smart Specialisation regarding the circular economy. It indicates preferential areas of support of research, development and innovation work (R+D+I).

- Currently, one person in the EU consumes annually, on average, 16 tonnes of mineral raw resources, of which 6 tonnes become waste. Therefore, a key competence of the economy of the 21st century is ecodesign – stresses Minister Emilewicz.

And Deputy Minister Marcin Ociepa indicates: *- Transformation towards a low-carbon circular economy is impossible without ecoinnovations – both organisational and process and product. They are necessary at all stages of lifecycle of a raw material, from its acquisition, ecodesign, through production, consumption, waste collection to its management.*

Participation of the industry

It is worth mentioning that under the Paris Agreement, the governments agreed on, *inter alia*, leading to a quick reduction in greenhouse emissions, in accordance with the latest scientific information available. An important role here is played by actions in the industrial sector.

New digital technologies, implemented by the industrial sector, called jointly Industry 4.0 solutions, have a potential to accelerate transformation towards CE. The point is, *inter alia*, sensors embedded in products and devices which enable communication among them (Internet of Things) as well as collection and ongoing evaluation of big data. Consequently, they allow to increase the performance of processes and thus to reduce costs.

The panel on industry's contribution is devoted to the industry 4.0 approaches. As one of them, the new resource efficiency methodology, which was developed by the University of Cambridge and Emerson and which will be presented in the framework of this panel, seeks to integrate material flow, energy flow and CO2 emission impact measurement into a single framework. Building on Emerson's expertise in control automation and Cambridge's system-levels resource mapping techniques, the vision aims to exploit digital control data and develop tools for measuring industrial resource efficiency, leading to increased plant profitability and the identification of climate change mitigation options.

LOTOS

This year saw the introduction of the Act on electromobility and alternative fuels, which, in accordance with the assumptions is to create conditions for making electric transport popular in Poland. The LOTOS Group, which has always invested in innovative and effective technological solutions, as part of the current strategy seeks to gain the position of leader in the area of new generation fuels. This October, LOTOS opened the Blue Route, the project which allows drivers of electric and hybrid cars to ride freely along the A1 and A2 highways between Warsaw and Tricity. Apart from charging points for electric cars, the concern is planning to put up for sale such fuels as hydrogen, CNG and LNG. In this way, the LOTOS network of petrol stations will be transformed in the future into the LOTOS Energy Hub – modern network to get energy.

PKEE

As it results from a report on innovation, drawn up by the Polish Electricity Association, even in 2014 the Polish energy sector spent on innovations about 40% of the average for the whole economy. Today, companies only from the so-called big four declare budgets for research and development amounting to nearly 200% of the average for the economy (per employee). Among the most prospective technologies in the incoming years are those related to offshore wind farms, energy storage, digital services for consumers or prosumer energy industry. This trend is convergent with the global phenomenon of supporting low-carbon energy sources, driven by care for climate, environment and health.

Involvement of non-governmental organisations

An important partner in transformation towards CE are also non-governmental organisations. They, in fact, know the conditions of local groups or communities. What is possible thanks to them, is cooperation among entities which normally compete with each other. And as a result of cooperation and access to common resources (knowledge, experience, technologies), they can do more for CE and also for their own development than when

staying outside the cooperation platform. The sustainable development is dealt with leading non-governmental organisations, *inter alia*, WWF, UNEP GRID, INNOWO, WISE Europa. They carry out a number of CE-related initiatives and projects.