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FIRST REGIONAL CONFERENCE ON SUSTAINABLE INDUSTRIAL DEVELOPMENT

PROMOTING SUSTAINABLE ENERGY SOLUTIONS AND CLEAN TECHNOLOGIES IN CIS COUNTRIES

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VIC

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Introduction

The First Regional Conference on Sustainable Industrial Development: "Promoting Sustainable Energy Solutions and Clean Technologies in the CIS Countries" was organized by the United Nations Industrial Development Organization (UNIDO) from 22 to 24 November 2017 at the Vienna International Center (VIC) with the financial support from the Russian Federation.

It brought together more than 100 government officials, industry stakeholders, experts, and observers from the Commonwealth of Independent States (CIS) and other countries, as well as UNIDO staff, to discuss the most recent trends in sustainable energy solutions, clean industrial technologies and practices.

The conference promoted innovative, practical and cost-effective ways to address industrial sustainability issues and foster inclusive and sustainable industrial development in the CIS region. The event enabled participants to share experiences and gain new knowledge, whilst forging new partnerships, with the overall aim of scaling-up more sustainable technologies to counteract the threat of climate change and advance the 2030 Agenda for Sustainable Development.

The first day of the conference was dedicated to exploring strategies and instruments to promote "green industries", the adoption of resource efficient and cleaner production processes and energy efficiency policies and programmes, with particular attention paid to Energy Management Systems (EnMS) in line with ISO 50001.

During the second day, the conference participants debated best practices for leveraging public-private partnerships for the development and increased uptake of sustainable energy solutions and clean technologies, as well as financing opportunities for energy efficient industries and clean technologies.

The second day of the conference also saw the inauguration of a featured inter-regional exhibition of selected companies at the VIC, which showcased advanced cleaner technologies and successful applications of sustainable energy solutions.

The participants benefitted from the networking opportunities throughout the conference and were able to take advantage of technical expertise offered by UNIDO staff. On the sidelines of the conference, a number of bilateral meetings between UNIDO project managers and country delegates took place to address individual requests and queries.

In the course of the bilateral meetings, experts from UNIDO's Industrial Energy Efficiency Division met with a delegation from Belarus, Kazakhstan and Moldova. The main topics discussed were industrial energy efficiency and climate change, clean technology projects, as well as the involvement of UNIDO under the seventh cycle of the Global Environment Facility (GEF), with a focus on industrial energy efficiency, energy systems and impact programmes. Such programmes discussed included Global Cleantech Innovation and other focal areas which

contribute to global environmental benefits and sustainable development. Countries' delegations also explored a potential participation in the Industrial Energy Efficiency Accelerator (IEEA).

Representatives of UNIDO's Industrial Resource Efficiency Division met with the delegations from Belarus, Kazakhstan and Kyrgyzstan. During discussions with the delegation from Kazakhstan, potential participation in the Partnership for Action on Green Economy (PAGE) and questions regarding resource efficiency were raised. Main points addressed during the meeting with the Kyrgyz delegation were the control of waste movement and sustainable e-waste strategies in the region, while discussions with the delegation from Belarus concerned the country's involvement in the Eastern Partnership (EaP) GREEN programme . All the above mentioned delegations reiterated their strong interest in close cooperation with UNIDO.

In addition, a meeting took place between UNIDO's Green Industry Division and a delegation from Kyrgyzstan that allowed fruitful discussion on cooperation and future projects. Consultations were also held with UNIDO's Partnership Department to discuss the Strategy for Sustainable Industrial Development of Kyrgyzstan for 2018-2023 and a planned UNIDO Programme for Country Partnership in Kyrgyzstan.

Potential energy efficiency solutions for the attending Russian companies were discussed between experts from UNIDO's Resource Efficiency and Cleaner Production (RECP) Programme and JSC "RAOPROEKT", a company specialized in project organization in the field of radioactive waste and the decommissioning of nuclear and radiation hazardous objects.

The three-day event concluded on 24 November 2017 with a study visit to three best-practice industrial facilities in Vienna, which use cutting-edge sustainable energy solutions and clean technologies.

Welcome Speeches

The conference was opened by **Mr. LI Yong, Director General of UNIDO**, who reminded the audience that we all live in an outstandingly important development era marked by the implementation of the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change. Sustainable energy solutions and clean technologies must be in place to secure our planet's integrity towards achieving sustainable development. The importance of sustainable energy along with clean and resource efficient production practices have long been recognised as a necessary element as UNIDO supports its Member States to achieve sustainable industrial development. This approach is applied in UNIDO technical cooperation programmes and projects with countries from the CIS region. For the realization of this endeavour, UNIDO works in partnership with major international stakeholders, such as the Global Environment Facility, the European Commission, and other multilateral and bilateral donors. The region has significant potential to tap into the varied opportunities offered by the shift to the circular economy. UNIDO stands ready to support the CIS countries in this undertaking. The Director General underlined a strong commitment of the Russian Federation in supporting the conference and contributing to UNIDO's mission of promoting inclusive and sustainable industrial development (ISID). He further stressed the importance of the conference in generating ideas and partnerships that can facilitate transformative policy-making and encourage much-needed investments. Further emphasis was given on Industry 4.0 and the necessity to retrofit existing industrial facilities with best available "green technologies" and encourage digitalised and interconnected industrial production. The Director General outlined the importance of such measures for supporting the ability of countries in the CIS region to leapfrog and develop smart factories, decentralized micro-grids, optimise energy and resource use, heighten productivity and achieve substantial cost savings.

Mr. Alexey Aleshin, Chairman, Federal Environmental, Industrial and Nuclear Supervision Service of the Russian Federation, Rostechnadzor, welcomed the audience and emphasized the relevance of the conference's topic, its complexity and the indivisible nature of the Sustainable Development Goals (SDGs). Considering the rapid development of global relations, the SDGs can only be implemented together. The industrial sector is hereby key and inextricably linked with technological progress in finding innovative solutions in manufacturing, taking into account rising energy consumption and the attributed influence on the environment. Regulatory authorities are crucial as they develop relevant legislation and conduct inspections of industrial enterprises. In recent times, the regulatory system of industrial safety in the Russian Federation has undergone a number of important changes, which resulted in the reduction of the number of accidents, an increase of general productivity and the implementation of technology innovations throughout the country. Rostechnadzor cooperates with regulatory authorities of the CIS region within several frameworks in exchanging experience in industrial safety and energy security. Cooperation with UNIDO is considered of high value and the First Regional Conference unites countries at different levels of industrial development, to discuss global questions and challenges of today.

Mr. Georgy Mikhno, Acting Permanent Representative of the Russian Federation to the International Organizations in Vienna, spoke about cooperation with UNIDO and the successful implementation of energy efficiency projects in the Russian Federation. He mentioned that the Russian Federation is currently funding fourteen UNIDO projects in the field of sustainable industrial development. The results of the ongoing projects in Armenia, Belarus, Kyrgyzstan and Tajikistan are positive. New initiatives supported by the Russian Government include a global forum on converging environmentally friendly technologies. Mr. Mikhno expressed hope that the First Regional Conference on Sustainable Industrial Development will open a new chapter for future cooperation between the Russian Federation and UNIDO.

Mr. Dmitry Belanovich, Adviser to the Minister of Natural Resources and Environment of the Russian Federation, presented past and future cooperation between the Ministry of Natural Resources and Environment and UNIDO in the field of environmental safeguarding. One example of this cooperation is a project which focusses on the reduction of ozone depleting substance

emissions under the framework of the Montreal Protocol. Other examples include projects in industrial energy efficiency, resource efficiency of industrial facilities, "green building" and the utilization of stabilized organic waste containing Persistent Organic Pollutants (POPs) under the Stockholm Convention. Furthermore, the implementation of innovative water treatment and water preparation technologies is one of a number of projects which emanate from successful cooperation between the Ministry and UNIDO. The Ministry established capacity building centers focusing on hazardous and industrial waste and the protection of water bodies under the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area. In the future, the Ministry plans to continue to strengthen its partnership with UNIDO in the area of naturally-based converging technologies.

Panel session I: Strategies and instruments to promote green industries

Global problems require global cooperation and local action. Despite an increasing urgency, the industrial sector has been slow in "greening" production processes. This can be largely explained by two factors, namely competition pressure which dominates the marketplace and protectionist policies. The underlining misconception is that entities integrating "green industry" aspects may not survive the associated cost of adopting environmentally sustainable practices.

The first panel of the conference opened with defining the role of environmental safeguarding in advancing ISID, thus setting the stage for a discussion on strategies, policies, and best practices that promote the establishment of "green industries" in a country-specific context. In his opening remarks, **Mr. Stephan Sicars, Director of the UNIDO Department of Environment**, emphasized the role of industries in complying with ever faster approaching planetary boundaries. By pointing to UNIDO's flagship programme on RECP, the audience gained insights on practical ways of addressing the economic, environmental and social dimensions of sustainability. These included UNIDO's global RECP network and the promotion of eco-industrial parks as a way to apply low-carbon and low-impact technologies and provide essential services for sustainable cities. In addition, the use of the circular economy model for reducing the environmental footprint of industries, decreasing recourse dependency, increasing income levels as well as creating new jobs was discussed. Overall, UNIDO's experience shows that the promotion of "green industries" supports the resilience of local industries and creates economic and social value along the supply chain.

Country-specific perspectives were shared by **Ms. Lusine Avetisyan, Head, Economic Mechanisms, Standards and Technical Regulations Division, Department of Environmental Strategic Programmes and Monitoring, Ministry of Nature Protection of the Republic of Armenia**. The Armenian Government introduced the concept of the "green economy" in 2013, and seeks to address challenges including energy efficiency, air pollution from the transport sector, the development of renewable energy sources (RES), and the sustainable management of key resources such as water and soil. The government aims to combat these challenges by developing new government programmes that attract investments and new technologies.

Mr. Yury Fedorov, Deputy Director, Department for State Regulation of Tariffs, Infrastructure Reforms and Energy Efficiency, Ministry of Economic Development of the Russian Federation, presented state programmes that address energy efficiency and environmental safeguarding by building up on the commitment to international agreements. Examples included presidential decrees and legislation on waste, pollution, land use and the mitigation of greenhouse gas (GHG) emissions. By the year 2030, the Government of the Russian Federation seeks to advance its policy measures to accelerate the "green" development of its industrial sector. Going beyond the mid-century, "green investments", including from the New Development Bank (NDB) and a structural adjustment of the economy, are set to result in a substantial decrease in the carbon intensity of the industrial sector.

Ms. Elena Vikulova, Unit Chief, Department for Economic Co-operation, Ministry of Natural Resources and Environment of the Russian Federation, presented case studies of cooperation with GEF and UNIDO. Such case studies include the promotion of "green growth" and sustainable energy, the preservation and safeguarding of the environment, the creation of effective mechanisms for hazardous waste treatment, as well as capacity building under the UNIDO Centre for International Industrial Cooperation (CIIC) / National Research Centre (NRC) "Kurchatov Institute" Initiative.

Best practice examples on the promotion of RES in Russia were shared by **Mr. Alexander Smekalin, Chairman of the Government of the Ulyanovsk Region**, where the integration of wind energy in industrial zones resulted in the development of a local manufacturing base and innovative research and knowledge infrastructure. The industrial zone "Zavolzhye" encompasses 706 hectares and 22 companies from eight countries that invest in the area. The Ulyanvsk Region is currently constructing a wind farm with a total capacity of 250 megawatt (MW), which will be finished within the next five years.

General insights on industrial regulation and safety compliance in the field of environmental safeguarding were presented by **Mr. Ivan Yasinskiy, Deputy Head, Department of General Industrial Supervision, Federal Environmental, Industrial and Nuclear Supervision Service (Rostechnadzor)**. Rostechnadzor's function within the state regulatory system is to develop regulatory documents and technical regulations, licensing, authorizing, controlling and supervisory activities.

Ambitious targets were presented by **Ms. Anar Bulzhanova, Deputy Director, "Green Economy" Department, Ministry of Energy of the Republic of Kazakhstan**. The share of RES in the power sector is set to increase to 50 percent by 2050, while energy intensity should be reduced by 25 percent already by 2020. By fully committing to the 2015 Paris Agreement, the Government of Kazakhstan pledges to substantially transform its economic activity, promoting not just sustainable energy solutions, but also the concept of the circular economy. It plans to do this by incentivising waste reduction on a household level, promoting recycling businesses, and establishing new recycling obligations in the manufacturing sector.

Mr. Aliaksei Fiodarau, Deputy Head, Main Department of Sustainable Development, Ministry of Economy of the Republic of Belarus, presented the National Strategy on Sustainable Development until 2030 and the National Plan for the Development of the "Green Economy" in Belarus. Until 2020, the National Strategy focusses on high-technologies, while until 2030, the advancement of human development and knowledge-based industries are key objectives that will address the promotion of sustainable energy, waste reduction and local initiatives. The National Plan specifically targets the development of industrial areas

in the "green economy", supported by state laws and procurement, certifications and the introduction of RECP platforms in the country.

In the concluding questions and answers (Q&A) session, panellists and members of the audience exchanged ideas on what tools and measures should be used to promote "green industries" and how to stimulate compliance with introduced policies and regulations. While there was a general agreement on how "green industries" are comparably more expensive at an initial stage of development, governments should nevertheless define minimum requirements for environmental safeguarding in industries, focussing on particular industrial sectors that offer profitable conditions. In most cases, economic viability takes the highest priority, therefore it is considered essential to look for good business cases and initiate a step-by-step approach that is supported by firm and long-term state regulation in compliance with national budgetary conditions.

Panel session II: Adoption of resource efficient and cleaner production processes

Panel session two of the conference set the focus on how to adopt RECP processes as a preventive strategy concerned with environmental management concepts and total productivity tools in order to improve resource productivity and reduce pollution intensity and risks. Essential techniques in advancing RECP were shared by a keynote speaker **Mr. Branko Dunjić, RECP Sound Chemical Management Coordinator, UNIDO Industrial Resource Efficiency Division**. The expert outlined techniques such as good housekeeping, input material change, better process control, equipment and product modification, technology change, onsite reuse and recycling, as well as the utilization of useful by-products for subsequent industrial processes. Insights shared by UNIDO revealed that, aside from technology, human factors play a decisive role in advancing the sustainable development of industries and the adaptation of RECP processes. There needs to be a strong commitment by senior management to RECP on the ground, while at the same time, the government must support industries and make sure sustainable industrial practices are a high-priority topic on the development agenda. UNIDO's introduction to the second panel session also included a glimpse at its RECP methodology, the concept of chemical leasing, and the global RECP network, overall conveying the message that RECP has proven to be beneficial for enterprises, the environment, employees, society and the economy at large.

Moving to the country-specific context, **Mr. Haidar Khol, First Deputy Minister of Industry and New Technologies, Republic of Tajikistan,** introduced the country's current development status with a focus on key industrial sectors. With an increasing energy demand, the adaptation of RECP could become a key aspect of the country's growing mining and energy sector, emphasizing foremost the promotion of energy efficiency in the national context of industrial development.

Ms. Aisulu Amanova, Head, Department of Sustainable Development Strategy, Ministry of Economy of the Kyrgyz Republic, presented the National Strategy for Sustainable Development until 2040, which contains reform and development programmes as well as strategic indicators to measure progress in the country's sustainable development. Under the National Strategy, the government has adopted the "green economy" concept, focussing on the support and coordination of the transition process to an inclusive "green economy", the dissemination of information and creation of training platforms, as well as monitoring advancements on both the state and private sector level. The government is

currently working on several state programmes that seek to advance the sustainable and inclusive development of the economy and industries, reinstating its commitment to the 2030 Agenda for Sustainable Development.

Ms. Veronica Lopotenco, Head, Air and Climate Change Section, Ministry of Agriculture, Regional Development and Environment of the Republic of Moldova, presented the National Cleaner Production Program (NCPP), implemented by UNIDO under the Global Program on RECP with the support of the United Nations Environment Programme (UNEP). The NCCP aims to contribute to sustainable development and the generation of employment and income in Moldova by scaling up and mainstreaming the application of RECP processes and policies. Key activities under the NCPP include training of national experts, the provision of assistance to businesses and other entities in the implementation of RECP and the promotion of RECP policies at government levels. Prioritised sectors under the NCPP are the food industry, construction materials and municipal services. Case studies presented point to the successful implementation of the NCPP, highlighting the achievement of savings and reductions in energy, water, resources, emissions, and waste in the private sector. Currently the government seeks to incorporate RECP into its road map on the "green economy".

Practical lessons on the successful implementation of the Stockholm Convention were shared by **Ms. Natalia Sokolova, Head, Department of State Ecological Supervision at the Federal Service for Supervision in the Sphere of Nature of the Russian Federation, Rosprirodnadzor**. An important milestone of the implementation plan was the Joint Declaration on the support and promotion of ecologically steady decisions in the Russian Federation by UNIDO and the Russian Railways enterprises of 2013.

A strong case for the uptake of sustainable energy was made by **Ms. Günel Bahaddinova, Expert, Ministry of Ecology and Natural Resources of the Republic of Azerbaijan**. Currently, seven percent of the country's electricity is provided by wind, solar, biomass and geothermal energy. In accordance with the country's favourable natural conditions, the uptake of wind and solar energy is set to increase the overall share of alternative sources in the power mix to 20 percent by 2020.

Finally, **Mr. Alexander Sobko, General Director, Raoproekt,** presented business practises in the use of recyclable materials and reusable resources as raw materials. The company focuses on the implementation of engineering and project management in areas such as radioactive waste and the decommissioning of nuclear and radiation hazardous objects. By applying big data and artificial intelligence, Raoproekt is increasingly looking into ways to collect raw materials from waste in the most effective way and to utilize technology for transforming waste into raw elements.

Panel session III: Enhancing industrial energy efficiency and energy management systems

The third panel was initiated with an introductory note by **Mr. Tareq Emtairah, Director of the UNIDO Department of Energy**. The work of UNIDO's energy department is concerned with realizing the great potential of reducing GHG emissions by promoting RES in the power sector and increasing industrial energy efficiency (IEE). By bringing together people, technology, data, and other driving factors, energy consumption in industries can be reduced substantially, while at the same time increasing economic competitiveness and creating new jobs. Given that proven and established technological applications exist, the focus of UNIDO's work is set on sustainable development and overcoming policy challenges that hinder the advancement of RES and IEE based on a broad set of factors.

According to **Mr. Marco Matteini, Programme Officer, UNIDO Department of Industrial Energy Efficiency**, who acted a s a moderator of the session, such barriers include the lack of concern and understanding, limited capacities to identify opportunities, poor or misused monitoring systems and data, and the high up-front costs of implementation weighed up against savings that are typically generated over the long-term. The main challenge for IEE is that practices are not integrated into the daily management of industry; therefore, a more systematic approach is needed to overcome the identified barriers. UNIDO's contribution to panel session three gave an introduction to EnMS, in particular ISO 50001, which aims to enable the following of a systematic approach in achieving continual improvements of the energy performance in industry. Important lessons were shared by UNIDO's involvement in IEE, where energy savings in the first 1-2 years of implementing EnMS-ISO 50001 reach up to 15 percent on an organizational level, with little or no capital investments required. This makes a strong case for increasing IEE, which ultimately also results in non-energy benefits, including water and material savings, as well as the reduction of maintenance costs. In order to capitalize on the wide range of benefits and programmes that seek to advance IEE, measures must address governments, markets and the private sector holistically. Essentially, such programmes must also take into account the complexity of EnMS supply and value chains, the existing country baseline, and ultimately strive for long-term implementation.

Ms. Astghine Pasoyan, Director, Energy Saving Foundation, Republic of Armenia, gave a comprehensive overview of the industry's structure of energy use and its savings potential. Armenia's industrial energy demand is expected to increase in the future, thus the use of energy efficient technologies and production methods

particularly in the chemical industry, metallurgy and small and medium-sized (SME) enterprises are of key priority. Barriers similar to those commonly identified by UNIDO exist in Armenia, namely a lack of knowledge about energy efficient technologies, uncertainties about price or capital availability and the perceived risk associated with new technologies. Steps to introduce IEE include the avoidance of unnecessary energy consumption, decreasing specific energy consumption, improving the efficiency and utilization ratio, promoting heat recovery and, lastly, the uptake of RES. In this context, the government plays an important role in providing state programmes as well as supportive economic and legal mechanisms. Aside from legislative support and the uptake of finance, information and outreach, in addition to capacity building, have been identified as factors essential to the successful implementation of establishing a more sustainable energy system.

Mr. Sorboni Kholmuhamadzoda, Head, Energy Department, Ministry of Energy and Water Resources of the Republic of Tajikistan, presented three strategic areas of the country's engagement: energy security, transport and food. In the field of energy security, Tajikistan aims to develop new energy capacity and infrastructure, reduce losses, promote energy efficiency and RES, reform the billing system and establish regional energy markets. The current power mix is dominated by hydropower plants (HPPs), which make up 95 percent of all electricity provided. The experience of Pamir Energy was presented as a case study of the first public-private partnership (PPP) initiative in Tajikistan. The company is tasked with the distribution of electricity to domestic consumers as well as to neighbouring Afghanistan. There are currently several ongoing projects in the construction of additional HPPs and power transmission lines carried out with the involvement of foreign investments.

Mr. Zhaxylyk Tokayev, Head, Energy Saving and Energy Efficiency Department of the Industrial Development Safety Committee, Ministry for Investments andDevelopment of the Republic of Kazakhstan, introduced the country's approach on how to increase the energy efficiency of industry and promote energy management systems. Barriers to IEE identified by the Ministry are characterized by the private sector's lack of initial interest in increasing efficiency, under conditions where business activities are already profitable. Furthermore, hierarchies within businesses have been identified as often prohibiting progress and industry is often afraid to replace existing techniques and approaches with new ones. In addition, there are a wide range of energy performance audits (120 energy auditing companies and 180 energy auditors), which pose the challenge in identifying the right one. To overcome such persistent challenges, laws have been adopted that aim to establish requirements for companies to comply with EnMS. In addition, the government seeks to advance energy efficiency throughout the establishment of educational centres, the National Institute for Energy Saving Development, the monitoring and coordination of energy efficiency programmes and international cooperation. Lastly, solutions for the implementation of EnMS such as their introduction as an alternative to conducting a mandatory energy audit were mentioned.

Mr. Aladdin Kuli-Zade, Deputy Director, Department for Cooperation in Economics of the Executive Committee of the Commonwealth of Independent States (CIS), reinstated the high priority industrial development of the CIS member states has on the agenda of the Committee. Detailed figures on the transformation process in the transport sector were presented, emphasizing the growing relevance of gas as a transport fuel among the CIS countries. Development priorities acknowledged by the CIS include renewable energy and energy efficiency, as well as the stimulation and introduction of research in new technologies and innovative materials in the fuel and energy complex. Presented activities also contain the establishment of economic incentives and mechanisms to enhance the innovation activity of energy companies and the training of personnel and exchange

of experience among member states. In this context, the Committee actively supports the concept of the establishment of a regional waste management system for electronic and electrical equipment, developed by the UNIDO CIIC in the Russian Federation.

Mr. Tikhon Koveshnikov, Head, Department for State Programme Monitoring, Research and Educational Activities, Federal State Budgetary Organization at the Russian Energy Agency, Ministry of Energy of the Russian Federation, presented the outlines and methodology of its joint project with UNIDO on energy efficiency benchmarking of industrial enterprises in the Russian Federation. A key component of the project was the creation of an automated online information system that provides a visualization of verified data of studied enterprises in the form of interactive dynamic models, showing ranking results based on selected benchmarks. Based on the experience under the joint project, the Russian Energy Agency promoted the idea at the Ministry of Energy of the Russian Federation and put forward recommendations for amending legislative acts of the Russian Federation, with the aim to incentivize the participation of industrial enterprises in energy efficiency benchmarking.

Mr. Sirojiddin Akhmedov, Deputy Head, Department of Energy Efficiency and Renewable Energy Sources Development, Ministry of Economy of the Republic of Uzbekistan, presented the approach on the implementation of ISO 50001 into national policy making. For the period 2015-2019, ISO 50001 has been approved by 78 enterprises. The scope of implementation includes industries in sectors such as electro-technics, heat and supply, oil, gas and electricity, chemicals, mining and smelting, automotive, lighting, construction, as well as cotton processing. While encompassing a wide range of industrial sectors, the government has identified common barriers, namely a lack of commitment on the management level, insufficient knowledge and skills of staff, as well as deficits in technical equipment and the ability of maintaining the functioning of EnMS. Suggested countermeasures include the improvement of legislation to stimulate the introduction of EnMS, the promotion of results-orientation in energy management practices on the personnel level, the creation and maintenance of useful information platforms on energy-saving technologies, dissemination of methods and experience in their use, the continuous improvement of staff knowledge and reduced staff turnover and, finally, the introduction of differentiated tariffs to stimulate EnMS.

The concluding Q&A session raised the question of whether energy auditing should be mandatory. While it is deemed difficult to follow up on auditing with the implementation of EnMS due to the high investments required, evidence suggests that legislation can have a positive impact. There exists a range of tools to choose from, including mandatory efficiency measurements, however these tools need to fit within the overall framework of advancing IEE in order to have a lasting effect (For instance, EU legislature offers the option to choose between EnMS and auditing). Finally, successful implementation also depends on additional policies that are set in place connected to energy efficiency in the country-specific context.

To conclude the first day of the conference, **Mr. Jacek Cukrowski, Chief of the UNIDO Europe and Central Asia Regional Division,** summarised the achievements of the first three panel sessions, thanking all participants for their valuable contributions and emphasizing the common awareness that more needs to be done along the whole value chain of production and consumption in order to embark on a path of sustainable development. Mr. Cukrowski noted that acting on ISID becomes a window of opportunity, not only for increasing economic competitiveness, but also for creating high-value “green jobs”, while at the same time safeguarding the environment we all depend on.

Panel session IV: Public-private partnership (PPP) for development and promotion of sustainable energy solutions and clean technologies

In his opening remarks at the fourth panel session, **Mr. Edward Paul Clarence-Smith, UNIDO Senior Consultant on Green Industry,** revived the common definition of PPP. Going beyond the definition, Mr. Clarence-Smith focussed on what types of PPPs exist, why they are essential in achieving the goals set under the 2030 Agenda for Sustainable Development and what is needed in order for them to be implemented successfully. Noteworthy is the role of PPP in Research and Development (R&D), where combined efforts of government, private sector and other institutions can advance a fast and further drive of technology and help to overcome the so-called "valley of death" (the often crucial gap between initial R&D and market introduction). Long-term contracting of PPP was mentioned to be of high relevance in providing public services where private parties bear substantial risks, such as hydro- and wind power projects or energy efficiency in buildings. Essentially, PPPs enable involved parties to raise more capital than would otherwise be possible, while also signalling a guaranteed demand after project completion. Efficiency during construction and commission compared to public procurement often turns out be higher. However, there also exist potential challenges with PPP (e.g. delays) and they should not automatically be considered as the first best option. Private sector inclusion can improve the situation of certain projects, although successful management of PPP over their entire life-time span must be ensured by all parties, including the government. Overall, the public should try to shift market risks to the private sector, but keep in mind that businesses only engage if the public entity lowers the associated contextual risks, namely in the form of legal and strategic barriers.

Mr. Arman Kashkinbekov, CEO, Association of Renewable Energy, Republic of Kazakhstan, expressed his understanding about the role of governments in PPP, emphasizing that a fair share of support by the public entity should be provided over the entire duration of projects. Mr. Kashkinbekov made clear that all partners should set out to work with a realistic understanding of projected economic scenarios, taking into account that growth might stagnate and that outlooks eventually have to be adjusted accordingly. Sharing the Kazakh experience, the Association of Renewable Energy sees considerable potential for wind and solar energy development and seeks to significantly step up its commitments. Noteworthy, investors from the traditional energy sector are starting to invest in solar and wind in Kazakhstan, enabling the securitization of the Kazakh energy sector where one-fifth of all power comes from Soviet-era

coal power plants that are reaching the end of their lifetime. However, there are currently only few PPPs that are involved in the development of RES in the country. This is mainly due to the private sector's reluctance to engage in long-term commitments with government entities. The short-term interest of the private sector prevails, hampering fast development of the sustainable energy sector. What is more, the energy market is heavily dependent on oil price fluctuation, which influences the overall macro-economic condition and thus the profitability of businesses. The government is seeking to address the lack of PPP by introducing according legislation, lifting market barriers, establishing a high-quality tender process, and improving the overall bankability for RES projects. Successful PPP so far were introduced in projects that worked to replace Soviet-era electricity lines and infrastructure.

The crucial role of PPP in improving energy security was also resonated by **Mr. Viktar Akushka, First Deputy Director, Department for Energy Efficiency, State Committee for Standardization of the Republic of Belarus**. Since there are no considerable domestic energy resources, energy efficiency is a high-priority topic for Belarus and is thus supported by a comprehensive framework of laws on energy savings and efficiency. Since 2000, the contribution of renewable sources to the country's energy mix has steadily grown, substantially supported by the government. In an effort to further promote efficiency and the uptake of renewable energy, namely solar PV, hydro and wind power, in 2015 the government introduced a law on PPP, setting up definitions, mandates, conditions, modalities, and major strategic goals for industries and government agencies. The legislation enables private businesses to access the centralized grid, which is considered as a key factor, in addition to regulated tariff setting for energy from renewable sources. The legislation creates a favourable environment for PPP in RES development, including tax holidays for investors during the first 10 years of operation. Looking ahead, the development of bioenergy forms a huge potential for further transforming the country's energy sector toward enhanced sustainability. Public funds are also going into electric transportation in urban areas, housing insulation, the development of rural areas, and last but not least outreach programmes that aim to involve the general public, since 75 percent of all energy is consumed by the public.

Similar to the case of Belarus, energy efficiency and renewable energy are key public policy priorities of the Government of the Republic of Azerbaijan. In his contribution to the panel, **Mr. Fikrat Gurbanov, Deputy Director, Industry Department, Ministry of Economy of the Republic of Azerbaijan,** presented the government's Strategic Map for the Development of National Economic Perspectives of the Republic of Azerbaijan that was established in 2016. The Strategic Map includes the building of new waste management facilities, promoting energy efficiency technologies, and stimulating the creation of new industries. One of the first results of the Strategic Map was the establishment of a chemical industrial park. Other facilities in operation or under construction include industrial waste recycling, pharmaceuticals, and automobile parks. Developments were supported by the government with tax and customs privileges, issuance of soft loans, simplification of administrative procedures, and the provision of services to improve business efficiency, amongst others. In the energy sector, there are currently several ongoing constructions of HPPs, in addition to wind and solar, which all aim to reduce GHG emissions. The government has also supported the establishment of a solar panel and light bulb manufacturing sector. As a combined result of the actions undertaken, the energy intensity of industry in Azerbaijan has substantially decreased in recent years. In spite of the successful advances, one of the key challenges as a result of enhanced efficiency is the issue of job loss in high-intensity industries, since new and more sustainable factories tend to employ less people.

Another case study was shared by **Mr. Nicolae Soloviov, Project Finance Consultant, Energy Efficiency Agency, Government of the Republic of Moldova**. Overall energy consumption has been steadily increasing in Moldova, and with the industrial sector as one of the main consumers of imported electricity oil, gas and coal, the promotion of energy efficiency is one of the key target areas of policy intervention. In cooperation with UNIDO and the Republic of Poland, the Republic of Moldova has successfully implemented a project enhancing local manufacturing capacities of solar thermal energy systems. Some of the key lessons learned from the project are that there is considerable interest by the private sector in creating a manufacturing base for established technologies in the field of renewable energy.

As a final contribution to the fourth panel session, **Mr. Alexander Sobko, General Director, Raoproekt,** provided a company's insights into how PPP can be used in the creation of integrated systems for waste management with an example of the management of nuclear waste at a nuclear power plant in the Russian Federation.

The Q&A session raised the question of how to identify the right technology and how to resolve the issue of intellectual property within PPP in R&D. Selecting the right technology depends on existing niche markets and areas of activity that provide favourable conditions for R&D. For instance, UNIDO has been involved in projects working on battery storage in automobiles in China. In addition, the experience of UNIDO's Global Clean-Tech Innovation Programme provides important lessons learned from previous engagements and industrial sectors that nurture public private cooperation. Regarding intellectual property, UNIDO is involved in the project stages that follow after the initial R&D phase. Overall no common methodology exists, thus the question of ownership poses a challenge that must be addressed comprehensively over the course of negotiations prior to agreements. Another question was raised about the effectiveness of PPP in promoting RES in comparison to other measures of intervention. In general, PPP are not necessarily always the best way to drive the uptake of RES and should thus not automatically be used in all cases. The decision to implement PPP must be based on a comprehensive analysis, where success is often to be found when the private sector is looking for strong public commitment, for example in terms of the strategic role and development of RES in the national energy sector. A clear government framework and the public provision of land on the one hand and the provision of technologies and operation by the private sector on the other hand have proven to be an effective measure to drive down the price of RES. Also, financing issues of RES can be bridged by the creation of PPP, given that most RES are relatively new technologies and PPP can thus provide greater access to renewable technologies at an initial market stage.

Panel session V: Financing opportunities for clean technologies and energy efficient industries

In his introduction during the final panel session of the conference, the keynote speaker **Mr. Wolfgang Diernhofer, Head, Energy, Environment and Climate Change Department, Kommunalkredit Public Consulting, Austria,** elaborated on the common barriers surrounding the financing of energy efficiency in the industrial sector. Barriers arise on different levels on the side of investors, the financing sector and providers of energy efficiency services. Some of the well-known barriers are that commercial banks are often unfamiliar with practices and that there is a perceived risk associated with financing energy efficiency. This is most often the case in countries or regions that lack a long history of commercial banking and where the financial sector is faced with structural challenges. Underdeveloped market conditions, institutional constraints, unattractive financing terms, and a lack of suitable and sustainable financing mechanisms all add up to the challenges. However, these challenges must be overcome before the many benefits, such as reduced running and maintenance costs, increased production capacity, more reliable and secure production, increased performance and competitiveness, as well as a reduced environmental footprint can be realised. Public intervention can play a crucial role in promoting the financing of energy efficiency, by developing dedicated banking products, establishing funds, incentive schemes for SMEs, strengthening international cooperation, communicating successful projects and lastly establishing a reliable market framework. While financial instruments are available, local banks are often not yet equipped with the mandatory tools, capability and mind-set to drive markets in more sustainable directions. Moreover, financing tools need to be tailored to individual needs.

Following the introduction on energy efficiency financing, **Mr. Ekmat Baibakpaev of the Kyrgyz Parliament** gave a presentation on the state of RES and the "green economy". In 2008, the Kyrgyz Republic introduced a law targeted at the promotion of renewable energy projects, which since then has been amended to attract private investments and resulted in the construction and restoring of facilities, including small and medium-sized HPPs. RES is considered an important way to increase energy security and is thus supported by the government with tax and customs preferences, provision of land, and lowering market barriers for local and small-scale producers. In addition to promoting RES, the "green economy" is supported by the adaptation of legislation, the creation of designated funds that promote the concept of "green" industrial parks, and the establishment of "The Central Asian Centre for Small Hydro Power Plants".

Mr. Ermek Abdubaliev, Head, Department of Renewable Sources of Energy and Energy Saving, State Committee for Industry, Energy and Subsoil Use of the Kyrgyz Republic, reinstated that the country offers significant potential not just for the development of HPPs, but also for solar, wind and biomass. In an effort to balance energy shortcomings in the winter months, it is important to leverage the potential of both energy efficiency and RES. By adopting and amending targeted legislation, the Kyrgyz Republic seeks to overcome common economic, regulatory and normative barriers to promoting sustainable energy solutions.

Mr. Sergey Korotkov, Director of the UNIDO CIIC in Moscow, gave a comprehensive overview of the existing legislative basis for financing clean technologies and energy efficiency projects in the Russian Federation. In addition to federal laws and state programmes, the government provides targeted loans for the implementation of projects aimed at the introduction of advanced technologies under its Industrial Development Fund. Special Investment Contracts (SPICs) are considered another important tool, in addition to subsidising interest rates, supporting manufacturers and, lastly, extra budgetary funding sources, such as bank products, PPPs and energy service contracts. A practical example was given by highlighting the success of implementing EnMS-ISO 50001 under the UNIDO Project on Energy Efficiency in GHG-intensive industries in Russia. Mr. Korotkov also emphasized the important role of the UNIDO CIIC - NRC "Kurchatov Institute" Initiative in conducting pilot and demonstration projects on the transfer of modern industry in Russia and other countries under which new financing opportunities with the NDB and other financial institutions will be investigated.

Mr. Timur Nurashev, Deputy Chairman, Industrial Development and Industrial Safety Committee, Ministry for Investments and Development of the Republic of Kazakhstan, highlighted the decisive role of the availability and repayment of loans in financing. Mr. Nurashev noted that financing opportunities in the form of designated national and international funds exist. However, in the face of low energy prices and the absence of a domestic manufacturing base for needed equipment, repayment of initial loans remains a key challenge in financing energy efficiency and renewable energy projects. There is a need to make projects more attractive for commercial banks, which can be supported by the government, amongst others, in subsidising energy efficiency from state funds and establishing energy efficiency criteria for private businesses that seek state support.

Ms. Anna Kurguzova, representing the Strategy and Partnerships Division of the New Development Bank, talked about the newly established bank and its strategic priorities for the next five years. The NDB was launched in 2015 by the BRICS countries (Brazil, Russia, India, China and South Africa) and is mandated to mobilize resources for infrastructure and sustainable development projects in BRICS and other emerging markets and developing countries. Sustainable infrastructure development will be the primary focus of the NDB's operational strategy in the period 2017-2021. This strategic approach blends both dimensions of the bank's mandate: infrastructure and sustainable development. In broad terms, sustainable infrastructure can be defined as infrastructure that incorporates economic, environmental and social criteria in its design, building and operation. The concept of sustainable infrastructure moves beyond short-term, direct economic calculations to a longer-term and broader assessment of economic, environmental and social impacts. NDB's key areas of operation will include, but not be limited to: clean energy; transport infrastructure; irrigation, water resource management and sanitation; sustainable urban development; and economic cooperation and integration among member countries.

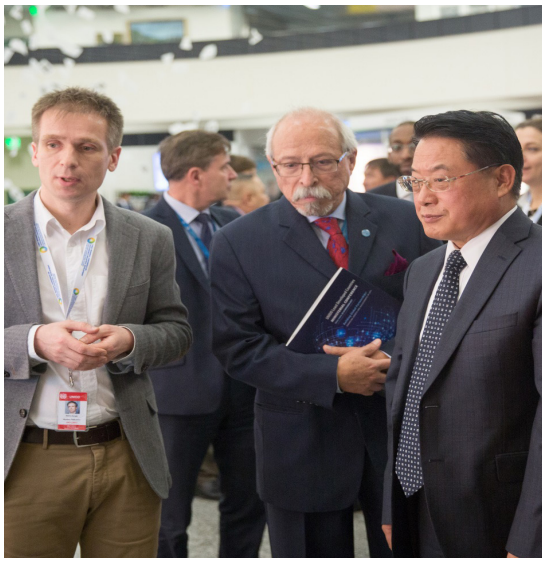
The final round of Q&A raised the issue of how to overcome common challenges for financing. Recommendations were formulated to implement targeted tax incentives, adopt regulations for mandatory compliance, and enable the operation of a stable and transparent financing sector.

Closing Remarks

Mr. Jacek Cukrowski, Chief, Europe and Central Asia Regional Division at UNIDO, wrapped up the conference by giving a short summary of the findings. He recalled that a strong commitment is required for "greening" the industrial sector and governments need to play the absolutely indispensable facilitating role through targeted policies and government regulations. Resource efficiency and cleaner production technologies provide sustainability and resilience to economic development while at the same time improving environmental performance, energy and income security, as well as human wellbeing.

In his closing remarks, **Mr. Jaime Moll de Alba, Officer-in-Charge, UNIDO Department of Regional Programmes and Field Representation,** stressed once again how examples of clean technologies and sustainable energy solutions articulated during the conference should be used as an inspiration for scaling up business models and promoting commercially viable "green industry" practices in the CIS region. He underlined that the practical application and concrete steps made at different levels, stimulated by such platforms as the present conference, are of the highest value. Even the smallest ones, starting from the grassroots level whereby companies' managers become committed to changing their business as usual models and to introducing new sustainable and resource efficient solutions. Equally important, at the highest decision-making level, where policy makers have obtained important take-aways from the discussions, they are now better equipped to introduce new policies or strategies improving the national business environment for the increased uptake of clean technologies and innovations with a forward-looking approach. Mr. Moll de Alba reiterated appreciation for continued support of the Russian Federation and expressed hope that many more convincing follow-ups will appear, witnessing new exciting undertakings.

Mr. Georgy Mikhno, Acting Permanent Representative of the Russian Federation to the International Organizations in Vienna, thanked all participants for their important contribution to the success of the event and underlined that the intensive discussions vividly demonstrated a strong demand and the high importance of the conference's topic in the CIS region. The Russian Federation prioritises the issue of sustainable development and environmental protection in the context of the 2030 Agenda. In this endeavour, utilizing the platforms, expertise and institutional knowledge of international organizations like UNIDO is critically important. In this regard, the Government considers that the unique capacities and services of UNIDO should be increasingly utilized for exploring regional and international cooperation in the area of ISID and environmental safeguarding. The Russian Government will continue providing financial support to the regional initiatives implemented by UNIDO to promote ISID in the partner countries.



Mr. LI Yong, Director General of UNIDO, at the opening of the exhibition accompanying the conference, listening to the presentation of the Kaspersky Lab, 23 November 2017.

Participants of the conference on a study tour, visiting the "Kraftwerkspark Simmering" in Vienna, Austria's largest combined heat and power (CHP) station. 24, November 2017.

Study Visit

In conclusion of the First Regional Conference on Sustainable Industrial Development, "Promoting Sustainable Energy Solutions and Clean Technologies in CIS Countries", participants took part in a study visit to three industrial facilities around Vienna, which readily utilize cutting-edge sustainable energy solutions and clean technologies.

Participants visited the main municipal waste water treatment facility "EBS Wien Hauptkläranlage" to learn more about waste water treatment, mitigating environmental risks and on-site electricity production. In addition to its status as a critical infrastructure for the municipality, the waste water treatment facility is also known for its integration of "green technologies". The facility uses energy intensive processes for treating the municipal's waste water. Hence, this facility alone uses currently around 1% of the available energy in Vienna but aims to become fully independent by 2020 through implementing energy efficiency measures and on-site electricity production. In addition, energy can be generated from sewage sludge.

Different types of electricity generation methods and air pollution control measures, including air filtration, were presented in a visit to the energy power plant "Kraftwerkspark Simmering". The original design of the power plant relied on coal and heavy oil as a fuel. Nowadays, the plant's design has been upgraded to cleaner forms of energy production and consists of various gas turbines and gas boilers. In addition, the plant has implemented a biomass power plant, which uses woodchips from the region and a photovoltaic plant. The usage of heavy oil will be phased out in coming years in order to meet the environmental targets of the operator and municipality.

A visit to the Industry 4.0 Pilot Plant located in the urban development area, "Aspern Seestadt", concluded the study visit. The plant was constructed jointly by the Vienna Technical University, the Federal Ministry for Transport, Innovation and Technology of Austria and the City of Vienna. It aims to help local companies to adjust to the production techniques of the future. This includes additive and laser-assisted manufacturing, collaborative robotics, hybrid technologies and connectivity to modern communications technology as well as Big Data analytics for testing and researching into industrial production applications. Industry

4.0 is a smart integration of production, where people, machines and products are in permanent intercommunication. In the pilot plant, new methods and production processes are researched, the results of which then go on to be integrated into regular production processes by the 20+ companies present on the site. The participants were able to try out innovative assembling technologies where robots work jointly with humans and could experience different solutions for augmented reality.

Participants exploring the potential applications of augmented reality and digital technologies in industrial design and manufacturing processes at the Industry 4.0 Pilot Plant at "Aspern Seestadt", 24 November 20 17.

Concluding Remarks

Industrial transformation in the CIS region has created modern societies and built sound economic foundations. At the same time, the industrial sector is responsible for one-third of global primary energy use, two-fifths of global energy-related CO_2 emissions and is typically characterized by a significant environmental footprint.

During the First Regional Conference on Sustainable Industrial Development: "Promoting Sustainable Energy Solutions and Clean Technologies in the CIS Countries", participants reached a shared understanding that is it critically important to take necessary actions at various levels to accelerate the shift to resource efficient and cleaner technologies and sustainable energy solutions in the industrial sector. Shared figures from the adaption rate of renewable energy solutions in the region give hope, but further accelerated action on a policy and business level is required to steer the region towards a more sustainable industrial development path.

UNIDO's experience shows that implementing measures to reduce the environmental footprint increases the resilience of local businesses and creates additional value along the value chain. The participants agreed that sound legislation and the sustainable management of key resources such as water, energy and soil are crucial for achieving the goals of lowering the environmental impact of industries, as well as attracting more investments in new technologies. In this context, governments have a crucial role to play as they define minimum requirements for environmental safeguarding and enact associated legislation.

The countries of the region are increasingly committed to international agreements, such as the Paris Agreement on climate change. Global awareness about the numerous benefits of sustainable energy solutions and clean technologies is growing rapidly. Both governments and the private sector are able to stimulate sustainable, commercially viable and innovative production and consumption practices by demonstrating a strong commitment and setting ambitious targets to provide incentives to realize the goals set under the Paris Climate Accord.

By substantially transforming national economies through promoting innovative concepts, such as the circular economy, entire new business sectors, i.e. the recycling industry are created. The human factor in this equation is decisive in advancing sustainable and inclusive industrial development. The main challenge is that useful practices are not entirely integrated into daily management in the industrial sector. Therefore, a more systematic approach is needed to overcome the identified barriers. A strong commitment on the level of both senior management and technical and producing staff is required, transcending through all hierarchy levels. By bringing together people, technology, data and other thriving factors, resource and energy consumption can be lowered drastically, while, at the same time, economic competiveness can be advanced.

Still, significant barriers continue to persist. They include a lack of concern and understanding, limited capacities to identify opportunities, poor or misused monitoring systems and data, and the high up-front costs of implementation weighed up against savings that are typically generated over the long-term. Evidently, desired solutions must not only be environmentally-friendly and create new jobs, but also be economically viable.

Clean technologies are central to sustainable development. New concepts and game-changing technologies are being introduced, but the level of readiness in different CIS countries to uptake innovative approaches in industries varies substantially. The participants recalled that current development strategies need to be continuously updated to reflect newly available technological innovations. In view of the current challenges faced by the CIS region, there is a strong momentum to foster valuable networking opportunities between government officials and industry practitioners. This will allow for the creation of mutually beneficial partnerships

for advancing innovative and cost-effective solutions to enhance resource and energy efficiency and to promote clean technologies.

Through sharing national experiences, exchanging knowledge and best practices in clean industrial technologies, the participants of the regional conference were able to facilitate the development of a regional perspective and to identify common trends in addressing the challenge of sustainable industrial development.

The conference has generated insightful recommendations applicable to the regional context, which can provide useful guidance to all partners, including UNIDO, on the way forward towards scaling up successful solutions and practices and achieving the goals set under the 2030 Agenda for Sustainable Development.

Feedback from Participants

Mr. Georgy Mikhno, ***Acting Permanent Representative of the Russian Federation to the International Organizations in Vienna***

The First Regional Conference on Sustainable Industrial Development in the Commonwealth of Independent States (CIS) countries, organized by UNIDO with the financial support of the Russian Federation is a good example of international co-operation in the field of energy and environment, facilitated by the United Nations. We are sure that a convening role and rich expertise of UNIDO have brought the event to the highest professional level and that resources were utilized in the most efficient way. The CIS region is a priority of the Russian efforts in the sphere of international development assistance. Based on this positive experience, we plan to continue our joint work with UNIDO for inclusive and sustainable industrial development in the region in line with the 2030 Agenda and for enhanced cooperation with our partner states.

Ms. Astghine Pasoyan, ***Executive Director, Foundation to Save Energy, Republic of Armenia***

The most useful at the Conference were the discussions on various legal and regulatory tools that are known to promote energy efficiency in industry, such as standards, mandatory energy audits and financing schemes. The countries' experiences have been especially enlightening with respect to the negative experiences and the shared lessons learnt from how good policies can go wrong, and the joint search of better solutions, learning from each other. While the governments can find workable solutions for promoting command-and-control or incentive-based energy efficiency policies for industry, it is important that the technical assistance is extended to the industrial counterparts to build their awareness and knowledge of resource efficiency practices, which can both cut resource use and make enterprises more competitive.

Mr. Nicolae Olari, ***Main Consultant, Energy Policies Department, Ministry of Economy and Infrastructure of the Republic of Moldova***

On behalf of the Ministry of Economy and Infrastructure from the Republic of Moldova, I want to thank you for the invitation to the First Regional Conference on Sustainable Industrial Development: "Promoting Sustainable Energy Solutions and Clean Technologies in CIS Countries". I believe that the diverse and dynamic group of speakers and panelists provided an in-depth insight, as well as actionable and practical tools of engagement models, methods, and mechanisms that have worked very well. This experience helped us make the event a great success and positive spirit helped make our time together more productive. I wish you all the best and hope that you will continue to be engaged with other events organized by UNIDO to promote sustainable industrial development.

Ms. Karine Khudaverdian, ***Minister Counsellor, Permanent Mission of the Republic of Armenia to the International Organizations in Vienna***

Congratulations to the team on the success of the First Regional Conference and thank you all for a really hard work done to make it happen. Our participants stressed, in particular, that UNIDO's extensive expertise was and is crucial, especially for a knowledge transfer - something that is needed for the modernization of the sectors they work in.

Mr. Aladdin Kuli-Zade, ***Deputy Director, Department for Economic Cooperation, CIS Executive Committee***

We express our sincere gratitude for the good preparation and implementation of the Conference, as well as for the warm welcome and information provided during the event. It is important to highlight the relevance of the issues announced at the conference, together with the interesting presentations made during the panel sessions and discussions, which have practical value and scientific credibility. Separately, I would like to stress the high status and scientific level of the speakers. The variability of clean technology solutions and advancing energy efficiency in industrial economic sectors is of great interest for the participated states from the CIS countries.

Ms. Anna Kurguzova, ***Economist, Strategy and Partnerships Division, New Development Bank***

Getting to know the sustainability agenda across different countries in the CIS region was helpful. In particular, the depth and scale of discussions provided me with insights into the needs of governments in sustainable infrastructure solutions, industry trends, as well as innovative ways to be undertaken by development banks in bridging the infrastructure funding gap. As part of the conference, it was particularly fascinating to go on a study tour at the Vienna waste water treatment facility and to get a practical impression of sustainability on the municipal levels

Mr. Alexandru Ciudin, **Director, Energy Efficiency Agency, Government of the Republic of Moldova**

Thank you for inviting our Agency to the First Regional Conference on Sustainable Industrial Development and for giving us the opportunity to talk about the situation in the energy sector and about implemented projects in Moldova. We would like to highlight the importance of this conference in the context of the present situation in the energy sector in the CIS countries. We express our appreciation for the opportunity to meet with representatives from different countries and find more information about the real situations in the sector. Thank you once again for inviting us. We look forward to continuing this relationship and to future meetings with UNIDO.

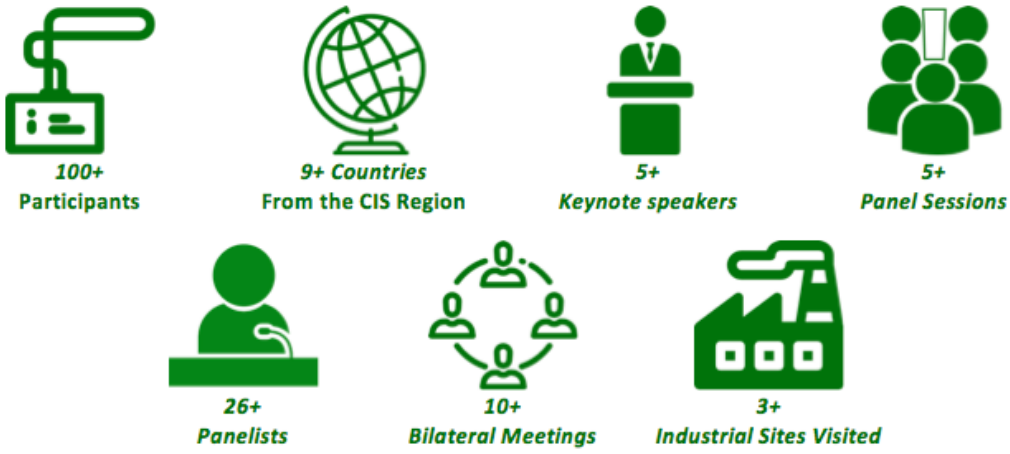
Mr. Maxim Eliseev, General Director, Innovation Center for Production Optimization (ICPO)

It was my pleasure to have attended the First Regional Conference on Sustainable Industrial Development, organized by UNIDO. I would like to underline the highly professional level of organization of major and side events, and the very diverse background of speakers and attendees. As far as our major business relates to the introduction of resource and energy efficient methodologies, it was highly valuable to acquaint myself with country specific approaches in the area of company's operations. This Conference also allowed me to recognize the broad portfolio of UNIDO expertise, as well as to establish new potential cooperation agreements and exchange experience with target professionals.

Mr. Fikrat Gurbanov, Deputy Director, Industry Department, Ministry of Economy of the Republic of Azerbaijan

I would like to bring my deep appreciation for the successful organization of the event. It was a nice experience for us to get acquainted with different policy pathways of the different countries and also find networking opportunity with distinguished participants. We will consider these experiences in our daily works and we think that meetings of UNIDO are a good opportunity in order to share best practices and knowledge on the international level. Taking this opportunity, I would like to renew my deep appreciation to all the organizers and wish success in your new endeavors.

Conference Overview and List of Participants



Armenia

1. ***Ms. Lusine Avetisyan,*** *Head, Economic Mechanisms, Standards and Technical Regulations of Environmental Division, Department of Environmental Strategic Programm and Monitoring, Ministry of Nature Protection of the Republic of Armenia*
2. ***Mr. Tigran Melkonyan,*** *Head, Foreign Relations Department, Ministry of Energy Infrastructures and Natural Resources of the Republic of Armenia*
3. ***Ms. Lilit Harutyunyan,*** *Chief Specialist, Sectoral Economic Policy Department, Ministry of Economic Development and Investments of the Republic of Armenia*
4. ***Ms. Astghine Pasoyan,*** *Director, Energy Saving Foundation, Republic of Armenia*
5. ***Ms. Karine Khudaverdian,*** *Minister Counsellor, Permanent Mission of the Republic of Armenia to UNIDO*

Azerbaijan

6. ***Mr. Fikrat Gurbanov,*** *Deputy Director, Industry Department, Ministry of Economy of the Republic of Azerbaijan*
7. ***Mr. Elkhan Karimov,*** *Head, Sector Legal Expertise, Ministry of Energy of the Republic of Azerbaijan*
8. ***Ms. Günel Bahaddinova,*** *Expert, Ministry of Ecology and Natural Resources of the Republic of Azerbaijan*
9. ***Mr. Agshin Bakirzade,*** *Adviser to the Chairman, State Agency on Alternative and Renewable Energy Sources, Republic of Azerbaijan*

Kazakhstan

10. ***Ms. Anar Bulzhanova****, Deputy Director, "Green Economy" Department, Ministry of Energy of the Republic of Kazakhstan*
11. ***Mr. Timur Nurashev,*** *Deputy Chairman, Industrial Development and Industrial Safety Committee, Ministry for Investments and Development of the Republic of Kazakhstan*
12. ***Mr. Zhaxylyk Tokayev,*** *Head, Energy Saving and Energy Efficiency Department of the Industrial Development Safety Committee, Ministry for Investments and Development of the Republic of Kazakhstan*

13. ***Mr. Aidar Makhambet**, Chairman of the Board, Socially Significant Initiatives Development Fund, Republic of Kazakhstan*
14. ***Mr. Arman Kashkinbekov**, CEO, Association of Renewable Energy of Kazakhstan, Republic of Kazakhstan*

Kyrgyzstan

15. ***Mr. Ekmat Baibakpaev,** Member of Parliament (Jogorku Kenesh), Republic of Kyrgyzstan*
16. ***Ms. Aisulu Amanova,** Head, Department of Sustainable Development Policy, Ministry of Economy of the Republic of Kyrgyzstan*
17. ***Mr. Daniiar Sheishekanov,** Deputy Head, Department of the Fuel-energy Complex and Mining, Office of the Government, Republic of Kyrgyzstan*
18. ***Mr. Ermek Abdubaliev,** Head, Department of Renewable Sources of Energy and Energy Saving, State Committee for Industry, Energy and Subsoil Use, Republic of Kyrgyzstan*
19. ***Ms. Nazira Abdylasova,** Head, State Ecological Expertise Department, State Agency on Environmental Protection and Forestry, Republic of Kyrgyzstan*
20. ***Ms. Begaiym Nurlan,** Second Secretary, Permanent Mission of the Republic of Kyrgyzstan to UNIDO*

Republic of Belarus

21. ***Mr. Viktar Akushka,** First Deputy Director, Department for Energy Efficiency of the State Committee for Standardization, Republic of Belarus*
22. ***Mr. Aliaksei Fiodarau**, Deputy Head, Main Department of Sustainable Development, Ministry of Economy of the Republic of Belarus*
23. ***Mr. Mikalai Dzivakou,** Counsellor, Department of Economic Cooperation and Sustainable Development of the Director General for Multilateral Diplomacy of the Directorate General for Multilateral Diplomacy, Ministry of Foreign Affairs of the Republic of Belarus*
24. ***Mr. Aleksei Raiman,** Senior Counsellor, Permanent Mission of the Republic of Belarus to UNIDO*

Republic of Moldova

25. ***Ms. Veronica Lopotenco,** Head, Air and Climate Change Section, Regional Development and Environment Department, Ministry of Agriculture of the Republic of Moldova*
26. ***Mr. Nicolae Olari,** Main Consultant, Department for Energy Efficiency and Renewable Energy Policies, Ministry of Economy and Infrastructure of the Republic of Moldova*
27. ***Mr. Alexandru Ciudin,** Director, Energy Efficiency Agency, Republic of Moldova*
28. ***Mr. Nicolae Soloviov,** Project Finance Consultant, Energy Efficiency Agency, Republic of Moldova*

Russian Federation

29. ***Mr. Dmitry Belanovich**, Adviser to the Minister of Natural Resources and Environment of the Russian Federation, Ministry of Natural Resources and Environment of the Russian Federation*
30. ***Mr. Yury Fedorov,** Deputy Director, Department for State Regulation of Tariffs, Infrastructure Reforms and Energy Efficiency, Ministry for Economic Development of the Russian Federation*
31. ***Mr. Nikita Kabanov,** Chief Specialist-Expert, Department for State Regulation of Tariffs, Infrastructure Reforms and Energy Efficiency, Ministry for Economic Development of the Russian Federation*

32. ***Ms. Elena Vikulova,*** *Unit Chief, Department for Economic Co-operation, Ministry of Natural Resources and Environment of the Russian Federation*

33. ***Mr. Tikhon Koveshnikov,*** *Head, Department for State Programme Monitoring, Research and Educational Activities, FGBU Russian Energy Agency under the Ministry of Energy of the Russian Federation*

34. ***Mr. Georgy Mikhno,*** *Acting Permanent Representative of the Russian Federation to the International Organizations in Vienna, Permanent Mission of the Russian Federation to UNIDO*

35. ***Ms. Vera Khutorskaya,*** *Counsellor, Permanent Mission of the Russian Federation to UNIDO*

36. ***Mr. Alexey Aleshin,*** *Chairman, Federal Environmental, Industrial and Nuclear Supervision Service (Rostechnadzor), Russian Federation*

37. ***Mr. Pavel Cheprakov,*** *Assistant to the Chairman, Federal Environmental, Industrial and Nuclear Supervision Service (Rostechnadzor), Russian Federation*

38. ***Ms. Irina Sokolova,*** *Head, International Relations Department, Federal Environmental, Industrial and Nuclear Supervision Service (Rostechnadzor), Russian Federation*

39. ***Mr. Dmitry Chachelov,*** *Deputy Head, Division of International Relations Department, Federal Environmental, Industrial and Nuclear Supervision Service (Rostechnadzor), Russian Federation*

40. ***Mr. Ivan Yasinskiy,*** *Deputy Head, Department of General Industrial Supervision, Federal Environmental, Industrial and Nuclear Supervision Service (Rostechnadzor), Russian Federation*

41. ***Ms. Natalia Sokolova,*** *Head, Department of the State Supervision and Regulation in the Field of Waste Management and Biodiversity, Federal Service for Supervision in the Sphere of Nature (Rosprirodnadzor), Russian Federation*

42. ***Mr. Artem Chaika,*** *President, International Congress of Industrialists and Entrepreneurs ,Russian Federation*

43. ***Mr. Maxim Eliseev,*** *General Director, Innovation Center for Production Optimization, Russian Federation*

44. ***Ms. Svetlana Erkenova,*** *Vice President, MEDTV Living Planet, Institute for High Temperatures of the Russian Academy of Sciences*

45. ***Mr. Viktor Glukhikh,*** *Honorary President, International Congress of Industrialists and Entrepreneurs, Russian Federation*

46. ***Mr. Egor Gorbatenko,*** *Expert, International Congress of Industrialists and Entrepreneurs, Russian Federation*

47. ***Mr. Vladislav Kukhartsev,*** *Head, Technical Regulation Division, JSC "VetroOGK", Russian Federation*

48. ***Mr. Aleksandr Smekalin,*** *The Chairman of the Government, The Government of Ulyanovsk Region, Russian Federation*

49. ***Mr. Ruslan Gainetdinov,*** *Chairman of the Board, State Corporation for Entrepreneurship Development of Ulyanovsk Region, Russian Federation*

50. ***Ms. Vera Popova,*** *Senior Expert, Investor Relations Department, JSC "Ulyanovsk Region Development Corporation", Russian Federation*

51. ***Mr. Oleg Sukhanov,*** *Consultant, JSC "Ulyanovsk Region Development Corporation", Russian Federation*

Tajikistan

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53. ***Mr. Sorboni Kholmuhamadzoda,*** *Head, Energy Department, Ministry of Energy and Water Resources of the Republic of Tajikistan*
54. ***Mr. Khusrav Ramazonzoda,*** *Head, Legal Department, Ministry of Energy and Water Resources of the Republic of Tajikistan*
55. ***Mr. Idibek Kalandar,*** *Permanent Representative, Permanent Mission of the Republic of Tajikistan to the International Organizations in Vienna*
56. ***Mr. Firdavs Usmonov,*** *Counsellor, Permanent Mission of the Republic of Tajikistan to the International Organizations in Vienna*

Uzbekistan

57. ***Mr. Sirojiddin Akhmedov,*** *Deputy Head, Department for Energy Efficiency and RES Development, Ministry of Economy of the Republic of Uzbekistan*
58. ***Mr. Abdurasul Usmanov,*** *Head, Supervision for Power Industry (Uzgosenergonadzor), Republic of Uzbekistan*
59. ***Mr. Sardor Kodirov,*** *Lead Specialist, State Committee for Investments, Republic of Uzbekistan*

International Organizations

60. ***Mr. Aladdin Kuli-Zade,*** *Deputy Director, Department for Cooperation in Economics, Executive Committee of the Commonwealth of Independent States (CIS)*
61. ***Ms. Anna Kurguzova,*** *Economist, Strategy and Partnerships, New Development Bank*

Companies

62. ***Mr. Alexander Sobko,*** *General Director, Raoproekt*
63. ***Ms. Daria Ovichinnikova,*** *Deputy General Director, Economics and Finance, Raoproekt*
64. ***Ms. Oksana Konovalova,*** *Head, Environmental Protection Group, Raoproekt*
65. ***Mr. Mikhail Molchanov,*** *CEO, Solar Systems LLC*
66. ***Mr.Viktor Belov,*** *Deputy Director, Construction, Solar Systems LLC*
67. ***Ms. Gabriele Brandl,*** *Project Manager, Austria Energy Agency*
68. ***Mr. Wolfgang Diernhofer,*** *Head, Energy, Environment and Climate Change Department, Kommunalkredit Public Consulting*
69. ***Mr. Christian Oberleitner,*** *Senior Consultant, Kommunalkredit Public Consulting*
70. ***Mr. Sergei Paltov,*** *Solution Architect Group Manager, Critical Infrastructure Protection, Kaspersky Lab*

UNIDO

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72. ***Mr. Stephan Sicars,*** *Director, Department of Environment*
73. ***Mr. Tareq Emtairah,*** *Director, Department of Energy*

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75. ***Mr. Marco Matteini,*** *Industrial Development Officer, Department of Energy, Industrial Energy Efficiency Division*
76. ***Ms. Alyona Nevidoma,*** *Project Administrator, Department of Energy, Industrial Energy Efficiency Division*
77. ***Ms. Nilguen Tas,*** *Chief, Industrial Resource Efficiency Division*
78. ***Ms. Carolina Gonzalez-Mueller,*** *Industrial Development Officer, Industrial Resource Efficiency Division,*
79. ***Ms. Tatiana Chernyavskaya,*** *International Project Coordinator, Industrial Resource Efficiency Division,*
80. ***Mr. Sergey Korotkov****, Director, Investment and Promotion Division*
81. ***Mr. Jaime Moll de Alba,*** *Officer-in-Charge, Department of Regional Programmes and Field Representation*
82. ***Mr. Victor Zagrekov,*** *Senior Advisor on Partnerships, Office of the Director*
83. ***Mr. Edward Paul Clarence-Smith,*** *Senior Consultant, Green Industry Division*
84. ***Mr. Branko Dunjić,*** *Senior Consultant, Resource Efficiency and Cleaner Production Expert*
85. ***Ms. Anya Onysko,*** *Industrial Development Officer, Country Partnerships Division*
86. ***Mr. Marat Usupov,*** *Staff, Field Office in Bishkek*
87. ***Ms. Maria Lazareva,*** *National Coordinator*
88. ***Ms. Dona Scola,*** *National Consultant*

UNIDO Regional Division - Europe and Central Asia

89. ***Mr. Jacek Cukrowski,*** *Chief*
90. ***Ms. Solomiya Omelyan,*** *Programme Officer*
91. ***Ms. Tsvetelina Milovska,*** *Programme Specialist*
92. ***Ms. Gabriele Czasch,*** *Office Assistant*
93. ***Mr. Daniel Laaber,*** *International Consultant*
94. ***Ms. Sofia Fileccia,*** *Consultant*
95. ***Ms. Irma Kekic,*** *Consultant*
96. ***Ms. Katharina Nieschalk,*** *Intern*
97. ***Mr. Artur Udartsev,*** *Intern*
98. ***Mr. Antonius Schick,*** *Intern*

Observers

99. ***Mr. Zhang Shaohui,*** *Postdoctoral Research Scholar, International Institute for Applied Systems Analysis (IIASA), China*
100. ***Ms. Nargiz Bizhanova,*** *Student, Diplomatic Academy of Vienna*
101. ***Ms. Svetlana Kiriliuk,*** *Student, Diplomatic Academy of Vienna*

External Support Crew

102. Ms. Mariia Klymenko, *Photographer*

103. Mr. Johannes Reschl, *Cameraman, Filmagio*

104. Mr. Samual Ancieta, *Cameraman, Filmagio*

For more information and background on the conference please refer to the following links:

Website (including all related documents)
https://www.unido.org/first-regional-conference-sustainable-industrial-development

Promotional video
https://www.youtube.com/watch?list=PLu54zbUJCBPmdkCk7aMaAU6Zr_5kvjo92&v=OCmMP24AZs4

Wrap-up video
https://www.youtube.com/watch?v=OCmMP24AZs4

Video interviews
https://www.youtube.com/playlist?list=PLu54zbUJCBPmdkCk7aMaAU6Zr_5kvjo92

Images
https://www.flickr.com/photos/unido/sets/72157690362438425/

News related to the conference:

UNIDO to host First Regional Conference on "Promoting Sustainable Energy Solutions and Clean Technologies in CIS Countries"
https://www.unido.org/news/unido-host-first-regional-conference-promoting-sustainable-energy-solutions-and-clean-technologies-cis-countries

UNIDO continues to explore sustainable energy solutions in CIS countries
https://www.unido.org/news/unido-continues-explore-sustainable-energy-solutions-cis-countries

Study tour concludes the first regional conference on Promoting Sustainable Energy Solutions and Clean Technologies in CIS countries
https://www.unido.org/news/study-tour-concludes-first-regional-conference-promoting-sustainable-energy-solutions-and-clean-technologies-cis-countries

CIS countries come together to discuss sustainable energy solutions and clean technologies
https://www.unido.org/news/cis-countries-come-together-discuss-sustainable-energy-solutions-and-clean-technologies

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