UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Sustainable Energy Solutions and Clean Technologies in Eastern Europe, Caucasus and Central Asia

INCLUSIVE AND SUSTAINABLE INDUSTRIAL DEVELOPMENT

FIRST REGIONAL CONFERENCE ON
SUSTAINABLE INDUSTRIAL DEVELOPMENT
PROMOTING SUSTAINABLE ENERGY SOLUTIONS
AND CLEAN TECHNOLOGIES IN CIS COUNTRIES

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BAT	Best Available Techniques
ChL	Chemical Leasing
CIS	Commonwealth of Independent States
CO_2	Carbon dioxide
EaP	Eastern Partnership
EECCA	Eastern Europe, Caucasus and Central Asia
EIP	Eco-industrial Park
EnMS	Energy Management Systems
EST	Environmentally Sound Technology
EU	European Union
FFS	Fossil fuel subsidies
GCIP	Global Cleantech Innovation Programme
GEF	Global Environment Facility
GHG	Greenhouse gases
ISID	Inclusive and Sustainable Industrial Development
ISO	International Organization for Standardization
KWh	Kilowatt hour
MVA	Manufacturing value added
NGO	Non-governmental Organisation
OECD	Organisation for Economic Cooperation and Development
PPP	Public Private Partnership
R&D	Research and Development
RECP	Resource Efficient and Cleaner Production
SDG	Sustainable Development Goal
SES	Sustainable Energy Solutions
SME	Small and Medium Sized Enterprise
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization

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Foreword

With the financial support of the Government of the Russian Federation, the United Nations Industrial Development Organization (UNIDO) held the First Regional Conference on Sustainable Industrial Development "Promoting Sustainable Energy Solutions and Clean Technologies in the CIS Countries" from 22 to 24 November 2017 in Vienna, Austria. The Conference 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 trends and practices in industry 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 in the region.

By promoting innovative, practical and cost-effective ways to address challenges of environmental sustainability in industry and to 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. Participants of the Conference reached a shared understanding of the critical importance of acting at various levels to accelerate the shift to Sustainable Energy Solutions (SES) and Environmentally Sound Technologies (ESTs) in the industrial sector. Awareness of the numerous benefits of SES and ESTs, or clean technologies, in the region is growing rapidly. However, more ambitious action on a policy and business level is required to steer the region towards an environmentally sustainable industrial framework. Countries are seeking new ways to accelerate the use of clean energy and technologies as a measure to mitigate climate change and adapt to the growing scarcity of natural resources. By sharing national experiences and exchanging knowledge and best practices in SES and ESTs, participants developed a regional perspective, identified common trends to address the challenge of making industries more sustainable and generated recommendations applicable to their national context.

With this report, UNIDO builds on the findings of the Conference to facilitate a regional perspective and to identify common trends in addressing the challenge of sustainable industrial development in Eastern Europe, Caucasus and Central Asia (EECCA). This group of countries encompasses a highly diverse geographical, climatic, economic and social spectrum. The general scope of this paper focusses on countries in the region that are member, associate or observer states of the CIS, namely Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan Turkmenistan, Ukraine and Uzbekistan.

Best practice cases on SES and ESTs implemented with the support of UNIDO and other international organizations presented in this paper cover Armenia, Belarus, Moldova, Russia, Ukraine and Kyrgyzstan. These cases may serve as examples that show opportunities for transformative change in the industrial sector for promoting commercially viable and environmentally sustainable practices, especially when supported by national legislation. Equally importantly, policy makers can also access important takeaways from the identified challenges and solutions. This will better equip them to introduce new policies and consistent strategies to improve the national business environment for the increased adoption of SES and ESTs with a forward-looking approach. More detailed information on the interventions referenced in this report, and many others, can be accessed publically on the UNIDO Open Data Platform: https://open.unido.org/

Executive summary

Under a business-as-usual scenario, greenhouse gas (GHG) emissions from industry are estimated to increase between 50 and 150% by 2050 (IPCC, 2014). Given that industry is the single largest driver of anthropogenic emissions, contributing one-third to total GHG emissions, the resulting change in the climate would put unprecedented strain on global society. While the impacts of climate change are increasingly being felt across all regions of the world, current projections indicate a significant gap in the mitigation efforts undertaken to limit global average temperature increase to well below 2°C (UNEP, 2017). In fact, projected emissions from the burning of fossil fuels in Eastern Europe, Caucasus and Central Asia, are expected to increase further. In addition, the region's ecological footprint points in a direction where current patterns of industrial production and consumption will not be compatible with the growing scarcity of natural resources (UNIDO, 2018b). This has significant implications for the future trajectory of the industrial sector, highlighting the need to transform the current system based on a linear industrial development path towards Sustainable Energy Solutions and clean technologies.

Based on the proceedings of the First Regional Conference on Sustainable Industrial Development, the findings of this report suggest that policy-makers have to address prevailing barriers, including issues of limited access to finance, review existing procedures and address limited institutional capacities. At the same time, it should be considered useful to investigate different financing options, including cooperation with international organisations, which may provide funds to support innovative demonstration projects. Creating a level playing field for new technologies eventually helps to build new markets and increases the resilience of local businesses, while creating additional value along the whole value chain. The pursuit of strategies centred on the circular economy boosts employment and provides income-generation opportunities for the local population. Importantly, increased efficiency in energy and resource use and the sustainable management of key resources have proven to generate substantial energy and cost savings on the operational level of enterprises, resulting in a significant reduction of emissions.

Mainstreaming applicable solutions will require a long-term political commitment to ensuring appropriate policy development, including regulatory frameworks governing products, waste, water, energy, capacity building, economic incentives and the development of appropriate technologies. Technical capacity can be enhanced by providing targeted seminars and trainings. This includes supporting demonstration installations, exhibitions, trade fairs, matchmaking events and education with a focus on vocational and higher education. The United Nations (UN) is well-positioned to provide a platform for interaction and dialogue on the identification, selection, and implementation, as well as the monitoring and evaluation of suitable solutions. Countries in the region face similar challenges, which may have similar solutions. There are numerous opportunities for regional cooperation and the sharing of experiences to implement more environmentally sustainable production and consumption regimes. Best practice examples presented in this report serve as a guide for policy-makers, industry practitioners, academia and civil society. Their insights will increase knowledge about the diverse range of options that exist to enable the industrial sector to provide for the long-term welfare of individual countries and for the whole region to embark on a more sustainable development path.

Following the introduction in Chapter One, this report provides an outline of current approaches towards sustainable development, highlighting the role of Sustainable Energy Solutions and Environmentally Sound Technologies in industry. Chapter Three provides an overview of selected case studies from the region, covering different stages, from the identification, selection and implementation to the monitoring and evaluation of suitable solutions. This includes successful examples of interventions in the development of clean technology innovations; the identification of financing mechanisms; the adoption of renewable energy and energy efficiency in small and medium sized enterprises (SMEs) and large industries; implementing resource efficient and cleaner production; and the sustainable management of chemicals. It also includes a general outline of the concept on Eco-industrial Parks and, finally, monitoring and evaluation. A strong focus is placed on the implementation of applicable solutions on the ground, emphasizing practical approaches to technical cooperation and capacity building, which will help to make industries more resilient and fit for the future on a changing planet.

1. Introduction

The impacts of accelerating climate change and growing resource scarcity are putting unprecedented strain on global society with profound implications for future human well-being and the stability of vital ecosystems. Industry contributes about one-third of total direct and indirect greenhouse gas (GHG) emissions, the major cause of climate change, thereby becoming the single largest driver of the recent growth in anthropogenic emissions. Unless there is a drastic switch from current practices, GHG emissions from industry are estimated to increase between 50 to 150% by 2050 (IPCC, 2014). In order to avoid jeopardizing the quality of life of present and future generations, a new production and consumption paradigm is needed.

At the current rate of oil, gas and coal exploitation, by 2030, the global economy will be left with only 20% of burnable fossil fuel reserves.

Since the Paris Climate Agreement entered into force, the global response to the threat of climate change has experienced a significant boost. Under the Agreement, ratifying Governments have provided their commitments in the form of Intended Nationally Determined Contributions (INDCs) (and subsequently NDCs) to reduce emissions in line with keeping global warming to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C by 2050 (UNFCCC, 2015). In practice, this translates into substantially increasing the share of renewable sources in the global energy mix, accelerating energy efficiency, scaling up investments in clean technologies, rationalizing fossil fuel subsidies (FFS) and lowering energy and resource intensity (UN, 2017).

Based on current emission pathways, however, full implementation of NDCs under the Paris Agreement and comparable mitigation action thereafter will lead to an average global surface temperature increase of more than 3°C by the end of this century. While the current baseline scenario and policy trajectory point to even more accelerated warming scenarios, it shows that there is a significant gap in achieving a stable climate and secure future for humanity (Figure 1). At the current rate of oil, gas and coal exploitation, by 2030, the global economy will have already exhausted 80% of all burnable fossil fuel reserves. These burnable reserves describe the world's oil, gas and coal that can be exploited under the scenario outlined under the Paris Agreement to not exceed 2°C