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INDEPENDENT COUNTRY EVALUATION The People's Republic of China (2016-24)

Office of Evaluation and Internal Oversight

**OFFICE OF EVALUATION AND INTERNAL OVERSIGHT
INDEPENDENT EVALUATION UNIT**

Independent Country Evaluation

The People's Republic of China (2016-2024)



**UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION**

Vienna, December 2024

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Distr. GENERAL | EIO/IEU/24/R.20 | December 2024 | Original: English

Abstract

The main purpose of this independent country evaluation in China was to assess UNIDO's engagement in and with China and the extent to which expected results under the previous and current UNIDO-China Country Programmes (CP) have been achieved. The evaluation results will inform future UNIDO interventions in China and the development of the next UNIDO-China Country Programme. The evaluation focused on UNIDO's cooperation with China from 2016 to 2024, with emphasis on the ongoing Country Programme for Inclusive and Sustainable Industrial Development (ISID) (2021-2025). While covering all UNIDO activities in China in principle, the evaluation selected key projects as case studies to focus on major activities while allowing for answering the evaluation questions. A mixed-methods and an inclusive and participatory approach were used to respond to the questions.

The main findings support the contribution of the Country Programmes to the progress of the national industrialization agenda and UNIDO ISID's objectives to improve the performance of China's manufacturing sector. To this end, UNIDO-China cooperation has contributed to improving the performance of the sector/area priority objectives, including rural revitalization, mainly by accelerating green growth and green transformation. This could be achieved through innovation. UNIDO has also played a pivotal role in transforming China's position in international cooperation, facilitating the country's transition from primarily a recipient of development assistance to an active contributor in global sustainable development efforts. The main opportunities for improvement are focused on the coordination, communication and project management processes between UNIDO's headquarters, field office, and other UNIDO projects in China.

The recommendations are focused on strengthening UNIDO's project management and operational efficiency in China; establishing a high-level industrial policy dialogue mechanism with key Chinese ministries to share international perspectives on emerging industrial development trends and challenges; developing a comprehensive programme to support Chinese Small and Medium Enterprises (SMEs) in transitioning to greener production methods; and optimizing UNIDO's role in promoting innovation-driven industrial growth in China centred on Four Industrial Revolution technologies.

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Acknowledgments

The Evaluation team would like to acknowledge and thank all individuals who volunteered their time and knowledge to contribute to this evaluation. Their perspectives and input were essential for the successful implementation of this assessment, and it would not have been possible to undertake this evaluation without their contribution. The evaluation team would like to particularly thank the UNIDO personnel in its Office in Beijing for their strong commitment and effective support and cooperation in this evaluation.

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Abbreviations and Acronyms

Abbreviation	Meaning
ADB	Asian Development Bank
AP	Alkylphenol ethoxylates
ASEAN	Association of Southeast Asian Nations
BDS	Business Development Services
CCPED	China Consumer Products Engineering and Design
CIDCA	China International Development Cooperation Agency
CICETE	China International Centre for Economic and Technical Exchanges
CO	Country Office
CP	Country Programme
CSR	Corporate Social Responsibility
DDT	Dichlorodiphenyltrichloroethane
DMDS	Dimethyl disulfide
EPB	Environmental Protection Bureau
EPD	Environmental Protection Department
FECO	Foreign Environmental Cooperation Center
GEF	Global Environment Facility
GHG	Greenhouse Gas
GII	Global Innovation Index
GIN	Global Innovation Network
HBCD	Hexabromocyclododecane
HCH	Hexachlorocyclohexane
HCFC	Hydrochlorofluorocarbon
HEC	High Energy-Consuming
HFC	Hydrofluorocarbon
ICSHP	International Center on Small Hydropower
IHEC	International Hydrogen Energy Center
IDF	Industrial Development Fund
ISID	Inclusive and Sustainable Industrial Development
ITPO	Investment and Technology Promotion Office
JPO	Junior Professional Officer
KII	Key Informant Interview
MCD	Mechanochemical Destruction
MEA	Multilateral Environmental Agreement
MEE	Ministry of Ecology and Environment
MIIT	Ministry of Industry and Information Technology
MOFCOM	Ministry of Commerce
MSE	Micro and Small-scale Enterprise
MTPF	Medium-Term Programme Framework

NCB	National Coordination Body
NEV	New Energy Vehicle
NMPAIED	National Medical Products Administration Institute of Executive Development
ODP	Ozone Depleting Potential
PFC	Partnerships and Field Coordination
POP	Persistent Organic Pollutant
PPG	Project Preparation Grant
RAC	Room Air Conditioning
RC	Resident Coordinator
RCO	Resident Coordinator's Office
RE	Renewable Energy
RPTC	Regular Programme of Technical Cooperation
SAMR	State Administration of Market Regulation
SC	Stockholm Convention
SDG	Sustainable Development Goal
SHP	Small Hydropower
SITPC	Shanghai International Technology Promotion Center
SME	Small and Medium-sized Enterprise
TC	Technical Cooperation
TBBPA-DBMPE	Tetrabromobisphenol A-bis (2,3-dibromo-2-methylpropyl ether)
TEQ	Toxic Equivalent
TTPC	Technology Transfer Promotion Center
UCSSIC	UNIDO Centre for South-South Industrial Cooperation
UN	United Nations
UNDP	United Nations Development Programme
UNEG	United Nations Evaluation Group
UNIDO	United Nations Industrial Development Organization
UNSDCF	United Nations Sustainable Development Cooperation Framework
UR	UNIDO Representative
V2G	Vehicle to Grid
VCM	Vinyl Chloride Monomer
WHO	World Health Organization
XPSF	Extruded Polystyrene Foam

Executive Summary

Purpose and scope of the evaluation

The main purpose of this independent country evaluation was to assess UNIDO's engagement in and with China and the extent to which expected results under the previous and current UNIDO-China Country Programmes (CP) have been achieved. This evaluation is a forward-looking exercise seeking to identify the best practices and areas for improvement. It aims to generate findings, draw lessons, and provide actionable recommendations to inform future UNIDO interventions in China and the development of the next UNIDO-China Country Programme.

The evaluation focused on UNIDO's cooperation with China from 2016 to 2024, with emphasis on the ongoing Country Programme for Inclusive and Sustainable Industrial Development (2021-2025). While covering all UNIDO activities in China in principle, the evaluation selected key projects as case studies to focus on major activities while allowing for answering the evaluation questions.

Evaluation Methodology

This evaluation followed a mixed-methods, inclusive, and participatory approach with adequate triangulation to arrive at credible, reliable, and unbiased findings. It utilized primary data sources, including interviews with 80 key stakeholders, focus group discussions, an online survey with 84 respondents, and direct observations during field missions. Secondary data sources included over 200 relevant documents. The evaluation was conducted in four phases: inception, data collection, data analysis, and reporting, spanning from April to October 2024.

Key Findings

Based on the Theory of Change, the Country Programme has been successful in achieving its intermediate outcomes and expected impacts by contributing to the progress of the national industrialization agenda and UNIDO ISID's objectives to improve the performance of China's manufacturing sector. To this end, UNIDO-China cooperation has contributed to improving the performance of the sector/area priority objectives, mainly by accelerating green growth and green transformation. This could be achieved through innovation. UNIDO has facilitated technology demonstrations and global value chain integration for Chinese companies. Innovation has mainly focused on new technology development and technology transfer in key industrial sectors to phase out the use of hazardous industrial substances.

UNIDO's assistance has also laid a solid foundation for the decarbonization of industry through renewable energy technologies, such as the creation of the International Hydrogen Energy Center and the linking of electric vehicles with renewable energy, which have involved digitalization and 4IR technologies. Although the direct impact of innovation on employment generation has been mixed and the overall relevance of 4IR technologies has been limited. Furthermore, this work has been closely aligned with national development priorities, contributing to China's significant rise in global innovation rankings.

Moreover, these successful results were also achieved through UNIDO's assistance in creating a better policy environment for green growth. UNIDO has contributed to an innovative and strengthened environmental governance system of Chinese industry to

accelerate its green development and industrial green transformation. Numerous standards and guidelines have been developed, as well as strategic policies and plans, which have contributed to strengthening institutional capacities and support innovation.

As a result, UNIDO has contributed towards accelerating compliance with multilateral environmental agreements to which China is a party by supporting the creation of an enabling environment based on a comprehensive policy/technical/regulatory framework and on innovation and technology transfer. Private sector investment has also been key to achieving these results due to the high level of co-financing provided, mainly for infrastructure development.

UNIDO's interventions have also contributed to China's rural revitalization and poverty alleviation efforts through targeted projects in agro-industrial development and food safety that have been conducive to increasing GDP in Chengbu and facilitating markets and accessibility to better quality food products in Quannan, demonstrating UNIDO's effective role in promoting inclusive and sustainable industrial development in rural China.

Opportunities for improvement identified in relation to UNIDO assistance focus on the need for further support from UNIDO and other international experts, as national counterparts recognize the value of international exchanges of experience and know-how in accelerating green development and transformation, and in some cases, these have been limited.

Regarding international cooperation, UNIDO has played a pivotal role in transforming China's position in international cooperation, facilitating the country's transition from primarily a recipient of development assistance to an active contributor in global sustainable development efforts. Through the establishment of specialized centers, promotion of knowledge exchange, and support for South-South cooperation, UNIDO has effectively leveraged China's growing industrial and technological capabilities to benefit other developing countries while simultaneously enhancing China's integration into global innovation networks and standards.

UNIDO's management of the country programme in China exhibits significant strengths in aligning with national development strategies and implementing projects effectively. However, it also faces significant challenges in coordination, communication and project management processes between headquarters, field office, and other UNIDO projects in China, which represent the main opportunities for improvement.

UNIDO's country programme in China has made notable progress in integrating gender considerations in its interventions, aligning with both national policies and UNIDO's global gender strategy, however, the depth and consistency of these efforts vary. Gender mainstreaming has achieved some success in promoting women's participation in industrial development, particularly through ITPO initiatives. In this regard, opportunities exist for more systematic gender mainstreaming approaches, including potential collaboration with other UN agencies and the need for a dedicated gender focal point to strengthen these efforts.

Environmental assessments and compliance with national and international safety environmental standards have been a regular practice in the Country Programme interventions, and no negative environmental effects have been reported during its implementation. Each type of intervention has its own mechanism for safeguarding the environment. Only the need to strengthen the environmental assessment of some interventions in the food safety area has been identified. Regarding rural development and

vulnerable groups, UNIDO's country programme in China has integrated approaches into its industrial development initiatives, benefiting vulnerable groups. Aligning with both UNIDO's mandate and China's poverty alleviation efforts, the programme has enhanced economic opportunities and living standards in rural areas through vocational training, support for small enterprises, and improvements in food safety.

Key Conclusions

Conclusion 1: UNIDO's Country Programme in China has demonstrated strong alignment with national development priorities and consistency with economic and environmental policies, particularly in promoting innovation-driven industrial growth and green transformation. Therefore, UNIDO's work in China is highly relevant and coherent with China's 14th Five-Year Plan and with Inclusive and Sustainable Industrial Development (ISID).

Conclusion 2. The CP has contributed to innovation-driven industrial growth in China, including in a limited manner to the 4IR technologies as few interventions were focused on digital transformation. Through targeted projects and initiatives, UNIDO has facilitated technology demonstrations, standards development, and global value chain integration for Chinese enterprises. This work has aligned closely with national development priorities, contributing to China's significant rise in global innovation rankings.

Conclusion 3: UNIDO has played a crucial role in supporting China's transition to a greener economy. Through various projects, the organization has facilitated testing and demonstrating innovative green technologies, developed relevant standards, and promoted knowledge sharing. These initiatives have contributed to China's progress in areas such as clean industry, renewable energy adoption, circular economy practices and industrial energy efficiency.

Conclusion 4: The CP has contributed to rural revitalization and smart agro-food systems in China. UNIDO's interventions have successfully introduced international standards, improved food safety practices, and enhanced agricultural value chains in targeted rural areas. These efforts have led to increased productivity, improved product quality, and better market access for rural enterprises.

Conclusion 5: UNIDO's efforts in promoting international cooperation on Inclusive and Sustainable Industrial Development (ISID) have yielded positive results. The CP has facilitated knowledge transfer, technology exchange, and South-South cooperation, reflecting China's transition from primarily a recipient of development assistance to an active contributor in global sustainable development efforts. This has effectively leveraged China's growing industrial capabilities to benefit other developing countries while enhancing its integration into global innovation networks and standards.

Conclusion 6: While the management has shown strengths in project implementation and alignment with national strategies, there are significant challenges in coordination and communication between UNIDO headquarters, the field office, and various UNIDO projects in China. Addressing these issues, including improving project management processes, clarifying roles and responsibilities, and enhancing communication channels, could enhance overall CP effectiveness and impact.

Conclusion 7: The execution of the interventions by national counterparts under UNIDO's technical assistance and oversight has strengthened the capacities of national institutions and promoted a high level of ownership of the achievements, which contributes to the

sustainability of UNIDO's interventions. This level of ownership is also reflected in the high level of co-financing provided by the private sector, which in some cases allowed the goals of the interventions to be exceeded, showing efficient use of resources.

Conclusion 8: The CP has shown a commendable commitment to mainstreaming and integrating gender into project design, implementation, and monitoring across various sectors. There is still room for improvement, e.g., through potential collaboration with other UN agencies.

Conclusion 9: The Country Programme has made notable contributions to inclusive development in China, particularly through its focus on poverty alleviation, rural development, and improving health and safety standards. UNIDO's interventions have helped enhance the capacities of vulnerable groups and promoted more equitable access to economic opportunities.

Conclusion 10: Environmental considerations have been well-integrated into the Country Programme's activities, reflecting UNIDO's commitment to sustainable industrial development. Environmental assessments have been a regular practice in interventions, with no negative effects identified, although future interventions may require stronger environmental assessments. UNIDO has played a significant role in supporting China's compliance with international environmental agreements, including the Montreal Protocol, Minamata Convention, and Stockholm Convention, through policy support, technology transfer, and capacity-building initiatives.

Recommendations

The recommendations below aim to enhance UNIDO's effectiveness, broaden its impact, and better meet the needs of its partners and beneficiaries in China and globally.

Recommendation 1: To further bolster inclusive and sustainable development in China and other developing countries, UNIDO HQ & CO should work with China to incorporate the following elements in the next phase of the CP:

- Develop a comprehensive programme to support Chinese SMEs in transitioning to greener production methods, including tailored technical assistance and access to financing mechanisms.
 - Collaborate with relevant stakeholders to create industry-specific guidelines for environmental impact assessments that align with international best practices and China's ecological civilization goals.
 - Provide more practical guidance on international standards and best practices, with increased involvement of international experts.
- Optimize UNIDO's role in promoting innovation-driven industrial growth in China.
 - Develop a specialized programme to support Chinese SMEs and traditional industries in adopting and adapting Fourth Industrial Revolution technologies, with a focus on sectors identified as priorities in China's national innovation strategies.
 - Initiate a series of targeted technology transfer initiatives between China and other developing countries in areas where China has demonstrated leadership, such as e-commerce, mobile payments, and renewable energy.
 - Provide customized support to help Chinese entities understand and adapt to international environmental standards and work with Chinese policymakers to reform Chinese policies and mechanisms.

Recommendation 2: To strengthen coordination and integration of UNIDO activities at HQ and in the ground, to improve its effectiveness in China, UNIDO should consider implementing pending and still relevant recommendations from the previous country evaluation (See Annex 9) and the following elements:

- Strengthen UNIDO's project management and operational efficiency in China.
 - Improve mechanisms for communication and coordination within various UNIDO projects in China, between headquarters and UNIDO entities, UNIDO and partners, and UNIDO and national counterparts. This could include developing, implementing and reporting on a joint results framework that encompasses all UNIDO's work in China, including work undertaken under various HQ-managed projects and documentation clarifying the role of all UNIDO entities in China.
 - Implement a streamlined approval process for smaller projects (under a certain budget threshold) to reduce administrative bottlenecks and improve responsiveness to partner needs.
 - Accelerate procurement and administrative processes for requisitioning services and personnel (e.g., by delegating authority to the country office).
 - Create a dedicated capacity-building programme for local project managers and partners, focusing on UNIDO's project cycle management, results-based management, and reporting requirements.
 - Elevate UNIDO's involvement in policy-level discussions in China and expand the Beijing office's role. Restart staff secondment programmes with technical staff.
 - Provide more practical guidance on international standards and best practices, with increased involvement of international experts from UNIDO and other instances and customized support to help Chinese entities adapt to European requirements.
 - Streamline UNIDO projects/entities in China to reduce overlap and duplications and sunset those that are a misfit in the current socio-economic milieu.
 - Implement a digital project monitoring system and tools that allows real-time tracking of project progress, financial expenditure, and results, accessible to both UNIDO staff and key Chinese counterparts.
- Establish a high-level industrial policy dialogue mechanism with key Chinese ministries to share international perspectives on emerging industrial development trends and challenges.
 - Develop and share a comprehensive study on China's industrial policy evolution and its implications for global sustainable development with other UNIDO member states.

UNIDO Management has agreed to address the findings and recommendations from this evaluation through two Management Action Plans (MAPs), as provide in section 6 of this report.

1. Introduction

Evaluation Purpose

The independent country-level evaluation of China was included in the evaluation work plan 2024-2025 of the Evaluation and Internal Oversight Office (EIO). The main purpose of this independent country evaluation was to assess UNIDO's engagement in and with China and the extent to which expected results under the previous and the current UNIDO-China Country Programmes have been achieved. This evaluation is a forward-looking exercise seeking to identify the best practices and areas for improvement. It aims to generate findings, draw lessons, and provide a set of actionable recommendations. The evaluation will inform future UNIDO interventions in China and the development of the next UNIDO-China Country Programmes.

Evaluation Objectives and Scope

The subject and scope of the evaluation is UNIDO's cooperation with China from 2016 to 2024, with a focus on the ongoing Country Programme for Inclusive and Sustainable Industrial Development (2021-2025). While the evaluation covered all UNIDO activities in China in principle, the evaluation did not assess the performance of all individual projects under the Country Programme due to the large portfolio and number of activities. Instead, it selected some projects as case studies during the inception phase to focus on key activities while allowing answering the evaluation questions.

In order to achieve the five objectives of the evaluation, the evaluation focused on the following:

1. Assess the results and performance of the UNIDO-China Cooperation with regard to UNIDO's contribution to transformational changes at the country level.
2. Identify what factors facilitated or hindered the achievement of the intended results.
3. Examine the strategic positioning of UNIDO in China and the Organization's contribution to the Sustainable Development Cooperation Framework (UNSDCF), the SDGs, and the 2030 Agenda.
4. Generate findings and provide recommendations to shape the future partnership with China, along with other country partners.
5. Consider the dual role of China as a beneficiary and an emerging donor.

The evaluation also examined the role and performance of the UNIDO Office in China in relation to coordinating, monitoring, and implementing UNIDO activities in the country and assess to which extent the office provides added value to the overall cooperation between UNIDO and China. The evaluation also examined the role of China as a donor to UNIDO.

Evaluation Questions

Though this evaluation used the standard Evaluation criteria (relevance, coherence, effectiveness, efficiency, impact, and cross-cutting issues, including gender equality and women's empowerment, inclusiveness, and social and environmental safeguards) to assess the performance of UNIDO's engagement in and with China, the findings are reported by expected results outlined in the Theory of Change for enhanced usefulness and accessibility of the report for key decision-makers and stakeholders. The following evaluation questions (Table 1), revised in conformity with the UNEG guidelines, guided the evaluation inquiry.

Table 1. Evaluation Questions

Criteria	Questions
Relevance	Is the UNIDO country cooperation strategy aligned with China's National Policies and Strategies and with UNIDO's strategic priorities? Are UNIDO activities relevant to the needs of the beneficiaries? Is UNIDO cooperation aligned with the dual role of China as a beneficiary and an emerging donor?
Coherence	Is UNIDO's country engagement in China overall coherent? Is it coherent with the UNIDO MTPF 2022-2025? Does it consider synergies and interlinkages between different interventions? Is it coherent with other commitments, such as the UNSDCF and the Agenda 2030?
Effectiveness	To what extent were the objectives of UNIDO interventions achieved or are likely to be achieved at the time of the evaluation? Did UNIDO react to pandemic and post-pandemic challenges and to the changing context in China?
Efficiency	Did UNIDO deliver results in an economic and timely manner?
Impact	To what extent has the UNIDO-China cooperation contributed to long-term transformational changes in the country and/ or in other countries? Has it generated higher-level effects? What is UNIDO's comparative advantage?
Sustainability	How sustainable are the results achieved in the country? To what extent will the benefits continue, or are they likely to continue?
Gender and Youth	To what extent were gender issues addressed in UNIDO interventions? To what extent have women, youth, and other vulnerable groups benefited from UNIDO interventions in the country?
Environmental Issues	To what extent did UNIDO address environmental issues? Were environmental screenings and assessments conducted, and the prevailing environmental standards considered?
UNIDO Field Office Performance	How did the UNIDO Field Office perform with regard to overall coordination, monitoring, and its contribution to UNIDO's convening role, incl. global forum activities?

Methodology

This evaluation was conducted following the Charter of the Office of Evaluation and Internal Oversight, the UNIDO Evaluation Policy, and the UNIDO Evaluation Manual. Guided by a

theory of change approach, it followed a mixed-methods, inclusive, and participatory approach with adequate triangulation to arrive at credible, reliable, and unbiased findings. It utilized a combination of primary and secondary sources of data. The primary data sources included, among others, interviews with key stakeholders, focus group discussions, online surveys, and direct observations. Secondary data sources include all relevant documents and data available from UNIDO and its stakeholders. The evaluation was conducted in four phases: (1) inception, (2) data collection, (3) data analysis, and (4) reporting. The evaluation timeline spanned from April to October 2024, culminating in the submission and presentation of the evaluation report by the evaluation team.

The methodology of the evaluation was designed to allow for achieving the evaluation objectives. Given the large financial volume of UNIDO's cooperation with China - the total funding secured for ongoing projects is around USD 121.4 million with 14 projects under implementation (Table 2), the evaluation was designed carefully to achieve its objectives.

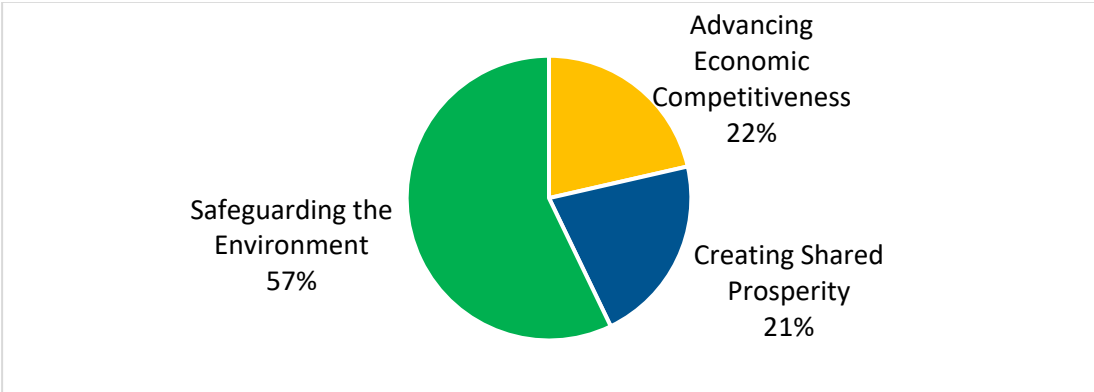
Table 2. UNIDO's TC Portfolio in China (as of March 2024)

	Number of Projects	Total Funding
Ongoing Projects	14	121,399,536
Completed Projects (2018-2024)	15	118,725,360
Completed and Ongoing Global Projects Incl. China	10	22,241,953.9
Total TC Portfolio	39	262,366,849

Source: Terms of Reference for the Country Evaluation - China, Annex 2, April 2024.

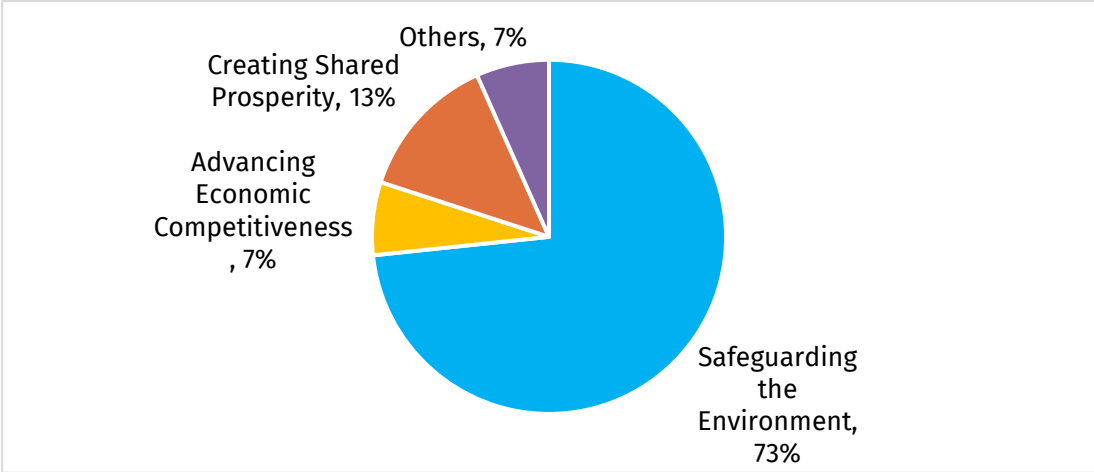
The emphasis of the evaluation is on activities that are relevant and contribute to the implementation of the current Country Programme's key components. A striking feature of UNIDO's cooperation with China is the significance of the 'Safeguarding the Environment' thematic area. The total funds for ongoing environment-related projects (USD 112.6 million) constitute 92% of the total ongoing project funding (Figure 1).

Figure 1. UNIDO's ongoing TC Portfolio in China by Thematic Area (as of March 2024)



Source: UNIDO Open Data Platform, April 2024.

Figure 2. UNIDO's completed TC Portfolio in China by Thematic area (as of March 2024)



Of the 14 ongoing projects, 8 pertain to 'Safeguarding the Environment'. For the completed projects between 2018-2024, 11 out of 15 were in this thematic area, amounting to 97% of the total funding for completed projects (Figure 2). The other thematic areas covered include 'Advancing Economic Competitiveness' and 'Creating Shared Prosperity'. The evaluation needed to emphasize the thematic area of safeguarding the environment; however, other thematic areas and Country Programme components were also examined for a comprehensive picture.

[Annex VIII](#) presents twelve projects that were used as case studies for in-depth examination, chosen in consultation with key stakeholders. It includes large-scale projects such as the HCFC Phase-out Management Plan projects that absorb a significant share of the funding. The table also lists the criteria that were used for the selection of projects.

Inception Phase

The inception phase, undertaken in May-June 2024, culminated with a finalized inception report. It involved a preliminary desk review and discussions with key stakeholders listed in [Annex IV](#). This phase enabled the evaluation team to fine-tune the evaluation approach and methodology, including the evaluation matrix, questions, stakeholder mapping, and data collection tools. It also helped develop a theory of change, focusing on UNIDO's objectives in China, such as promoting inclusive and sustainable industrial development, fostering innovation, and supporting green industrial transformation.

Data Collection Phase

The second phase of the evaluation – data collection – officially began after the finalization of the inception report. Using the tools outlined in this report, data collection from various sources and methods was undertaken concurrently. It involved documentary evidence from over 200 documents, consultations by way of key informant interviews (KIIs) with 80 stakeholders, and focus group discussions (FGDs), online surveys administered to 98 beneficiaries (84 of whom responded), direct observations during the field mission, and other data as available. This section lays out the approach that was taken within each of these methods.

Desk review: All important documents were formally reviewed and coded, including relevant existing evaluations, internal documentation (project documents, progress

reports, etc.), Country Programme documents, and the Strategic Cooperation Framework between UNIDO and China. The desk review provided concrete, documented evidence to help answer the evaluation questions.

Stakeholder consultations: The evaluation team worked on mapping a list of key stakeholders, which include (i) UNIDO Management, (ii) UNIDO staff involved in China projects, (iii) Chinese government representatives, (iv) Donor representatives, (v) Counterparts and beneficiaries. Key informant individual and group interviews (KIIs) and focus group discussions (FGDs) provided qualitative information on all aspects of the UNIDO-China cooperation. All KIIs and FGDs were conducted during the field mission in July-August 2024.

Online survey: An online survey was deployed to collect data from a wider range of stakeholders and beneficiaries, with 84 respondents (86% response rate) providing valuable insights. The surveys provided critical information on the outcomes outlined in the evaluation matrix.

Direct observations: The evaluation team undertook a field mission to China for direct observation of project sites and beneficiaries. This provided first-hand insights into the implementation and results of UNIDO's interventions.

Data Analysis Phase

The third phase involved data analysis. This was an ongoing process, beginning with the document review and collection of data through KIIs, FGDs, and surveys. Qualitative and quantitative analytical techniques were employed. Content analysis was used to convert content from the documents and interview notes into data according to the evaluation matrix. Case studies provide illustrative examples to extract lessons and good practices. Quantitative analysis was used with the survey data and project portfolio data. Results were disaggregated where applicable.

Reporting Phase

The fourth and final phase is focused on reporting and validating findings and recommendations. A draft report was shared with key stakeholders for review and feedback. A final evaluation report was provided as the principal output of the evaluation process. The evaluation was conducted following the Charter of the Office of Evaluation and Internal Oversight and the UNIDO Evaluation Policy, as well as UNEG guidelines and UNEG Ethical Standards for Evaluations. Overall, the evaluation followed a mixed-methods, inclusive, and participatory approach with adequate triangulation to arrive at credible, reliable, and unbiased findings.

Limitations

Project beneficiaries' data: The online survey was administered to a shortlist of beneficiaries provided by some projects. This data on potential survey respondents was not available for most projects, and hence its results should be drawn carefully. Though the evaluation has tried to triangulate the survey findings against other sources, the evaluation cannot be sure of the reliability and generalizability of survey responses (which were highly positive). At the same time, no adverse conclusions should be drawn from such unavailability of the required data.

2. Country Context

With the world's second-largest population and third-largest land area, China has made remarkable economic and social progress since initiating the economic policies known as "reform and opening-up" in the late 1970s. China is now the second-largest economy and top manufacturer in the world¹. It is perhaps the only country to have moved from the low human development group in 1990 to the high development group, with a Human Development Index (HDI) of 0.788 in 2022², reflecting broad-based improvements in income, health, and education.

Despite this progress, the country faces several challenges, including environmental deterioration and income inequality. A significant number of people remain vulnerable, and the gap between rural and urban areas and between western and eastern provinces remains considerable. Furthermore, the COVID-19 pandemic had significant effects on China's economy, including a slowdown in growth rate, job losses, and increased unemployment.

To deal with these challenges, the Chinese government has set national strategies and priorities, aimed at green, inclusive, and innovation-driven growth in its 13th and 14th Five-Year Plan periods (2016-2020 and 2021-2025)³. A "high-quality development" vision was announced to prioritize quality rather than the rate of economic growth, which symbolizes a transition from a labor-intensive economic structure to a productive and innovation-focused model. Industrial modernization is a major drive to achieve the targets of the national plans, by upgrading traditional industries, promoting intelligent and green manufacturing, and cultivating future industries such as artificial intelligence, hydrogen energy, and energy storage. It is expected that 17% of GDP will come from emerging industries, including biotechnology, information technology, green products, and new energy vehicles.

Given its size, China is also central to many regional and global development issues. China today accounts for 27 percent of annual global carbon dioxide and a third of the world's greenhouse gas emissions. The country is also the largest producer and exporter of hydrofluorocarbons (HFCs), greenhouse gases used as alternatives to ozone-depleting substance (ODS) chemicals, trading with more than 120 countries.⁴ Global environmental problems cannot be solved without China's engagement.⁵ To address global climate challenges, China made a commitment to achieving carbon peaking by 2030 and carbon neutrality by 2060, or the so-called "Dual Carbon Goals." The country ratified the Minamata Convention on Mercury in 2016 and adopted the Kigali Amendment to the Montreal Protocol in 2021, which aimed to control emissions of non-CO₂ greenhouse gases such as HFCs. By implementing national plans on the implementation of the Stockholm Convention on Persistent Organic Pollutants (POPs), China has reportedly phased out 29 of the 34 types of

¹ Guo, Chaoxian, [Major Achievements and Experiences in Chinese Industrial Development in the 40 Years Since Reform and Opening-up](#).

² <http://www.hdr.undp.org/en/data>

³ https://www.gov.cn/xinwen/2016-03/17/content_5054992.htm; https://www.gov.cn/xinwen/2021-03/13/content_5592681.htm

⁴ <https://www.unep.org/ozonaction/news/news/china-implements-hfc-import-and-export-licensing-system>

⁵ <https://www.worldbank.org/en/country/china/overview>

pollutants, cleaned up over 100,000 metric tons of POP waste each year, and brought down the emission intensity of dioxins in major industries.⁶

To reduce the gap between urban and rural areas, China has initiated rural revitalization, which features coordinated urban-rural development and agricultural modernization.⁷ Agricultural modernization covers from green transformation and agribusiness scale-up to quality and safety supervision over agricultural products. At the same time, China has reportedly increased engagement with other developing economies through aid, trade, and investment. Some of the initiatives towards its South-South include the Global Development Initiative, the Belt and Road Initiative, and the establishment of the China International Development Cooperation Agency (CIDCA) in 2018.

The China-UNIDO cooperation

UNIDO has a long history of cooperation with China, dating back to 1971 when China was recognized as a member of the Organization. While in the first years, China contributed funding to UNIDO, it was in 1979 that China began to receive aid and technical assistance from UNIDO. Over these five decades, the Organization has implemented hundreds of technical cooperation projects in China and strongly contributed to structural transformation and industrialization in the country.

Since 2000, four Country Programme Frameworks have been implemented, focusing on foreign investment introduction and technology transfer, energy and environmental protection, information technology, food safety, agro-business, South-South cooperation, human development, green industry, and international cooperation. Environmental pollution is recognized as a major problem. Several UNIDO projects focused on the promotion of resource-efficient and low-carbon production, access to cleaner and renewable energy, and the implementation of international norms, protocols, and conventions concerning environmental protection and compliance with international standards.

The ongoing Country Programme for Inclusive and Sustainable Industrial Development (2021-2025) followed the China-UNIDO Country Programming Framework for Inclusive and Sustainable Industrial Development (2016-2020). It builds on past projects and programmes and is designed to enhance UNIDO's support to the Government of China to implement a roadmap towards inclusive and sustainable industrial development (ISID). The Country Programme's priorities are aligned with China's 14th Five-Year Plan (2021-2025), which aims to boost the construction of a new development pattern, achieve high-quality economic development, coordinate development and security, protect the ecological environment, improve people's well-being, and bridge the gap in internal development.

In line with the new development aspirations of China and considering the 14th Five-Year Plan, UNIDO, by implementing the Country Programme for ISID 2021-2025, gives priority to the four following areas⁸:

- Boosting innovation-driven industrial growth;
- Accelerating the development of green industry and green industrial transformation;
- Rural revitalization and smart agro-food systems;

⁶ https://english.www.gov.cn/news/202405/18/content_WS664815cdc6d0868f4e8e73d9.html

⁷ https://english.www.gov.cn/news/202405/18/content_WS664815cdc6d0868f4e8e73d9.html

⁸ UNIDO Country Programme in China. 2021-2025

- Promoting international cooperation for ISID.

In addition to the UNIDO-China CP 2021-2025, in October 2023, China and UNIDO signed the Strategic Cooperation Framework (2023-2025) to promote ISID and seek to facilitate China's high-quality development and align it with the objectives of the 2030 Agenda for Sustainable Development.⁹

The framework entails the following areas of cooperation: bilateral high-level exchanges and policy coordination; green development; digital economy; standards and conformity assessment; South-South and triangular cooperation; support for major forums and events; talents exchange and cooperation; and project management.

As a member of the United Nations (UN) Country Team, UNIDO has participated in the elaboration, validation, and signature of the United Nations Sustainable Development Cooperation Framework (UNSDCF) for the People's Republic of China (2021-2025). The overall objective of the UNSDCF for China is to contribute to the achievement of the 2030 Agenda and realize innovation-driven, coordinated, green, open, and shared development.

The UNSDCF for China is strategically centered on three key priorities¹⁰:

- People and Prosperity: Achieving innovation-driven, coordinated, and shared development.
- Planet: Achieving Green Development towards a more sustainable and resilient environment
- Partnerships: Realizing the full potential of China's international engagement to promote its open development and partnerships to accelerate the achievement of the SDGs across the world.

UNIDO's main counterpart in China is the Ministry of Commerce (MOFCOM), whose Department of International Trade and Economic Affairs serves as the coordinating agency on the policy level. Directly under the MOFCOM, at the operational level, the China International Centre for Economic & Technical Exchanges (CICETE) coordinates the cooperation between China, UNIDO, UNDP, and the United Nations Volunteers programme. In addition, UNIDO maintains close collaboration with other ministries in China, such as the Ministry of Industrial and Information Technology, the National Development and Reform Commission, the Ministry of Finance, the Ministry of Water Resources, the China Food and Drug Administration, and the China International Development Cooperation Agency. UNIDO cooperates with a long list of partners, including government organizations, provincial governments, development finance institutions, universities, and industry associations.

The UNIDO Office in Beijing is led by a Regional Representative (UR) and includes regular project staff. The office also covers the Democratic People's Republic of Korea and Mongolia, though UNIDO has no physical presence in those countries. UNIDO has also established some TC project-related centers and offices in China, which include the Investment and Technology Promotion Offices (ITPOs) projects in Beijing and Shanghai and the UNIDO Centre for South-South Industrial Cooperation (UCSSIC) project.

⁹ Strategic Cooperation Framework (2023-2025) Between the Government of the People's Republic of China and the United Nations Industrial Development

¹⁰ UNSDCF for China, signed on August 18, 2020

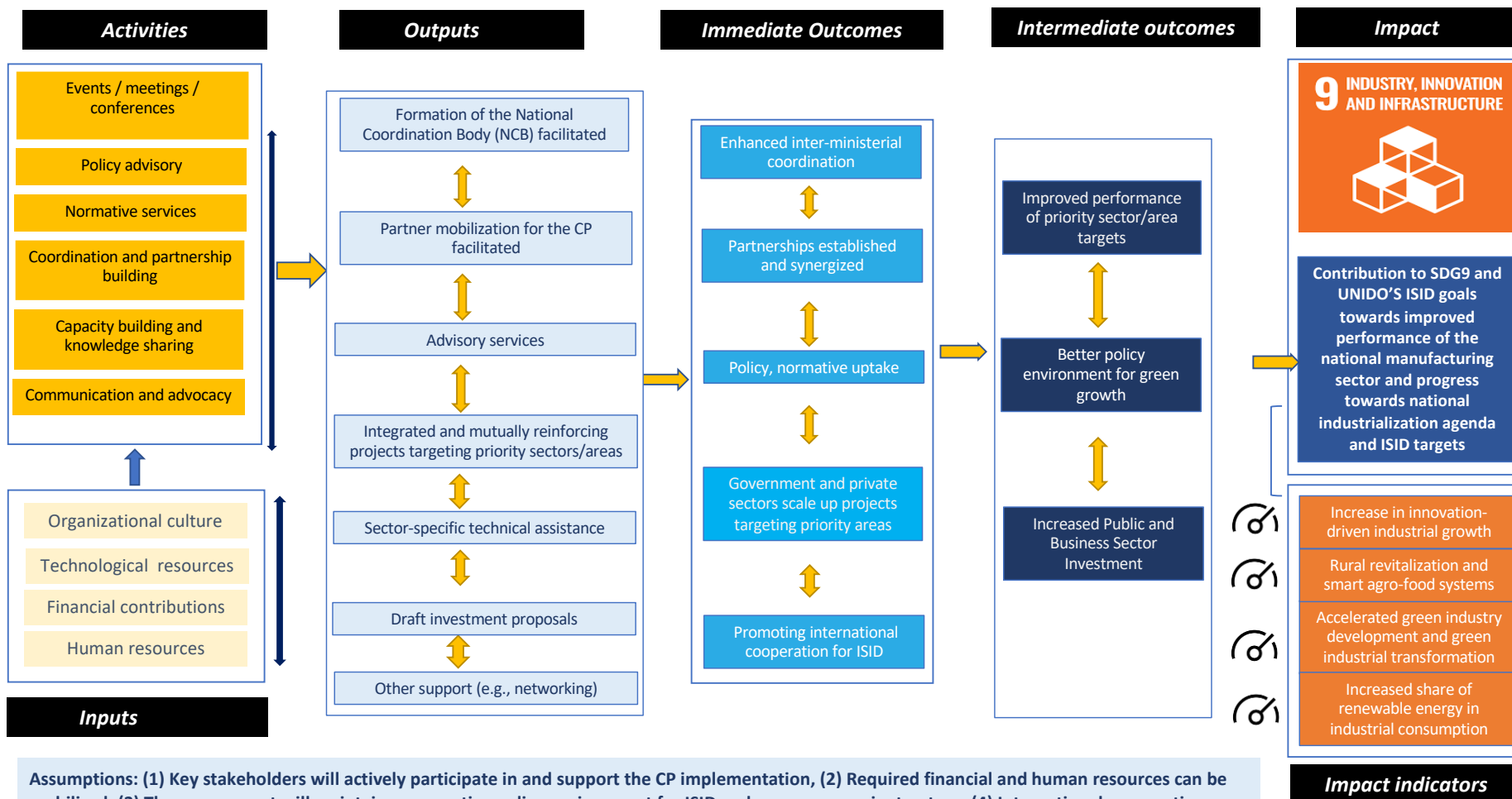
3. Theory of Change

As mentioned in Section 1.3.1 (inception phase), the evaluation team put together a Theory of Change (ToC) for this evaluation. This ToC details the causal pathway from activities to impacts for UNIDO's interventions outlined in the previous section.

The Theory of Change for UNIDO China outlines a comprehensive framework for achieving its objectives. Key outputs include the formation of a National Coordination Body, partner mobilization, advisory services, integrated projects targeting priority sectors, and sector-specific technical assistance. These outputs are expected to lead to immediate outcomes such as enhanced inter-ministerial coordination, established partnerships, policy and normative uptake, scaled-up projects in priority areas, and promotion of international cooperation for ISID.

These immediate outcomes are expected to catalyse intermediate outcomes, including improved performance of priority sectors, a better policy environment for green growth, and increased public and business sector investment. The ToC aims for impact aligned with SDG 9 and UNIDO's ISID goals, contributing to improved performance of the national manufacturing sector, progress towards national industrialization, and outcomes such as innovation-driven industrial growth and accelerated green industry development.

Figure 3. Theory of Change



4. Findings

This section first presents the findings of the evaluation relating to the four components of the Country Programme as described in its Country Programme Strategy document.¹¹ It then assesses progress in relation to the management and coordination (including field office and all cross-cutting aspects).

4.1. Component 1: Boosting Innovation-driven industrial growth

Finding 1: The evaluation found that UNIDO's country programme has contributed to innovation-driven industrial growth in China. Through targeted projects and initiatives, UNIDO has facilitated technology demonstrations, standards development, and global value chain integration for Chinese enterprises. This work has aligned closely with national development priorities, contributing to China's significant rise in global innovation rankings, though the programme's direct impact on employment generation was mixed and innovation in 4IR technologies was limited as few interventions were focused on digital transformation.

Innovation-driven industrial growth is a key component of UNIDO's country's programme. While innovation can span across all interventions, the country programme related this component specifically to digital technology and the Fourth Industrial Revolution (4IR) in the context of China's prioritization of these emerging technologies. UNIDO's interventions aimed to address the following challenges and opportunities¹²:

- Low level of participation by traditional industries, small and medium-sized enterprises (SMEs), and the private sector in digital transformation.
- Inadequate regulatory and institutional capacities for innovations in production technology.
- Lack of synthesis of Chinese success in industrial digital transformation, which can be shared with other developing countries.

As noted in the TOC, UNIDO aimed to facilitate China's development of innovative approaches and practices through policy advice, technology transfer, development of norms and standards, and research and knowledge dissemination. This echoes the UNIDO Strategic Framework for the Fourth Industrial Revolution 2022-2030, which specifies three strategic objectives (1) strengthening 4IR capacity-building for firms with implementation tools and methodologies, (2) expanding UNIDO's services on 4IR diagnostics, innovation, and technology advice, and (3) expanding UNIDO's research and policy advice to enhance technology policies and strategies.

Several projects in China aimed to contribute towards this objective. Some of the examples of projects listed in the country programme to address these objectives include:

- Strengthening the global innovation network (GIN) on inclusive and sustainable industrial development.

¹¹ UNIDO Project Document Country Programme 2021-2025

¹² Country Programme (2021-2025)

- Intelligent manufacturing technology and its application in small and medium-sized enterprises.
- Investment and Technology Promotion Offices (ITPOs) in Beijing and Shanghai.
- Supporting the establishment and development of the International Hydrogen Energy Centre.
- Integrated adoption of New Energy Vehicles in China.

During the field mission, the evaluation team conducted direct observations as stakeholder consultations to dive deep into these projects.¹³ The evaluation team learned firsthand about various activities that contributed to this outcome, which include:

- Innovative technologies tested and demonstrated, although most of these technologies are more related to the replacement of hazardous substances by less harmful substances than 4IR technologies (See annex 9 for details).
- Standards developed or revised to guide technology applications, including international standards on hydrocarbon manufacturing and hydrogen and horizontal energy systems.
- Matchmaking events arranged to connect investors with technology companies
- Platforms established to foster partnerships, such as 4IR Alliance, 4IR Accelerator (Hangzhou) and the World Industrial and Innovative Technology Cooperations.¹⁴ As per 2020 Annual Report of ITPO Shanghai (Page 6), the Shanghai International Science and Technology Innovation Center was the other platform established to strengthen the China Innovation Network, although the implementation of this strategy had some complications and the operation of the network continues to have limitations.
- Competition facilitated by ITPOs to stimulate innovations, including the annual UNIDO Global Call and Open Call for SDG Good Practices.
- Knowledge products developed by ITPOs, covering healthcare, the digital divide, the gender divide, and urban innovation competitiveness in the Yangtze River Delta. The International Hydrogen Energy Centre produced a report on the hydrogen industry development in developing countries.
- 4IR-focused publicity events, such as fora, seminars, conferences, and exhibitions organized to raise awareness, showcase 4IR technologies and disseminate knowledge. Examples include forums held by ITPO Beijing at the China International Fair for Trade in Services, China International Import Expo, China International Fair for Investment & Trade (CIFIT) and Global Digital Trade Expo; events held by ITPO Shanghai at the World Artificial Intelligence Conference, Global Industrial Internet Conference, and Global and Manufacturing and Industrialization Summit; and the Global Science & Technology Innovation Conference held by Shanghai International Science and Technology Innovation Centre.
- Training to build skills in innovation.

¹³ The Green Hydrogen Energy Integrated Demonstration Application Project (Project No. 210197) also belongs to the category, but the project just started earlier this year, so it is too early to assess its outcomes at this stage.

¹⁴ The World Industrial and Innovative Technology Cooperations (WiiTs) is an initiative aiming to collaborate with global industrial technology innovators, industrial manufacturers, product globalization users, financial service providers and technology partners to create industrial technology innovation and an international cooperation ecosystem and promote technological innovation and ISID.

CP's focus on innovation was highlighted by both KII respondents and survey participants. For example, one KII respondent noted, "Innovation is a key element in the new China development cooperation (8 areas of cooperation have been identified) and in line with the UNSDCF's pillars people, prosperity, planet and partnerships." The significance of these projects, particularly the International Hydrogen Energy Centre (IHEC), was indicated by multiple KII respondents. For instance, one respondent emphasized: "IHEC is a good example that links new technology innovation industry energy and environment ... where UNIDO contributed clearly."

Uptake of innovative technologies by the private sector

IHEC appears to have played a prominent role in facilitating the development and application of hydrogen energy, which is considered as part of 4IR. It collaborated with a private-owned company, SinoHytec, to demonstrate hydrogen fuel cell commercial vehicles during the 2022 Winter Olympics. According to IHEC, 3,006 fuel cell vehicles operate in Beijing, Tianjin, and Hebei, with a total operating mileage of more than 200 million kilometers. IHEC currently incubates nine companies that are engaged in hydrogen production, storage, refueling, fuel cells, and power generation.¹⁵ In addition, IHEC is working with local companies and governments on projects including:

- Baotou International Hydrogen Energy Metallurgy and Chemical Demonstration.
- Zone project, which will install wind power and produce green hydrogen and ammonia.
- Hydrogen-compatible City Gas Network, which will develop technologies to provide solutions to carbon reduction in gas-powered equipment.
- A comprehensive demonstration in Tangshan involving green port trade, chemical industry, metallurgy, green power, and heating green transportation.

UNIDO's contribution also fostered the transfer of technology to integrate electric vehicles (EV) with renewable energy (photovoltaic energy) and smart grid in two pilot cities: Shanghai and Qingdao. In this regard, these cities have charging stations capable of supporting renewable energy (RE) micro-grid to EV charging, but also EV to grid (V2G) systems. Currently, there are more than 480 EVs powered by RE micro-grids in Yancheng and Shanghai, and three mobile charging stations operate daily in Yancheng. In addition, data monitoring centers have been developed and are in operation in both pilot cities to collect real-time data to control charging times. A city-level vehicle-grid integrated energy management platform was established. Some 32 companies reported their intention to increase efforts in the EV-RE area.

Several other projects similarly facilitate technology transfers by the private sector. "Environmentally Sound Management and Disposal of Obsolete POPs Pesticides and other POPs in China" supported the replication of fly ash treatment technologies to a cement company.¹⁶ "Demonstration of Mercury Reduction and Minimization in the Production of

¹⁵ IHEC's presentation

¹⁶ Project terminal evaluation report on the "Environmentally Sound Management and Disposal of Obsolete POPs Pesticides and other POPs in China" Project (2018)

Vinyl Chloride Monomer in China” enabled the transfer of low-mercury catalysts technology to six companies.¹⁷ The project, “Upgrading of China Small Hydropower Capacity,” supported the transformation of a traditional sector through digitalization. It assisted private and public SHPs in making station control and monitoring less labor-intensive and more efficient through automation technologies, such as telemetry, remote control, and the use of micro-computer governors.¹⁸

Although all these projects may not involve SMEs or the private sector, they engage traditional sectors, which address the challenges identified in the country programme. Although, as mentioned above, innovation in digital transformation was limited, as few interventions, both in SMEs and in traditional sectors, focused on 4IR technologies.

Capacity development

Almost all projects listed in Annex 7 incorporated a capacity-building element. They supported the training of operators, managers, and government officials on the use of demonstrated technologies and/or relevant standards. In addition, the project ITPO Beijing worked with IT companies to organize a series of training sessions on 4IR in less developed areas in China, targeting women and the rural population, among others. For example, according to the ITPO Beijing 2023 Annual Report, the 4IR alliance achievements in the 2021-2023 period included cognitive/knowledge gains for government departments, intermediary agencies and international organizations, skills acquisition and empowerment of participating individuals, as well as increased integration into value chain and improved management practices of companies.

Integration of enterprises into global value chains

This indicator can best be reflected in ITPOs’ investment promotion efforts. ITPO Shanghai organized “Go to China Venture Camp” in 2019, where six AI companies presented their projects in a roadshow, and one of UK-based Spark EV Technology was reported to settle in Shanghai and work with automobile manufacturers, including BMW and Geely¹⁹. Another roadshow was around the World Artificial Intelligence Conference in 2020. It was reported that agreements were signed between DigitWin and Lingzhong Capital, between PETOI and Baidu Innovation Center, and between livecom and Ziyi Technology, respectively²⁰. In 2022, ITPO Beijing assisted international investors such as JP Morgan and KKR in establishing cooperation with companies such as Chengbu Easton Biopharmaceuticals, Guangzhou Fenghua Biotech, and Tianfu International Bio City.²¹ These initiatives supported startups in accessing national and international investors and clients.

Another example is the project titled “HCFC Phase-Out Management Plan (Stage II) (RAC sector).” It supported air-conditioner manufacturers to develop innovative technologies to

¹⁷ KII with Foreign Economic Cooperation Office, Ministry of Ecology and Environment

¹⁸ Monitoring reports of pilot SHPs.

¹⁹ ITPO Shanghai Annual Report 2019.

²⁰ ITPO Shanghai Annual Report 2020.

²¹ ITPO Beijing Annual Report 2022.

replace hydrofluorocarbon (HFC) with hydrocarbon, which has low global warming potential but is highly inflammable. This innovation helps companies export to the Western markets, which are restricting the use of HFC in air-conditioners.²²

The focus on global networks and technology transfer was also highlighted by survey respondents. For example, one respondent emphasized: "The trends here strongly emphasize building global networks for innovation and technology transfer, with a focus on South-South cooperation."

Employment generation

Employment generation was not included in the results framework of most innovation-related projects under the country programme. Therefore, it is not monitored and reported in general. There are two exceptions. One is Project 150073, "POPs and Chemical Pollution Solutions through Area-Based Eco-effective Management," which reported 204 jobs created because of the improvement of "product design, procurement, production, transportation, recycling and social responsibility of enterprises," including 92 female jobs. Another is the Upgrading of China Small Hydropower (SHP) Capacity Project, which did a social impact analysis of its demonstration SHPs. The findings were mixed in job creation. On one hand, local villagers were given opportunities to support the retrofitting of SHPs. On the other hand, the staff size of SHPs was downsized because of automation (as is to be expected from digitalization and the use of less labor-intensive technologies that reduce employment for specific projects but can create jobs elsewhere by raising productivity).

China's ranking in the Global Innovation Index

Global Innovation Index (GII), published annually by the World Intellectual Property Organization, tracks the state of innovation worldwide and ranks the performance of 132 countries. GII takes the pulse of four key stages in the innovation cycle: (1) science and innovation investment, (2) technological progress, (3) technology adoption, and (4) the socioeconomic impact of innovation.²³ According to GII, China's global ranking rose from 25 in 2016 to 12 in 2023 (Figure 4). The trend coincides with China's national policy to prioritize innovation-led quality development. China's overall investment in research and development totaled RMB 3 trillion in 2022, three times more than 10 years ago.²⁴ UNIDO's country programme is in tune with the national strategies, although the actual contribution to innovation progress was not measurable.

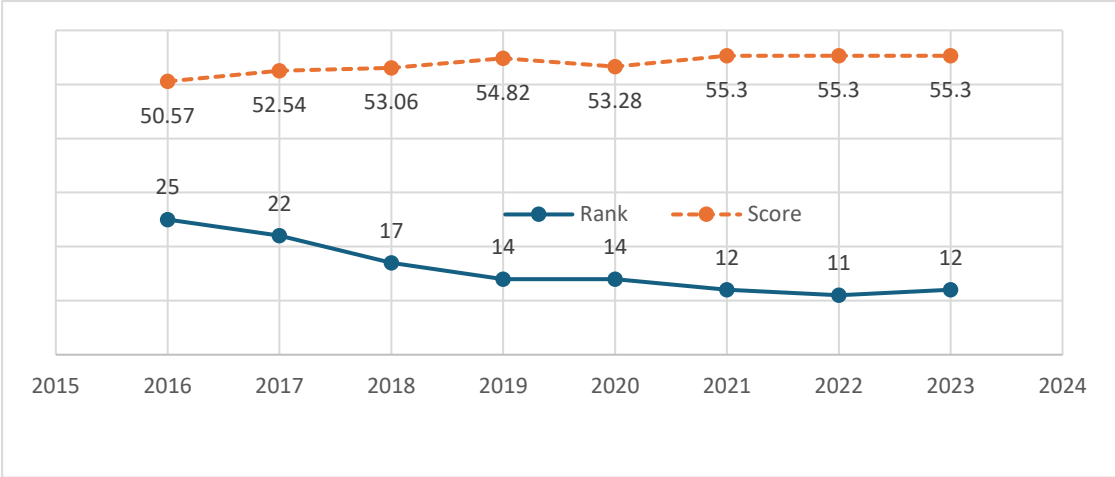
The alignment of UNIDO's efforts with China's national development priorities was a recurring theme among KII respondents. For instance, one stakeholder described, "China has entered a new era of social development: Innovation coordination green open and shared development. All areas are highly relevant."

²² Interviews with Foreign Economic Cooperation Office, Ministry of Ecology and Environment, and TCL Air Conditioner Division

²³ GII annual reports

²⁴ https://www.gov.cn/yaowen/liebiao/202312/content_6921896.htm. The total investment was the combined input from the state and the private sector.

Figure 4. China's Ranking in the Global Innovation Index



Source: Global Innovation Index Annual Reports

Additionally, survey respondents also noted unintended positive outcomes from these activities. As an illustration, one respondent mentioned: "Unexpected outcomes include increased demand for eco-friendly products and positive impacts on youth involvement in innovation."

Alongside the achievements mentioned above, the evaluation team also noticed that although the CP highlighted digital technology and 4IR, only a few were related, as shown in Annex 9.

4.2. Component 2: Accelerating the Development of Green Industry and Industrial Green Transformation

Institutional Capacity

Finding 2. UNIDO has contributed to an innovative and strengthened environmental governance system of Chinese industry to accelerate its green development and industrial green transformation. Numerous standards and guidelines have been developed, as well as strategic policies and plans, which have contributed to strengthening institutional capacities. The need for further assistance from UNIDO and other international experts was identified as an area of improvement for UNIDO as national counterparts recognize the value of international exchanges of experience and know-how in accelerating green development and transformation, and in some cases, these have been limited.

Most of UNIDO's interventions in China during the evaluation period have included institutional capacity building through the extensive development of standards, regulations, and guidelines at national, regional, and local levels,²⁵ and some policies and strategic plans, whose approval/adoption by the Government of China has provided a solid foundation and given sustainability to green industry development and green industrial

²⁵ Approximately, 51 new and revised standards, 24 new and revised guidelines, 7 new and revised policies and strategic plans and 2 certification regulations. In addition, China and ONUDI have participated in the review of two international standards.

transformation, which has also accelerated these development and transformation processes. It is worth noting that most of the instruments developed were approved or adopted by the Chinese government, and only a few are in the revision phase, which facilitates the sustainability of achievements and makes the attainment of the intermediate outcomes of the ToC evident as there is policy and normative uptake.

This contribution is in line with Part XI, Green Development and Harmonious Co-existence between Humanity and Nature of China's 14th Five-Year Plan (2021-2025), which mandates continuous environmental improvement through, inter alia, a modern environmental governance system, and a faster transformation for green development through, inter alia, a policy system for green development. In this regard, an interviewee mentioned that *"China needs UNIDO's support, especially to have policies and a regulatory framework that meet international standards"*.

In this regard, the CP in China has been highly relevant to the Chinese Government. In particular, UNIDO-China collaboration has significantly contributed to:

- The establishment of policies that indicate the path to follow to promote the green development of the industry (e.g., the New Energy Vehicle Industry Development Plan 2021-2035) or to transform the industry (e.g., the Technical Policy on the Prevention and Control of Mercury Pollution).
- Strengthening and/or updating existing legislation at the national, regional, or local level to create an enabling environment for compliance with international commitments (e.g., updated customs policy on banning the import and export of HBCD) or introduce new concepts for greening the industry (e.g., incorporating the concept of eco-effectiveness into Tianjin's 14th Five-Year Plan for Ecological Environmental Protection).
- Formulation or updating of technical standards to: (i) establish measures or processes to be applied to evaluate the performance of more energy-efficient equipment or less environmentally hazardous substances (e.g., Method for Evaluating the Uncertainty of Thermal Performance Testing of Boilers); (ii) indicate safety measures to be observed in new or updated industrial processes (e.g., Requirements for transportation of room air-conditioners charged with flammable refrigerants); (iii) prevent and control pollution (e.g., Automotive Power Battery Recycling and Reuse Part 6 Remaining Life Assessment Specifications); and (iv) certify companies, processes or products (e.g., Certification Rules for the Power Battery Recycling Service Outlet System for New Energy Vehicles). This contribution has also included UNIDO's assistance in the formulation of international standards, such as ISO/TC 197/SC 1 Hydrogen at Scale and Horizontal Energy Systems, or to request the revision of international standards to allow the use of alternatives for the phase-out of hazardous substances, e.g., the revision of 60335-2-40:2022 (Household and similar electrical appliances - Safety - Part 2-40: Particular Requirements for Electric Heat Pumps, Air Conditioners and Dehumidifiers).
- The implementation of international guidelines, for example, to improve the performance of industrial parks (e.g., International Guidelines for Industrial Parks) or to strengthen the development and performance of small hydropower plants (e.g., Technical Guidelines for the Development of Small Hydropower Plants - Part 3: Design Principles and Requirements).
- Promotion of Corporate Social Responsibility in the construction industry.

For this work, UNIDO has assisted in technical issues and policy development by UNIDO project managers and thematic experts, arranging for technical advice from international

experts, and conducting visits and exchanges of knowledge and experience between Chinese officials and companies with their counterparts in developed countries. However, several interviewees mentioned the need for more advice from UNIDO and other international experts. In one of the Project Implementation Reports was indicated “UNIDO should support the PMO [Project Management Office] to identify more opportunities to interact with international expertise through seminars and workshops. Several stakeholders mentioned the value of discussion with experts from abroad.”

It is of note the collaboration between China and UNIDO to enable the environment for the integration of electric vehicles and renewable energy through the development of a policy, legal and technical framework that has helped to accelerate the development of the new energy vehicle industry in China (see Box 1).

Technology Transfer

Finding 3. UNIDO's contribution to the development of green industry and green industrial transformation has included significant innovation in technologies and technology transfer in key industrial sectors for phasing out the use of hazardous industrial substances with high private sector investment.

Finding 4. The implementation of UNIDO's country programme in China has also laid a solid ground for the industry's decarbonization through renewable energy technologies such as the establishment of the International Hydrogen Energy Center and the linking of electric vehicles with renewable energy.

Fifty-seven percent of UNIDO's Green Industry interventions have included the development or adoption of technologies to support low-carbon transformation and green transition. 43% percent of the interventions have included demonstrations of new or adapted technologies, and 11% are in the process of being demonstrated. Annex 9 presents the description of the technologies.

The technologies have mainly focused on supporting the green transition of chemical industries to find alternatives to hazardous substances regulated by international treaties, to which China is a party. The sectors addressed correspond to key sectors where interventions would have the greatest impact in phasing out hazardous substances.

For example, China identified the calcium carbide method of vinyl chloride monomer (VCM) production as the key Chinese industry targeted for mercury pollution prevention and control under the Minamata Convention due to the high mercury consumption and high risk of mercury pollution from this industry. Other sectors addressed include room air conditioning (RAC), extruded polystyrene foam, lead-acid battery recycling and manufacturing, and the crude oil exploitation and methyl bromide production industry.

Box 1. Case study: Integrating an Environmental Governance System for New Energy Vehicles

The Chinese new energy vehicle (NEV) industry has developed rapidly, which has become one of the largest NEV markets in the world. The Chinese government has played a pivotal role in supporting and promoting the NEV industry, leading to

significant advancements in policies among other aspects (Tian, et. al., 2024).²⁶ In this regard, the UNIDO-China collaboration contributed to this policy development through the *Integrated adoption of New Energy Vehicles in China* project, which was implemented from 2015 to 2022.

This project undertook extensive research and policy development, as well as roadmaps, technical standards and institutional plans to both stimulate the adoption of electric vehicles (EVs) and support greater use of renewable energy (RE) in EV charging, and to promote greater use of EVs as a means to support the integration of RE into the national grid. The policy, legal and technical framework developed at national and local levels is described below.

National and local policies (6 national and 1 local policies):

- ✓ The project informed the Development Plan of New Energy Vehicle Industry 2021-2035, which is a strategic top-level policy guiding the development of a comprehensive and fully integrated New Energy Vehicle and Intelligent Connected Vehicle eco-system in China.
- ✓ 5 policies already adopted to regulate and incentive systems for the charging of EVs with RE, including those integrating either RE micro-grid or grid-based large-scale RE installations and to regulate and incentivize use of retired EV batteries.
- ✓ 1 local policy: Shanghai Local Standard "Technical Requirements for Intelligent Charging and Interactive Response of Electric Vehicle Smart Charging Piles."

National standards

- ✓ 3 standards on vehicle power battery recycling for new energy vehicles.
- ✓ 1 standard on two-way interactive practice and standard system of electric vehicle charging and discharging (V2G).

Sector and association standards

- ✓ 5 standards on two-way interactive practice and standard system of electric vehicle charging and discharging (V2G).
- ✓ 4 standards on fire safety of power battery cascade utilization energy storage system.
- ✓ 3 standards on automotive power battery recycling.
- ✓ 1 standard on green design product evaluation technical specifications automotive power battery.

Overall, the project contributed towards integrating political, legal and technical elements into the environmental governance system for new energy vehicles, thereby contributing to reducing pollution and CO₂ emissions.

Most of the technologies have been the result of R&D by manufacturing companies or Chinese research institutes or universities, with UNIDO assisting in selecting the most suitable alternative. An interviewee indicated, "we had a very deep discussion with UNIDO, and with the help of our consultant, we decided to go for this alternative." For example, to replace HCBC-22 technology with R-290 technology, Chinese RAC manufacturers designed a compressor and other vital components to produce room air-conditioners. In particular, the private sector has invested USD 40 million in using R-290 technology in stage 1 of the sectoral HCFC phase out plan. Overall, there has been significant private sector investment in this green transition, demonstrating its level of technology ownership and sustainability of UNIDO's interventions. This also demonstrates the achievement of the intermediate outcomes of the ToC, as there has been an increase in business sector investment.

²⁶ Tian, J. Wang P. and Zhu D. (2024). Overview of Chinese new energy vehicle industry and policy development. *Green Energy and Resources* 2 (2024) 100075. Elsevier.

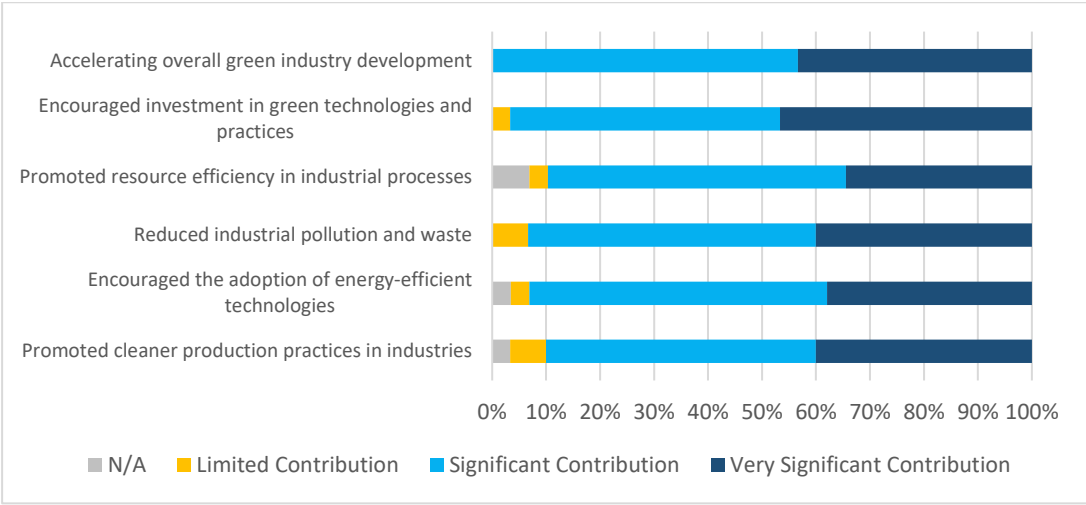
Other technologies have focused on promoting renewable energy (RE) to support the industry's decarbonization. In this regard, UNIDO supported China in the establishment of The International Hydrogen Energy Center (IHEC), which opened in 2021 with the aim of achieving technological breakthroughs and demonstrating and applying hydrogen energy products in preparation for the future establishment of hydrogen technology and an industrial innovation system. This contribution is highly relevant as Medium- and Long-Term Plans for China consider hydrogen energy to be an important part of the future national energy systems. At present, large-scale demonstrations of commercial hydrogen fuel buses have been carried out, and there are several ongoing demonstrations of comprehensive solutions for green products in the chemical industry, metallurgy, green power, and heating.

The integration of electric vehicles (EVs) with RE through Vehicle to Grid (V2G) technology for decoupling the growth of EVs from reliance on China's carbon-intensive national grid has constituted a new concept for the government and private sector. Work to date has demonstrated the technical viability and commercial potential of EV-RE technologies in China. This technology deployed infrastructure such as charging stations, photovoltaic energy microgrids, smart meters, and data monitoring centers in Shanghai and Qingdao.

UNIDO also made technological contributions to increase China's ability to remove/destroy hazardous substances, such as Persistent Organic Pollutants stockpiles and waste, through the adoption and adaptation of leading-edge combustion and non-combustion technologies. It is also addressing traditional sectors such as furniture, textiles, and building materials under the concept of eco-design. At present, capacity is being developed around eco-design principles through national workshops and exchanges with international companies.

According to Figure 5, the survey results strongly support UNIDO's significant role in accelerating the development of green industry and industrial green transformation in China. Respondents overwhelmingly rated UNIDO's contributions as significant or very significant across all key areas. Notably, UNIDO's efforts in accelerating overall green industry development received the highest rating, with all respondents indicating very significant contributions. The organization also scored exceptionally well in encouraging investment in green technologies and practices, promoting resource efficiency in industrial processes, and reducing industrial pollution and waste. These findings underscore UNIDO's effectiveness in driving China's transition towards more sustainable and environment-friendly industrial practices, aligning closely with the country's green development goals.

Figure 5. UNIDO's Contribution to ISID: Accelerating Green Industry Development and Transformation



Compliance with Multilateral Environmental Agreements

Finding 5. UNIDO has contributed towards accelerating compliance with multilateral environmental agreements (MEAs) to which China is a party by supporting the creation of an enabling environment based on a comprehensive policy, technical, and regulatory framework and on innovation and technology transfer. This has contributed to eliminating the use of hazardous substances and meeting the targets set, which in some cases have been exceeded, to phase out others in accordance with the timetables stipulated by the MEAs.

UNIDO has been the international implementing agency for three management plans to phase out hydrochlorofluorocarbons (HCFCs) from the room air-conditioning (RAC) and extruded polystyrene foam sectors (XPSF), as well as methyl bromide, under the Montreal Protocol. Therefore, UNIDO has shared responsibility with the Government of China for implementing these plans. The budget allocated to these plans has been USD 190,124,033, one of the highest budgets as the sectors addressed are among the most complex in China with private sector co-financing of USD 44,936,687. The implementation of the plans has been successful, with China having phased out the production and consumption of methyl bromide since 2019 and met, even exceeded, the stage targets for the RAC sector (Box 2) and is also on track to achieve the complete phase-out of HCFCs in XPSF. Table 3 shows the levels of reduction of these substances.

UNIDO-China collaboration has also contributed to achieving part of the goals of the Minamata Convention on Mercury, to which China is a party. UNIDO has supported China to meet the 50% reduction of mercury use in *Vinyl Chloride Monomer* production by 2020 (Article five of the Minamata Convention) (Table 3) and China is now working to completely eliminate mercury use from this production.

China is also a party to the Stockholm Convention on Persistent Organic Pollutants (POPs) and its collaboration with UNIDO, through the Country Programme, has enabled China to build capacities in government institutions and enterprises, as well as apply technological/regulatory/policy measures, set out in China’s National Implementation Plan, to: i) reduce or eliminate releases from intentional production and use as well as from unintentional production; and ii) reduce or eliminate releases from stockpiles and wastes

to phase out chemicals listed in the Convention. Table 3 shows the POPs elimination/reduction/substitution figures.

Table 3. Achievements of UNIDO-China Collaboration for Compliance with Multilateral Environmental Agreements

International Treaty	Achievements
Montreal Protocol	<ul style="list-style-type: none"> • Reduction of consumption from 4,108.5 ODP t (baseline average of 2009-2010) to 1,595 ODP t in 2022 of HCFCs from the RAC sector. • Elimination of production of 776.3 ODP t and consumption of 1,087.8 ODP t of Methyl bromide.
Minamata Convention on Mercury	<ul style="list-style-type: none"> • Reduction of 359.5 t/year of mercury in VCM production.
Paris Agreement	<ul style="list-style-type: none"> • Alternatives to HCFC with Low Global Warming: 79,993,228 t CO₂ eq. • Demonstrations of fuel cell commercial vehicles: 34,787 t CO₂ eq. • Improved Small Hydropower Plants: 55,370 t CO₂eq/year.
Stockholm Convention on Persistent Organic Pollutants	<ul style="list-style-type: none"> • Elimination of 6,392 t of POPs (dichlorodiphenyltrichloroethane/ Hexachlorocyclohexane and hexabromocyclododecane waste). • Elimination of 149.9 g TEQ of dioxins and furans. • Remediation of 42,000 t POPs contaminated soil. • Use reduction of 83 kg of Decabromodiphenyl ether (DecaBDE). • Substitution of 0.8 t of Alkylphenol ethoxylates (AP). • Stop production of 18,000 t of hexabromocyclododecane (HBCD). • Substitution and use reduction of 218.9 t of HBCD. • Avoided the release of 48.87 g TEQ/year of dioxins and furans.

Source: Own elaboration. Note: ODP: Ozone Depleting Potential.

China's updated National Determined Contributions to address climate change and meet the Paris Agreement call for reaching its CO₂ emissions peak by 2030 and carbon neutrality by 2060. Through the work done on new energy vehicles, the UNIDO-China collaboration has contributed to the gradual improvement of the Low Carbon Industry System focused on the high-tech manufacturing sector and accelerating energy-saving and low-carbon vehicles. In addition, the collaboration has driven technological breakthroughs such as the creation of the International Hydrogen Energy Center, which will support industry's decarbonization. In

synergy with the Montreal Protocol, the selection of alternatives with low Global Warming Potential to replace ozone-depleting substances has also led to the reduction of GHG emissions. It has also contributed to improving installed renewable energy capacity by upgrading existing hydropower plants. Table 3 shows CO₂ reductions from selected UNIDO interventions. Reductions due to new energy vehicles were not included, as there were some doubts about their validity due to methodological issues.

The elimination or minimization of the use or consumption of hazardous substances, as well as the reduction of GHG emissions demonstrate the fulfillment of the ToC intermediate outcomes, as the performance of priority industrial sectors has improved.

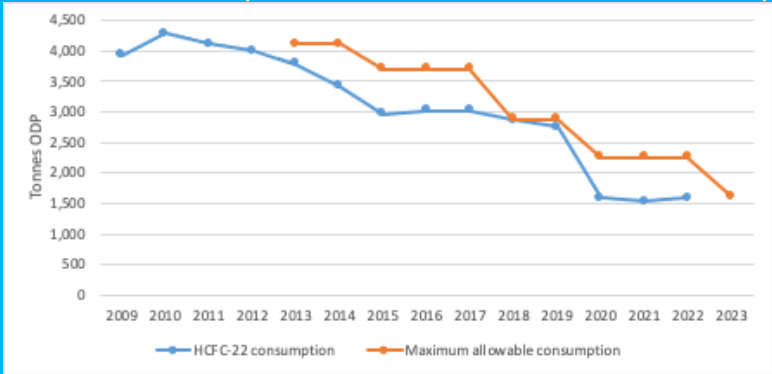
As areas for improvement, it was identified that in some of UNIDO's interventions, low priority has been given to the methodology for estimating GHG emission reductions during project design and systematic follow-up during project implementation, including data quality assurance. It also reiterates the need to strengthen UNIDO's accompaniment with greater promotion of the interaction of national counterparts with international experts.

Box 2. Case Study: Progress in Meeting Montreal Protocol Targets in the Air-Conditioning sector

China is the largest producer and consumer of hydrochlorofluorocarbons (HCFCs) among the Montreal Protocol Article 5 countries, therefore their phase-out seems to be a complex and long-lasting task. Room air-conditioning (RAC) sector is the biggest HCFC-22 consumer in China. UNIDO has assisted China to phase out the consumption and production of HCFC-22 in the RAC sector through two interventions focused on the implementation of stages 1 and 2 of the HCFC Phase-out Management Plan in the RAC sector, with a total funding of USD 135,394,081. HCFC-22 is being replaced by R-290 gas, which does not harm the protective ozone layer and has a low Global Warming Potential.

As can be seen in Figure a, the interventions have been very successful, as China has managed to reduce consumption below the maximum allowable limits set by the Montreal Protocol to phase out HCFCs. Therefore, China has met and even exceeded targets for HCFCs by managing to freeze its HCFCs production and consumption at the 2009-2010 (baseline) average level in 2013 (4,108 t ODP) and eliminating 27.7% of consumption when the goal was 10% reduction in 2015, and 55% reduction in 2020 when the goal was 35% reduction. Bases on the consumption recorded in 2022 and the people interviewed, there is a high probability that China will reach its 67.5% reduction goal in 2025.

Figure a. China's HCFC-22 consumption and maximum allowable consumption.



UNIDO has contributed to these results by assisting policy development, technical advice for the selection of alternative technologies, and plan implementation. UNIDO also worked on undertaking joint performance and technical verifications with the Government of China and ensuring financial verification of implemented activities, and reporting and submitting requests for approval of consecutive tranches to the Montreal Protocol Executive Committee.

Standards created, revised, and adopted:

- ✓ Technical safety codes for using flammable refrigerants in the household and in the air-conditioners manufacturing industry (GB 4706.32-2012).
- ✓ Requirements for transportation of room air-conditioners charged with flammable refrigerants (GB 4706.32-2012).
- ✓ Technical safety codes for servicing equipment using flammable refrigerants (QB/T 4835).
- ✓ IEC 60335-2-40 Household and Similar electrical appliances - Safety - Part 2-40: particular requirements for electrical heat pumps, air-conditioners and dehumidifiers.

Innovative technology:

- ✓ Compressor and key complements.

4.3. Component 3: Rural Revitalization and Smart Agro-food Systems

Finding 6: UNIDO's interventions have contributed to China's rural revitalization and poverty alleviation efforts through targeted projects in agro-industrial development and food safety that have been conducive to increasing GDP in Chengbu and facilitating markets and accessibility to better quality food products in Quannan, demonstrating UNIDO's effective role in promoting inclusive and sustainable industrial development in rural China.

Rural revitalization and poverty alleviation have been one of the most important strategies for China's governance since the 12th Five-Year Plan. Therefore, UNIDO's interventions in these areas are highly relevant to the Government of China. China completed the poverty alleviation target task in December 2020²⁷ and made comprehensive rural revitalization a focus of the sustainable development of agriculture and rural areas after overall poverty alleviation. Aligned with this priority strategy of rural revitalization and under its strategy on inclusive and sustainable industrial development (ISID), UNIDO has supported China in improving local agro-industrial capacity, promoting employment and income of impoverished rural populations, and stimulating the development and creation of industries that provide safe and ecological goods and services.

UNIDO assisted the Government of China in alleviating poverty in Chengbu County, Hunan Province, through technology upgrades in bamboo processing, improving the quality and quantity of local dairy products, improving the innovative design capability of ethnic

²⁷ Nearly 100 million impoverished people were lifted out of poverty, including the poorest villages in Gansu, Guangxi, Jiangxi, Xizang, Xinjiang, etc.

cultural products, and promoting related e-commerce development. According to the final report of the intervention,²⁸ the added value of local bamboo shoots increased from CNY 20,000 per ton to CNY 60,000 per ton. The per capita income increased by more than CNY 3,600. The average milk production was also increased to 4.2 tons per year. This increased the average annual income of dairy farmers per cow by 5%. E-commerce promotion reached more than CNY 5 million in sales of agro-products and increased the income of more than 600 impoverished households. The GDP of Chengbu County increased from CNY 3,971 million to CNY 6,819 million in 2017-2023, higher than the GDP growth rate in China during the same period.²⁹ The annual output value of bamboo processing industry and dairy industry both exceed 300 million Yuan in 2023.³⁰ Therefore, according to the ToC, UNIDO has contributed to one of the expected impacts of the country programme, which is rural revitalization, in this case, in Chengbu County. In line with this conclusion, the survey results also highlight UNIDO's support to rural industries to have a significant impact on the development of the local economy (Figure 6).

In Quannan, Jiangxi Province, UNIDO-China collaboration has contributed to (i) facilitating markets through the GLOBAL G.A.P. enterprise certification programme, where 4 enterprises were certified, helping companies to access certain markets and improve their market access and operation; (ii) increasing institutional capacities for the establishment of a platform for smart quality and safety control of agricultural products as a pilot demonstration (see Box 3), which will represent a trust mechanism for local organic vegetable products; (iii) developing infrastructure and providing trainings for food testing including an online training module for food safety auditors and inspectors in the form of virtual reality (VR), as a pilot to provide more possibilities for remote audits in the future for food inspectors.; and (iv) complying with food safety standards. According to the local government interviews, food quality has improved, as the pass rate recorded was 1.67% higher than the average pass rate of the 18 counties in the Ganzhou area. The current pass rate of rapid testing in Quannan's farmers' markets is 99.67%, which implies that people are gaining access to higher-quality products. Although these results are encouraging, this first intervention in Quannan has not yet measured its contribution to poverty alleviation as expected in its design, as no additional income has yet been reported.

²⁸ UNIDO. 2021. Final Report of the Improving Industrial Capacity for Poverty Reduction in Chengbu, Hunan Province, China project. UNIDO Headquarter.

²⁹ Government of Chengbu County. 2017. Statistical Bulletin on National Economic and Social Development of Chengbu Miao Autonomous County in 2017. China.

<https://www.chengbu.gov.cn/chengbu/tjsj/201805/0c93624404274687b362433bfea0b64d.shtml>

Government of Chengbu County. 2023. Statistical Bulletin on National Economic and Social Development of Chengbu Miao Autonomous County in 2023. China.

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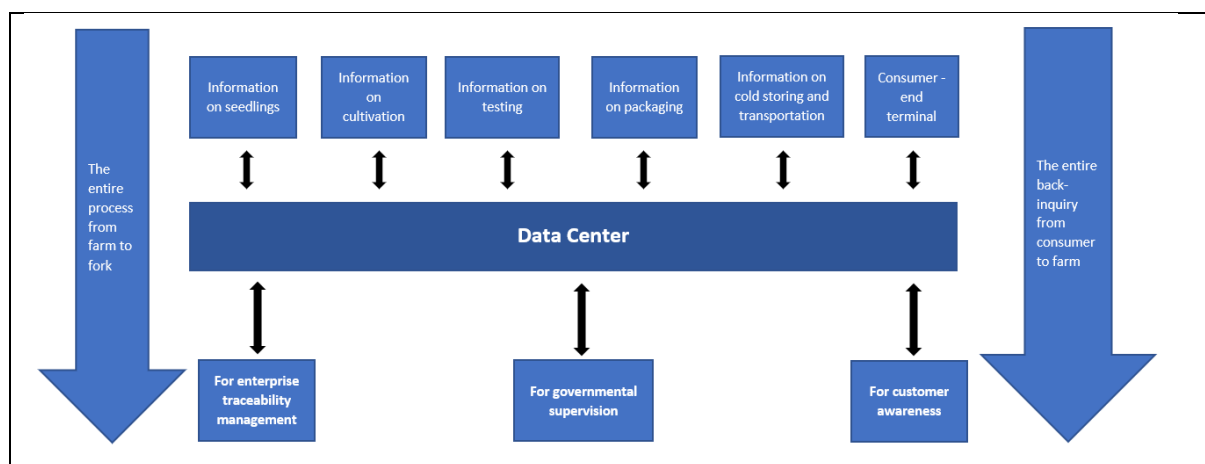
Government of China. 2017. Statistical Bulletin on National Economic and Social Development of the People's Republic of China in 2017. China.

National Bureau of Statistics. 2023. The gross domestic product for the whole year of 2023. China.

https://www.gov.cn/lianbo/bumen/202401/content_6926564.htm

³⁰ China News. 2023. Record of Social and Economic Development in Chengbu Miao Autonomous County, Hunan Province. http://szji.china.com.cn/2023-12/26/content_42650147.html

Box 3. Agro-product Traceability System Processes



The system for monitoring agro-product quality and safety is a digital agriculture cloud management platform, created as a pilot demonstration, that contains functions including traceability management and farm monitoring through centralizing all the application systems to be managed on a cloud platform, involving PC terminal, mobile APP, IOT monitoring, and various hardware devices associated. It is based on the database in the traceability center, and through the website, supermarket touch screen, cell phone SMS, and cell phone for scanning QR code, various ways.³¹

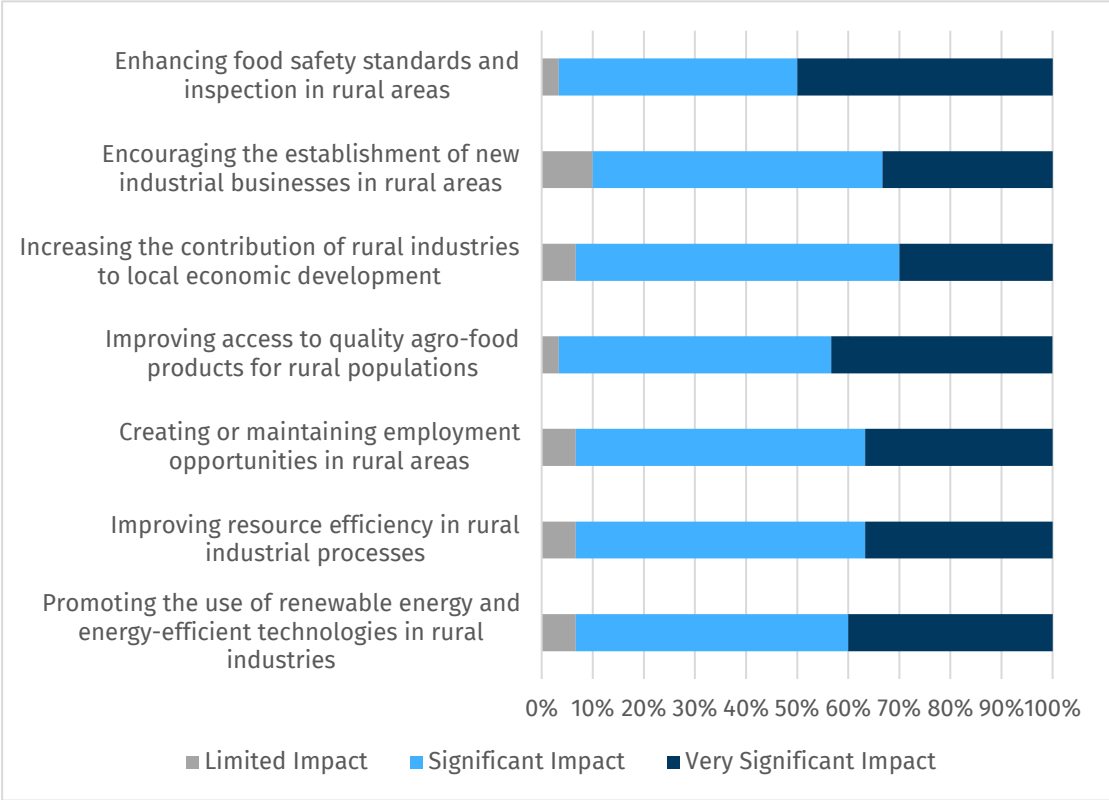
The system supports farms to establish a complete traceability system for the overall organic and traceable production. Information on seedling, cultivation, fertilization, pest control, irrigation, harvest and other aspects is collected and uploaded promptly. After the packaging and shipment of the products, the data is transferred to the central database through the unified data interface and QR codes are printed through a code printer connected to the circulation stage. Then, consumers can scan or input the product traceability code through different platforms to access information about products at different stages of the supply chain. Meanwhile, the production process of the base is visualized on the electronic screen and monitoring devices. Once any food safety issue occurs, linkages can be easily traced back to locate the source of hazardous food and recall compromised products in time to minimize losses.

UNIDO’s ongoing work in Quannan is focused on improving agro-industrial value chains. Therefore, an impact on economic gains and job creation is foreseen. The environmental impact of this work is addressed in the Environmental Assessment section.

The establishment of a pool of professional food inspectors has also been recognized as one of China’s strategic policy priorities on food safety. In this regard, as a result of the China-UNIDO cooperation, a group of trainers in food safety inspections was formed based on high national and international standards through the Qualification Programme for Senior Food Safety Assessors, in which 32 senior food production inspectors from 23 provinces in China were qualified. In addition, national training courses and staff exchanges on food safety inspection were organized, benefiting a total of 188 trainees from 23 provinces. Other China-UNIDO initiatives are ongoing to strengthen the capacity of China’s food inspection and testing bodies to improve trust for trade along the Belt and Road.

³¹ Government of Quannan County, reporting documents for the UNIDO NP evaluation, 2024.

Figure 6. UNIDO's Contribution to Rural Revitalization and Smart Agro-food Systems



4.4. Component 4: International Cooperation on ISID

Finding 7: Triangulated evidence indicates that UNIDO has played a pivotal role in transforming China's position in international cooperation, facilitating the country's transition from primarily a recipient of development assistance to an active contributor in global sustainable development efforts. Through the establishment of specialized centers, promotion of knowledge exchange, and support for South-South cooperation, UNIDO has effectively leveraged China's growing industrial and technological capabilities to benefit other developing countries while simultaneously enhancing China's integration into global innovation networks and standards.

UNIDO has played a significant role in fostering international cooperation in China across various sectors and initiatives. The organization has engaged with multiple Chinese institutions and government bodies to promote sustainable industrial development, technology transfer, and environmental protection. The organization has been instrumental in establishing TC projects' supporting specialized centers that promote international cooperation, including:

- The International Center on Small Hydro Power (ICSHP) facilitates knowledge exchange and technical assistance among its 429 members from 80 countries. The center has organized ten Hydropower Power for Today Forums, produced world small hydropower development reports, and developed international standards.
- The International Hydrogen Energy Centre (IHEC) focuses on promoting hydrogen energy technologies. The center has conducted demonstrations of hydrogen application and technological research and is developing a large-scale

demonstration project on hydrogen energy in the Metallurgical and Chemical sectors.

- UNIDO's Investment and Technology Promotion Offices (ITPOs) in Beijing and Shanghai also play crucial roles in attracting foreign investment, importing key technologies, and advancing industrial transformation. These projects have supported startups in going global and encouraged local firms to expand internationally. For instance, the ITPO network has assisted companies in setting up overseas branches and has facilitated policymaker exchanges, such as recommending policy options for innovations in Ethiopia's food industry.

UNIDO's projects have also contributed to capacity building and knowledge sharing on a global scale. For example, the Foreign Environmental Cooperation Center (FECO) has conducted cooperation activities with ASEAN countries and Africa for capacity building. UNIDO's expertise has been valuable in sharing experiences on developing regulations and standards with other countries, as noted in the energy efficiency project with the State Administration of Market Regulations (SAMR). These efforts have not only benefited China's industrial and environmental progress but have also contributed significantly to global sustainable development through knowledge sharing, capacity building, and the promotion of innovative technologies and practices.

International Standards

One area that UNIDO has contributed significantly to is the development and application of international standards, contributing to improved industrial practices and environmental protection. UNIDO's projects have addressed critical areas such as Corporate Social Responsibility (CSR), environmental protection, innovative and sustainable industrial development, and energy efficiency. For instance, the Corporate Social Responsibility project in construction improved business performance, certified 40 firms, and raised awareness among over 230 companies, influencing other industries as well.³²

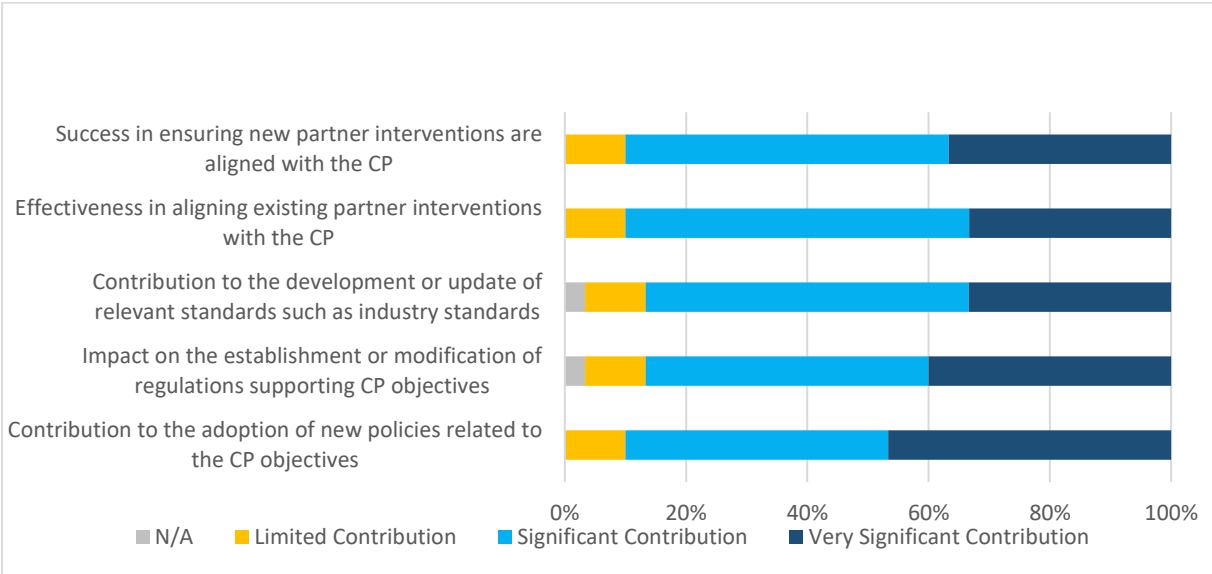
In the energy sector, UNIDO's collaboration with the International Center on Small Hydro Power (ICSHP) resulted in the development of Technical Guidelines for the Development of Small Hydropower Plants, which serve as a basis for international standards in small hydropower development.

UNIDO's efforts have also been instrumental in aligning Chinese practices with international environmental standards. UNIDO has been involved in several significant projects, including collaborating with the Foreign Environmental Cooperation Center (FECO) on projects related to ozone-depleting substances, persistent organic pollutants (POPs), and mercury reduction.

Figure 7 below highlights survey results on UNIDO's significant impact on policies and strategies for Inclusive and Sustainable Industrial Development in China. A majority of respondents indicated that UNIDO made substantial contributions across key areas, including the adoption of new policies (90% significant or very significant), establishment of supportive regulations (87%), alignment of partner interventions with the Country Programme (90% for existing interventions), and development of relevant industry standards (86%). These findings underscore UNIDO's effective role in shaping policy frameworks and aligning them with Country Programme objectives, demonstrating its influence in promoting sustainable industrial development in China.

³² KII

Figure 7. UNIDO's Contribution to Policies and Strategies for Inclusive and Sustainable Industrial Development (ISID)



Knowledge and Technology Transfer

UNIDO’s work in China strongly emphasizes building global networks for innovation and technology transfer, with a focus on South–South cooperation. There is growing interest in standardizing innovative practices, and the organization has orchestrated numerous initiatives to connect Chinese stakeholders with global expertise and best practices. For example, several projects included the organization of study tours that enabled project stakeholders to share knowledge and discuss their field of work with counterparts from other countries (e.g., furniture producers toured European factories or FECO staff visiting a Mercury disposal facility in Germany).

The projects related to UNIDO's Investment and Technology Promotion Offices (ITPOs) in Beijing and Shanghai have been instrumental in fostering international collaborations. The Beijing office, for instance, invited overseas partners from Germany, Uzbekistan, Africa, and Belgium for joint projects, promoting cross-border knowledge exchange. Furthermore, the International Center on Small Hydro Power (ICSHP) has established itself as a joint research, capacity-building, and knowledge-sharing platform, contributing to global small hydropower development. In the field of persistent organic pollutants (POPs) management, UNIDO facilitated access to state-of-the-art knowledge, improving the quality of regulations and technologies in China. This included collaboration with institutions like the Bavaria Environment Agency and participation in international conventions and workshops. These initiatives have not only enhanced China's technological capabilities but also positioned it to share its experiences with other developing countries.

Another UNIDO project promoting China’s engagement in international cooperation was the Global Innovation Network. The GIN aims to promote international cooperation for industrial innovation in developing countries by facilitating technology transfer and knowledge sharing. The network claims that it helped promote the characteristic wooden toy industry of Yunhe County internationally, introducing advanced technology and

enhancing the region's global influence.³³ This initiative demonstrates UNIDO's role in fostering local industry development with global reach.

South-South Cooperation and China's Dual Role as Recipient and Donor

The UNIDO projects implemented in collaboration with the Chinese government are excellent examples of China's growing role as a contributor to supporting international development and helping other countries to achieve the SDGs both as a donor and by sharing its own experiences, knowledge, and sustainable technology. China is advancing cooperation by (1) holding in-depth dialogue and discussions, (2) carrying out pragmatic cooperation with international organizations, (3) carrying out tripartite cooperation programmes, (4) increasing donations (e.g. to ADB, WB, GEF), and (5) promoting co-financing³⁴ (e.g. local governments contribute to ITPO projects through the CICETE³⁵). As the State Council Information Office of the People's Republic of China explained, "by helping other developing countries reduce poverty and improve their people's lives, China works together with them to narrow the North-South gap, eliminate the deficit in development, establish a new model of international relations based on mutual respect, equity, justice, and win-win cooperation, and build an open, inclusive, clean and beautiful world that enjoys lasting peace, universal security and common prosperity."³⁶

Key informants echoed this perspective pointing out that while China was previously the recipient of support, they have now developed effective technologies and standardization practices that will be useful for others to apply. For example, one respondent mentioned, "as we have now developed the technologies that we can help transfer, we have a duty to support others."³⁷ Another pointed out that China has industrialization experience to share and "would like to help because we know the feeling of poverty and deprivation."³⁸

Several examples of UNIDO projects highlight this approach, including:

- The ICSP's efforts to support the scale-up of sustainable SHP development for productive uses abroad include a feasibility study conducted for Ethiopia, Myanmar, Nigeria, and Kyrgyzstan and capacity-building activities conducted in Peru.
- The emergency response assistance to the outbreak of the coronavirus disease in the Islamic Republic of Iran, which set up two autoclave systems in 2021. In addition to the provision of waste management technology, the project also improved the technical capacity and awareness of four relevant target groups on infectious medical waste management in a safe and environmental manner. As the evaluators of the project emphasized, "the project demonstrated a successful practice of South-South cooperation modality in Iran within the platform of UNIDO as the specialized UN agency. This model can be an outset point for other productive cooperations in the future."³⁹

³³ Survey Respondent

³⁴ Government of the People's Republic of China, "China's International Development Cooperation in the New Era" (January 2021), The State Council Information Office of the People's Republic of China

³⁵ KII

³⁶ China's International Development Cooperation in the New Era (2021)

³⁷ KIIs

³⁸ Ibid

³⁹ UNIDO office for Independent Evaluation, Independent Terminal Evaluation Final Report on the Emergency response assistance to the outbreak of the coronavirus disease in the Islamic Republic of Iran (PN 200151), (2022)

- The UNIDO South-South Cooperation Center project included sharing Industrial Park standards developed based on experiences of Chinese industrial parks to be shared with other countries. ^[OBJ]

Overall, UNIDO's engagement in China demonstrates a multifaceted approach to international cooperation, spanning environmental protection, technology transfer, industry standards, and sustainable development. These efforts not only benefit China's industrial and environmental progress but also contribute to the global dissemination of best practices and technologies while fostering South-South cooperation and supporting local industries in their international endeavors.

4.5. UNIDO Management and Coordination (including Field Office and All Cross-cutting Aspects)

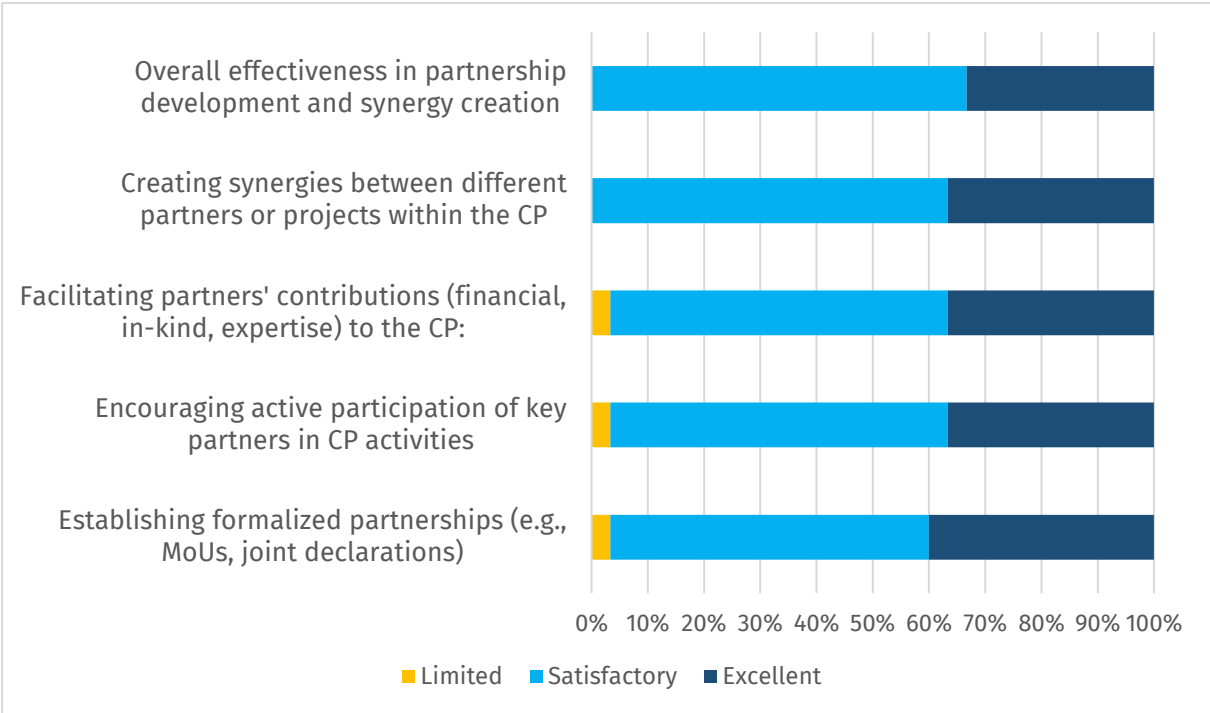
Management

Finding 8: The evaluation found that UNIDO's management of the country programme in China exhibits significant strengths in aligning with national development strategies and implementing projects effectively. However, it also faces challenges in coordination between headquarters, field office, and other UNIDO entities in China. While UNIDO's alignment with China's green development goals and its project implementation capabilities are lauded, issues such as communication gaps, operational integration of different UNIDO entities, and project management processes present opportunities for improvement.

According to survey respondents and key informant interviews (KIIs), UNIDO's management of the country programme in China demonstrates notable strengths while facing certain challenges. The organization's alignment with national development strategies and its ability to link China's green development concepts with SDGs, particularly those related to climate change, are recognized as key strengths. This alignment is fundamental to the effective implementation of UNIDO's Inclusive and Sustainable Industrial Development (ISID) mandate in China.

Figure 8 below depicts survey results that further support these findings, highlighting UNIDO's effectiveness in establishing partnerships and creating synergies. Most respondents rated UNIDO's overall partnership development as satisfactory (67%) or excellent (33%). The organization excels in creating synergies between partners and projects (63% satisfactory, 37% excellent), facilitating partner contributions (60% satisfactory, 37% excellent), and encouraging active participation in country programme activities (60% satisfactory, 37% excellent). UNIDO also performs well in establishing formalized partnerships through MoUs and joint declarations (57% satisfactory, 40% excellent).

Figure 8. UNIDO's Performance in Partnership Development and Synergy Creation in China



Survey respondents and KIIs consistently acknowledged UNIDO's project implementation capabilities, noting the support of a professional project team and international experience. These factors have contributed to UNIDO's efforts in promoting industrial upgrading and modernization in China as well as providing extensive training resources and high-quality public services. UNIDO's technical expertise was highly valued by partners across multiple interviews.

However, the management of the country programme faces significant challenges. KIIs identified coordination and communication between UNIDO headquarters, the field office, and various UNIDO projects operating in China as areas requiring urgent attention. The government counterparts sometimes experience difficulties in coordinating with UNIDO headquarters, partly due to time zone differences and geographical distance but mainly due to challenges of coordinating with HQ staff from the field. As the information on ongoing projects and missions is not always readily available from the country office, which is generally not kept in the loop on various projects, country counterparts often need to contact project staff in HQ. This was also highlighted in the evaluation survey: respondents frequently mentioned communication efficiency as an area needing improvement. Similarly, national counterparts indicated that while the technical assistance of HQ project managers and their support in supervising projects have been effective, a greater presence of them in the field is required, which echoes the findings of the UNIDO's 2019 field network evaluation.⁴⁰ On the flip side, at least three of the interviewed HQ project managers were unfamiliar with the CP, which could make it difficult for them to seek opportunities to contribute from different angles to its implementation or find synergies with other interventions.

The operational structure of the projects on the Investment and Technology Promotion Offices (ITPOs) in China was noted in multiple interviews as a factor that could benefit from closer integration with other UNIDO operations in the country. Similarly, there is also a lack

⁴⁰ [Independent evaluation of UNIDO's field network](#)

of clarity regarding responsibilities among UNIDO's field office in Beijing, and the project entities in China, such as between the country office and ITPOs, leading to confusion and potential overlap. Three KII mentioned this confusion and one of them mentioned, "Beijing office is responsible for strategic issues, for example, arranging high-level visits and liaison functions, it lacks responsibility to manage projects on the ground." However, the Terms of Reference for UNIDO Field Offices issued in September 2020 state that field offices may: "Carry out selected technical cooperation activities, including acting as the Executing Entity for projects, upon approval by the Office of the Managing Director of PFC [Partnerships and Field Coordination]; and for Global Environment Facility projects, following approval in line with DGB/2019/04." These findings collectively suggest a need for enhanced communication channels and coordination between various UNIDO entities operating within China. Additional management issues identified by both survey respondents and KIIs, and substantiated by desk review of previous project evaluations, include delays in project fund transfers, inadequate reporting mechanisms for some small-value projects, and procedural challenges for projects exceeding €5,000. Slow recruitment processes and understaffing issues, particularly in ITPOs, were also highlighted as concerns in interviews. These factors indicate potential areas for improvement in UNIDO's project management processes. Survey respondents also expressed interest in extended project durations.

KIIs indicated that the lack of delegation of authority to the field office and project staff on the ground was a significant bottleneck, leading to decision-making challenges and delays in project implementation. There are also concerns about UNIDO's limited involvement at the policy level compared to other UN agencies, as noted in multiple interviews.

According to KII, the lack of technical staff in the country office also makes it difficult for national counterparts to have more fluid and frequent technical exchanges. In addition, the lack of a comprehensive monitoring system in the country office and the high number of indicators⁴¹ of the Country Programme hinder strategic project management. Special consideration could be given to strengthening collaboration between UNIDO and MOFCOM to review and assess the status of ongoing projects, with a view to enhancing operational effectiveness. There may also be opportunities to address the issue of inactive projects, which pose potential reputational risks. This process could involve enhancing cooperation between project managers and CICETE and with other national counterparts and stakeholders to ensure comprehensive and timely progress reporting in line with project documentation requirements. Furthermore, adopting a more inclusive approach to decision-making on key project activities could be beneficial.

Overall, the evaluation noted the need for improving project management processes, reconsidering staffing locations in key areas (HQ vs. field), clarifying roles and responsibilities between different UNIDO entities, and enhancing communication channels. It also found the need for more frequent field visits and engagement with local agencies, as highlighted in interviews with government partners.

Gender

Finding 9: UNIDO's country programme in China has made notable progress in integrating gender considerations, aligning with both national policies and UNIDO's global gender strategy. While gender mainstreaming is evident across various project outcomes, the depth and consistency of these efforts vary. The programme has achieved some success in promoting women's participation in industrial development, particularly through ITPO initiatives. However, opportunities exist for more systematic gender mainstreaming

⁴¹ The logical framework of the Country Programme 2021-2025 has more than 50 indicators, some of which are milestones.

approaches, including potential collaboration with other UN agencies and the need for a dedicated gender focal point to strengthen these efforts.

Gender equality is a fundamental state policy in China. Since 1995, the central government has published the National Programme for Women's Development, which sets goals and tasks for the development of women for a specified period. The current one covers the period from 2021-2030, and the previous one from 2011-2020. According to the monitoring report published by the National Bureau of Statistics, women accounted for 43.2 percent of the total workforce in 2022. The gender gap in labor force participation is lower in China than the average of upper-middle countries. In 2022, the proportion of female directors on corporate boards and female supervisors in Chinese companies was 37.1% and 40.8%, respectively, an increase of 4.4% and 5.6% from 2010.⁴²

While gender mainstreaming was mentioned in the UNIDO Country Programme (2016-2020), it became more prominent in the ongoing programme. The latter includes a separate subsection on gender mainstreaming and a distinct gender element in the results framework, which was informed by a gender analysis conducted prior to the CP design. The CP log frame included gender indicators in Outcomes 1, 2, 4, 6, and 7, which is aligned with the UNIDO Strategy for Gender Equality and the Empowerment of Women (2020-2023).

The evaluation team did a tentative gender analysis of the informants in China, who represented members of the national coordination body, and project management and implementing partners. Of the 80 informants interviewed in China, 41 were men and 39 women. Fifty-four of the informants were mid-to-senior level management staff, of whom 42.6% were female, which is slightly higher than the national data on female supervisors. This reflects that gender mainstreaming was factored in the progress toward the achievement of CP Outcome 1 (enhanced inter-ministerial coordination) and Outcome 2 (partnership forged).

On the progress toward Outcome 4 (boosted innovation-driven industrial growth), the ITPO Shanghai and Beijing projects promoted women empowerment through training, public discussions, and knowledge-sharing events. Examples are:

- ITPO Shanghai and Idol Group submitted a proposal, "New infrastructure of e-commerce empowers women employment and career development in the digital era," to an open call on SDG implementation in 2021. The proposal was selected by the UN Department of Economic and Social Affairs as a success story.
- ITPO Shanghai supported and participated in events and initiatives related to women's empowerment, including "Shanghai International Forum on Women's Development 2020", "AI Women Elites' Association," and "World AI Conference - Women's Roundtable."
- ITPO Beijing organized training events on the Fourth Industrial Revolution and Women's Empowerment in 2020 and 2021.
- ITPO Beijing supported a Tanzanian female entrepreneur, who was also a winner of the Global Call 2023, to share experience at roadshows of the Sixth China International Import Expo.

⁴² "Statistical Monitoring Report of China National Programme for Women's Development (2021-2030) in 2022." Accessed September 12, 2024.
https://www.stats.gov.cn/english/PressRelease/202401/t20240115_1946563.html#:~:text=In%202022%2C%20the%20proportion%20of,employee%20congresses%20was%2030.3%20percent.

In addition, ITPO Shanghai was nominated for the “Gender Equality Mobilization Award” in 2021, which is meant for UNIDO to recognize its staff’s outstanding deeds and initiatives in promoting gender equality and women’s empowerment in their work.

On the progress toward Outcome 6 (Rural Revitalization and Smart Agro-food Systems), the project titled “Improving agro-industrial value chain and supervision capacity in Quannan” provided technical training to local women professionals to carry out rapid food-testing and improve food production safety of agro-businesses. Similarly, female participation was observed for events co-organized by ITPO Beijing, including training in Sri Lanka on trade facilitation of agricultural and aquatic products and an exchange with the Indian Association Business Council on public-private partnerships (outcome 7).⁴³

Despite the lack of specific gender-disaggregated indicators for Outcome 5 (accelerated green industry development and green industrial transformation), project reports show that gender-related indicators were included in their results frameworks, and gender-disaggregated data were reported, as required by the CP gender mainstreaming strategy. The project, “Development of Corporate Social Responsibility in the Construction Sector in China,” produced the Evaluation Standard for Enterprise Social Responsibility in the Construction Industry and included two indicators that reflected gender mainstreaming. One indicator specifies that female staff are given fair opportunities for promotion and another indicator requires measures to ensure occupational safety for all staff, especially women in their pregnancy, maternity, lactation, and menstruation. The inclusion of gender indicators in the standard has the potential to institutionalize gender mainstreaming in companies adopting the standard.

The project “Upgrading of China’s Small Hydropower Capacity” is also a good example of gender mainstreaming. The SHP project took a consistent approach to gender mainstreaming throughout the project cycle. The project document included a results framework with clear gender dimensions and prescribed measures for gender mainstreaming during implementation. Strong gender considerations were visible in the planning, contracting, delivery, and monitoring of project activities. Gender-related data, such as SHP female employees and beneficiaries, were collected and analyzed in various monitoring reports. Similar gender-supporting practices were also followed in the training and seminar activities, which included gender as a standalone chapter in curricula and lectures. In policy studies where a gender target was not required, delivery teams reported their consideration of gender, e.g., the proportion of female researchers. As part of the impact of this work, the final evaluation of the project reported that the number of female middle managers across the workforce increased slightly as the project supported SHP automation, which was seen to particularly benefit female staff.

As per KIIs, gender mainstreaming is considered one of the criteria for project formulation and implementation in UNIDO’s Country Programme. Respondents reported increased support for female entrepreneurs. Gender considerations were indicated to be incorporated in multiple stages, with initial encouragement for gender balance and women’s empowerment in industry projects, followed by emphasis on addressing gender issues in workshops and trainings. However, interviewees acknowledged the need for further development in this area, suggesting potential collaboration with other UN agencies, such as UNDP, to provide more structured gender-focused training and expertise. While efforts to promote women’s participation were noted, the absence of a dedicated gender focal point was highlighted.

⁴³ <https://www.unido.org/sites/default/files/unido-publications/2024-07/ITPO%20Beijing%20Annual%20Report%202023.pdf>

It is also relevant to mention that, according to the documentary review, while some projects included gender considerations in their design, e.g., Applying the eco-design principles to industrial design in China project or were assigned a gender mark such as 2A, meaning that the project would pay significant attention to gender and was expected to contribute to gender equality, e.g. Integrated adoption of New Energy Vehicles in China project, gender considerations and actions were not adequately addressed or implemented during their implementation.

Some initiatives aimed at institutionalizing gender balance in risk management and operations committees were mentioned, along with plans to document best practices. Overall, the evaluation found that while gender considerations are paid attention to, there is a need for more systematic and comprehensive approaches to mainstreaming.

Environmental Assessment

Finding 10: Environmental assessments and compliance with national and international safety environmental standards have been a regular practice in the Country Programme interventions, and no negative environmental effects have been reported during its implementation. Each type of intervention has its own mechanism for safeguarding the environment. Only the need to strengthen the environmental assessment of some interventions in the food safety area was identified.

Most of the interventions carried out under the CP have included an environmental assessment and, in some cases, Environmental and Social Management Plans, which are formulated during project design to address any environmental and social risks that may be generated by the project. These plans are executed and monitored during the implementation of the interventions. The implementation of these plans has, for example, addressed the impact of small hydropower plants (SHPs) on river connectivity and ecosystems through the implementation of minimum e-flows, which allows the rivers to have a constant flow and not dry up. This measure later became mandatory for all SHPs across China. All mid-term and final evaluations of these interventions have reported effective consideration of environmental and social matters.

Other interventions have followed the rules and indications of international treaties to avoid any collateral impact on the environment. For example, the Montreal Protocol publishes information on proven alternatives to replace ozone-depleting substances that also have low global warming potential. In the case of the R-290 alternative, which is replacing HCFC-22 in the room-air conditioning sector, six safety assessments were carried out to find the best conditions and practices for managing and using R-290, which is a highly flammable refrigerant. The assessments were conducted by the Tianjin Research Institute of Fire Science and Technology and Huazhong University of Science and Technology, among others, and three standards have been enacted to guide the safe use of this alternative. UNIDO and the Government of China are responsible for carrying out the technical and performance verifications of these alternatives in the participating companies. The results of these verifications are reported by UNIDO with the support of government counterparts to the Montreal Protocol Executive Committee, which also reviews and comments on the work carried out.

Various interventions funded by the Chinese government have observed national and international environmental standards and national plans, as have those funded by international agencies. However, the evaluation finds preliminary evidence suggesting the need for the ongoing project in Quannan on the agro-industrial value chain to consider further environmental assessment. The project document does not suggest that this activity

was fully considered, and therefore, the environmental and social assessment may not have identified the potential risks involved. While the project follows the Quannan Contaminated Farmland Safe Utilization Work Plan and uses phytoremediation technology as a pilot, providing an environmentally friendly and cost-effective remediation solution, further environmental risk assessment could be useful. This will help clarify whether intake of contaminated food is the main route of exposure to heavy metals from the polluted soil or whether there are other exposure pathways, e.g., water pollution that also require mitigation measures. Overall, the evaluation findings suggest the need for the project to contemplate further measures to protect human health and the environment.

However, during the evaluation mission, no negative environmental effects of UNIDO's work in China were reported by those interviewed or observed by the evaluation team during various site visits.

Attention to Vulnerable Groups

Finding 11: UNIDO's country programme in China has included attention to vulnerable groups into its industrial development initiatives, the evaluation revealed. Aligning with both UNIDO's mandate and China's poverty alleviation efforts, the programme has enhanced economic opportunities and living standards in rural areas through vocational training, support for small enterprises, and improvements in food safety. These efforts have effectively promoted inclusiveness through industrial development, particularly benefiting vulnerable groups.

Attention to vulnerable groups within industrialization have special prominence in UNIDO's programmatic activities in China in light of its inclusive and sustainable industrial development (ISID) mandate to achieve the 2030 Agenda and the Sustainable Development Goals (SDGs) and as well as other commitments agreed by Member States. SDG 9 takes a special position for the Organization, as it recognizes the role of industry, innovation, and infrastructure for sustainable development. UNIDO seeks to contribute to SDG 10 by promoting greater productivity, stable employment, and increased incomes and improving economic opportunities between and within populations, countries, and regions to reach vulnerable groups. It also seeks to contribute to SDG 16 by supporting the restoration of economic activities and empowerment of communities affected by crises and strengthening the capacities of governments and small and medium-sized enterprises.

China has transitioned to a moderately prosperous society and reduced absolute poverty by 2021. Such transition provides the foundation for the right to food, safe drinking water, education, basic medical care, and safe housing.

Therefore, UNIDO's work in rural areas has been relevant to support the Chinese government's policies in maintaining the drive against poverty. In particular, UNIDO provided training to tap market potential, attracting small investments and financing, and improving entrepreneurs' technical, business, and management skills. More specifically, UNIDO assisted partners in building up a pool of professional skills in technical sectors and establishing competitive thinking among entrepreneurs to facilitate production and marketing.

UNIDO helped China develop sustainable and green industry, especially in the rural areas. Its activities focus on strengthening and rehabilitating vocational training systems to promote demand-oriented training programmes for target specific groups, vulnerable groups, and remote target areas, upgrading physical infrastructure and provision of modern equipment to vocational training systems, and fostering micro- and small-scale enterprises

(MSEs) creation and expansion through facilitation of Business Development Services (BDS), market linkages, micro-finance schemes, and business promotion. Beneficiaries are individual farmers, farmer households and families, especially youth, women, and children, farmers' cooperatives and other forms of farmers' associations, residents and consumers, civil servants and technical staff in governmental institutes, local agro-product and food processing enterprises, SMEs and e-commerce enterprises, and agro-product and food value chain in the rural area.

UNIDO's activities in the health rights of vulnerable groups are also fundamental and inclusive, which is the basic guarantee for human beings to live with dignity. After long-term unremitting efforts, China has significantly improved the health level of its people and is praised by the World Health Organization as a "model for developing countries." Specifically, UNIDO improved the health rights of vulnerable groups and remote target areas, including school children, the elderly, and people living in remote mountainous rural areas with less access to public health resources for better food safety and catering assurance of the beneficiaries. It facilitated the upgrading of three school canteens to improve food catering facilities, regulate and manage food safety, and establish knowledge transfer, sharing, and social support for improved food safety in the kindergartens and schools. This effectively improved the dining conditions for 288 students and enhanced the level of food safety assurance. Thus, overall, UNIDO's work in China pays adequate attention to the needs of vulnerable groups.

5. Conclusions and Recommendations

5.1 Based on the triangulated evidence presented in the previous section, the following Conclusions can be drawn:

1. UNIDO's Country Programme in China has demonstrated strong alignment with national development priorities and consistency with economic and environmental policies, particularly in promoting innovation-driven industrial growth and green transformation. Therefore, UNIDO's work in China is highly relevant and coherent with China's 14th Five-Year Plan and with Inclusive and Sustainable Industrial Development (ISID).
2. The CP has contributed to innovation-driven industrial growth in China, including in a limited manner to the 4IR technologies in both SMEs and traditional industries. Through targeted projects and initiatives, UNIDO has facilitated technology demonstrations, standards development, and global value chain integration for Chinese enterprises. This work has aligned closely with national development priorities, contributing to China's significant rise in global innovation rankings.
3. UNIDO has played an important role in supporting China's transition to a greener economy. Through various projects, the organization has facilitated testing and demonstrating innovative green technologies, developed relevant standards, and promoted knowledge sharing. These initiatives have contributed to China's progress in areas such as clean industries, renewable energy adoption, circular economy practices, and industrial energy efficiency.
4. The CP has contributed to rural revitalization and smart agro-food systems in China. UNIDO's interventions have successfully introduced international standards, improved food safety practices, and enhanced agricultural value chains in targeted rural areas. These efforts have led to increased productivity, improved product quality, and better market access for rural enterprises.
5. UNIDO's efforts in promoting international cooperation related to its ISID agenda have yielded positive results. The CP facilitated knowledge transfer, technology exchange, and South-South cooperation, reflecting China's transition from primarily a recipient of development assistance to an active contributor in global sustainable development efforts. This has effectively leveraged China's growing industrial capabilities to benefit other developing countries while enhancing its integration into global innovation networks and standards.
6. While the programme management has shown strengths in project implementation and alignment with national strategies, there are significant challenges in coordination and communication between UNIDO headquarters, the field office, and various UNIDO projects operating in China. Addressing these issues, including improving project management processes, clarifying roles and responsibilities, and enhancing communication channels, could improve overall programme effectiveness and impact.

7. The execution of the interventions by national counterparts under UNIDO's technical assistance and oversight has strengthened the capacities of national institutions and promoted a high level of ownership of the achievements, which contributes to the sustainability of UNIDO's interventions. This level of ownership is also reflected in the high level of cofinancing provided by the private sector, which in some cases allowed the goals of the interventions to be exceeded, showing an efficient use of resources.
8. The CP has shown a commendable commitment to mainstream gender by integrating its considerations into project design, implementation, and monitoring across various sectors. There is still room for improvement, for example, through potential collaboration with other UN agencies.
9. The CP has made notable contributions to inclusive development in China, particularly through its focus on poverty alleviation, rural development, and improving health and safety standards. UNIDO's interventions have helped enhance the capacities of vulnerable groups and promoted more equitable access to economic opportunities.
10. UNIDO has played a significant role in supporting China's compliance with international environmental agreements, including the Montreal Protocol, Minamata Convention, and Stockholm Convention, through policy support, technology transfer, and capacity-building initiatives. In addition, environmental considerations have been well-integrated into the Country Programme's activities, reflecting UNIDO's commitment to sustainable industrial development. Environmental assessments have been a regular practice in interventions, with no negative effects identified; however, in the case of the remediation of the heavy metal-contaminated soil at Quannan, the evaluation concluded the need for further environmental risk assessments.
11. Overall, the conclusions of this evaluation can be summarized with the help of the SWOT analysis in Table 4. As seen from the chart, UNIDO's work in China has demonstrated strong alignment with national and global development goals in China. It uses a project-based operations model for most of its work, which can be highly flexible and responsive to changing stakeholder needs on the ground. UN's brand name and credibility combined with UNIDO's own network and technical skills were widely appreciated by stakeholders of all categories and validated by the evaluation.
12. On the flip side, it was readily apparent that multiple UNIDO entities in China largely operate independently of each other. This makes the task of operating as one-UNIDO, not to mention one-UN, impossible. It leaves stakeholders confused, interventions fragmented, and result-oriented efforts weakened. Complex administrative procedures, inadequate delegation of authority, insufficient visibility, and financial and resource constraints are related weaknesses that are associated with this operating model.
13. While UNIDO has several potential opportunities, it also faces many important challenges in the country. The rapid rise of China as an economic power and its recent transition to a greener economy provide the biggest opportunities for UNIDO. UNIDO can use this success in several ways, such as transitioning to greener production methods, demonstrating success stories, promoting South-South cooperation, and

facilitating knowledge exchanges including towards green economic transformations around the world. Chinese stakeholders also conveyed their eagerness to share their resources and knowledge with other developing countries. This is a major potential opportunity for UNIDO.

14. At the same time, UNIDO needs to be mindful of several critical challenges confronting the world, which have significant implications for both the country and UNIDO's interventions, including for SDGs and ISID goals. Other major threats for UNIDO emanate from its own weaknesses. Insufficient resources and capacity to coordinate and deliver results may nudge Chinese counterparts and international stakeholders to consider alternatives to achieve their desired policy goals.

Table 4. Summary SWOT analysis of UNIDO country programming in China

Strengths	Weaknesses
Strategic alignment with national and global development goals.	Coordination challenges within UNIDO and with partners.
Flexible and responsive operational model.	Financial and resource constraints.
Extensive global network and high-quality resources.	Limited diversity in expertise and regional representation.
Strong credibility and influence as a UN organization.	Complex administrative procedures.
Professional and skilled implementation team.	Insufficient visibility.
Opportunities	Threats
China's rise as an economic power.	Global Geopolitics challenges.
Facilitating South-South cooperation.	Lack of capacity on ground to meet expectations.
Facilitating China's role as a donor.	Inadequate external stakeholders or funding partnerships.
Facilitating green industrialization and climate-focused agenda.	

5.2 Recommendations

The recommendations below aim to enhance UNIDO's effectiveness, broaden its impact, and better meet the needs of its partners and beneficiaries in China and globally.

Recommendation 1: To further bolster inclusive and sustainable development goals in China and other developing countries, UNIDO HQ & CO should work with China to incorporate the following elements in the next phase of the CP:

- Develop a comprehensive programme to support Chinese SMEs in transitioning to greener production methods, including tailored technical assistance and access to financing mechanisms.
 - Collaborate with relevant stakeholders to create industry-specific guidelines for environmental impact assessments that align with international best practices and China's ecological civilization goals.
 - Provide more practical guidance on international standards and best practices, with increased involvement of international experts.
- Optimize UNIDO's role in promoting innovation-driven industrial growth in China.
 - Develop a specialized programme to support Chinese SMEs and traditional industries in adopting and adapting Fourth Industrial Revolution technologies, with a focus on sectors identified as priorities in China's national innovation strategies.
 - Initiate a series of targeted technology transfer initiatives between China and other developing countries in areas where China has demonstrated leadership, such as e-commerce, mobile payments, and renewable energy.
 - Provide customized support to help Chinese entities understand and adapt to international environmental standards and work with Chinese policymakers to reform Chinese policies and mechanisms.

Recommendation 2: To strengthen coordination and integration of UNIDO activities at HQ and in the ground, to improve its effectiveness in China, UNIDO should consider implementing pending and still relevant recommendations from the previous country evaluation (see Annex 9) and the following elements:

- Strengthen UNIDO's project management and operational efficiency in China.
 - Improve mechanisms for communication and coordination within various UNIDO entities in China, between headquarters and UNIDO entities, UNIDO and partners, and UNIDO and national counterparts. This could include developing, implementing and reporting on a joint results framework that encompasses all of UNIDO's work in China, including work undertaken under various HQ-managed projects and documentation clarifying the role of all UNIDO entities in China.
 - Implement a streamlined approval process for smaller projects (under a certain budget threshold) to reduce administrative bottlenecks and improve responsiveness to partner needs.
 - Accelerate procurement and administrative processes for requisitioning services and personnel (e.g., by delegating authority to the country office).

- Create a dedicated capacity-building programme for local project managers and partners, focusing on UNIDO's project cycle management, results-based management, and reporting requirements.
- Elevate UNIDO's involvement in policy-level discussions in China and expand the Beijing office's role. Restart staff secondment programmes (e.g., with FECO) with technical staff.
- Provide more practical guidance on international standards and best practices, with increased involvement of international experts from UNIDO and other instances and customized support to help Chinese entities understand and adapt to European requirements.
- Streamline UNIDO entities in China to reduce overlap and duplications and sunset those that are a misfit in the current socio-economic milieu.
- Implement a digital and practical project monitoring system and tools with strategic indicators that allows real-time tracking of project progress, financial expenditure, and results, accessible to both UNIDO staff and key Chinese counterparts.
- Establish a high-level industrial policy dialogue mechanism with key Chinese ministries to share international perspectives on emerging industrial development trends and challenges.
 - Develop and share a comprehensive study on China's industrial policy evolution and its implications for global sustainable development with other UNIDO member states.

6. Management Action Plans (MAPs)

#	Recommendation	Management Actions	Responsibility	Target Date
1.	To further bolster inclusive and sustainable development goals in China and other developing countries, UNIDO HQ & CO should work with China to incorporate the following elements in the next phase of the CP	<p>Through a substantial consultation process with Government counterparts and UNIDO relevant services, the following thematic areas will be proposed to be included in the new CP document for China:</p> <ul style="list-style-type: none"> ● SME empowerment, which include a roadmap and strategy for SME development in the CP; a tailor-made project to strengthen women-led SMEs' competitiveness and technological uptake in the agro value chain; supports the International SME Fair to strengthen SMEs' international cooperation; ● Capacity-building activities on international standards, focusing on the application and mainstreaming of existing industrial park guidelines and development of Free Trade Zone guidelines; ● South-South Cooperation initiatives transferring 4RI technologies, including e-commerce, mobile payments from China to other Global South countries; ● Continued strengthening the cooperation with other developing countries on renewable energy technology transfer, for example hydrogen and small hydro power station etc;Capacity building on international environmental standards. With the support from HQ, 	GLO/RFO/FLD/ASP/CPR, with support and cooperation from GLO/RFO/ASP and TCS/SME	Q2 of 2026

		provide online training for project counterparts to understand and adapt to international environmental standards.		
2.	To strengthen coordination and integration of UNIDO activities at HQ and in the ground, to improve its effectiveness in China, UNIDO should consider implementing pending and still relevant recommendations from the previous country evaluation (See Annex 9) and the following elements	<p>To enhance the coordination and integration of UNIDO activities, the following actions were agreed:</p> <ul style="list-style-type: none"> • Continue to organize annual capacity-building workshops for the local project team and counterparts; to ensure internal coordination, monitoring, and reporting at the CP level; • China CO to propose in the CP M&E framework regular coordination mechanisms (both in-house and with external partners) to ensure operational efficiency and avoid double reporting; • The field office to foster (in coordination with HR and relevant donor entities) the secondments, partner expert, JPO and internship programmes; • On request, continue to coordinate and support high-level participation of Chinese counterparts in UNIDO key events on industrial policy, for example, MIPF, BRIDGE for Cities; • Discuss with TC department to design a dedicated project to support the establishment of the industrial policy dialogue mechanism in green industry, decarbonization or supply chain; • Follow-up with HQ on previous suggestions and comments on the new TC guidelines towards greater decentralization, including a streamlined approval process for smaller projects (under a certain budget threshold) to reduce administrative bottlenecks and improve responsiveness to partner needs. • Discuss with HQ to accelerate procurement and administrative processes for requisitioning services and personnel. 	GLO/RFO/ASP/CPR with support and cooperation from GLO/RFO/ASP and SPP	Q3 of 2026

7. Lessons Learned

1. In a rapidly developing country like China, where countries transition from recipients of technical assistance to a dual role as recipient and donor, reviewing and adjusting portfolios is of critical essence. This includes both organizational (e.g., units, entities, and staff) and delivery (what, how, and where) portfolios.
2. Project interventions in the new CP and elsewhere in UNIDO's work could prioritize the development and proposal of methodologies to calculate the reduction of emissions during the design of the project and ensure their application during the implementation of the project. In China, some projects that contribute to the reduction of greenhouse gas emissions did not include from their design the methodology to estimate such reduction, and/or during their implementation, did not consider generating and ensuring the quality of the data to make the estimate, which generated estimates with lower quality.
3. Some projects, especially those financed by governments, might require updating the environmental and social assessments in their execution plans. This is especially the case once activities become more specific during implementation, especially when activities may generate significant environmental impacts. For example, ensuring that projects such as in areas with heavy metals in Quannan need more detailed environmental risk assessments to ensure necessary mitigation measures to avoid or minimize identified risks are undertaken.
4. Given that efforts to mainstream gender in UNIDO's interventions were varied in terms of their depth and coherence, expert and dedicated support is needed, as well as collaboration with other UN agencies to better target efforts.

8. Annexes

Annex 1: Evaluation Terms of Reference

[TOR. Independent country evaluation in the People's Republic of China.pdf](#)

Annex 2: Evaluation Framework / Matrix

Outputs	Outcomes	KPIs	Data source	Method
<p>Projects</p> <p>CO coordination and technical assistance</p> <p>ITPOs technical assistance</p> <p>Other HQ technical assistance</p>	<p>Impact:</p> <p>Contribution to the improved performance of the national industrial sector towards meeting</p> <p>China's green economic growth, UN's SDG 7 and SDG 9 goals, and UNIDO's ISID agenda.</p>	<p>The extent of acceleration in green industry development and pace of green industrial transformation.</p> <p>Increase in the percentage of industrial growth driven by innovation.</p> <p>Extent of rural revitalization and adoption of smart agro-food systems and practices.</p> <p>Contributions to increase in the share of renewable energy in total industrial energy consumption.</p>	<p>Documents</p> <p>Archival / statistical data</p> <p>Interviews</p> <p>Surveys</p> <p>Field mission</p>	<p>Qualitative and quantitative analysis</p> <p>Direct Observations</p>
<p>Support to National and local governments on frameworks for green growth</p>	<p>Intermediate outcome 1: Better policy environment for green growth.</p>	<p>The extent to which new policies are developed and implemented.</p> <p>Policies, strategies, regulations, and standards adopted.</p>	<p>Documents</p> <p>Archival or statistical data</p> <p>Interviews</p> <p>Surveys</p> <p>Field mission</p>	<p>Qualitative and quantitative analysis (e.g., content and survey analyses)</p>
<p>Sector-specific technical assistance</p>	<p>Intermediate outcome 2:</p>	<p>Number of SMEs and private sector enterprises adopting</p>	<p>Documents</p>	<p>Qualitative and</p>

<p>including specific projects.</p> <p>Technical assistance provided to promote the adoption of advanced digital production technologies, especially among SMEs and the private sector.</p> <p>Capacity building and policy support provided to accelerate the low-carbon transformation and green transition of traditional high-polluting and energy-intensive industries.</p> <p>Technical assistance and capacity building are provided to rural areas to develop local industries, realize comparative advantages, and promote sustainable economic growth.</p> <p>Support provided to industries and businesses to operationalize corporate social responsibility practices in the context of their international engagements and investments.</p>	<p>Improved performance of priority sector/area targets</p>	<p>advanced digital production technologies through UNIDO technical assistance.</p> <p>A number of traditional high-polluting and energy-intensive industries supported their low-carbon transformation and green transition.</p> <p>A number of rural enterprises and industries supported through technical assistance and capacity building to promote sustainable economic growth.</p> <p>Number of industries and businesses operationalizing corporate social responsibility practices with UNIDO support in the context of their international engagements and investments.</p> <p>Number of sector-specific projects implemented promoting the transfer, application, and innovation of green and low-carbon technologies.</p>	<p>Archival / statistical data</p> <p>Interviews</p> <p>Surveys</p> <p>Field mission</p>	<p>quantitative analysis</p> <p>Direct Observations</p>
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Sector-specific projects implemented to promote the transfer, application, and innovation of green and low-carbon technologies in key industries.				
Draft investment proposals and technical support	Intermediate outcome 3. Increased public and business sector investment in industrial development	<ul style="list-style-type: none"> - Public investment projects - Public support programmes/projects - Business investment projects (pipeline, ongoing, completed) 	<p>Documents</p> <p>Archival / statistical data</p> <p>Interviews</p> <p>Surveys</p> <p>Field mission</p>	<ul style="list-style-type: none"> - Qualitative and quantitative analysis - Direct Observations
<p>Technical support for establishing and enhancing coordination mechanism/s</p> <p>Formation of the National Coordination Body (NCB) facilitated</p>	Immediate outcome 1: Enhanced inter-ministerial coordination	<ul style="list-style-type: none"> - Functioning coordination mechanism with key stakeholders - Alignment of partner interventions to the CP - NCB formed or not 	<p>Documents</p> <p>Interviews/ Surveys</p> <p>Field mission</p>	<ul style="list-style-type: none"> - Desk review - Direct observation
<p>Partner mobilization for the CP facilitated</p> <p>High level meetings, workshops, consultations conducted explaining the CP and seeking common ground for engagement</p>	Immediate outcome 2: Partnerships established and synergized.	<ul style="list-style-type: none"> - Formalized partnerships (MoUs, joint declarations, etc.) - Active participation of key partners in the CP - The extent of partners' contributions to the CP 	<p>Documents</p> <p>Interviews</p> <p>Surveys</p> <p>Field mission</p>	<ul style="list-style-type: none"> - Qualitative and quantitative analysis - Direct Observations
Advisory and normative services	Immediate outcome 3: Policy and normative	<ul style="list-style-type: none"> - Adopted policies, strategies, regulations, standards 	Documents	<ul style="list-style-type: none"> - Qualitative and quantitative analysis

	uptake increased.	- Alignment of existing/new partner interventions to the CP	Archival / statistical data Interviews Surveys Field mission	- Direct Observations
UNIDO TC Component 1: Integrated and mutually reinforcing projects targeting 1st priority sector/area	Immediate outcome 4: Increase in innovation-driven industrial projects directly or indirectly supported by UNIDO CO.	- Use of vocational training and industrial skills development - Number of projects implemented	Documents Archival / statistical data Interviews Surveys Field mission	- Qualitative and quantitative analysis - Direct Observations
UNIDO TC Component 2: Integrated and mutually reinforcing projects targeting 2nd priority sector/area	Immediate outcome 5: Accelerated green industry development projects implemented by industry and partners with UNIDO's direct or indirect support.	- CO2 emissions per unit of value added and cumulative reduction - Cumulative tons of pollutants reduced or eliminated - Increased ratio of decoupling growth from resource consumption - Amount of fiscal investment in greening - Industrial/sector policies conducive to greening	Documents Archival / statistical data Interviews Surveys Field mission	- Qualitative and quantitative analysis - Direct Observations
UNIDO TC Component 3: Integrated and mutually reinforcing projects targeting 3rd priority sector/area	Immediate outcome 6: Rural revitalization and smart agro-food systems implemented by industry	<ul style="list-style-type: none"> • Application of renewable energy, efficient energy use, low carbon tech • Industrial resource efficiency 	Documents Archival / statistical data Interviews Surveys	- Qualitative and quantitative analysis - Direct Observations

	and partners with UNIDO's direct or indirect support.	<ul style="list-style-type: none"> • Additional jobs created/retained • People gaining access to quality products • Increased % contribution of industries to GDP in rural areas • Industrial businesses increased in rural areas • Certified food safety inspectors in rural areas 	Field mission	
UNIDO TC Component 4: Integrated and mutually reinforcing projects targeting 4th priority sector/area	Immediate outcome 7: Increase in international cooperation for ISID with UNIDO's direct or indirect support.	<ul style="list-style-type: none"> • MoUs signed on industrial cooperation • Collaborative ventures launched, including joint R&D and technology transfer • Value of joint investments in industrial projects and infrastructure • Best practices and technologies shared through knowledge-sharing platforms 	Documents Interviews Surveys Field mission	- Content and survey analysis - Direct Observations

Annex 3: List of Documentation Reviewed

Background Documents

1. United Nations Sustainable Development Cooperation Framework for the People's Republic of China 2021–2025, United Nations, 2021.
2. United Nations General Assembly Resolution A/RES/70/1: Transforming Our World: The 2030 Agenda for Sustainable Development New York: United Nations, 2015.
3. Asian Development Bank, Country Partnership Strategy: People's Republic of China 2021–2025. Manila: Asian Development Bank, 2021.
4. Food and Agriculture Organization China's 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035. Food and Agriculture Organization of the United Nations, 2021.
5. World Bank China: Country Partnership Framework for the Period FY2020–2025. Washington, DC: World Bank Group, 2019.
6. China Country Briefing Report 2018959939.

Past evaluations

1. UNIDO, Reduction of Mercury Emissions and Promotion of Sound Chemical Management in Zinc Smelting Operations. Independent Terminal Evaluation, 2015.
2. UNIDO, Environmentally Sustainable Management of Medical Wastes in China. Independent Terminal Evaluation, 2018.
3. UNIDO, Strengthening Institutions, Regulations and Enforcement (SIRE) Capacities for Effective and Efficient Implementation of the National Implementation Plan. Independent Terminal Evaluation, 2015.
4. UNIDO, Environmentally Sound Management and Disposal of Obsolete POPs Pesticides and Other POPs in China. Independent Terminal Evaluation, 2018.
5. UNIDO, Promotion and Transfer of Marine Current Exploitation Technology in China and Southeast Asia. Independent Terminal Evaluation, 2015.
6. UNIDO, China's compliance with the Stockholm Convention: Review and update of the National Implementation plan for the Stockholm Convention on Persistent Organic Pollutants. Independent Terminal Evaluation, 2020.
7. UNIDO, Upgrading of China Small Hydropower (SHP) capacity project. Independent Evaluation, 2020.
8. UNIDO, POPs and Chemical Pollution Solutions through Area-Based-Eco Effective Management in China, Independent Terminal Evaluation. 2024.
9. UNIDO Integrated adoption of new energy vehicles in China. Independent Terminal Evaluation. 2023.

10. UNIDO, Independent Country Evaluation: People's Republic of China. 2010.
11. UNIDO, Independent Evaluation of the UNIDO Investment and Technology Promotion Office (ITPO) Network - Shanghai. 2020
12. UNIDO, Final Self-Evaluation of the Country Programme for the People's Republic of China. 2021
13. UNIDO, Mid-Term Evaluation: Environmentally Sound Management of Obsolete POPs Pesticides and Other POPs Wastes in China. 2014.
14. UNIDO, Independent Thematic Evaluation: UNIDO Field Network. 2019.
15. UNIDO, Independent Thematic Evaluation of the UNIDO Investment and Technology Promotion Office Network. 2021.
16. UNIDO, Independent Thematic Evaluation of the Medium-Term Programme Framework (MTPF) 2018-2021. 2022.
17. UNIDO Independent strategic evaluation: UNIDO's Contribution to Transformational Change, 2022.
18. UNIDO, Thematic Review of UNIDO Operations Integration in China. 2018. Thematic Review of UNIDO Operations Integration 2018
19. UNIDO, Mid-Term Review of the Country Programme for China 2016-2020 February 2019.
20. UNIDO, Mid-Term Evaluation of the UNIDO GEF Project: Environmentally Sound Management and Disposal of Obsolete POPs Pesticides and Other POPs Wastes in China. Final Draft, March 2014
21. UNIDO, Mid-Term Performance Evaluation Report of GEF Project 6919: Upgrading of China SHP Capacity, 2020
22. UNIDO, Independent Mid Term Review: Demonstration of Mercury Reduction and Minimization in the Production of Vinyl Chloride Monomer in China." July 2021.
23. UNIDO, Independent Terminal Evaluation: Upgrading of China SHP Capacity Project, 2024.

Other Project Documents

1. UNIDO. China-UNIDO Country Programme Framework for Inclusive and Sustainable Industrial Development 2016-2020: Progress Reports (2).
2. UNIDO. 2022 Annual Progress Report for UNIDO Field Offices: China, 2022.
3. UNIDO. China-UNIDO Country Programme Framework for Inclusive and Sustainable Industrial Development 2021-2025: Progress Report, December 2023.
4. UNIDO. 2023 Annual Progress Report for UNIDO Field Offices: China. 2023.
5. UNIDO. Promoting energy efficiency in Industrial Heat Systems and High Energy-consuming Equipment in China. Project Documents (16).
6. UNIDO. Evaluation Brief: Environmentally Sound Management and Disposal of Obsolete POPs Pesticides and Other POPs in China. May 2019.
7. UNIDO. Upgrading of China SHP Capacity Project. Project Documents (7).
8. International Center on Small Hydro Power (ICSHP). Inception Report for Upgrading of China SHP Capacity Project. November 2017.

9. UNIDO. Operational Guidelines for Entities Executing UNIDO Projects Financed from Various Funds. July 2017.
10. UNIDO. Demonstration of Mercury Reduction and Minimization in the Production of Vinyl Chloride Monomer in China, Project Documents.
11. UNIDO, HCFC Phase out Project documents (3 documents).
12. UNIDO. Inception report, final evaluation of project: POPs and Chemical Pollution Solutions through Area-Based Eco-effective Management,2024.
13. UNIDO. POPs and Chemical Pollution Solutions through Area-Based Eco-effective Management, Project documents (114 documents).
14. UNIDO. Integrated adoption of new energy vehicles in China, project documents (3 documents).
15. UNIDO, Applying Eco-design principles to Industrial Design in China. Self-Evaluation Progress Report, 2024.
16. UNIDO. Applying Eco-design Principles to Industrial Design in China, Project Documents. (139 documents).
17. UNIDO. Improving agro-industrial practice and capacity for poverty alleviation in Quannan, China. Project Document. 2019.
18. UNIDO, Improving agro-industrial practice and capacity for poverty alleviation in Quannan, China. Project Final Report. 2021.
19. UNIDO. Improving agro-industrial practice and capacity for poverty alleviation in Quannan, China. Back-to-Office Mission Report. 2019.
20. UNIDO. Supporting the Establishment of the International Hydrogen Energy Centre (11 documents).
21. UNIDO. Improving agro-industrial value chain and supervision capacity in Quannan, China. (6 documents).
22. UNIDO. Investment and Technology Promotion Office (ITPO) Network - Shanghai. Annual Report. 2019.
23. UNIDO. Investment and Technology Promotion Office (ITPO) Network - Shanghai. Project Document.
24. UNIDO. Investment and Technology Promotion Office (ITPO) Network - Beijing. Project Document.
25. UNIDO. Investment and Technology Promotion Office (ITPO) Network - Beijing. Annual Report. 2022.
26. UNIDO. Achievements of the UNIDO Centre for South-South Industrial Cooperation in China Project - Phase II.

TC Portfolio

1. CE-CRP List of ongoing and completed projects.
2. 100283 China GEF 5 HEC Agreements (multiple annexes and agreement).

UNIDO Key Documents

1. UNIDO. 2022-2025 Medium-Term Programme Framework. 2021.
2. UNIDO. Abu Dhabi Declaration. 2019.
3. UNIDO. Annual Report. 2020.
4. UNIDO. Annual Report. 2021.
5. UNIDO. Annual Report. 2022.
6. UNIDO. Lima Declaration. 2013.

UNIDO China Cooperation Documents

1. Strategic Cooperation Framework (2023-2025) between the Government of the People's Republic of China and the United Nations Industrial Development Organization.
2. UNIDO Project Document Country Programme 2021-2025. 2021.
3. China-UNIDO Country Programming Framework for Inclusive and Sustainable Industrial Development 2016- 2020.
4. China-UNIDO Country Programming Framework (2016-2020) Progress Report December 2017.
5. Memorandum of Understanding between the Ministry of Industry and Information Technology People's Republic of China and the United Nations Industrial Development Organization. 2023.
6. Relevant agreement for the legal context clause of a programme or project document
7. Marking the 50th Anniversary of UNIDO; UNIDO-China cooperation. 2016.

Annex 4: List of Stakeholders Consulted

Name	Title	Organizaiton
Ms. LI Xiaoyan	Project officer	FECO of MEE
Mr. FU Haifei	Party Secretary and Director	Economic and Information Technology Bureau, Anji, Zhejiang
Mr. LI Tao	Member of the Party Working Committee Construction Zone	The Administrative Committee of Wujin Green Construction Zone, Wujin, Jiangsu
Ms. GUO Min	Deputy Technical Director	Guangdong Association of Circular Economy and Resources Comprehensive Utilization
Ms. SONG Xiaoming	Director	Institute of Energy Resources and environment, CIETC-MIT
Mr. Zhang Owen	General Advisor (consultant)	TCL Air Conditioning Division

Mr. Liu Zhixin	Deputy General Manager	Manufacturing Center of TCL Air Conditioning Division
Mr. Xiang Minjun	Deputy Director	Manufacturing Center of Commercial Air Conditioning Business Center of TCL Air Conditioning Division
Mr. Mi Wenjie	Assistant Minister	Process Equipment Department of Commercial Air Conditioning Business Center of TCL Air Conditioning Division
Mr. Liang Yongchao	Director of Heat Pump Development Department 2	Commercial Product Development Center of TCL Air Conditioning Business Unit R&D Center
Mr. Zhang Wensheng	Procurement Engineer	Supply Chain Management Center of TCL Air Conditioning Division
Mr. Stephen Bainous Kargbo	Representative and Head of Regional Office	UNIDO Beijing Office
Ms. LI Ning	Project Administrator	
Ms. MA Ning	Office Assistant, Secretary to UR	
Ms. ZHANG Yanbing	Senior Project Assistant	
Ms. ZHANG Na	Team Assistant	
Mr. Wang Dazhong	Division Director	Division V, International Department, MOFCOM
Mr. YOU Junliang	Project Manager	Battery management Engineer of Greatwall Motor.
Mr. YE Weihang	EV Owner	Participant of the V2G pilot.
Mr. Lei Wang	Project assistant	Energy service engineer of Greatwall Motor.
Ms. LI Xiao	Project Specialist	UCSSIC, CICETE
Mr. GUO Li	Director	
Ms. LEI Xueya	Deputy Director	IHFCA(China-SAE)
Ms. WANG Ju	Secretary General	
Mr. ZHAO Kangning	Senior Researcher	
Mr. TIAN Xuehao	Senior Researcher	
Mr. FANG Jun	Deputy Director-General	NMPAIED
Ms. ZHENG Yang	Deputy Division Director	Division of R&D, NMPAIED
Ms. YUAN Yanfang	Associate Professor	Division of R&D, NMPAIED
Mr. ZHAO Yang	Deputy Division Director	Division III, NMPAIED
Ms. Yang Linlin	Deputy County Mayor Nominee	Standing Committee of the County Party Committee, Quannan County
Mr..ZENG Yufeng	Director	Agriculture and Rural Affairs Bureau of Quannan County
Mr. HUANG Shaofu	Head of Vegetable Office	Quannan County Agriculture and Rural Bureau
Mr. Liu Wenchao	Director of the Enforcement and Inspection Bureau	Quannan County Market Supervision Administration

Mr. Tang Qingquan	Director of Food Safety Supervision and Management Unit	Enforcement and Inspection Bureau, Quannan County Market Supervision and Administration Bureau
Ms. Hu Fuying	Director of the Agricultural Products and Grain and Oil Inspection and Testing Sub center	Quannan County Comprehensive Inspection and Testing Center
Mr. Peng Xiang	Deputy Division Director	Ministry of Finance
Mr. Gao Shang	Officer	
Mr. James George	Deputy Resident Representative	UNDP China
Mr. Zhou Changhui	Assistant to General Manager	Beijing Zhongjianxie Certification Center
Ms. Wang Zhenqi	Project Leader	
Ms. Jia Jing	Project Officer	
Ms. Hu Guofang	R&D Director	
Ms. Tian Xiaoyu	Project Officer	
Mr. Li Yonghong	Deputy Director General	Foreign Environmental Cooperation Center, Ministry of Ecology and Environment
Mr. Sun Yangzhao	Division Director	
Mr. Peng Zheng	Deputy Division Director	
Ms. Shao Dingding	Senior Specialist	
Ms. Yang Jini	Senior Project Manager	
Ms. Zuo Rao	Project Assistant	Bureau of Special Equipment Safety Supervision, State Administration for Market Regulation
Mr. Zhou Liang	Deputy Director General	
Mr. Xu Feng	Division Director	
Ms. Zheng Ying	Division Director	
Ms. Wang Yuhan	Deputy Division Director	
Mr. Wang Zhongwei	Project Manager	
Mr. Zhang Yunqi	Project Officer	China Special Equipment Inspection & Research Institute
Ms. Liu Xuemin		
Ms. Li Meng	Specialist	International Hydrogen Energy Center
Ms. Chu Sufeng	Specialist	
Mr. Zhang Yi	Deputy Director-General	China International Center for Economic and Technical Exchanges
Mr. Guo Li	Division Director	
Ms. Zhou Yuan	Project Officer	
Mr. Zhang Gexing	Vice President	Shanghai National Accounting Institute (Asia-Pacific Finance and Development Institute, AFDI)
Ms. Tian Bei	AFDI Director	
Mr. Liu Xiaoqiang	AFDI Vice Director	
Ms. Zhao Xiaolei	Director	Investment and Technology Promotion Office Shanghai
Ms. Wang Yijing	Team Assistant	
Ms. Ye Lin	Team Assistant	
Mr. Sun Zhongcheng	General Manager	

Mr. Lu Xiaofeng	Vice General Manager	Jinyun Cascade Power Generation Company
Ms. Huang Yan	Deputy Director	International Center on Small Hydropower
Ms. Hu Xiaobo	Division Chief	
Mr. Ou Chuanqi	Division Chief	
Ms. Zhang Yingnan	Project Officer	
Ms. Bao Lina	Project Officer	
Mr. Miao Qisen	Project Officer	
Ms. Wang Xueyuan	Intern	
Ms. Janey Jing Liu	Executive Director	UNIDO Global Innovation Network Shanghai Global Science and Technology Innovation Center
Mr. Wu Yabin	Director	Investment and Technology Promotion Office Beijing
Ms. Bai Xiao	Team Assistant	
Ms. Yang Jianing	Volunteer	

Annex 5: Primary Data Collection Instruments

Interview details:

Name, organization and position	
Location	
Time	
Interviewee(s)	

The following interview protocol for in-person or virtual interviews is a comprehensive instrument. Interviewers should customize and adapt questions for each interview based on the interviewee's role, time constraints, response, and level of knowledge/ familiarity with topics revealed during interviews. (Note that all interviews should start with informed consent. The interviewee should be made aware that the information they provide will remain confidential and anonymous, they should be told how the information will be used and for what purpose, and they should agree to continue the interview.)

For Government Counterparts, Country/Strategic Level

Interview Question	Response
Background	
1. What is your role in connection with UNIDO's activities in China? Which specific projects, initiatives, or components have you been involved with or interacted with?	
2. How familiar are you with UNIDO's Country Programmes (2016-2020 and 2021-2025) and the Strategic Cooperation Framework (2023-2025) between UNIDO and China?	
Relevance	

3. How well aligned are UNIDO's activities in China with the country's national policies, strategies, and the needs of beneficiaries? Can you provide specific examples?	
4. How has UNIDO's cooperation adapted to China's changing role as both a beneficiary and an emerging donor? What evidence have you observed of this adaptation?	
5. How you see the CHINA role of “donor” and its cooperation with UNIDO activities abroad? Please provide examples/details	
Coherence	
5. How coherent is UNIDO's overall engagement in China with its Medium-Term Programme Framework (MTPF) 2022-2025, the UN Sustainable Development Cooperation Framework (UNSDCF), and the agenda 2030? Can you provide examples of this alignment?	
6. Can you describe any instances where UNIDO has effectively leveraged synergies and interlinkages between its different interventions in China?	
7. How focused have UNIDO's interventions in China been on the selected priority sectors outlined in the Country Programmes and Strategic Cooperation Framework?	
8. How effective have multi-stakeholder partnerships been in supporting UNIDO's work in China?	
Effectiveness	
9. Can you share some specific examples of UNIDO interventions in China that have achieved their objectives or are on track to do so? What evidence supports this progress?	
10. Has the National Executing Entities modality brought benefits to Chinese institutions and UNIDO? If so, what benefits?	
11. What would you consider to be the main results (outputs, outcomes, and impacts) of UNIDO's interventions in China during the evaluation period?	
12. Can you highlight some of the most successful UNIDO interventions in China and the factors that contributed to their success?	
Do you identify any UNIDO interventions that had limitations in meeting their objectives? If any, what were the constraints?	
13. How did UNIDO adapt its approach in China to address challenges posed by the COVID-19 pandemic and the changing context in the country? What were the results of these adaptations?	
14. To what extent has UNIDO facilitated large-scale public and private investment in China?	
Efficiency	
15. Can you provide examples of how UNIDO has delivered results in China in an economical and timely manner? What factors have contributed to or hindered this efficiency?	
16. How has the high level of co-financing provided by the Chinese government affected UNIDO's ability to deliver results in an economical and timely manner in China?	
17. In your view, have the UNIDO China office and International Technology Promotion Offices (ITPOs) had sufficient human resources and operating	

budgets to effectively carry out their work? If not, what have been the main constraints?	
Impact	
18.. What are some significant, long-term transformational changes in China and/or other countries that can be attributed to UNIDO's cooperation with China? How have these changes been measured or documented?	
19. How has UNIDO's work contributed to China's 14th Five-Year Plan and the country's National Plan on SDG Implementation? What evidence supports this contribution?	
20. Can you describe any higher-level effects or comparative advantages that UNIDO's work in China has generated? What evidence supports these claims?	
Sustainability	
21. How sustainable are the results achieved by UNIDO in China? What factors contribute to or threaten the continuation of these benefits?	
22. To what extent has the high level of co-financing provided by the Chinese government contributed to the sustainability of UNIDO's results in China?	
23. What actions or strategies would you recommend enhancing the sustainability of UNIDO's work in China going forward?	
Gender and Youth	
24. Can you provide examples of how UNIDO interventions in China have addressed gender issues and the needs of women, youth, and other vulnerable groups? What have been the outcomes of these efforts?	
25. In your view, what more could UNIDO do to better integrate gender and youth considerations into its projects and activities in China?	
Environmental Issues	
26. How has UNIDO addressed environmental issues, including conducting screenings, assessments, and considering prevailing environmental standards, in its projects and activities in China? Can you provide specific examples?	
27. What have been the results or impacts of UNIDO's environmental efforts in China? How have these been measured or documented?	
UNIDO Field Office Performance	
28. How would you assess the overall coordination, monitoring, and convening role (including global forum activities) of the UNIDO China office? What are its strengths and areas for improvement?	
29. How effectively has the UNIDO China office coordinated with other UN agencies and development partners in the country? Can you provide examples of successful collaboration or areas where coordination could be enhanced?	
30. How effectively has the UNIDO China office managed relations with the government and other key stakeholders?	
31. Can you describe the key achievements and challenges of the ITPO Beijing and ITPO Shanghai with the UNIDO China office? What lessons can be drawn from their experiences?	
32. Are the roles and responsibilities of different UNIDO organizational units (Field Office, projects, ITPOs,.) clearly defined with regard to the organization's work in China? How clear are the roles and responsibilities among relevant UNIDO staff?	

34. What have been UNIDO's primary roles and comparative advantages in its cooperation with China?	
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For Project Level Interviews:

Interview Question	Response
Background	
1. What is your role in connection with UNIDO's activities in China? Which specific projects have you been involved with or interacted with?	
2. How familiar are you with UNIDO's Country Programmes (2016-2020 and 2021-2025) and the Strategic Cooperation Framework (2023-2025) between UNIDO and China?	
Coherence	
5. How coherent is the projects you are involved with, with the UNIDO's overall engagement in China and with UNIDO's Medium-Term Programme Framework (MTPF) 2022-2025, the UN Sustainable Development Cooperation Framework (UNSDCF), and the agenda 2030? Can you provide examples of this alignment?	
Effectiveness	
9. Can you share some specific examples of the project that have achieved their objectives or are on track to do so? What evidence supports this progress?	
11. What would you consider to be the main results (outputs, outcomes, and impacts) of UNIDO's interventions in China during the evaluation period?	
Do you identify any limitations in meeting their objectives? If any, what were the constraints?	
13. How did the project(s) adapt its approach in China to address challenges posed by the COVID-19 pandemic and the changing context in the country? What were the results of these adaptations?	
Impact	
18.. What are some significant, long-term transformational changes in China that can be attributed to thr prpjct(s) How have these changes been measured or documented?	
Sustainability	
21. How sustainable are the results achieved by the project(s) in China? What factors contribute to or threaten the continuation of these benefits?	
22. To what extent has the high level of co-financing provided by the Chinese government contributed to the sustainability of UNIDO's results in China?	
23. What actions or strategies would you recommend enhancing the sustainability of Project(s) in China going forward?	
Gender and Youth	
24. Can you provide examples of how the project(s) have addressed gender issues and the needs of women, youth, and other vulnerable groups? What have been the outcomes of these efforts?	
25. In your view, what more could UNIDO do to better integrate gender and youth considerations into its projects and activities in China?	
Environmental Issues	

26. How these UNIDO project(s) addressed environmental issues, including conducting screenings, assessments, and considering prevailing environmental standards, in its projects and activities in China? Can you provide specific examples?	
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Annex 6: Survey / Questionnaire



UNIDO China Country Evaluation Survey

UNIDO needs your feedback!

Dear colleague,

The United Nations Industrial Development Organization (UNIDO) is conducting an evaluation of its cooperation with China from 2016 to 2024, with a particular focus on the ongoing Country Programme for Inclusive and Sustainable Industrial Development (2021-2025).

While the evaluation covers all UNIDO activities in China in principle, the evaluation will not assess the performance of all individual projects under the Country Programme due to the large portfolio and number of activities. Instead, it will select some projects as case studies during the inception phase to focus on key activities while allowing answering the evaluation questions.

Your responses to the survey will be kept strictly anonymous. They will be reported in aggregate form only. If you have questions or concerns about this survey, please feel free to contact us at the addresses provided below. We understand the pressures on your time and have kept the survey very short. This survey should take approximately 10-15 minutes to complete.

Please note that this survey will close on xx

We appreciate your constructive feedback. Thank you.

Sincerely,

Punit Arora, PhD
DeftEdge Corp.
survey@deftedge.com
+1-917-727-8648.

Relevant project themes

* UNIDO in China carries out its work in several themes. In which of the following thematic areas have you participated or collaborated with the UNIDO? Please select all that apply.

- | | | |
|---|--|--|
| <input type="checkbox"/> Hazardous Substances Management | <input type="checkbox"/> Ozone Depleting Substances Management | <input type="checkbox"/> Renewable Energy and Energy Efficiency |
| <input type="checkbox"/> Agro-Industry and Food Safety | <input type="checkbox"/> Industrial Innovation and Competitiveness | <input type="checkbox"/> International Cooperation and Technology Transfer |
| <input type="checkbox"/> Sustainable Industrial Development | <input type="checkbox"/> Poverty Reduction, Rural Development and Others | |

Other (Please specify)

Hazardous Substances Management Project results

UNIDO has carried out several projects in the thematic area of Hazardous Substances Management. Which of these projects are you most familiar with or have participated in? Please select all that apply.

POPs and chemical pollution solutions through area-based-ecoeffective-management

Environmentally sound management and disposal of obsolete POPs pesticides and other POPs wastes in China

Improvement of the Environmental Performance of the Foam Sector: Phase out and Management of HBCD in China

Demonstration of Mercury Reduction and Minimization in the Production of Vinyl Chloride Monomer in China

Minamata Initial Assessment project for China

Other (Please specify)

What were the most significant outcomes or results of the project/s? Please provide specific examples.

What challenges, if any, were encountered during the implementation of the project/s? How were they addressed? What lessons can you identify?

Challenges encountered

Steps undertaken

Lessons learned

What best practices or successful strategies were employed during the implementation of the project/s? Based on these, what recommendations would you make for future UNIDO projects in China?

Best practices

Recommendations

What unexpected outcomes or results, if any, emerged from the UNIDO project(s) you were involved in? Please describe any unforeseen positive or negative effects and their impact on the project or its beneficiaries.

Ozone Depleting Substances Management Projects

Which UNIDO Ozone Depleting Substances Management projects in China are you most familiar with or have had the most direct involvement in? Please select all that apply.

- | | | |
|---|---|--|
| <input type="checkbox"/> HCFC Phase-Out Management Plan (Stage II) (RAC sector) | <input type="checkbox"/> HCFC phase-out management plan (stage II) (extruded polystyrene foam sector) | <input type="checkbox"/> Sector plan for the phase-out of methyl bromide production in China |
| <input type="checkbox"/> HCFC Phase-out Management Plan in Room Air-conditioner Sector in China # Stage I | <input type="checkbox"/> Conversion from HFC-134a to HFOs+CO2 with gluing technology in an extruded polystyrene foam manufacturer | |
| <input type="checkbox"/> Other (Please specify) | | |

What were the most significant outcomes or results of the project/s? Please provide specific examples.

What challenges, if any, were encountered during the implementation of the project/s?
How were they addressed? What lessons can you identify?

Challenges encountered

Steps undertaken

Lessons learned

What best practices or successful strategies were employed during the implementation of the project/s? Based on these, what recommendations would you make for future UNIDO projects in China?

Best practices

Recommendations

What unexpected outcomes or results, if any, emerged from the UNIDO project(s) you were involved in? Please describe any unforeseen positive or negative effects and their impact on the project or its beneficiaries.

Energy Efficiency and Renewable Energy Project Results

Which UNIDO Energy Efficiency and Renewable Energy projects in China are you most familiar with or have had the most direct involvement in? Please select all that apply.

- Supporting the establishment and development of the International Hydrogen Energy Centre
- Green hydrogen energy integrated demonstration application project in China
- Upgrading of China Small Hydropower (SHP) Capacity Project
- Solar photovoltaic technology transfer from China to Fiji and the wider region of Pacific Island Countries and Territories
- Integrated adoption of New Energy Vehicles in China
- Promoting Energy Efficiency in Industrial Heat Systems and High Energy-Consuming (HEC) Equipment
- Other (Please specify)

What were the most significant outcomes or results of the project/s? Please provide specific examples.

What challenges, if any, were encountered during the implementation of the project/s?
How were they addressed? What lessons can you identify?

Challenges encountered

Steps undertaken

Lessons learned

What best practices or successful strategies were employed during the implementation of the project/s? Based on these, what recommendations would you make for future UNIDO projects in China?

Best practices

Recommendations

What unexpected outcomes or results, if any, emerged from the UNIDO project(s) you were involved in? Please describe any unforeseen positive or negative effects and their impact on the project or its beneficiaries.

Agro-Industry and Food Safety Project Results

Which UNIDO Agro-industry and Food Safety projects in China are you most familiar with or have had the most direct involvement in? Please select all that apply.

- UNIDO-CFDAIED Centers of Excellence in China
- Strengthening the capacity of China's food inspection and testing bodies to improve trust for trade along the Belt and Road
- Improving agro-industrial value chain and supervision capacity in Quannan, China
- Improving agricultural practices and capacity for poverty alleviation in Quannan, China
- Other (Please specify)

What were the most significant outcomes or results of the project/s? Please provide specific examples.

What challenges, if any, were encountered during the implementation of the project/s?
How were they addressed? What lessons can you identify?

Challenges encountered

Steps undertaken

Lessons learned

What best practices or successful strategies were employed during the implementation of the project/s? Based on these, what recommendations would you make for future UNIDO projects in China?

Best practices

Recommendations

What unexpected outcomes or results, if any, emerged from the UNIDO project(s) you were involved in? Please describe any unforeseen positive or negative effects and their impact on the project or its beneficiaries.



Industrial Innovation and Competitiveness Project Results

Which UNIDO Industrial Development and Innovation projects in China are you most familiar with or have had the most direct involvement in? Please select all that apply.

- Intelligent manufacturing technology and its application in small and medium-sized enterprises
- Applying the eco-design principles to industrial design in China
- Strengthening the global innovation network on inclusive and sustainable industrial development
- Development of corporate social responsibility in the construction sector in China-Phase 2
- Other (Please specify)

What were the most significant outcomes or results of the project/s? Please provide specific examples.

What challenges, if any, were encountered during the implementation of the project/s? How were they addressed? What lessons can you identify?

Challenges encountered

Steps undertaken

Lessons learned

What best practices or successful strategies were employed during the implementation of the project/s? Based on these, what recommendations would you make for future UNIDO projects in China?

Best practices

Recommendations

What unexpected outcomes or results, if any, emerged from the UNIDO project(s) you were involved in? Please describe any unforeseen positive or negative effects and their impact on the project or its beneficiaries.

International Cooperation and Technology Transfer Project Results

Which UNIDO International Cooperation and Technology Transfer projects in China are you most familiar with or have had the most direct involvement in? Please select all that apply.

- | | | |
|--|--|--|
| <input type="checkbox"/> UNIDO Investment and Technology Promotion Office in Shanghai, China | <input type="checkbox"/> UNIDO Investment and Technology Promotion Office in Beijing, China (2019-2024) | <input type="checkbox"/> Supporting the UNIDO Centre for South-South Industrial Cooperation in China (3rd Phase) |
| <input type="checkbox"/> Promoting sustainable industrial parks via South-South and triangular industrial cooperation platform | <input type="checkbox"/> BRIDGE for cities - Belt and Road Initiative: Developing green economies for cities | <input type="checkbox"/> Promote ISID along Maritime and Continental Silk Road |
| <input type="checkbox"/> Support to the First China International Import Expo | | |
| <input type="checkbox"/> Other (Please specify) | | |

What were the most significant outcomes or results of the project/s? Please provide specific examples.

What challenges, if any, were encountered during the implementation of the project/s?
How were they addressed? What lessons can you identify?

Challenges encountered

Steps undertaken

Lessons learned

What best practices or successful strategies were employed during the implementation of the project/s? Based on these, what recommendations would you make for future UNIDO projects in China?

Best practices

Recommendations

What unexpected outcomes or results, if any, emerged from the UNIDO project(s) you were involved in? Please describe any unforeseen positive or negative effects and their impact on the project or its beneficiaries.

Sustainable Industrial Development Project Results

Which UNIDO Sustainable Development and Green Economy projects in China are you most familiar with or have had the most direct involvement in? Please select all that apply.

- Partnership for Action on Green Economy (PAGE): Supporting Change for the Future We Want
- Technical guidelines for the development of international standards for small hydropower plants
- China Country Programming Framework for Inclusive and Sustainable Industrial Development (2021-2025)
- China Country Programme Framework for Inclusive and Sustainable Industrial Development Time Frame 2016-2020
- Other (Please specify)

What were the most significant outcomes or results of the project/s? Please provide specific examples.

What challenges, if any, were encountered during the implementation of the project/s? How were they addressed? What lessons can you identify?

Challenges encountered

Steps undertaken

Lessons learned

What best practices or successful strategies were employed during the implementation of the project/s? Based on these, what recommendations would you make for future UNIDO projects in China?

Best practices

Recommendations

What unexpected outcomes or results, if any, emerged from the UNIDO project(s) you were involved in? Please describe any unforeseen positive or negative effects and their impact on the project or its beneficiaries.

Zoho Survey

11/22/24, 8:48 AM

Poverty Reduction, Rural Development and Others

Which of the following UNIDO projects in China are you most familiar with or have had the most direct involvement in? Please select all that apply.

- Improving industrial capacity for poverty reduction in Chengbu, China
- Supporting poverty reduction and inclusive and sustainable economic diversification of Bama County in China through innovative upgrading and world-level branding of health-related food value chains
- Emergency Response Assistance to the Outbreak of Coronavirus Disease 2019 in China
- Other (Please specify)

What were the most significant outcomes or results of the project/s? Please provide specific examples.

What challenges, if any, were encountered during the implementation of the project/s? How were they addressed? What lessons can you identify?

Challenges encountered

Steps undertaken

Lessons learned

What best practices or successful strategies were employed during the implementation of the project/s? Based on these, what recommendations would you make for future UNIDO projects in China?

Best practices

Recommendations

What unexpected outcomes or results, if any, emerged from the UNIDO project(s) you were involved in? Please describe any unforeseen positive or negative effects and their impact on the project or its beneficiaries.

UNIDO project results

This page inquires about the effectiveness of the project/s in achieving the objectives of the UNIDO's China Country Projects as a whole.

Keeping in mind the UNIDO projects that you are familiar with, how well did the UNIDO's country programme in China perform across the following criteria?

Alignment with China's National Policies and Strategies

- Very unsatisfactorily
- Unsatisfactorily
- Satisfactorily
- Very satisfactorily
- Not aware

Alignment with the needs of the beneficiaries

- Very unsatisfactorily
- Unsatisfactorily
- Satisfactorily
- Very satisfactorily
- Not aware

Alignment with UNIDO's Inclusive and Sustainable Industrial Development Agenda

- Very unsatisfactorily
- Unsatisfactorily
- Satisfactorily
- Very satisfactorily
- Not aware

Synergies with UNIDO's other projects and interventions

- Very unsatisfactorily
- Unsatisfactorily
- Satisfactorily
- Very satisfactorily
- Not aware

Achievement of project objectives

- Very unsatisfactorily
- Unsatisfactorily
- Satisfactorily
- Very satisfactorily
- Not aware

Adaptability to changing contexts (e.g., pandemic response)

- Very unsatisfactorily
- Unsatisfactorily
- Satisfactorily
- Very satisfactorily
- Not aware

Timely and economical delivery of results

- Very unsatisfactorily
- Unsatisfactorily
- Satisfactorily
- Very satisfactorily
- Not aware

Contribution to long-term changes in industrial development in China

- Very unsatisfactorily
- Unsatisfactorily
- Satisfactorily
- Very satisfactorily
- Not aware

Likelihood of benefits continuing after project completion

- Very unsatisfactorily
- Unsatisfactorily
- Satisfactorily
- Very satisfactorily
- Not aware

UNIDO country programme China

The next set of questions will focus on UNIDO's overall portfolio in China at the strategic level. We are interested in your perspectives on UNIDO's broader impact, alignment with national priorities, and overall performance across various projects and initiatives in China. If you are not familiar with some aspect of UNIDO's work, you may skip or answer that question to the best of your knowledge based on your experience and observations.

How familiar are you with UNIDO's overall work and activities in China?

Not at all



Very familiar



Would you like to answer questions about UNIDO's overall work in China?

Yes

No

UNIDO Country programme results

In your assessment, how has UNIDO's work in China contributed to policies and strategies for Inclusive and Sustainable Industrial Development at various levels of the Chinese government?

Contribution to the adoption of new policies related to the Country Programme (CP) objectives

- No Contribution
- Limited Contribution
- Significant Contribution
- Very Significant Contribution
- N/A

Impact on the establishment or modification of regulations supporting CP objectives

- No Contribution
- Limited Contribution
- Significant Contribution
- Very Significant Contribution
- N/A

Contribution to the development or update of relevant standards such as industry standards

- No Contribution
- Limited Contribution
- Significant Contribution
- Very Significant Contribution
- N/A

Effectiveness in aligning existing partner interventions with the CP

- No Contribution
- Limited Contribution
- Significant Contribution
- Very Significant Contribution

Success in ensuring new partner interventions are aligned with the CP

- No Contribution
 - Limited Contribution
 - Significant Contribution
 - Very Significant Contribution
 - N/A
-

In your assessment, how has UNIDO's Country Programme (CP) contributed to Inclusive and Sustainable Industry Development in China?

Promoted cleaner production practices in industries

- No Contribution
- Limited Contribution
- Significant Contribution
- Very Significant Contribution
- N/A

Encouraged the adoption of energy-efficient technologies

- No Contribution
- Limited Contribution
- Significant Contribution
- Very Significant Contribution
- N/A

Reduced industrial pollution and waste

- No Contribution
- Limited Contribution
- Significant Contribution
- Very Significant Contribution
- N/A

Promoted resource efficiency in industrial processes

- No Contribution
- Limited Contribution
- Significant Contribution
- Very Significant Contribution
- N/A

Encouraged investment in green technologies and practices

- No Contribution
- Limited Contribution
- Significant Contribution
- Very Significant Contribution
- N/A

Accelerating overall green industry development

- No Contribution
- Limited Contribution
- Significant Contribution
- Very Significant Contribution
- N/A

In your assessment, what has been the impact of UNIDO's Country Programme on rural revitalization and smart agro-food systems?

Promoting the use of renewable energy and energy-efficient technologies in rural industries

- No Impact
- Limited Impact
- Significant Impact
- Very Significant Impact
- N/A

Improving resource efficiency in rural industrial processes

- No Impact
- Limited Impact
- Significant Impact
- Very Significant Impact
- N/A

Creating or maintaining employment opportunities in rural areas

- No Impact
- Limited Impact
- Significant Impact
- Very Significant Impact
- N/A

Improving access to quality agro-food products for rural populations

- No Impact
- Limited Impact
- Significant Impact
- Very Significant Impact
- N/A

Increasing the contribution of rural industries to local economic development

- No Impact
- Limited Impact
- Significant Impact
- Very Significant Impact
- N/A

Encouraging the establishment of new industrial businesses in rural areas

- No Impact
- Limited Impact
- Significant Impact
- Very Significant Impact
- N/A

Enhancing food safety standards and inspection in rural areas

- No Impact
- Limited Impact
- Significant Impact
- Very Significant Impact
- N/A

In your assessment, how did the UNIDO perform in establishing partnerships and creating synergies with relevant stakeholders?

Establishing formalized partnerships (e.g., MoUs, joint declarations)

- Unsatisfactory
- Limited
- Satisfactory
- Excellent
- N/A

Encouraging active participation of key partners in CP activities

- Unsatisfactory
- Limited
- Satisfactory
- Excellent
- N/A

Facilitating partners' contributions (financial, in-kind, expertise) to the CP:

- Unsatisfactory
- Limited
- Satisfactory
- Excellent
- N/A

Creating synergies between different partners or projects within the CP

- Unsatisfactory
- Limited
- Satisfactory
- Excellent
- N/A

Overall effectiveness in partnership development and synergy creation

- Unsatisfactory
- Limited
- Satisfactory
- Excellent
- N/A

In your opinion, to what extent does the ongoing UNIDO Country Programme for Inclusive and Sustainable Industrial Development (2021-2025) represent an improvement over previous cooperation frameworks?

- No improvement Slight improvement Moderate improvement
 Significant improvement N/A

What do you consider to be the main strengths and weaknesses of UNIDO's work in China?

Strength 1:

Strength 2:

Strength 3:

Weakness 1:

Weakness 2:

Weakness 3:

Statistical Data

Please provide [following](#) information for aggregate analytical purposes only.

What is your current role in relation with UNIDO's country programme in China?

- UN staff or consultant Government official Academic collaborator
- Private sector Project beneficiary (e.g., trainee) Other international organization
- Non-governmental organization
- Other (Please specify)

What is your age category (in years)?

- Below 21 21-25 26-30
- 31-40 41-50 51-60
- Above 60

What is your gender?

- Male Female Other
- Rather not say

Where do you currently reside?

- | | | |
|-------------------------------|------------------------------------|---------------------------------|
| <input type="radio"/> Anhui | <input type="radio"/> Beijing | <input type="radio"/> Chongqing |
| <input type="radio"/> Fujian | <input type="radio"/> Gansu | <input type="radio"/> Guangdong |
| <input type="radio"/> Guangxi | <input type="radio"/> Guizhou | <input type="radio"/> Hainan |
| <input type="radio"/> Hebei | <input type="radio"/> Heilongjiang | <input type="radio"/> Henan |
| Hong Kong | <input type="radio"/> Hubei | <input type="radio"/> Hunan |
| Inner Mongolia | <input type="radio"/> Jiangsu | <input type="radio"/> Jiangxi |
| Jilin | <input type="radio"/> Liaoning | <input type="radio"/> Macao |
| Ningxia | <input type="radio"/> Qinghai | <input type="radio"/> Shaanxi |
| Shandong | <input type="radio"/> Shanghai | <input type="radio"/> Shanxi |
| Sichuan | <input type="radio"/> Tianjin | <input type="radio"/> Tibet |
| Xinjiang | <input type="radio"/> Yunnan | <input type="radio"/> Zhejiang |
| Other (Please specify) | | |

Annex 7: Projects selected for an in-depth review.

	SAP ID	Title	Status	Total Budget (\$)	Thematic area	Specific area	Donor	Geographical coverage	Additional rationale	Has it been evaluated?	Implementation modality
1	100283	Promoting Energy Efficiency in Industrial Heat Systems and High Energy-Consuming (HEC) Equipment	Ongoing	\$ 5,375,000.00	Green Industry	Energy efficiency and renewable energy	GEF	Beijing (15 outputs)	Of the ongoing projects in the area of energy efficiency and renewable energy, this project has the highest budget, and it is funded by the GEF.	No	National Executing Entities (General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) and China Special Equipment Inspection and Research Institute (CSEI)
2	140214	Demonstration of Mercury Reduction and Minimization in the Production	Ongoing	\$ 16,499,956.24	Green Industry	Hazardous substances management	GEF	Beijing (1 output)	Of the ongoing projects in the specific area of hazardous substance	No	National Executing Entities (FECO)

		of Vinyl Chloride Monomer in China							s management, this project has the third highest budget and is funded by the GEF. Note: the project with the second largest budget is very similar to the project with the highest budget.		
3	140386	HCFC Phase-Out Management Plan (Stage II) (RAC sector)	Ongoing	\$ 36,012,934.42	Green Industry	Hazardous substances management	MP, Italy	Beijing (9 outputs)	Of the ongoing projects in the specific area of hazardous substances management	No	

									ent, this project has the highest budget and is funded by the Montreal Protocol and Italy.		
4	150073	POPs and chemical pollution solutions through area-based-eco-effective-management	Ongoing	\$6,000,000.00	Green Industry	Hazardous substances management	GEF	Tianjin (7 outputs)	This project has less budget, but is implemented outside Beijing, in Tianjin municipality, which could show the performance of the project in the countryside beyond the traditional	Yes (although the project evaluation was finalized during the review phase of this report, therefore the project evaluation was not consulted)	

									economic centers.		
5	190320	Supporting the establishment and development of the International Hydrogen Energy Centre	Ongoing	\$ 3,536,406.79	Green Industry	Energy efficiency and renewable energy	RPTC China	Beijing (1 output)	Of the ongoing projects in the area of energy efficiency and renewable energy this project has the second highest budget and is funded by China (RPTC).	No	
6	220006	Improving agro-industrial value chain and supervision capacity in Quannan, China	Ongoing	\$ 1,000,000.00		Agroindustry and food safety	China	Quannan	Although there is another project with a higher budget in this specific area, the relevance	No	

									of this project is that it is funded by China, which could be useful to analyze the role of China as a donor.		
7	104147	Environmentally sound management and disposal of obsolete POPs pesticides and other POPs wastes in China	Operationally completed	\$9,956,886.65		Hazardous substances management	GEF	13 provinces and cities (Hunan provincial EPD, Zhuzhou city EPB; Xiangtan city; Beijing)	This project has the second largest budget of the operationally completed projects in the hazardous substances management area. It has been evaluated and found to be highly	Yes	

									relevant, and its overall performance was rated as highly satisfactory. It was funded by the GEF.		
8	105064	HCFC Phase-out Management Plan in Room Air-conditioner Sector in China # Stage I	Operationally completed	\$ 74,977,736.74		Hazardous substances management	MP		This project has the highest budget of all the projects implemented by UNIDO in China in the period under evaluation.	No	
9	140196	Upgrading of China Small Hydropower (SHP) Capacity Project	Operationally completed	\$ 9,124,918.66	Green Industry	Energy efficiency and renewable energy	GEF	Beijing, Guangxi, Zhejiang, Yunnan, Hubei, Chongqing, Fujian	This project has a high budget and has been implemented in	Yes	

								and Shaanxi.	several cities in China.		
10	150157	Integrated adoption of New Energy Vehicles in China	Operationally completed	\$ 9,127,633.90	Green Industry	Energy efficiency and renewable energy	GEF	Shanghai and Qingdao	This project has a high budget, has been implemented outside Beijing and has a 2A gender marker. It has been evaluated and rated as highly satisfactory and highly relevant.	Yes	
11	170162	Applying the eco-design principles to industrial design in China	Operationally completed	\$ 522,873.18	Green Industry	General	RPTC, China	Guangdong, Jiangsu, Zhejiang (or Beijing 7 outputs)	The relevance of this project is that it has been funded by China (RPTC).	No	

1 2	1802 35	Improving agricultural practices and capacity for poverty alleviation in Quannan, China	Operationally completed	\$ 746,958.17	Food Safety Comp.	Agroindustry and food safety	China	Quannan	This project, operationally completed, appears to be the only one that has addressed the area of agroindustry and food safety. It also has a 2A gender marker.	No	
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Annex 8. Implementations of recommendations made by previous countries and project evaluations.

Country Programme Evaluation:

Recommendation	Status
Administration:	
UNIDO should as soon as possible decentralize project decision-making to the Regional Office in Beijing. This would imply that the project management authorities should be (at least partly) based in Beijing to ensure a closer and more direct hands-on cooperation with the Chinese counterparts and more expedient handling of prevalent issues.	Not implemented
When the Project Managers sit in Beijing RO, “Focal Point Officers” (or “Deputy Project Managers”), should be appointed in HQ Vienna, to be the main communication link with the PM and ensure that the required backstopping services to the projects are given by UNIDO HQ. In such set-up, the UNIDO HQ will still play an important role as center of excellence and would provide the technical expertise to the projects on request from the RO/PMs in Beijing.	Not implemented
The staffing of the RO in Beijing must reflect this new hands-on management mandate of the office. Both international/national staff should generally have a broad environmental project management background, being experienced in formulating, planning and implementing/monitoring various kinds of projects.	Not implemented
There would be a need to have a couple of staff with specialized sector knowledge, depending on the focus areas decided to be pursued by the office. Also skilled staff with Chinese language skills would be needed to ensure proper monitoring of national execution processes, e.g. Chinese tendering processes.	Not implemented
The international staff that have left (e.g. two Industrial Development Officers), or who will be leaving, should be replaced (e.g. covering the theme of climate change/energy efficiency).	Unknown
UNIDO should consider using the national implementation modality applied under Component 5 also for other projects in China (i.e. leaving more responsibility to the Chinese partners), thus identifying other institutional partners with similar capacities as MEP/FECO.	Partly implemented
Procurement:	
Consideration should be given to delegating more procurement responsibility to the RO, including setting a higher threshold for such local procurement. UNIDO should benchmark with other similar agencies here, notably UNDP that has set the limit to USD 50,000 (around € 34,000 equivalent), whereas UNIDO today uses €20,000. This would require that procurement expertise is maintained at the RO. The concrete modality should minimize the risks associated with decentralized procurement and separate project implementation responsibility from procurement decisions.	Not implemented
UNIDO and FECO should together explore the possibilities if instigating a more flexible procurement modality (especially on MP and POPs projects) by e.g. involving institutions/companies more in the procurement process. Decisions on procurement delegation to counterparts could be taken on a case-to-case basis, depending on the nature of the project, the performance and record of the local partners, etc. Proper monitoring and control mechanisms must be prepared and	Not implemented

implemented, avoiding UNIDO staff wasting time on small procurements, but at the same time following closer the larger contracts. With relevant procurement expertise in the UNIDO RO, such flexibility would also reduce the time and cost of procurement.	
Reporting:	
A “one-line” reporting from the RO China to the HQ should be instigated. The UR, who would have the total overview of all the UNIDO operations in the country, will be responsible for the reporting. Routines for internal reporting by the various officers/PMs in the RO to the UR and standardized reporting formats would thus have to be prepared. Likewise, feedback from the HQ to the China operations should go to the UR, and project specific information/correspondence would go directly to the PM, copied to the UR as required.	Not implemented
The Country Programme:	
The UNIDO project activities in the non-environmental fields should gradually be concentrated on fewer thematic areas than today, and also clearly be limited to fewer provinces, both in order to initiate possible synergies between projects and to ease monitoring. UNIDO projects should also target areas where they can be “pilots” or “models” to other projects, being replicated at a larger scale by Chinese partners. Such “sharpening” of the UNIDO scope in China must clearly be based on the felt needs of the Chinese partners and must be developed based on a participatory approach. The area of food safety seems to be a promising candidate for future thematic focus in the non-environmental field.	Unknown
The Country Programme should in the future be used as a strategic tool also to plan the use of IDF funds and UNIDO Seed Funds in a more “targeted” way to support project development in the geographic and thematic focal areas chosen.	Unknown
UNIDO should further build upon the good results achieved so far in the area of food safety. Efforts should be made to mobilize additional funding from national and international sources. For future activities it is recommended to reconsider the strong focus on exporting enterprises and target smaller companies and local consumers/markets. With regard to the regional focus, it is recommended to also target Western and North-eastern regions of China. As poverty alleviation is the overarching objective of UNIDO activities, the focus on poverty should be sharpened and more profoundly addressed. To achieve this, strong key Chinese governmental funding and implementing partners should be identified and standardized UNIDO methodologies and approaches, such as Cluster Development or Value Chains, should be promoted and applied.	Unknown
The RO’s role in project identification could be strengthened. This will hopefully automatically be a positive impact from relocating dedicated PMs to Beijing and decentralize decision-making, but it could also be improved by developing “call for proposals” to access IDF funding in targeted thematic/geographical focal UNIDO areas. At the same time minimum co-funding ratios for IDF funded projects could be defined.	Not implemented
The UNIDO centers:	

Full responsibility of projects supporting centers' operations should be with the China RO. Some UNIDO centers need to be backed up by substantial technical assistance from UNIDO HQ (e.g. renewable energy) and cooperate closely with relevant UNIDO worldwide programmes.	Not implemented
A distinction should be made between "UNIDO Centers" (e.g. ITPOs) and "UNIDO Partner Centers" (e.g. ICSHP and IHEC). The former should have a strong thematic link to UNIDO key areas and be under UNIDO control. The latter could have a thematic link to UNIDO, receiving some "hands-on" guidance from UNIDO on the operations, but without the close formal institutional link and UNIDO control.	Partly implemented
Minimum requirements for capacity and quality, procedures for quality control and mutually binding agreements between UNIDO and "partner" centers, should be introduced as soon as possible.	Implemented
The ITCs, where such "quality assurance" does not apply (e.g. ICM, SITPC, IMR), should be removed from the list of UNIDO ITCs (and must stop using UNIDO name and logo, as they are not affiliated with UNIDO anymore).	Unknown
Such centers could however (voluntarily) participate in a UNIDO network maintained by the South-South Cooperation Center and maybe graduate to "UNIDO Partner Centers" later.	Unknown
There should be a clear strategy to "market" both the "UNIDO Centers" and the "UNIDO Partner Centers" in Vienna and in other UNIDO COs, for services to be utilized in other developing countries, and appropriate information material should be prepared.	Not implemented
The use of the UNIDO/UN logo in the centers should be closely monitored and "creative" new designs of the UNIDO logo should not be allowed.	Partly implemented
When defining the future relationship between UNIDO and centers in China, the recommendations of the "Thematic Evaluation of UNIDO International Technology Centers" should be taken into account.	Unknown
The RO, through the UNIDO South-South Center, should in general concentrate more efforts in facilitating south-south cooperation with focus on Africa, especially in encouraging local production capacities on appropriate affordable technologies. An important part of this would be producing marketing material (on paper and web) and raise awareness in the HQ and especially in the UNIDO COs on the possibilities of cooperation with Chinese (UNIDO) centers.	Not implemented

Projects:

Project ID	Year of evaluation	Recommendation	Status
104036	2017	2. For future projects, UNIDO should establish the respective baseline, and allocate the necessary resources for it. A solution for the measurement of such baseline could be through the adoption of standardized WHO / UN method for the measurement of HCW in hospitals already at PPG stage (for instance the Individualized Rapid Assessment Tool developed and	Implemented

		adopted by UNDP for the measurement of HCW management in various stages of project implementation.	
104036	2017	1. UNIDO, in cooperation with the Government of China, should consider use the capacity and infrastructure developed under this project on Environmentally Sound Management of healthcare waste as a demonstration and resource for the training and assistance to similar initiatives in other developing countries.	Ongoing
104147	2018	1. It is critical to ensure the proper protocols for feeding of POPs and fly ashes are observed, in terms of sufficiently high temperature at feeding point, adequate resident time for POPs or fly ash at appropriate temperature and proper training of kiln staff on hazardous waste management.	Implemented
104147	2018	2. Heavy metals present in fly ashes or wastes need to be appropriately assessed and controlled including long term considerations over the life cycle, in addition to POPs.	Implemented
130176	2019	1. As the science and technology around POPs evolves, UNIDO should maintain a relationship with the current group of NIP experts and managers in P.R. China, even if informal. Given the high level of expertise built through the development of the original NIP and the NIP update, it is recommended to:	
130176	2019	2. UNIDO and China should cooperate to continuously update industry on which chemicals are newly identified as POPs and work to ensure that BAT/BEP technologies and practices are flowing into China from abroad to ensure fast and effective detection and avoidance of those POPs, whether they are intentionally produced or unintentionally. Companies require a pipeline of best technologies in order to ensure that UP-POPs are either avoided or not spread into the environment if they are produced.	
130176	2019	3. Although UNIDO has tools that may be useful for national implementing organizations to use in the implementation of their projects, the identification of specific tools in the outcomes or outputs of project logframes should be avoided so as to avoid confusion if other equally effective measures are identified by the project implementer as more locally appropriate.	
130176	2019	4. UNIDO can work with partners to continuously shift the understanding of gender mainstreaming in development and ensure the inclusion of women not just as government decision makers and employees but also as participants in all levels of society that may not have had their exposure to pollutants researched or described in-depth in the past. Gender	

		mainstreaming should recognize the gap that exists in the technical and medical sciences with regards to how women's bodies are different from men's not just for reproductive purposes but also for their own inherent health and well-being, and how their daily lives and gender roles expose them in different ways to pollution.	
130176	2019	5. UNIDO should work with partners where possible to establish high-quality monitoring systems for the ambient levels of UP-POPs and develop communications strategies and methodologies to raise the awareness in the general public about those monitoring systems so as to avoid improper levels of public concern. Increased awareness and understanding in the general public should allow communities to make informed decisions and avoid unnecessary exposure to pollutants where possible.	
104037 (3263)	2015	1. Promoting the replication of demonstration pilots;	Implemented
104037 (3263)	2015	2. Ensuring continued awareness raising/education and monitoring activities;	Ongoing
104037 (3263)	2015	3. Facilitating further integrated cooperation between national and provincial authorities so as to not lose momentum gained and capacities developed;	Ongoing
104037 (3263)	2015	4. Considering developing mechanisms to facilitate the further development and promotion of the Technology Transfer Promotion Center (TTPC) to ensure widespread reach to all provinces.	Implemented
104037 (3263)	2015	5. Continuing to proactively support the Government of China (GOC) as it seeks to design new programmes to address evolving Stockholm Convention (SC) targets;	Ongoing
104037 (3263)	2015	6. Maintaining close ties to the Technology Transfer Promotion Center (TTPC) in order to:	Implemented

104037 (3263)	2015	7. Carrying out an impact evaluation in the near future (five years) as the size of this project would be ideal for this exercise and could provide valuable lessons for future work in China.	Closed/Not Implemented
100338	2016	1. The first achievement that baseline data on mercury release and reduction has been generated in a joint effort by the government and the enterprises implies that follow-up activities have to be put in place to stabilize the collaboration, monitor the trends and make interventions as necessary.	Implemented
100338	2016	2. Since the project outcomes generated an important reference for MEP to make policy and standards for mercury control in zinc sector, these experiences should be widened-up to include other non-ferrous metal industries, especially lead and copper since these processes also build upon ore concentrates and may encounter the same challenges as the zinc sector. It can be hoped that also the solutions from this project will assist in the development of BAT/BEP in related industries.	Implemented
100338	2016	3. It is highly recommended that MEP FECO, UNIDO and the BAT/BEP mechanisms under the future Minamata Convention on Mercury collaborate to gather the most actual and complete information as to the economic dimension of zinc production and technologies.	Implemented
100338	2016	4. To take a more active role in seeking cooperation with other GEF implementing agencies in the country networks in this field. The recommendation relates especially to projects that are implemented in the same country. See evaluation report for additional details regarding this recommendation.	Ongoing
100338	2016	5. MEP/FECO to more actively link related projects. MEP/FECO project manager to establish an exchange mechanism between staff at executing agency and with external partners. Costs will be negligible or zero since such exchange and updating can be done electronically. Setting up a “virtual” repository containing contact details and progress reports as well as finalized outputs would also benefit the exchange between implementing and executing agency. The usefulness is greater for the technical content and does not need to contain details on project or finance management.	Implemented

Annex 9. Technologies developed or adapted to support the development of green industry and green industrial transformation.

Technology	Purpose	Description	Number of companies that have participated in the adoption of the technology
Low-mercury catalyst	Reduce mercury consumption and pollution in the production of Vinyl Chloride Monomer to contribute to compliance with the goals of the Minamata Convention	The technology has been demonstrated under the project <i>Demonstration of Mercury Reduction and Minimization in the Production of Vinyl Chloride Monomer in China</i> (UNIDO ID 140214). The technology involves the application of BAT/BEP (Best Available Techniques/Best Environmental Practices) consisting of the use of feed gas dehydration technology to reduce the use of mercury, a catalytic exchanging system and a high efficiency mercury remover to control the mercury releases, and hydrochloric deep desorber technology to increase HCl removal rate and the mercury-contaminated wastewater treatment technology. The low-mercury technology was a result of R&D carried out by Chinese enterprises.	4 Demonstration enterprises and the project has promoted the technology in 6 additional enterprises.
Compressor for R-290 and other key components	Contribute to the conversion from HCFC-22 technology to R-290 technology in the room air-conditioning (RAC) sector and contribute to meeting Montreal Protocol goals.	R-290 is a hydrocarbon gas that does not affect the ozone layer and has a low Global Warming Potential (GWP). The compressor, which is a key component of the supply chain to produce room air conditioners, has been developed by Chinese manufacturers with the support of project-funded research studies, including safety studies as the gas is highly flammable.	8 Enterprises participating in the project were considered for the calculation of CO ₂ eq reductions. In total, 12 Enterprises have participated in the projects and converted to R-290 technology. There are 30 RAC

			manufacturing companies in China.
CO ₂ co-blowing technology		Optimized CO ₂ CO-blowing technology has been chosen for the HCFCs phase-out in extruded polystyrene foam sector. Using CO ₂ as main blowing agent, co-blowing with one or two other blowing agents with 0 Ozone Depleting Potential, low Global Warming Potential, low molecular weight and moderate boiling point and high solubility. This technology has been used under the HCFC phase-out management plan (stage II) (extruded polystyrene foam sector) project.	13
Microbial enhanced oil recovery; petroleum sulfonate viscosity-reducing oil drive technology, and CO ₂ green oil drive and foam modulation drive technology Mesh grid anode plate technology to reduce the consumption of lead raw materials; internalization of electrode processing technology to reduce sulfuric acid consumption: adopting the closed oxygen-enriched vertical furnace technology to improve the recycling rate of lead; and wet ammonium bicarbonate desulfurization process to produce sulfuric acid ammonium fertilizer	Reduce the use of Alkylphenol ethoxylates (AP) and other chemical oil repellent in the crude oil exploitation industry. Reduce the consumption of lead raw materials and sulfuric acid, improve the recycling rate of lead, and produce fertilizers in the lead-acid battery recycling and manufacturing sector.	POPs and SAICM concerning chemicals have been addressed through the POPs and chemical pollution solutions through area-based-ecoeffective-management project (UNIDO ID 150073). The technologies used in the project have been developed in China. For the crude oil industry, the Shengli Oilfield Research Institute of Oil Production Technology is working for the Sinopec Shengli Oilfield, providing innovative technologies such as microbial enhanced oil recovery, petroleum sulfonate viscosity reduction and carbon dioxide foam enhanced oil recovery. For the lead-acid industry, since GS Battery and Toho Lead Recycling are Sino-Japanese joint enterprises, the technologies adopted may receive technical support from the Japanese team.	3 Enterprises

	Contribute to phase out DecaBDE used in the outer polypropylene container as fire retardant		
Hydrogen fuel cell commercial vehicles	Reduce air pollution and GHG emissions	<p>Through the supporting the establishment and development of the International Hydrogen Energy Centre project, there have been the following demonstrations:</p> <ul style="list-style-type: none"> - 444 fuel cell buses in Zhangjiakou - 724 fuel cell buses used in the transportation of people participating in the Beijing Olympic games. It was the first complete demonstration of large-scale, high-intensity safe operation of fuel cell vehicles in extremely cold and high-altitude areas - 100 fuel cell delivery vehicles in Daxing District of Beijing where the world's largest hydrogen refueling station was built with 4.8 tons of hydrogen per day. <p>There are several ongoing demonstrations for comprehensive solutions for green products in chemical industry, metallurgy, green power and heating.</p>	9 Incubated and cultivated enterprises in the IHEC, all of which are core R & D enterprises in the industrial chain of hydrogen production, hydrogen storage, hydrogen refueling, fuel cells, energy storage and power generation
Water-washing technology for fly ash: removing chloride in the ash with the aim of co-processing fly ash by cement kiln. Cement kiln co-processing technology: destruction of POPs wastes (DDT/HCH)	Eliminate POPs wastes and remediate POPs contaminated soil.	<p>The 5 state-of-the-art techniques were used or were developed and locally adopted by participating firms and government under the project: Environmentally sound management and disposal of obsolete POPs pesticides and other POPs wastes in China.</p> <p>Water-washing technology: The technology involves a water-washing pre-treatment to remove alkali chlorides. This pretreatment is used to produce ordinary cement</p>	

<p>Fly ash sintering technology: for disposal of incinerator fly ash</p> <p>Thermal desorption and solidification: eliminate POPs (DDT/HCH) and heavy metal from contaminated soil</p> <p>Ball Mining (MCD): for POPs (DDT/HCH) contaminated soils</p>		<p>clinkers in which part of the raw material is substituted with dechlorinated fly ash.</p> <p>Cement kiln co-processing technology is widely adopted in many industrial and some developing countries and China also adopted to destroy POPs wastes with some adaptations to improve effectiveness. Waste is used either as a supplementary fuel or substitute for other raw materials, and the high temperature destroys hazardous waste.</p> <p>Fly ash sintering technology: it involves the production of Base Building Materials by sintering of waste incineration fly ash at high temperature. During the development of the process 14 patents were submitted.</p> <p>Thermal desorption and solidification: it is a remediation technology that utilizes heat to increase the volatility of contaminants such that they can be removed (separated) from the solid matrix (typically soil, sediments or sludge). China adopted and adapted this technology.</p> <p>Ball Mining: Mechanochemical Destruction (MCD) technology was introduced and demonstrated as a non-incineration technology. It can degrade POPs. It can realize the reaction between POPs wastes and the reagent in sealed mills. Supported innovative frontier research on MC technology at Tsinghua University was carried out.</p>	
<p>Tetrabromobisphenol A-bis (2,3-dibromo-2-methylpropyl ether (TBBPA-DBMPE)</p>		<p>TBBPA-DBMPE is a recommended substitute for hexabromocyclododecane (HBCD). This is a substance produced by in-depth processing of TBBPA. The physical properties of DBMPE allow it to maintain high stability under high temperatures and strong ultraviolet irradiation.</p>	<p>3 Enterprises</p>

<p>Brominated styrene-triblock butadienestyrene copolymer (Br-SBS)</p>		<p>Br-SBS is a large polymeric brominated flame retardant jointly developed by some overseas countries and largely used as a substitution for HBCD in the U.S, European countries, Japan and some western Asian countries.</p> <p>These alternatives have been used under the Improvement of the Environmental Performance of the Foam Sector: Phase out and Management of HBCD in China project.</p>	
<p>Continuous pyrolysis, intermittent pyrolysis and rotary kiln incineration Alternatives to incineration: high-temperature steam (autoclave) disinfection, chemical disinfection and microwave disinfection</p>		<p>BAT/BEP research & development and demonstrations were carried out with three kinds of pyrolysis and incineration process and three kinds of non-incineration treatment technology. This work was conducted under the Environmentally Sustainable Management of Medical Wastes in China project.</p>	<p>170 disposal centers and more than 1,500 hospitals participated in the project.</p>
<p>Several alternative substances</p>	<p>Phase-out of methyl bromide production and contribute to meeting Montreal Protocol goals.</p>	<p>Through R&D, the following alternatives have been demonstrated to replace methyl bromide:</p> <ul style="list-style-type: none"> - allyl isothiocyanate - DMDS - dazomet - 97% dazomet + thiazole phosphonic particle agent (96 + 1) sulfuryl fluoride - indian melia japonica water. 	<p>The compensation projects have been carried out to three methyl bromide producer enterprises.</p>
<p>Vehicle to Grid (V2G) technology</p>	<p>Incorporate renewable energy to the national grid contributing to</p>	<p>V2G is a new technology for China, which allows car batteries to give back to the power grid. This technology was demonstrated through the Integrated adoption of New Energy Vehicles in China project. To use this technology were also used charging stations capable of</p>	<p>30</p>

	reduce pollution and GHG emissions	supporting renewable micro-grid to energy vehicles charging. Energy management data centers were also created in the two pilot cities enabling extensive real-time data collection, which in turn supported the efficient management of charging networks. In addition, mobile stations repurposed (including retired and reconditioned) EV battery packs to provide charging services were used.	
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