INDEPENDENT EVALUATION DIVISION
OFFICE OF EVALUATION AND INTERNAL OVERSIGHT

# INDEPENDENT TERMINAL EVALUATION

# INDONESIA

# NATIONAL RESOURCE EFFICIENT AND CLEANER PRODUCTION (RECP) PROGRAMME IN INDONESIA

UNIDO PROJECT ID: 100224

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**Evaluation Team:**
Mr. Aaron E. Zazueta, Evaluation Team Leader
Mr. Dadang Setiawan, National Consultant, team member

## List of acronyms and abbreviations

| Abbreviation | Meaning |
|---|---|
| ADB | Asian Development Bank |
| CADGIE | Centre for Assessment and Development of Green Industry and Environment |
| CEFS | Centre for Environment and Forestry Standards |
| CHF | Swiss Francs |
| CP | Cleaner Production |
| CRECPI | Centre for Resource Efficient and Cleaner Production Indonesia |
| CTA | Chief Technical Advisor |
| CTB | Center for Textile Bandung |
| C2C | Cradle-to-Cradle |
| DAC | Development Assistance Committee |
| GC&E | Green Chemistry and Engineering |
| GEES PT | Ganesha Environment and Energy Services |
| GDP | Gross Domestic Product |
| GI | Green Industry |
| GIR | Green Industry Roadmap |
| GIS | Green Industry Standard |
| GiZ | German Agency for International Cooperation Gesellschaft für Internationale |
| ICPC | Indonesia Cleaner Production Centre |
| IGIDC | Indonesian Industry Development Centre (planning name for CRECPI) |
| IS | Industrial Symbiosis |
| ISID | Inclusive and Sustainable Industrial Development |
| ISO | International Organization for Standardization |
| ITB | Bandung Institute of Technology |
| JICA | Japan International Cooperation Agency |
| KADIN | Indonesian Chamber of Commerce and Industry |
| KfW | German Development Bank Kreditanstalt für Wiederaufbau |
| MoEF | Ministry of Environment and Forestry |

| Abbreviation | Meaning |
|---|---|
| MoEMR | Ministry of Energy and Mineral Resources |
| MoI | Ministry of Industry |
| MoT | Ministry of Tourism |
| NCPC | National Cleaner Production Centre |
| NCPP | National Cleaner Production Programme |
| NGO | Non-Governmental Organization |
| NRECPI | Network for RECP Indonesia |
| OECD | Organization for Economic Cooperation and Development |
| PD | Project Document |
| PMC | Project Management Committee |
| ProLH | Indonesian-German Environmental Management Program |
| PSC | Programme Support Cost |
| RBM | Results-Based Management |
| RCC R | RECP Coordination Committee |
| RECP | Resource Efficient and Cleaner Production |
| SCORE | Sustainable, Competitive and Responsible Enterprises |
| SCP | Sustainable Consumption and Production |
| SECO | State Secretariat for Economic Affairs (The Government of Switzerland) |
| SMART | Specific, Measurable, Achievable, Realistic and Time-bound (indicators) |
| SMARTFish | Sustainable Market Access through Responsible Trading of Fish in Indonesia |
| ToR | Terms of Reference |
| UN | United Nations |
| UNDAF | United Nations Development Assistance framework |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNIDO | United Nations Industrial Development Organisation |
| USAID | United States Agency for International Development |
| USD | United States Dollars |
| ZDHZ | Zero Discharge Hazardous Chemicals |

## Glossary of evaluation-related terms

| Term | Definition |
|---|---|
| Baseline | The situation, before an intervention, against which progress can be assessed. |
| Effect | Intended or unintended change due directly or indirectly to an intervention. |
| Effectiveness | The extent to which the development intervention's objectives were achieved, or are expected to be achieved. |
| Efficiency | A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results. |
| Impact | Long term effects produced by a development intervention--positive and negative, intended and non-intended, directly and indirectly. |
| Indicator | Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention. |
| Lessons learned | Generalizations based on evaluation experiences that abstract from the specific circumstances to broader situations. |
| Logframe (logical framework approach) | A management tool used to facilitate the planning, implementation, and evaluation of an intervention. It involves identifying strategic elements (activities, outputs, outcome, impact) and their causal relationships, indicators, and assumptions that may affect success or failure. Based on RBM (results-based management) principles. |
| Outcome | The likely or achieved (short-term and medium-term) effects of an intervention's outputs. |
| Outputs | The products, capital goods and services which result from an intervention; they may also include changes resulting from the intervention which are relevant to the achievement of outcomes. |
| Relevance | The extent to which the objectives of intervention are consistent with beneficiaries' requirements, country needs, global priorities, and partners' and donors' policies. |
| Risks | Factors, generally outside the scope of an intervention, which may affect the achievement of an intervention's objectives. |
| Sustainability | The continuation of benefits from an intervention, after the development assistance has been completed. |
| Target groups | The specific individuals or organizations for whose benefit an intervention is undertaken. |
| Theory of Change | A set of hypotheses on how and why an initiative works. |

## Executive summary

### Project factsheet

| | |
|---|---|
| Project title | National Resource Efficient and Cleaner Production (RECP) programme in Indonesia |
| UNIDO project No. and/or ID | Project No. 100224 |
| Region | Asia |
| Country(ies) | Indonesia |
| Planned implementation start date | 05 June 2012 |
| Planned implementation end date | 30 June 2017 |
| Actual implementation start date | December 2012 |
| Actual implementation end date | 30 June 2020 |
| Executing partner(s)/entity(ies) | Indonesia Cleaner Production Center (ICPC); Institute of Technology Bandung (ITB); Centre for Textiles Bandung (CTB); and Centre for Assessment and Development of Green Industry and Environment (CADGIE) |
| Donor(s): | SECO (Swiss State Secretariat of Economic Affairs) |
| Total project allotment | Grant 200001268 RECP Indonesia:<br>3,893,636.23 USD (forecasted at the exchange rate of the first installment)<br>(3,714,545.84 USD) funds received at actual exchange rates)<br>Grant 200001121 RECP Global:<br>118,433.00 EUR |
| Mid-term review date | 10-19 October 2016 |

Source: Project document, revised version 2015

The long-term objective of the Indonesia National Resource Efficient and Cleaner Production (RECP) Programme was to improve resource productivity and environmental performance of manufacturing, tourism, and micro-sector enterprises in Indonesia, and thereby contribute to inclusive and sustainable industrial development in the country. This objective would be achieved through the widespread implementation of RECP policies, technologies, and practices by enterprises, governments at all levels, by other organizations, and by developing capacities of RECP services providers, including for their technology and finance.

Based on the project document updated in May 2015, the project had five components with the following outcomes:

- ***RECP Capacity and Network.*** This outcome included the development of professional and institutional capacity for adapting and promoting the broad adoption of RECP methods, practices, and technologies.

- ***RECP Implementation and Replication.*** This included the implementation of RECP opportunities through support services customized to enterprises in the target sectors, namely: Textile and garment, tourism, food processing, metal products, micro enterprises and industrial zones.
- ***RECP Policy and Regulatory Framework*.** This included policy frameworks that foster the utilization of RECP methods, practices and technologies to support RECP in specific sectors of industry.
- ***RECP Technology and Innovation.*** The objective of this component was to increase the availability and affordability of suitable RECP technologies for the target enterprise groups, particularly those contributing to and/or inspired by Industrial Symbiosis (IS), Green Chemistry and Engineering (GC&E) and Cradle to Cradle.
- ***RECP Investment and Finance.*** This component intended to help develop the appropriate financial instruments to support RECP investments in the target enterprise groups, with the participation of financial intermediaries.

UNIDO designed the project during 2010, with the initial start date of June 2012 but negotiations led to a later date of December 2012. The project was originally scheduled to close in June 2017, but delays in the appointment of the first Chief Technical Advisor (CTA) and two subsequent changes of CTAs led to three project extensions. The project is now scheduled to close in June 2020. The project had a budget of 3,893,636 USD, including 3,714,545 USD from the State Secretariat for Economic Affairs (SECO) from the Government of Switzerland and a grant of 118,433 EUR from the Global RECP programme also fully funded by SECO. As of 30 September 2019, the project had used 3,081,380 USD.[1] The Project Management Committee (PMC) is the steering body of the project and consists of representatives from the Ministry of the Environment and Forestry (MOEF), the Ministry of Industry (MOI), and SECO (the donor). A representative of the Ministry of Tourism (MOT) was added to the PMC during project implementation. The UNIDO Representative to Indonesia, a representative of the Indonesia Cleaner Production Center (ICPC), and the Chief Technical Advisor (CTA) are also ex-officio members of the PMC with no voting rights. By the time the evaluation started in late 2019, the PMC had met 11 times.

The project helped improve resource productivity and environmental performance in enterprises in the targeted sectors. This included training activities of 727 enterprises on RECP and industrial symbioses. The project also carried out demonstrations in at least 149 enterprises. Of these enterprises, the project records had information available for specific RECP activities, investments and results of 81 enterprises. Many options for improvement identified during the RECP audits and implemented by the participating enterprises were low hanging fruits such as changes related to good housekeeping (34%), better process control (23%) and onsite reuse and recycling (12%). Recommendations that required some investments were mostly related to technology change (15%) and equipment modification (7%). The project carried out capacity development activities in 11 provinces that included at least 2,737 participants in 139 events that trained at least 77 RECP professionals from enterprises, government and academia. Training, which took place at the national and provincial levels was carried out by national and international experts.

[1] Originally the grant from SECO was forecasted of 3,893,636.23 USD but funds received at actual exchange rates was of 3,714,545.84 USD.

**Table 1: Annual Environmental and Financial Benefits of RECP**

| Item | Value | Unit | Saving (USD/year) |
|---|---|---|---|
| Energy Reduction Textile & garment | 273,021,324 | MJ/year | |
| Electricity | 63,869 | MWh/year | 7,025,596 |
| Wood | 1,559 | tones/year | 31,173 |
| Coal | 123,919 | tones/year | 9,293,920 |
| Diesel | 895,704 | liter/year | 537,423 |
| Water | 2,580,234 | m3/year | 1,032,094 |
| Wastewater Gen | 2,162,987 | m3/year | 432,596 |
| Recycling Water | | | 224,783[2] |
| **Total Textile and garment** | | | **18,670,718** |
| **Total other sectors** | | | **946,360** |
| **Total Financial benefits** | | | **19,617,078** |

In total the participating firms invested just over 10 million dollars to implement the identified opportunities with a total return of 19.6 million dollars. Without considering operational costs or maintenance costs this would represent a net present value (NPV) over a ten-year period of around 60 million dollars[3]. The number of RECP opportunities and extent of improvements achieved varied widely among the different sectors addressed by the project and the type of firms the project supported. The RECP assessments identified a high number of opportunities for eco-efficiencies in the textile and garment sector. Much of the savings realized in the sector were from energy consumption reduction, which was over 273 million joules per year which is equivalent to a reduction of 352,282 tons of CO2 emission. When accounting for the price of CO2 in the European market, the value of the GHG emission reduction accomplished by the participating enterprises comes to 9.7 million dollars[4]. The garment and textile sector had the most participation in the project in large part because H&M – one the larger garment retailors in the world – required its local suppliers to start working towards Zero Discharge Hazardous Chemicals (ZDHZ) compliance certification. In addition to the accomplishments in the textile sector the project recorded in other sectors a more efficient use of water, a reduction of waste water and increase in water recycling.

While the project helped specific enterprises adopt RECP, Cradle-to-Cradle (C2C) and IS approaches, particularly in the textile and garment sectors, its contributions to the enabling conditions for the widespread adoption of RECP were modest and unlikely to be sustainable. Most benefits of the projects have taken place through stakeholders directly reached by the project. While the project supported the formation of a RECP Network in Indonesia that has a membership of around 140 persons, most of these members are part-time RECP professionals and have various levels of expertise. The project also supported ICPC to become an independent organization that would provide RECP support services and training to enterprises. Yet the organization is in its early stages of development and while there are

[2] Estimate provided by the project
[3] NPV was calculated using the total cash flow estimated by the investments over a 10 year period considering a discount rate of 10%.
[4] Value of 25EUR per ton as of February 29, 2020.

some short-term prospects for subcontracts, funding in the long-run is uncertain. So far only the H&M supply chain is likely to function as robust mechanisms in place to support replication, mainstreaming or scaling up of project results. Thus, while the broader adoption of RECP in this supply chain is likely to result in considerable environmental benefits, the economic benefits that will be generated are likely to be for those sectors involved in this supply chain. Missing conditions for a broader adoption of RECP are: 1) a center or several centers of national cleaner production that are technically robust, acknowledged for their RECP excellence, and are financially sustainable; 2) robust capacities in the national and provincial governments to continue supporting the adoption of RECP and enforce regulations; 3) a regulatory framework that provided incentives for the adoption of RECP; and 4) the availability of financial resources that can support the development and adoption of technology by medium, small and micro enterprises. While UNIDO cannot be held responsible for the low capacities of national and provincial governments, the weak regulations and the lack of financial support mechanisms, these are key areas in which barriers need to be removed if widespread adoption of RECP is to take place more widely across sectors. These are conditions that are not likely to come about without a strong government commitment to carry out the needed reforms and an area in which international organizations like UNIDO can contribute by cultivating the necessary political will.

This project helped pioneer a new generation of UNIDO RECP projects informed by the experience of 2.5 decades of UNIDO support to RECP (and its predecessor concepts) in developing countries which indicated that to achieve a wide spread adoption of RECP, projects needed to overcome barriers in the context in which enterprises operate. The original approach proposed by the project was no longer limited to RECP demonstrations at the enterprise level and to the strengthening of a NCPC. The broader conditions affecting the incentives to enterprises would also need to be addressed. This made the case for a much more comprehensive but also more complex operation. However, several factors hampered the development of the project from the start. These factors include tradeoffs made during project design in the selection of the sectors that would be targeted, a prolonged inception phase and delays in the appointment of the CTA. But also, some assumptions during project design proved not to be present. One is the existence of a cadre of specialists, institutions and examples that the project builds on to adopt a broader strategy for the promotion of RECP in the country. And the other is a robust commitment within the country to the necessary changes to transition to green industry. The project thus had to focus on building capacities and supporting examples of RECP adoption by local enterprises. Given the delays experienced by the project, by mid-term the PMC decided to reduce the number of localities and sectors in which the project was engaged. This was a sensible decision as the project reach may have expanded too wide. But at the same time the PMC also emphasized the need to move away from addressing broader system barriers and instead to focus on achieving impacts that were sustainable. This required the project to give more attention to demonstrate resource efficiency and pollution reduction in specific enterprises and move away from activities that addressed long-term transformation at a broader level.

**Recommendations to UNIDO and SECO**

1) **Consider a no-cost project extension to enable ICPC to finish ongoing activities (to December 2020) to allow for oversight and reporting of the project activities that are still in operation.** ICPC present subcontract (2nd subcontract from July 2019 to June 2020) is up to 30th June 2020, which is also the end date of the Project. To conclude the project results additional time may be required after final report of the subcontract is received from ICPC. Additionally, ICPC requested for 2 months extension for the 1st subcontract (original period from July 2018 - June 2019 extended up to Aug 2019). If the activities are delayed due to unforeseen reasons under the present subcontract, this would lead to conclude the project with unfinished activities and may jeopardize ICPC and Project objectives.

2) **Support the MOI and the MOEF to strengthen NCPCs to deliver public good services required for the broader adoption of RECP.** UNIDO has been quite successful in supporting NCPCs around the world. Several of these centers are acknowledged as authorities on CP and are financially independent. These achievements have taken place in the context of collaborations with other agencies (UN Environment, for example) and with donors such as SECO over two decades. ICPC had gone through several phases before its participation in the project. But given its recent change in legal status, financial autonomy and high rates of staff turnover, it is not realistic to expect it to have developed a robust technical capacity and a track record to command the credibility of a national champion institution for RECP. Thus, it is important to continue to look for opportunities for UNIDO to continue to collaborate with MOI and MOEF to strengthen ICPC. Given the size of the country, it is also justified to seek to support more than one NCPC in Indonesia. The broad adoption of RECP will require that key public good services or functions are provided (such as awareness raising, training, dissemination of lessons, facilitation of access to information on RECP technology, and independent policy advocacy). But such services will be unlikely to be paid by private clients, and thus will probably require grants or some form of compensation that is not related to the market.

3) **The next UNIDO project, and future projects should more clearly identify the system and the boundaries of the system that the project seeks to transform.** This will help in designing projects that tackle barriers to RECP adoption in a comprehensive but realistic way in specific industrial sectors and type of enterprises, so that RECP can result in benefits across the targeted sectors. This is because the opportunities for eco-efficiencies and the stakeholder incentives for RECP adoption, the relevant regulations, and mechanisms to catalyze replication and mainstreaming vary considerably among different sectors and types of enterprises. The RECP Indonesia project targeted at least three complex systems that had very different characteristics and different types of enterprises (large, medium and small) that would have required different strategies, and possibly different projects, as well as more time.

4) **Future projects of UNIDO need to step up their efforts to build commitment of the GOI and other governments it supports to address key regulatory barriers by making available technical assistance, building in-country know-how, facilitating access to information on options that have worked and supporting the generation of knowledge and information on the costs and benefits of reform and non-action.** Government ownership is considered a key factor affecting project effectiveness, but also a factor that is often lightly addressed during project design. The RECP Indonesia project, like many other projects, assessed government ownership based on broad policy statements and programs. But the project document also pointed out important gaps in regulations, weak enforcement of regulations and different priorities among participating ministries.

5) **Future UNIDO projects should be required to develop a theory of change (TOC) to demonstrate how they will interact with the system that they seek to change.** The project document presents a robust analysis of root causes that approximates a theory of change. A TOC that succinctly defined the transformational objectives of the project and the conditions to enable such transformations may have guided restructuring of the project in a different direction that could have allowed to target the project in ways that could have made it more manageable but without losing its transformational objective. It is important to point out that at the time the project was designed, TOCs were not widely used and root cause analysis was among the best approaches for the design of a transformational project. Now TOCs are much more commonly used and these are particularly useful tools to identify system components and system boundaries that a project can realistically address to tackle barriers in the broader system. This is done by carefully defining the domains, scales (spatial and temporal), stakeholders, and system interactions that are relevant to the long-term objectives of the project.

**Recommendations to MOI, MOEF, and to the Government of Indonesia.**

The current incentives by the government of Indonesia in support of green industry, sustainable consumption and production include certification by Green Industry Awards, PROPER and Ecolabel. These programmes are structured to recognize industries already implementing RECP and other green industry technologies. Indonesia can provide incentives to a broad range of enterprises at low or no costs to the national budget by removing barriers to the adoption of resource-efficient and cleaner technologies. This is a complex process that will require time, but by structuring foreign assistance projects (such as those implemented by UNIDO and financed by SECO) four strategies for high potential gains are:

1) Allow private companies to sell and store electricity in the grid as an incentive for the investment on renewable energy technology (based on concept of net metering).
2) Set the price of water for industries at levels that provide incentives for water conservation and reflect the costs of water; regardless whether they are served by a utility (PDAM) or whether they have direct access to water (springs, groundwater, surface water).
3) Regulate waste in ways that establish the safety standards and allow/incentivize the trade, exchange, and re-use of industrial byproducts across enterprises as incentives to improve efficiency in the use of resources and reduce waste and pollution.
4) Develop standards and allow the re-use and recycling of used water to provide incentives for conservation.

**Project evaluation ratings**

| # | Evaluation criteria | Summary assessment | Rating |
|---|---|---|---|
| **A** | **Progress to Impact** | The RECP innovations adopted by enterprises resulted in considerable efficiencies in the use of water and electricity and the reduction of waste and pollution. The strategy led to important environmental benefits. The economic benefits were concentrated in a few firms and one enterprise in particular. There were also benefits to medium and small enterprises. Complications during implementation prevented the project from contributing to the strengthening of a robust national center for cleaner production | **3** |
| **B** | **Project design** | | **4** |
| 1 | • Overall design | The project preparation was correctly guided by focusing on root causes. But to obtain buy-in and ownership by several ministries, UNIDO was faced with trade-offs that led to a design that provably was too ambitious. | 4 |
| 2 | • Logframe | During project preparation, UNIDO did a good job of identifying root causes and the key domains and activities that need to be implemented to steer the target sectors to a green industrial production trajectory. | 5 |

| # | Evaluation criteria | Summary assessment | Rating |
|---|---|---|---|
| **C** | **Project performance** | | **4** |
| 1 | • Relevance | The project was relevant to UNIDO and SECO as it addressed several Sustainable Development Goals, and it was also relevant to the declared policies in support of the green industry of the MOI and MOEF. | 5 |
| 2 | • Effectiveness | The project implemented many training activities and activities to introduce RECP to enterprises. Nevertheless, the project was not as effective in building institutional capacities for RECP services or a cadre of full-time RECP professionals. Mechanisms for broader adoption of RECP are also not robust. | 4 |
| 3 | • Efficiency | The project innovations were very efficient in as far as they led to considerable financial benefits to participating enterprises and significant environmental benefits. Nevertheless, overall, challenges in finding a CTA early in the project and two additional changes of CTA contributed to substantial project delays that led to several downward adjustments of the scope of the project. | 3 |
| 4 | • Sustainability of benefits | The financial and environmental benefits generated by the support provided to the participating enterprises are likely to be sustainable. This is mostly because RECP recommendations are based on eco-efficiencies. Also the high adopters responded to requirements of the market. | 5 |
| **D** | **Cross-cutting performance criteria** | | |
| 1 | • Gender mainstreaming | This aspect is not rated as UNIDO RECP methodology does not make provisions for tracking or addressing gender issues and the project did not report on this. | NR |
| 2 | • Environment and socio-economic aspects[5] | The project supported enterprises to reduce CO2 emissions, improve efficiency in the use of water, and reduce waste and pollution. Some medium and small enterprises in the tourism and rice mill sector participated in the project. But most financial benefits went to large enterprises. Yet, given the highly competitive and risky nature of the global garment industry, this is likely to contribute, at least in the short term, to a stable local economy and society. | 5 |
| 3 | • M&E: (focus on Monitoring)<br>✓ M&E design | During the last phase of the project, UNIDO carried out systematic monitoring of RECP interventions and results. The information provided was critical to demonstrate the benefits of RECP. It was unfortunate that the records of the early phase of the project were | 5 |

| # | Evaluation criteria | Summary assessment | Rating |
|---|---|---|---|
| | ✓ M&E implementation | lost as there are most likely many lessons and achievements in this phase of the project that the TE could not capture. | |
| 4 | • Results-based Management (RBM) | The logical framework provided clear targets and objectives. Quarterly activities and deliverables were regularly submitted for approval and reported to the PSC. | 5 |
| **E** | **Performance of partners** | | |
| 1 | • UNIDO | While there were some miscalculations assumptions during project preparation, for their most part, these factors were not under the control of UNIDO – such as the extent to which the GOI is willing to carry out the necessary regulatory reforms to remove the key barriers to RECP. Yet the project delays in hiring CTA and three CTAs in the duration of the project are aspects related to implementation under the responsibility of UNIDO. | 3 |
| 2 | • National counterparts | While the GOI was slow in the designation of an independent organization to function as an NCPC, in general, the three partner ministries attended PSC meetings and engaged with the project in multiple activities. Like in many developing and emerging countries, removal of critical regulatory barriers is difficult and likely to require more time and resources than a project of this magnitude. | 4 |
| **F** | **Overall assessment** | | **4** |

**Rating system**

In line with the practice adopted by many development agencies, the UNIDO Independent Evaluation Division uses a six-point rating system, where 6 is the highest score (highly satisfactory) and 1 is the lowest (highly unsatisfactory).

Project rating criteria

| Score | | Definition* | Category |
|---|---|---|---|
| 6 | Highly satisfactory | Level of achievement presents no shortcomings (90% - 100% achievement rate of planned expectations and targets). | SATISFACTORY |
| 5 | Satisfactory | Level of achievement presents minor shortcomings (70% - 89% achievement rate of planned expectations and targets). | |
| 4 | Moderately satisfactory | Level of achievement presents moderate shortcomings (50% - 69% achievement rate of planned expectations and targets). | |
| 3 | Moderately unsatisfactory | Level of achievement presents some significant shortcomings (30% - 49% achievement rate of planned expectations and targets). | UNSATISFACTORY |
| 2 | Unsatisfactory | Level of achievement presents major shortcomings (10% - 29% achievement rate of planned expectations and targets). | |
| 1 | Highly unsatisfactory | Level of achievement presents severe shortcomings (0% - 9% achievement rate of planned expectations and targets). | |

## 1. Evaluation Objectives, Questions and Approach

The evaluation has two overall objectives:

The first objective is to assess project's achievement (or likely achievement) of its main objectives, including: the extent to which the programme contributed to the improvement of resource productivity and environmental performance of manufacturing, tourism and micro-sector enterprises in Indonesia, and the extent and forms to which the project contribute to inclusive and sustainable industrial development in Indonesia. Under this first objective, the evaluation will also assess the extent to which the project has considered sustainability and scaling-up factors and mechanisms that will continue to support a trajectory towards the long-term objectives of the programme (the improvement of productivity, environmental performance, and inclusive development).

The second objective is to identify key learnings to feed into the design and implementation of the forthcoming projects and identify lessons and recommendations for enhancing projects by UNIDO. The evaluation will seek to derive lessons for UNIDO, the government, donors, and project stakeholders and partners to help improve the selection and enhance the design and implementation of similar future projects and activities.

The evaluation team carried out this evaluation following the UNIDO Evaluation Policy[6], UNEG Norms, and Standards for evaluation and the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle[7]. Annex 1 presents the terms of reference for this evaluation. The evaluation provides an assessment of the project attainment of results, sustainability of results, project contributions to conditions enabling long-term transformations, and factors affecting project results and quality of M&E. Evaluation ratings follow the UNIDO Summary of Project Evaluation Criteria. The evaluation report also presents a set of lessons and recommendations. This was an independent, in-depth evaluation that included a participatory aspect, whereby key parties associated with the project were informed and consulted on the approach followed by the evaluation. The evaluation team visited Indonesia and conducted field work in several localities from the 17th to the 27th of November 2019. The terminal evaluation covers the whole duration of the project, from preparation to the time of the evaluation fieldwork was carried out in Indonesia.

The evaluation questions are the following:

1. To what extent has the project helped put in place the conditions that are likely to address the drivers and overcome critical barriers to the long-term project objectives?

2. How well has the project performed? What have been the project's key results (outputs, outcome, and impact)? Has the project done things right, with excellent value for money?

3. To what extent will the achieved results be sustained after the completion of the project? What mechanisms are in place to ensure a development trajectory with improved productivity, environmental performance, and social inclusion?

4. What are the lessons from the successful and unsuccessful practices in designing, implementing, and managing the project?

The evaluation followed a theory of change and used mixed methods to collect data and information from a range of sources and informants prior to analysis. Based on the project document and other

[6] UNIDO. (2018). Director General's Bulletin: Evaluation Policy (DGB/2018/08, dated 1 June 2018)

[7] UNIDO. (2006). Director-General's Administrative Instruction No. 17/Rev.1: Guidelines for the Technical Cooperation Programme and Project Cycle (DGAI.17/Rev.1, 24 August 2006)

documentation, the evaluation team developed a theory of change for the project that was subsequently verified with the manager of the project and project staff. The project's theory of change was used to identify areas of inquiry, to assess the extent to which the project addressed root causes, and to assess the extent to which the project was implemented in ways that contribute to the broad adoption of RECP in Indonesia. Desk reviews included the examination of project preparation material, the project document, the midterm evaluation, and the minutes of the Project Management Committee (PMC). In total, 52 stake holders were consulted and interviewed, including representatives from different government agencies, producer associations, enterprises, and collaborating agencies, and project staff. The list of key informants interviewed, and their affiliation can be found in the annexes. The evaluation team made extensive use of the monitoring information gathered by the project from enterprises and did additional literature searches on issues pertaining to RECP in Indonesia. The evaluation team also examined the overall readiness for project implementation, as well as the actions taken in response to the recommendations of the independent midterm evaluation.

## 2. Project Background

Resource Efficient and Cleaner Production (RECP) concerns the application of total productivity techniques, with the triple aim of improving the efficiency in the use of materials, water, and energy; reducing the generation of waste, wastewater and emissions; and reducing risks to humans. RECP provides an approach for industries in all manufacturing and related sectors and of all sizes to reduce their environmental impact and improve productivity, competitiveness, and conformance with market demands. RECP contributes to the Sustainable Development Goals on sustainable consumption and production (SDG12), inclusive and sustainable industrialization (SDG9), and green economy and productive workforce (SDG8). RECP also contributes to the commitments adopted by the Southeast Asian nations in the ASEAN Socio-Cultural Blueprint 2025, "forging ahead together."

The United Nations Industrial Development Organization (UNIDO) and United Nations Environment Programme (UNEP) have promoted the application of RECP (and predecessor concepts) in developing and transitioning countries since 1995, while also supporting the establishment and operation of National Cleaner Production Centers (NCPCs) and related entities. UNIDO has provided this support since 2009, within the framework of the joint global UNIDO-UNEP RECP Programme, the design of which had been informed by an independent evaluation of the predecessor National Cleaner Production Centres (NCPC) Programme in 2008 (Van Berkel, 2011). In 2009 RECP was not new to Indonesia. There had been multiple programs supporting cleaner production and similar initiatives in Indonesia since the mid 1980s. Examples of such programs are ADIPURA (1986), PROKASIH (1989), and PROPER (1993). Also, Indonesia Cleaner Production policy had been under consideration since 1993. In 1995, the Indonesian government declared its National Commitment to Cleaner Production, which fell under the Ministry of Industry and Trade, as a key mechanism for sustainable industrial development. By 2009, when UNIDO was approached by the government of Indonesia, there had been multiple development assistance projects relevant to RECP from the EU, JICA, ADB, and USAID, and most recently from GIZ.

By the time that the project was approved in 2012, at least eight different ministries of the government of Indonesia were addressing aspects related to Cleaner Production (CP). For example, in 2010, the Indonesian Cleaner Production Centre (ICPC) by then still an administrative entity of the Ministry of Environment and Forestry initiated implementation of the Clean Batik Initiative (CBI). By November of 2011, CBI reported the engagement of 500 batik medium and small enterprises (MSE) in the programme. This meant that by 2012, the RECP pilots at the level of enterprises numbered in the thousands. The results and experiences of the NCPCs were documented in various publications. Informed by the findings of the global NCPC evaluation in 2008, (Van Berkel, 2011), reflected on challenges facing RECP which indicated that while demonstrations at the level of the enterprise were

important, these were insufficient to achieve a broader, sector-wide transformation. In addition to the attention to technological demonstrations, the NCPC evaluation identified that there was a need to address root causes and to place more attention on the promotion of coherent policies that provide incentives for the adoption of RECP technology. The evaluation also pointed out the need to strengthen RECP support services and to address at the difficulty of MSE enterprises to access financing, as also highlighted by several other authors (Akihisa, 2008; Luken et al., 2016; Spranz, 2008; Van Berkel, 2010).

## 3. Project Design, Objectives, Components and Budget

In March 2009, the Ministry of Environment requested support from UNIDO for the implementation of Cleaner Production in Indonesia. The Government of Switzerland, through the State Secretariat for Economic Affairs (SECO), agreed in May 2009 to fund the preparation of a project, including assistance to review existing Cleaner Production activities in Indonesia and the development of a proposal for the establishment of the Indonesian Network for Resource Efficient and Cleaner Production or INRECP, later referred to as RECP Indonesia (RECPI). The project was signed by SECO and UNIDO on World Environment Day 5 June 2012, just immediately prior to the Rio+20 World Sustainable Development Summit. While this allowed for the project to be reported at Rio+20, the project still required six more preparation to be ready for implementation.

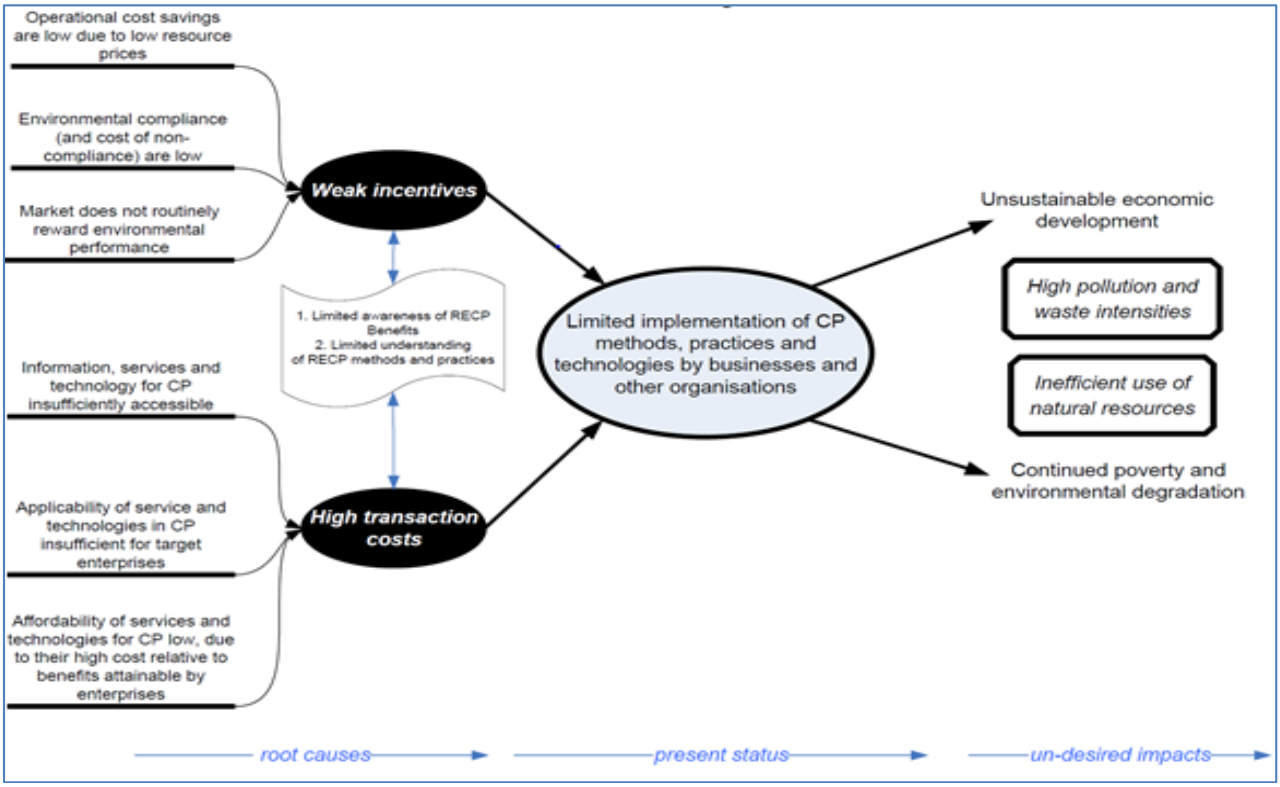



**Figure 1: Root cause of the limited uptake or RECP in Indonesia[8]**

Given the thousands of RECP demonstrations that had taken place in Indonesia, by 2010, the project preparation team felt that it did not make sense to have another project focusing predominantly at enterprise level alone. The new project would also need to address the factors that prevented the sector-wide adoption of RECP. This approach built on the findings of the 2008 NCPC evaluation that

[8] UNIDO 2012 National cleaner production and resource efficient production project document page 26

UNIDO had recently carried out which pointed out the need to move beyond the work with specific enterprises and to address broader barriers that stood in the way of a wide spread of RECP (Van Berkel, 2011, 2010). The project document presented an analysis that confirmed that high pollution and inefficient use of natural resources were major factors contributing to unsustainable resource use and pollution in Indonesia. The proposal indicated that preliminary studies showed that while RECP was well suited to address these challenges, two sets of factors prevented the broader adoption of RECP across Indonesia. One set related to the weak incentives to industry, including the low costs of natural resources, low environmental compliance (and weak enforcement of existing regulations), and markets that do not reward environmental compliance. The second set of factors was related to the high transaction costs in the application of RECP, which included insufficient accessibility of RECP information and services, insufficiently available RECP technology targeted to the needs of enterprises, and the low returns from RECP and difficulties in accessing financial resources (Figure 1). Unlike many previous UNIDO RECP projects, this project intended to give particular attention to barriers to the adoption of RECP that went beyond the enterprise.

The long-term objective of the Indonesia National RECP Programme was to improve resource productivity and environmental performance of manufacturing, tourism, and micro-sector enterprises in Indonesia, and thereby contribute to inclusive and sustainable industrial development in the country. This objective would be achieved through the widespread implementation of RECP policies, technologies, and practices by enterprises, governments at all levels, by other organizations, and by developing capacities of providers of RECP services providers, technology and finance.

The project had five components that intended the following outcomes:

- ***RECP Capacity and Network.*** This outcome included the development of professional and institutional capacity for adapting and promoting the broad adoption of RECP methods, practices, and technologies. The project proposed to build on the experiences of the previous Cleaner Production (CP) and related initiatives to enhance further the RECP service delivery capacity. The plan aimed to further strengthen national institutions, including implementation of proper management, organization and governance practices, widespread awareness-raising on RECP opportunities and benefits, and continued and further training of national experts (including staff of Bandung Institute of Technology (ITB), Indonesia Cleaner Production Center (ICPC), Centre for Assessment and Development of Green Industry and Environment (CAGIE), and Centre for Textile Bandung (CTB).
- ***RECP Implementation and Replication.*** This included the implementation of RECP opportunities through support services customized to the four main enterprise target groups, namely: small scale industries, industrial zones, tourism regions, and micro-enterprises. These customized programmes include demonstration, adaptation and replication steps. The support would consist of the setting-up of data collection processes as a part of RECP service delivery, to assess environment, resource use, economic and potential social benefits accomplished by enterprises.
- ***RECP Policy and Regulatory Framework*.** This included support for policy frameworks that foster the utilization of RECP methods, practices and technologies to support RECP in specific sectors of industry. To this end, the programme would contribute to creating at suitable administrative levels mechanisms for mainstreaming RECP concepts, methods and policy instruments, leading to an increased role of RECP in government policy in Indonesia.
- ***RECP Technology and Innovation.*** The objective of this component was to increase the availability and affordability of suitable RECP technologies for the target enterprise groups, particularly those contributing to and/or inspired by Industrial Symbiosis (IS), Green Chemistry and Engineering (GC&E) and Cradle to Cradle (C2C).
- ***RECP Investment and Finance.*** This component intended to help develop the appropriate financial instruments to support RECP investments in the target enterprise groups, with the participation of financial intermediaries. Upon assessment of gaps in enterprise finance, the project would identify and promote to financial institutions financial instruments tailored to RECP-type of investments.

Moreover, technical support would be provided for the pilot, evaluation, and scaling-up of financial instruments through training and capacity-building of financial institutions and businesses.

The project document included a Logical Framework (Annex 5). The project document also included regular monitoring, an independent mid-term review (MTR), and a terminal evaluation (TE), and an independent mid-term evaluation was carried out in October-November 2016.

**Project Budget**

The project budget was 3,893,636.23 USD. This budget includes SECO Grant 200001268 RECP Indonesia for 3,714,545.84 USD and a Grant 200001121 RECP Global for 118,433.00 EUR. As of September 30, 2019, the project had used 3,081,380.93 USD. (Table 2). [9]

**Table 2. Budget and Expenses by Project Component**

| Project outcomes | Budgeted (in USD) | Expended (in USD) |
|---|---|---|
| 1. RECP Capacity and Network | 325,555.62 | 340,284.29 |
| 2. RECP implementation and Replication | 970,657.04 | 626,444.98 |
| 3. RECP Policy and Strategy | 406,940.00 | 280,830.46 |
| 4. RECP Innovation | 480,134.99 | 77,732.14 |
| 5. RECP investment | 147,600.00 | 13,536.32 |
| Project Management | 1,562,748.58 | 1 ,742,552.74 |
| **Total (in USD)** | **3,893,636.23** | **3,081,380.93** |

Source: Project document (revised version 2015) these figures comprise both grants.
Expenses obtained from the CTA report to the 11th Meeting of the PMC on October 8, 2019.

## 4. Project Theory of Change

The theory of change (TOC) is a heuristic approach to help clarify the links between project activities and long-term objectives. As few projects under implementation have developed TOCs, evaluators typically develop a tentative TOC that is verified and amended during interviews with project managers and project stakeholders. Critical in the development of a TOC is the identification of the conditions likely to bring about the behavioural changes required to achieve the long-term goal of the project (Chen, 1990; Mayne, 2008), now referred to as system transformations. Given the complex nature of the interactions between human behaviour and the environment (the social-ecological system), and the unpredictability of outcomes of these interactions, it is also critical to identify the prominent assumptions made during project design and the ways project management adapted to unexpected circumstance during implementation (Folke et al., 2002; Levin, 2003).

The use of a theory of change in evaluation does not mean that the project will be held accountable for having resulted in system change. System transformations take place in time scales that typically go far beyond the spatial and temporal reach of a project. Evaluators use the TOC to assess the extent to which project activities contribute the conditions that are likely to lead to the long-term

[9] Grant 200001268 RECP Indonesia was originally forecasted for 3,893,636.23 USD but funds received at actual rates was of 3,714,545.84 USD.

transformations. Evaluators also use the TOC as a tool to better understand how a project interacts with the process it seeks to influence, the extent to which projects contribute to shifts in system trajectory, and to derive lessons and recommendations to improve future interventions.

There was no explicit TOC developed for this project. However, the project included a robust analysis of root causes and included specific a set of outputs on policy a finance to provide incentives to enterprises and another set of outputs to make RECP services more available to the targeted enterprises. The document included five project components, each of which included a set of activities that were meant to contribute to specific project outcomes. While the project results framework was modified two times by the Project Steering Committee, the overall components and broad expected outcomes remained constant[10]. The promised outcomes (or broad domains in which the project was expected to make contributions) identified in the project document are well aligned with the key conditions that are likely to steer the system development trajectory towards a more efficient and cleaner production.

Using the root cause analysis and causal link design presented in the project document, the evaluation team developed a TOC for the project developed during the inception phase of this evaluation (Figure 2). This TOC was used as a framework to assess the extent and forms by which the project contributed to a RECP development trajectory in the targeted industrial sectors.

- The extreme right of the diagram presents states of the long-term desired transformations. These are: 1) reduced pollution and more efficient use of resources, 2) improved productivity and competitiveness, and 3) improved labor conditions, wages, and community health.
- The causal chain leading to the transformation is presented from left to right in the diagram. To the extreme left are the five project components and the expected outcomes which are identified in the project logical framework (Annex 5). The logical framework outlines the project's intended chain of causality and identifies the indicators, baseline, and targets to track the promised outputs and outcomes.
- The next column, labeled "Enabling Conditions," presents the conditions proposed by the theory of change that will trigger the shift in development trajectory in the identified industrial sectors towards RECP. These conditions are: 1) policy and regulatory framework supportive to RECP & IS; 2) widespread awareness of the economic, environmental and social benefits of RECP & IS; 3) available, affordable RECP & IS technology, 4) capacities to promote, test, transfer, and replicate RECP and IS technology; and 5) financial instruments and business models for RECP & IS.
- The different domains are assumed to be sub-systems that are linked, encompassing different spatial and temporal scales. The interactions among the subsystems and scales is assumed to take place through the behavior of agents (in this case the relevant stakeholders).
- The full system transformation is unlikely to take place by the end of any given project or programme. Thus, in addition to the enabling conditions, there is a need to put in place mechanisms that can continue to mainstream, replicate and up-scaling project outcomes.

The project was designed to contribute to the transformation by carrying out concurrent integrated activities in various domains, sectors and scales. The project design included the introduction of new practices and technologies at the scale of the enterprise, in ways that helped build capacities to develop and transfer technology in particular institutions and that provided lessons to help address policy, regulatory, and institutional barriers to RECP at the country and provincial levels. The project also sought to identify financial instruments and opportunities for RECP applicable in Indonesia and included provisions to support the replication and broader adoption of the technologies tested.

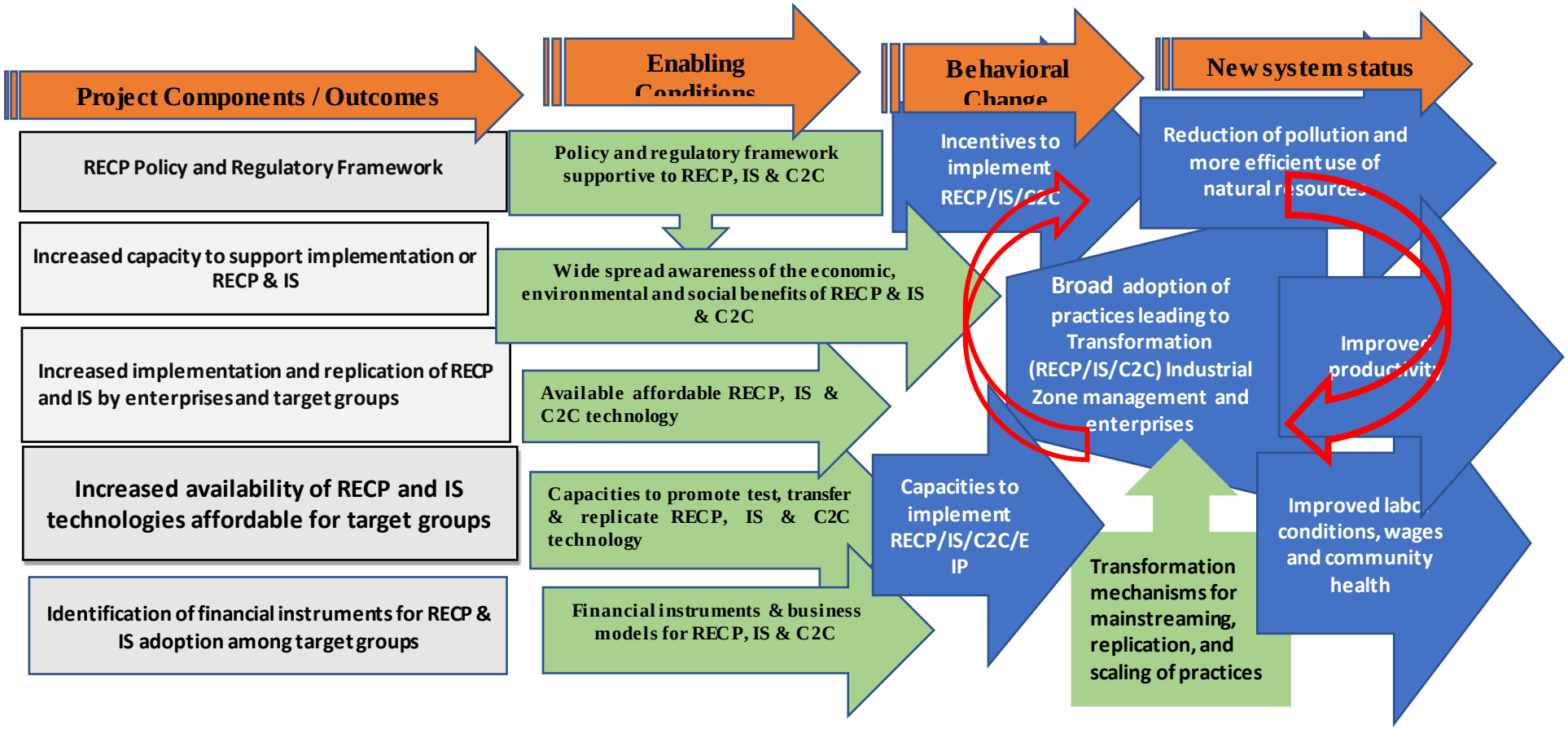
[10] The Project Steering Committee modified the project result framework for the last time in April 2018.

The project document makes the following assumptions:

- Enterprises will be willing to adopt cost-effective opportunities for RECP, IS or Cradle to Cradle (C2C).
- There is genuine Government of Indonesia intent to achieve sustainable industrial development.
- Institutional capacities for RECP support services existed at project start in Indonesia.
- There are financial instruments and business models to support RECP & IS that apply to the targeted groups in Indonesia.
- Enterprises will be willing to pay for the required RECP support services once the RECP benefits are demonstrated.

The evaluation team verified the theory of change during consultation with the team managing the project and other stakeholders.

**Figure 2: Theory of Change National Resource Efficient and Cleaner Production (RECP) Programme Indonesia**




**ASSUMPTIONS:** 1. Enterprises are willing to adopt cost effective opportunities for RECP and IS in Indonesia. 2. There is genuine GOI intent to achieve sustainable industrial development. 3. Institutional capacities for RECP support services existed in Indonesia. 4. There are financial instruments and business models to support RECP and IS applicable to the targeted groups in Indonesia. 5. The stakeholders will be willing to pay for the required RECP support services once the RECP benefits are demonstrated.

## 5. Project Implementation Arrangements

The Project Management Committee (PMC) is the governing and decision-making body of the project and is formed by representatives from the Ministry of the Environment and Forestry (MoEF), the Ministry of Industry (MoI), and SECO (the donor). A representative of the Ministry of Tourism (MOT) was added to the PMC during project implementation. The UNIDO Representative for Indonesia, originally foreseen CRECPI but now ICPC, and the Chief Technical Advisor (CTA) are also ex-officio members of the PMC with no voting rights. To date ten meetings of the PMC meetings were held.

The Project Document indicated that the project would be implemented by UNIDO, in close cooperation with four national implementing partners, respectively: Indonesia Cleaner Production Centre (ICPC); Centre for Resource Efficient and Cleaner Production Indonesia (CRECPI), Centre for Assessment and Development of Green Industry and Environment (CADGIE) and Centre for Textiles in Bandung (CTB).

The UNIDO Project Manager (part-time) sits in Vienna, and the Chief Technical Advisor (CTA, full time) was in CRECPI, Bandung, from June 2015 until June 2018. But as explained below, the CTA moved to Jakarta when the PMC decided to discontinue cooperation with CRECPI and to entrust the Jakarta-based ICPC with the implementation of the outstanding project activities. At the time of the evaluation, the CTA's office was located the UNIDO Country Office (UCO) in Jakarta.

One of the declared intentions of the RECP program was to establish a sustainable entity that could provide ongoing RECP services. The project set out to establish CRECPI as this entity, which is a unit of the Environment Centre of the Institute of Technology in Bandung (ITB), the country's pre-eminent technical university. At the time CRECPI had no budget, no permanent staff and no legal status; CRESPI was an organizational mechanism with in ITB that was activated when funds were available. Thus it could not sign contracts to receive funds. Given regulations at the time, which restricted government entities from receiving financing from non-public sources, ITB requested UNIDO to channel funding through PT Ganesha Environment and Energy Services (GEES), a company under the ITB Business and Endowment Fund Unit (PBULD). Hence GEES provided administrative services to CRECPI, on behalf of ITB.

## 6. Challenges during Project Preparation and Inception

The preparation and inception phases of the project faced several challenges and delays. While UNIDO presented a draft proposal for discussion in mid-2010, the project preparation included lengthy negotiations between UNIDO, SECO, MOEF, MOI and ITB. Preparation also required multiple consultations with enterprises and academia. Among the issues were the institutional arrangements of the project and the specific industries that would be included. UNIDO presented a draft to SECO in March 2012. The project was officially signed by SECO and UNIDO in June 2012, to be officially announced at the Rio+20 Conference the same month.

The Project Inception Phase started once SECO transferred funds to UNIDO, and the government of Indonesia signed the project in June 2012. Project end date at inception was in June 2017. During 2013, more design changes were made. These changes included adjustments to address the government policy pertaining to Green Industry (GI) and the new policy on Sustainable Consumption and Production (SCP). The project was also modified to include work in tourism sector with the Ministry of Tourism (MOT). Changes in the project design also responded to the

requests from SECO and the government to include Cradle to Cradle (C2C)[11] approaches and RECP monitoring and assessment tools. UNIDO, therefore, developed an amendment to reflect changes and confirm the revised schedule of activities, performance indicators, planning, and the distribution of roles among participating agencies. The amendment was finished and approved by the Project Management Committee in May 2015.

From May 2012 to June 2015, when UNIDO appointed the Chief Technical Advisor (CTA) in Bandung the project had de-facto extended inception phase, with activities taking place that included some training of national experts and preparation for demonstration projects. After June 2015, the project was expected to accelerate implementation and still reach completion in three years, by June 2018. UNIDO commissioned a mid-term independent evaluation during October 2016. Given the slow inception phase, the MTE recommended a project extension. The PMC, in its seventh session on February 21, 2017, revised the completion date to June 20, 2019. As delays continued the PMC requested that SECO granted a second extension in the eighth session on April 18, 2018, to its current closing date of June 30, 2020.

The project sought to establish and strengthen CRECPI, with the expectation that this entity would be constituted into an organization with its own staff, budget and legal status. Yet these efforts did not result as expected, and ITB did not take the necessary steps to establish CRECPI as an entity with a separate legal status. Throughout 2017, SECO voiced concerns to the Indonesian counterparts about the need to take the necessary steps to establish a RECP services entity with legal status. The Ministry of Environment and Forestry ramped up its efforts and transformed ICPC into an autonomous independent institution, formally legalized as Pusat Produksi Bersih Nasional (**PPBN**) in November 2017, with the mission of providing RECP-related services in the country. In its eighth meeting in April 2018, the PMC decided that UNIDO should terminate the contract with GEES and enter into a contractual agreement with ICPC for the execution of outstanding project deliverables by ICPC. In this meeting of the PMC also a no-cost extension to the end of June 2020 was proposed and granted by SECO.

## 7. Mid-term evaluation

The midterm evaluation (MTE) of the project was carried out during October 2016[12]. The MTE reported that during the first year of accelerated implementation, the project had provided support to the development and promotion of various Green Industry Policy Initiatives, including the Green Industry Award, Green Industry Certification, Green Industry Auditor Training, and Green Industry promotional campaigns and policy training. The project had also carried out RECP assessments for 71 enterprises and trained 63 national experts on theoretical aspects of RECP and involved them in execution of RECP assessments in enterprises (learning by doing). The MRT reported that the project had organized eight industry awareness and six industry consultation workshops.

Given the challenges and time delays in the implementation, the MTE recommended to "go deeper" instead of the original intention to "go wider," to ensure sustainability of project results. Two key conclusions of the MTE in this respect are:

[11] "The Cradle to Cradle design concept is inspired by nature. The aim is not only to minimize negative influences but also to leave a positive ecological footprint. As a result, products, processes, buildings and cities will emerge which are safe for humans, healthy for the environment and successful for business". https://epea.com/en/about-us/cradle-to-cradle

[12] UNIDO. 2017. Independent Mid-Term Evaluation. National Resource Efficient and Cleaner Production RECP Programme Indonesia. SAP ID 100224.

- ✓ "The project implementation was almost three years delayed, mainly due to slow recruitment of the CTA. When full implementation started there were three years left of the project, whereas the planned implementation period was five years."

- ✓ "The project was designed to scale-up RECP by 'going wide' to several sectors and locations. Sustainability of the efforts is seriously at risk with spreading out too widely with the limited project time left, also creating higher transaction costs. The team, therefore, suggests 'going deeper' into the sectors and locations already started and securing a stronger anchorage there."

The PMC reviewed the recommendations of the MTE in its meeting of December 22, 2016, and decided to rebalance the scope and depth of the program by limiting project activities to six provinces, removing the chemical products sector but expanding on the textile sector, and using the rice mill sector as a model for replication in small scale industries. The MTE also suggested cutting the policy support to the Ministry of Energy and Mineral Resources but strengthening the support of the RECP Network and RECP experts. The project CTA was encouraged to "take a critical look at all project activities and streamline down to those most critical towards achieving total impact and sustainability"[13]. The decision to reduce the number of localities and sectors in which the project was engaged was a sensible as the project reach might have expanded too broad for effective oversight, monitoring and quality control. But the MTE recommendations and the decisions of the PMC did not stop there. They also encouraged the CTA to move away from the emphasis on addressing broader system barriers to the adoption of RECP and instead to focus mostly on achieving impacts at enterprise level. This required the project to give more attention to demonstrate resource efficiency and pollution reduction in specific enterprises and de-emphasize activities that addressed conditions contributing to a long-term transformation at a broader level.

# 8. Key evaluation findings

## 8.1. Project relevance

Relevance pertains to the extent to which a development intervention is consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies. The project results are highly relevant to Indonesia, SECO and UNIDO. The project was well aligned with the policy priorities in Indonesia pertaining to industrial development and environmental management. As indicated earlier, project preparation included multiple consultations with the MOEF, MOI and subsequently the Ministry of Tourism. The project directly supported the Indonesian government and its National Commitment to Cleaner Production and PROPER, which were cleaner production policy instruments under the MOI. While there was alignment at a broad policy level, the extent ownership by the GOI differed across ministries and programmes and during the duration of the project. For example, the engagement of two ministries prolonged negotiations during project design and inception. Subsequently the MOI and particularly ITB was slow in responding to the project requirement for an autonomous institution to function as a RECP service provider.

[13]The Seventh PMC Meeting was a special meeting to discuss the MTE report and it took place in two instances. The first was in December 22, 2016 and the conclusions were recorded in the "National Resource Efficient and Cleaner Production (RECP) Programme Indonesia Review Meeting on Mid Term Evaluation (MTE) Report". The second meeting took place on February 17,2017 and confirmed the overall direction provided in December 2016. The conclusions of this meeting were recorded in the "Minutes of the Seventh RECP PMC Meeting (draft version 2 approved)"

The engagement of multiple ministries gave the project reach to several sectors (mostly Textile, Tourism and food sectors), but with this broader reach also came some trade-offs. Negotiations with multiple ministries contributed to delays during preparation and approval. Another trade-off was the inclusion in the program of industries that were of high priority for the government but that did not have many opportunities for eco-efficiencies. One example is the selection of the sugar sector. This sector was included in the project at the request of MOI. This helped cultivate government ownership of the project as the improvement of the sugar sector was a priority of MOI. At the time the sugar industry in Indonesia was mostly composed by state owned enterprises. The design team also considered that RECP could help to find modest efficiencies to improve production and reduce waste in the sector.

## 8.2. Project effectiveness

Effectiveness pertain the extent to which the development intervention's objectives were achieved or are expected to be achieved. The project had for main components in which key outcomes were expected.

**Outcome 1. RECP Capacity and Network**: This project component intended to improve capacity for and widespread utilization of RECP services to support adaptation and adoption of RECP methods, practices and technologies. The project carried out capacity development activities in 11 provinces that included at least 2,737 participants in 139 events. These events took place at the national and provincial levels. The project trained at least 77 experts in enterprises and institutes with the support of national and international specialists[14]. The project supported 12 international tours with the participation of government officials and other decision makers. The project also developed publications such as guidelines and case studies related to the benefits of RECP (Table 3). The project also supported the formation of the RECP Network, constituted by 144[15] professionals including 155 specialists, who also benefited from the project's workshops. The members of the network are mostly persons that have attended several workshops (both from the private sector and from government offices), who can apply the methodologies developed by the project. Among the members of the RECP Network, the project reported that 115 were certified for specific areas. Given the vast differences between the production processes among industries, most of RECP network members cannot yet be considered experts in RECP. Nevertheless, the knowledge and methods developed by the project allow for the application of RECP and the identification of low-hanging fruits in the form of eco-efficiencies. In summary while the project did deliver key capacity development outputs such as training, demonstrations (RECP, C2C and IS), case studies, training manuals, study Tours; the project did not deliver a cadre of professionals and the institutional capacity to continue providing RECP services. In most cases capacities are likely to remain at the level of enterprises that participated in the project. Changes in implementing partners and staff turnover resulted in limited capacities in partner institutions.

**Table 3. Capacity Development Output**

| Capacity development output | |
|---|---|
| Participants trained | 2737 |
| Enterprises reached | 727 |
| Provinces reached | 11 |
| Events organized (national /provincial) | 139 |

[14]These include 58 experts trained reported in the CTA "Monthly report for Programme Management Committee (PMC)" of February 2017 and 27 experts reported for the period after February 2017. The total is calculated at 77 experts because there was an overlap of 7 enterprises in the two periods.

[15] This is the most up to date information provided by the CTA to the evaluation team in October 2019.

| Capacity development output | |
|---|---|
| Expert group meetings | 20 |
| International study tours | 12 |
| Publications | 13 + |

**Figure 3. Implemented RECP options**

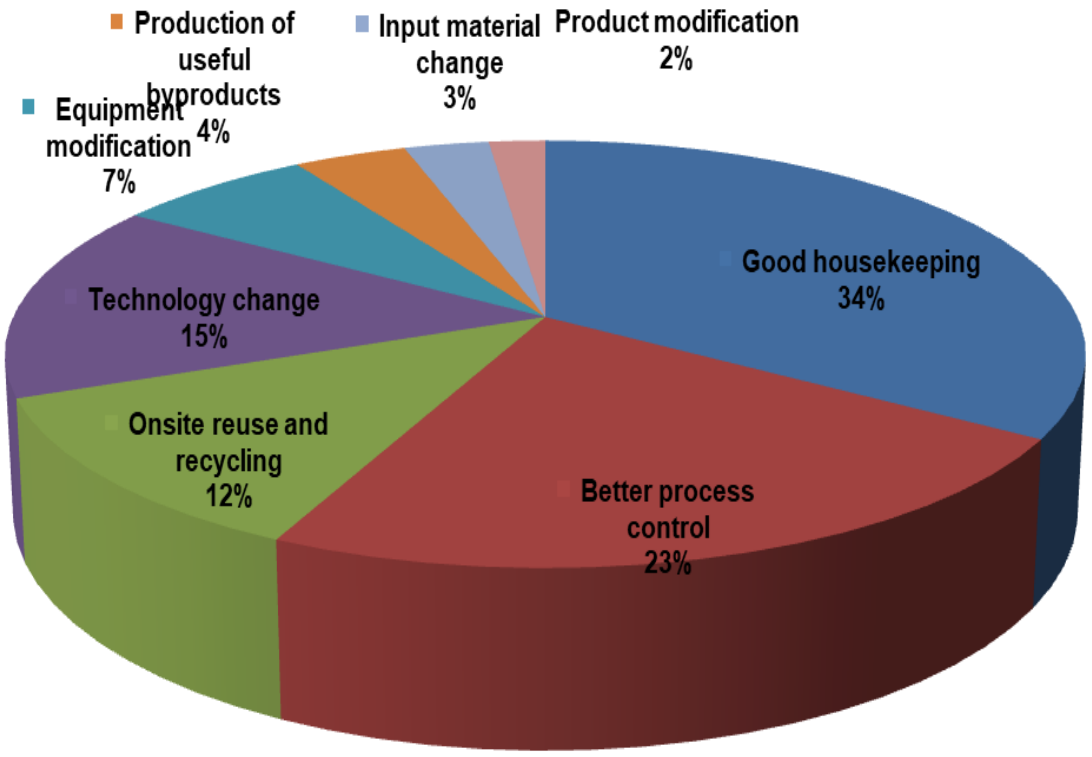



Figure 3 indicates the types of the options that were adopted by the participating enterprises. Many options for improvement were low hanging fruits that required changes related to good housekeeping (34%), better process control (23%) and onsite reuse and recycling (12%). Recommendations that required some Investments were mostly related to technology change (15%) and equipment modification (7%). In summary the project was able to demonstrate RECP and carry out a modest number of replications and meet most of the expectations in the project document. Most of the participating enterprises adopted recommendations and carried out the changes proposed by the RECP studies carried out by the project investments. Nevertheless, there were gaps on the records of RECP trial and the mechanisms to continue promoting adoption of RECP remain weak (mostly the Network, the NCPC and the partner government agencies) and are not likely to lead to a broad adoption of RECP, C2C and IS in the sectors targeted by the project.

***Outcome 2:*** **RECP Implementation and Replication:** The objective of this outcome was to increase the implementation and replication of RECP and IS by enterprises. The project workshops reached at least of 727 enterprises in the different sectors. Of these enterprises the project carried out RECP assessment at least in 149 enterprises. The project records indicate that of the 69 firms that participated in the project during the startup phase (up to February 2017), only seven enterprises were among those in the second phase of the project. This was mostly a result of the regional and sectoral consolidation of the project after the MTR. The PMU provided detail monitoring information on the 87 enterprises participating in RECP at the time of the evaluation in November 2019.[16] Of these projects 55 were in the textile and garment sector, in tourism (13), in food processing (4) and were located in industrial zones (15). Except for six of the enterprises in the textile and garment sector all had gone through the RECP studies and had implemented or were in the process of implementing RECP recommendations. In addition, the project was working with a cohort of enterprises selected in July 2029 which were expected to report results by June 2020 (Table 4).[17]

**Table 4: Enterprises in the demonstration pilots that implemented RECP recommendations**

| Enterprises | Textiles | Tourism | Food Processing | In industrial Zones | Total |
|---|---|---|---|---|---|
| Participants in demos prior February 2017 | 24 | 18 | 10 | 17 | 69 |
| Participants in RECP Demos after February 2017 | 55 | 13 | 4 | 15 | 87 |
| That implemented RECP | 31 | 3 | 4 | 5 | 43 |
| With ongoing implementation | 5 Old + 13 New | 8 Old + 2 New | 0 | 8 Old and 2 New | 38 |
| Did not provide enough info. | 6 | 0 | 0 | 0 | 6 |

Source: Information provided by the PMU

***Outcome 3:*** **RECP Policy and Regulatory Framework:** The objective of this component was to strengthen the policy frameworks that foster the utilization of RECP methods and practices. This component was also meant to support mechanisms which support government objectives related

[16] The CTA "Monthly report for Programme Management Committee (PMC)" for the period prior to February 2017 reported that the project had provided RECP support to 69 enterprises up to that date. For period from February 2017 to the time the evaluation took place in November 2019, the project reported supporting 87 enterprises, of these 7 enterprises were a carryover from the first phase, which makes a total of (69+87-7)=149 enterprises supported during the full length of the project. The evaluation had access to specific details on the type of RECP interventions for the cohort of 87 enterprises supported after February 2019. RECP results were available for 43 enterprises that had finished or were in the process of implementing recommendations.

[17] While some enterprises were still in the process of evaluating the implementation of some of the recommendations, the records of the project indicated that the rates of adoption among desmosome enterprises was high. For example, the records available for four participating enterprises in industrial parks indicate that out of 40 recommendations only 3 were rejected. In the tourist sector there was information available on six enterprises in which four recommendations out of 50 were rejected. This is explained in part because the recommendations made by experts considered the financial feasibility of investments, which varied from enterprise to enterprise.

to environment, industry, and tourism. The different ministries developed their policies mostly independently from the project; as indicated, several programs and policies had been in place years before the project started. The project did support activities intended to further include RECP in policies and supported the dissemination of regulations and guidelines through workshops and by financing their publication. For example, the project supported two consultation workshops for the mapping of RECP policies and initiated the inclusion of RECP in the PROPER rating scheme with Ministry of Environment and Forestry (MoEF) During 2015 and 2017 the project also provided technical support to the MoI green industry scheme. The project also financed the printing of 600 books on the Green Industry policy, and the process of establishing the Green Industry Certification Body. The project provided a draft on ways to embed RECP in the tourism sector. Other products developed by the project, such as the manuals on methods and case studies are also resources that can be used to support and programmes of the three collaborating ministries. Yet despite these modest accomplishments the project could not contribute much to removing the major policy barriers to the adoption of RECP, which include high energy subsidies, low price of water and the weak enforcement of regulations, none of these critical barriers were in the GoI policy reform agenda. The project achievements in this outcome are rated moderately satisfactory. The project carried out numerous activities in support of programs and staff of MOI, MOEF and MOT. Nonetheless the project could not do much to help remove key regulatory barriers (water pricing, waste management, private firms access to the grid, etc) for the adoption or RECP as the ministries were not ready to pursue those areas of reform.

**Outcome 4. Appropriate RECP technologies for sustainable product innovation identified, through application of C2C.** The objective of this component was to test and promote industrial symbiosis (IS) in two industrial parks, and to introduce Cradle to Cradle (C2C) certification. Earlier in 2015 the project carried out several workshops in collaboration with the SECO funded SMAR-Fish project and carried out RECP trials and applied SI principles in seven fish processing enterprises in Makassar. Based on these trials, and in collaboration with the RECP project, by April 2016 SMART-Fish combined RECP with other approaches into the Integrated Sustainable, Productive, Innovative Resource Efficient Development (INSPIRED). Subsequently SMART-Fish used INSPIRED as a key tool in its activities (UNIDO, 2019a)

The project carried out industrial symbiosis profiles for two industrial parks. At the time that the evaluation took place on November 2019 the industrial symbiosis profiles had just been developed and the participating enterprises were in the process of assessing the IS opportunities that were identified. In the KIMA Industrial Zone in Makassar which was conducted in 2017, the profile identified six potential IS technologies of which one is under implemented in the rice sector and two were under exploration. In the Modern Cikande Industrial Zone, Serang the project identified 21 opportunities which were assessed in a workshop with stakeholders using the criteria of achievability (likelihood that the technological change could take place) and extent of benefits that could be derived from the benefits (Table 5). The conclusion was that twelve opportunities met both criteria, of these three opportunities had already been implemented. At the time of the evaluation in November 2019, the participating enterprises had already implemented five of the new opportunities and had reported to UNIDO that they were planning to implement the rest.

**Table 5: Industrial Symbiosis Recommendations Planned for Implementation in Modern Cikande Industrial Zone, Serang**

| ACHIEVABILITY | Easy | Medium | High |
|---|---|---|---|
| High | • Waste from manufacturing industry used as alternative fuel in cement production<br>• Treated industrial wastewater used to irrigate green zones in the Industrial estate | • Common facilities to collect and pre-treat (chopping/milling) cable sleeve and PVC compound<br>• Waste from (human) food industry used by industries producing animal food<br>• Recycling of cooling water in the park | • Reuse of waste from cosmetic industries to produce detergent for car washing<br>• Supply chain synergies between chemical and cosmetic industries<br>• Waste/fibers from textile industry as filing material for car insulation |
| Medium | • Treated waste water from a relatively "clean industry" reused in textile industries<br>• Food waste could be composted to produce fertilizer | • Waste from steel industries reused in the building sector (e.g. steel scraps for producing concrete reinforcement)<br>• Waste from shoe industry reused by craft textile manufactures<br>• Hazardous Waste of Oil soaked Rug is given to PT Wiraswasta Gemilang Indonesia (trade name: Evalube) to be recycled | • Waste from plastic industry could be reused for packing in electronic industry<br>• Waste from metallic industry (e.g. steel slags) used as additive in cement.<br>• Waste from "high quality feed mill" (e.g. chicken food) reused in lower grade pet food production (e.g. cats and dogs) or in fish farms |
| Low | • Carbon dioxide capture and reutilization (for instance for sparkling beverage production) | • Anaerobic digestion of organic waste (e.g. food waste)<br>• Sludge from WWTP used as street coating / cement additive / fertilizer | • Polypropylene plastic waste remanufactured to produce household utilities (plastic cups, toys, etc.)<br>• Food waste could be processed to produce dyes for textile industry |

**BENEFITS**

Cradle to Cradle (C2C) certification was inserted as a pilot under the global RECP programme at the request of donor. It was expected to provide opportunity for Indonesia export-oriented garment enterprises to create new markets. This activity also offers the opportunity for ICPC to become the first C2C assessor in Asia. The project and MOI started the Cradle to Cradle (C2C) project activities with a workshop that trained on C2C 51 participants from government, industries, and international buyers. Subsequently, three firms were evaluated for the preparedness of specific units for C2C Certification of products. The C2C experts concluded that with little effort two enterprises could meet C2C requirements for certification of some of their processes at the Bronze to Silver levels, and that Sritex could meet the requirements for a C2C Gold certification. The project also organized a tour, with the participation of officials from MOI, MOEF and ICPC, to visit factories in the USA with certified C2C products. The process of C2C certification was still in progress at the time the evaluation took place. The project performance in this outcome is rated moderately satisfactory as the project did introduce SI and C2C to several industrial parks and laid the grounds for a more systematic engagement in the follow up project. The broader adoption of SI technology will require a cadre of technical specialist and updated professionals which the next project could help develop.

**Outcome 5. RECP Investment and Financing**

In the project document approved in 2012, included a series of studies to determine the financial gap necessary to fully implement RECP in enterprises, and to identify potential financial instruments in Indonesia that could trigger RECP investments in target enterprise sectors. This project component was drastically reduced during restructuring in 2015, and the objectives were made less specific. One objective was to support the application of good international practices with Indonesian institution, such as the Financial Service authority or OJK. To meet this objective, the project commissioned a compilation of RECP Financial tools used globally in February 2018 and presented it to OJK with no progress reported since that time. The second objective pertained to RECP financing capacity building, which the project carried out by providing training to staff of ICPC and MOI on the use of the software Computer Model for Feasibility Analysis and Reporting (COMFAR). This training took place in 2019. The project achievements in this outcome are rated moderately satisfactory. They did carry out several studies and consultations seeking to identify and adapt existing SME financial instruments for CP. The studies supported by the project identified the key obstacles (such as onerous administrative requirements by banks or programs and low financial planning capacities of enterprises). Jet the project did not test models to address obstacles as this was a decision taken by the PMC at the time of restructuring in 2015.

## 8.3. Project impacts

Impact refers to the long-term effects produced by a development intervention – positive and negative, intended and non-intended, directly and indirectly. The project impacts are accounted at the level of the enterprise. When assessing economic and environmental impacts of the project, the evaluation considered evidence that had been generated by the investments the enterprises had carried out and the calculation of the returns on such investments. This analysis does not include the RECP activities that were carried out in the first phase of the project (prior to February 2017) , the activities that were still under consideration by the participating enterprises at the time of the evaluation, or the cases in which enterprises did not disclose information to the project. Most of the assessments in IS and C2C had taken place recently and were still being studied by the enterprises.

The enterprises' implementation of RECP led to a more efficient use of resources and to savings of energy (electricity, wood, coal and diesel) and water, and in the reduction of waste. In total the

participating firms invested just over 10 million dollars implement the identified opportunities with a total return of 19.6 million dollars. The number of RECP opportunities and extent of improvements achieved varied widely among the different sectors addressed by the project and the type of firms the project supported. The RECP assessments identified a high number of opportunities for eco-efficiencies in the textile and garment sector. Much of the savings realized in the sector were from energy consumption reduction, which was over 273 million joules per year which is equivalent to a reduction of 352,282 tons of CO2 emission. When accounting for the price of CO2 in the European market, the value of the GHG emission reduction accomplished by the participating enterprises comes to 9.7 million dollars[18]. In addition to quantifiable and verifiable results, that have not been quantified include the reduction of solid and hazardous waste and toxic wastes, ozone-depleting potential (ODP) chemicals and unintentional persistent organic pollutants (uPOPs). This reduction is achieved by optimizing combustion and production processes, and substituting chemicals – such as refrigerants, bleaching/brighteners, stain removers, etc. – with environmentally friendly alternatives (Table 6).

**Table 6: Annual Environmental and Financial Benefits of RECP**

| Item | Value | Unit | Saving (USD/ year) |
|---|---|---|---|
| Energy Reduction Textile & garment | 273,021,324 | MJ/year | |
| Electricity | 63,869 | MWh/year | 7,025,596 |
| Wood | 1,559 | tones/year | 31,173 |
| Coal | 123,919 | tones/year | 9,293,920 |
| Diesel | 895,704 | liter/year | 537,423 |
| Water | 2,580,234 | m3/year | 1,032,094 |
| Wastewater Gen | 2,162,987 | m3/year | 432,596 |
| Recycling Water | | | 224,783[19] |
| **Total Textile and garment** | | | **18,670,718** |
| **Total other sectors** | | | **946,360** |
| **Total Financial benefits** | | | **19,617,078** |

The distribution of benefits generated was in most cases related to the investments carried out by enterprises. This indicates that there are considerable gains to be made by the wider implementation of RECP – particularly in the textile and garment sector, but this also implied that the investments and benefits of RECP were concentrated in a few industries in the textile and garment sector, with one of them taking the lion's share - 40% of total project's investment and 45% of total project savings achieved by single enterprise (Figure 4). The garment and textile sector had the most participation in the project in large part because H&M -one the larger garment retailors in the world- required its local suppliers to start working towards Zero Discharge Hazardous Chemicals (ZDHZ) compliance certification.

The strategy adopted by the project contributed significantly to the achievement of environmental benefits but did much less for the building of capacities and competitiveness among medium and small enterprises, which was one of the project intentions. Despite this major limitation, the project did contribute to the stability of the local economy. For example, the

18 Value of 25EUR per ton as of February 29, 2020.

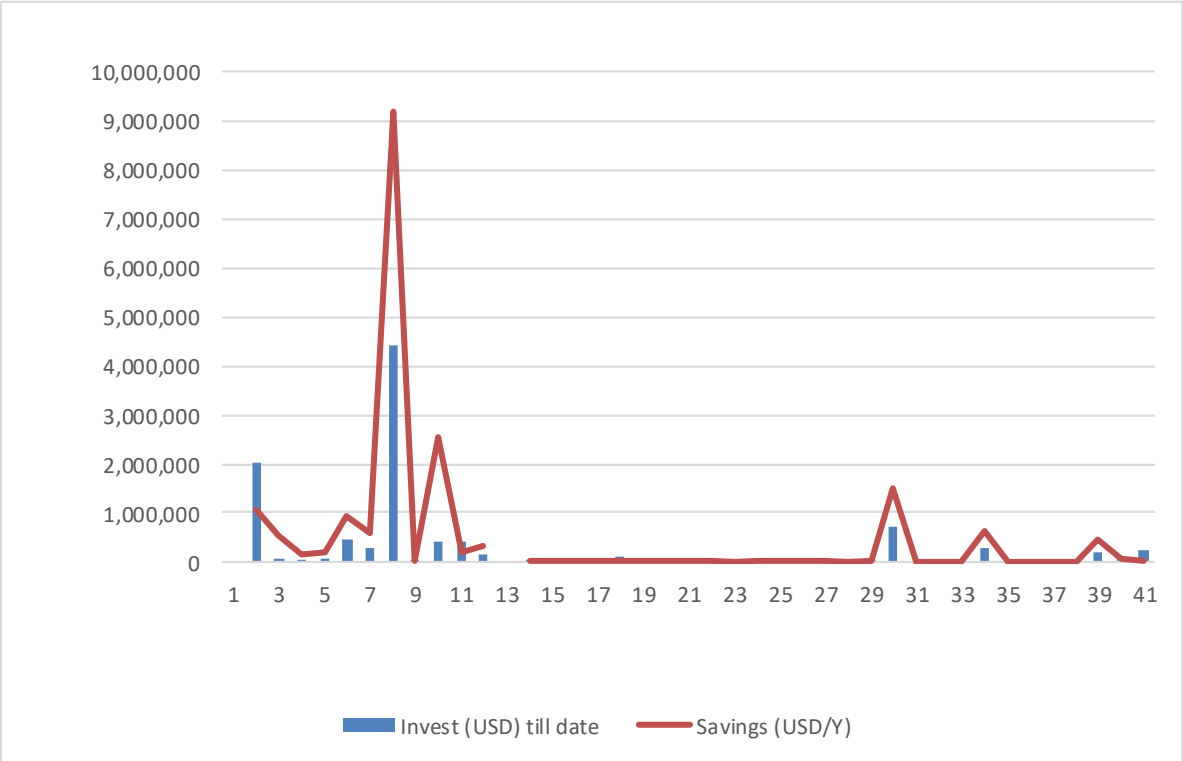
[19] Estimate provided by the project

enterprise that benefited the most from the project was the biggest employer in the province and the biggest source of tax revenue for the local government. This made the firm critical for the stability of the local economy and society. The manager of this enterprise explained that the global markets are extremely competitive. A small increase in the costs of production can make an enterprise non-competitive in the global supply chains. Given the nature of the global supply chains another major beneficiary of the project is the international retailer company to which the local enterprise supplied garments.

In summary the RECP innovations adopted by enterprises resulted in considerable efficiencies in the use of water and electricity and in the reduction of waste and pollution. This was possible because the RECP studies were able to identify ecoefficiencies that led to significant savings to the participating enterprise. While the strategy led to important environmental benefits, economic benefits were mostly concentrated in few firms – mostly in one enterprise- with much less benefits to medium and small enterprises.

## 8.4. Project Efficiency

**Figure 4: Investments and savings in textile and garment enterprises**




Efficiency is a measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results. The project was very efficient in the use of project funds when assessed from the economic and environmental returns generated by the project investment. By the time the evaluation took place without considering operational costs or maintenance costs this the calculated net present value (NPV) of returns over a ten-year period is around 60 million dollars[20]

[20] NPV was calculated assuming that the new investments would generate 19,617,078 per year over a period of 10 years with a discount rate of 10%. This does not include benefits generated by support to enterprises provided prior to February 2027 or the investments that were still in progress at the time of the evaluation on November 2019.

With respect to training activities, the project was also was quite efficient, training 2,737 persons in 11 provinces and reaching 727 enterprises (Table 2). On the other hand, achievements were very sparse with regards to the RECP network, the strengthening of ICPC, the strengthening of RECP policy, and the identification of options for RECP financing. A key factor affecting the extent of accomplishments was the delay in hiring the CTA during the early phase of the project. From 2015 to 2019, when the evaluation was carried out, the project went through three CTAs. This was key a factor that slowed down project implementation that also figured in the PMC decision to cut back some of the activities of the project. Delays in the establishment of an independent ICPC also slowed down the capacity development activities. Also, the shift to support the Jakarta based ICPC as the RECP service providing entity rather than the Bandung based CRECPI required to shift focus to the appointment and training of the ICPC staff roster[21]. Project delays often affect a project 's effectiveness, and particularly its transformational reach. This project followed a pattern frequently found in delayed projects. A review by UNIDO found that delays took place in "65% (34) of the evaluated project s and 34% (11) of these projects faced delays of greater than two years. Delays predominantly occurred during late design and early implementation phases and related to appointment of staff, tendering processes and identification of target beneficiaries" (UNIDO, 2018). The same report indicates that while some projects that experience delays in the early phases are able to catch up, delayed projects frequently require extensions and the reduction of project activities, and in many cases also require budget restructuring.

**12 Contributions to the enabling conditions for the transformation to green industry.**

While the project had major accomplishments in helping specific enterprises adopt RECP, C2C and IS approaches, particularly in the textile and garment sectors, the project contributions to the enabling conditions for the widespread adoption of CP were modest and unlikely to be sustainable.

**Widespread awareness of the economic, environmental and social benefits of RECP & IS & C2C.** The project helped to develop awareness of the need and opportunities to address pollution and waste among enterprises and government officials.

**Table 7: Visits to the Indonesia RECP website (June 2016 to Nov. 2019)**

| | Unique Visitors | Visits | Hits | Bandwidth |
|---|---|---|---|---|
| 2016 ( June <) | 1317 | 1936 | 349401 | 1.49 |
| 2017 | 7242 | 11858 | 259203 | 6.55 |
| 2018 | 7797 | 11998 | 213069 | 6.24 |
| 2919 (>Nov) | 9795 | 11051 | 213069 | 6.69 |

Awareness raising is mostly taking place among those who have been directly reached by the project. The project has also promoted a few mechanisms that are likely to continue to generate awareness and disseminate lessons and methods to new agents. Socialization of the results of RECP through visits and exchanges among project participants and some club activities are helping to communicate lessons to other interested stakeholders, but these mechanisms are not likely to reach a large number of people. The project has reached a larger audience through a website that has been operational since June 2016, which has attracted considerable traffic. By November 2019 the website registered 9,795 unique visitors for the year and a total of 213,009 hits.

[21] The PMU (including CTA) moved from Bandung to Jakarta in July 2018. At this time three of the five local staff in the PMU resigned and were replaced by new staff in Jakarta. All local staff in the PMU were subsequently transferred to ICPC.

**Available affordable RECP, IS & C2C technology.**

The project successfully tested technology (RECP, IS and C2C) to improve efficiency and reduce waste and pollution by participating enterprises, but the changes taking place are mostly at the scale of the enterprises. Vertically integrated enterprises or enterprises that have factories in different localities indicated that they were in the process of expanding RECP to other aspects of their operations that had not been initially included in the project. These included mostly medium-size and large enterprises in the textile and garment sector or in industrial parks. In the tourism and rice mill sectors, there was a modest adoption of new technologies or approaches. In the tourism sector, participating hotels frequently adopted energy-efficient lighting. In the rice mill sector, which is mostly composed of small enterprises operating in the rural areas, the project supported a few entrepreneurs in developing their own technological solutions – for example, the use of bran as a source of energy for drying rice. But progress in the latter case was very slow.

**Policy and regulatory framework supportive to RECP, IS & C2C.**

The government of Indonesia has promoted policies and programs that support the adoption of RECP. Under its Green Industry policy, the government carried out awards to clean industries and developed green industry standards (GIS) for specific sectors. PROPER and Ecolabel also provide incentives to cleaner production through its certification process. But key policy and regulatory barriers to the adoption of RECP remain. Most importantly, the enforcement of regulations and standards remains weak. Restrictions that do not allow enterprises to feed energy generated into the national electrical grid are a barrier to the adoption of renewable energy, and the low price of water provides little incentive for investing in new technologies for conservation. Solid waste and water treatment regulations and standards also function as a barrier for the adoption of industrial symbiosis and C2C approaches by prohibiting the use or trade of served waters or industrial by-products.

**Capacities to promote test, transfer & replicate RECP, IS & C2C technology.**

Most of the capacities developed by the project took place in the medium-size enterprises in the textile and garment industries and in industrial parks. The website, the case studies and handbooks developed by the project are important resources to help in the dissemination of approaches, methods and other lessons. But the mechanisms to use these resources are not yet fully developed. While the project trained many government officers in Jakarta and across the 11 provinces, staff rarely stays in the same position for a long time. Thus, ongoing staff training is required to ensure that institutional capacities remain. The RECP Network and ICPC were initially conceived as mechanisms to promote and support the adoption of RECP. Given the delays in the formation of ICPC as an independent organization and the recent staff changes, at the time of the evaluation ICPC was not yet ready to fulfill these roles. The RECP Network is mostly conformed of professionals or academicians that are part time RECP practitioners.

**Financial instruments & business models for RECP, IS & C2C**.

The PMC decided early on to cut back project activities pertaining to the identification of financial instruments for RECP. As indicated earlier, the project activities in this area consisted mostly of a report on global practices for small and medium-size enterprises applicable to RECP. Participating enterprises in the textile and garment sectors (and probably also in industrial zones) were able to tap into financial resources to carry out the necessary investments. As indicated, most

investments (98.4 percent) reported by the project's monitoring system were in the textile and garment sectors.[22]

**Financial instruments and business models for RECP, IS and C2C**.

The PMC decided to cut back project activities pertaining the identification of financial instruments for RECP in 2015. The project activities in this area consisted mostly of a report on global practices for small and medium-size enterprises applicable to RECP.

## 8.5. Factors that affected the attainment of project objectives

### Project design, inception, and implementation

This project set out to pioneer a new generation of UNIDO RECP projects informed by the experience of nearly 2 decades of UNIDO support to the adoption of cleaner production concept and technologies in developing countries. The project's preliminary studies confirmed little had been accomplished in Indonesia in nearly two decades of policies and ODA support to CP initiatives, and with multiple demonstrations of the financial and environmental advantages of RECP. During preparation, the design team identified the key barriers to the wider spread of RECP. These barriers included factors that went beyond the enterprise and the NCPC, which is where most previous projects had focused their attention. As indicated in theory of change presented in Figure 2, the project components are very consistent with the enabling conditions for the transformation to green industry.

The new project would need to go wide and focus on upscaling and spreading the adoption of RECP. For such a comprehensive approach to be feasible, it was important to define the system boundaries that the project would target. The identification of the intervention sectors (garment and textiles, food and tourism) were steps taken in this direction. The selected sectors responded to the priorities of the participating ministries (MOEF, MOI and MOT) which was an important factor that helped to develop country ownership of the project. But the sectors selected may have been too diverse in terms of the forms by which firms are linked to the market; in terms of their business models; and in terms of the extent of eco-efficiency opportunities that are attractive to enterprises. This was a tradeoff that allowed the project to move forward with government support, but that also most likely integrated further complexity into project implementation.

The delays caused by the long inception phase were a key factor affecting the attainment of project objectives. No qualified persons were willing to accept the CTA position. It took UNIDO three years to find a CTA acceptable to SECO. The project started in March 2012 and the CTA was hired in June 2015. Also, it was reasonable to expect that the previous projects would have produced experts and experiences that the SECO/UNIDO project could build on. After the CTA was hired in June 2015 the project progressed rapidly but it also became apparent that while cleaner production principles were not new to Indonesia, case studies documenting such adoptions and RECP experts were very rare. This compelled the project to scale up RECP activities in enterprises

[22] The total investments reported were of USD10 254 908, of these USD10, 087,826 (98.4%) were investments reported by textile and garment enterprises and USD167, 082 (1.6%) were reported by tourist sector enterprises. There was no information available on the investments made by enterprises in industrial parks. Enterprises in industrial parks were reluctant to disclose this information. Some industrial park enterprises interviewed during the evaluation indicated that the main factor in desiring on investments was related to the rates of return from investments. In one case of a cosmetic industry the enterprise was in the process of renovating the full industrial plant.

to generate case studies out of those experiences, and to focus the training of RECP experts and in the strengthening of national centers for cleaner production. The MTE took place as scheduled on October 2016 only 16 months after project implementation had started in earnest. Given the extent of delays, the MTE recommend modifying the scope of the project going deep instead of wide. This recommendation was adopted by the PMC in February 2017. The PMC also emphasized the need to focus on the achievement of sustainable impacts. It is not clear if the MTE and the PMC considered the possibility of a project extension, which would be the reasonable course of action under these conditions. These decisions made sense given that a there were very little capacities and documented examples of RECP in the country and those were key resources needed to promote the wider adoption of RECP in the country. This was followed by two changes in the CTA, which caused further delays that required two project extensions. These delays reinforced the need to focus on concrete project deliveries in such a way that in its last two and a half years the project focused mostly on RECP demonstrations and identification and strengthening of ICPC as an independent NCPC downplaying the attention on barriers to the broader adoption of RECP.

**The enterprises' business models and their articulation with the market**

One assumption of the project is that markets will reward cleaner production, with higher prices or a larger market share or a more secure share of the market. This assumption is held in the textile and garment sector and for large enterprises in industrial parks (and is likely applicable to other value chains that are well connected to global markets). It is not applicable to most SMEs in the tourism and rice milling sectors. The forms by which enterprises are articulated to the market are key in the adoption of RECP technology. The textile and garment sector is driven by to global brands through supply chains that are very sensitive to consumer demands related to environmental and social responsibility. Many of the garment factories supplied H&M, one of the larges garments retailors in the world. Around the time the project came in H&M started requiring its suppliers to work towards ZDHZ compliance. RECP provided advisory support and training to these enterprises. The garment enterprises are also structured in a business model to move a large quantity of merchandise at the lowest possible cost. Thus, textile and garment enterprises are receptive to technology that will help them meet the social and environmental standards set by the global brand and to technology that will reduce production costs. This explains the broad participation of industries in this sector in the project, and the willingness of some of the larger enterprises to invest on RECP.

Enterprises in the hospitality sector face a different condition. While the government of Indonesia is promoting the branding of small and medium-size cities as destinations for ecological and village tourism, the market demand for these services has been slow to develop. The participating industries in the hospitality sector were mostly oriented towards retaining and increasing the number of tourists that come to their hotels and were not as concerned with cutting marginal operational costs. For example, food waste in hotel restaurants carries a high operational cost for hotels. But managers are reluctant to regulate buffets in ways that would reduce waste, because they fear that clients will choose other hotels. Toiletries are another source of waste and cost that hotels are not willing to part with, for fear of losing customers to other local hotels. The rice mill sector is composed by small industries residing in rural areas. The price of rice is regulated by the government. Thus, rice mill operators have considerable incentives to reduce cost of production (mostly related to energy consumption during rice drying and disposal of waste). Rice mill entrepreneurs typically provide credit to farmers and are thus one step away from the risks associated with agriculture. Rice mill enterprises tend to be risk averse. Cultural factors and limited management skills also reinforce a caution in this sector.

**Eco-efficiency opportunities attractive to the enterprises**

The theory of change of the project assumed that RECP would provide tangible benefits to enterprises, government and other stakeholders. As we have seen the extent of the benefits of RECP and response by enterprises vary depending on resource intensity and pollution intensity of production processes, market incentives, business models and barriers encountered by enterprises. Most of the attractive opportunities for eco-efficiencies are in the textile and garment sector, and among industries in industrial parks. Enterprises in these sectors tend to be high consumers of energy and water and produce large amounts of by products and waste.

In the case of the hospitality sector, there are few opportunities for eco-efficiencies that are attractive to the enterprises. Two frequent efficiency gains refer to the introduction of energy-efficient bulbs and changes in the rotation of linens. In the hospitality sector, high energy-consuming boilers in hotels typically present an opportunity for eco-efficiencies, but hotels participating in the project are small and don't have high energy-consuming boilers. In the case of the rice mill sector, enterprises operate with highly inefficient technologies and generate large amounts of bran as a by-product. As these are low-cost operations, there are no off-the-shelf technological options to address the challenge they face, requiring considerable investments in time and human capital to develop and test the appropriate technological solutions, something the project was not designed for.

**Institutional and technical capacities for RECP support services**

The reviews carried out during project preparation concluded that institutional and technical capacities existed in Indonesia that could be developed to provide the necessary support services for the broad expansion of RECP. This assessment was correct in the sense that ICPC, CRECPI, ITB and other entities had been implementing projects for over a decade. But these entities functioned mostly as project implementation units of funds provided by international donors. To ensure the sustainability of RECP promotion and services after the UNIDO/SECO project ended, the project document proposed the establishment of an organization independent from the government that was self-sustaining and would provide continuous support in RECP. While sensible, this proved to be a very difficult to accomplish proposition. At the heart of the matter was that the staff affected by this decision were mostly people involved part-time in RECP, who had more solid careers as academics in various research institutes. The prospect of leaving a well-established, tenured position for one in a new organization with an uncertain financial future was thus not very attractive.

Under pressure from the project, MOEF moved to make ICPC and independent organization that was incorporated by officials from MOI, MOEF and the Indonesian Chamber of Commerce and Industry (KADIN) in their capacity as individuals. While ICPC is currently linked to MOI, MOEF and KADIN through the individual officers that sit in ICPC's board of directors, there is no formal link between ICPC and the three institutions. While CRECPI was an entity of Institute of Technology Bandung (ITB) for several years, the current ICPC is a new organization. By this time all former staff of CRECPI and ICPC had already resigned. At this point the project staff was transferred to ICPC. At the time of the evaluation in November 2019 the Chief Executive Officer (CEO) of ICPC had not been hired. [23] Once ICPC was stablished as Yayasan (an independent legal entity), the staff in the project management unit were transferred to ICPC and the project subcontracted ICPC to implement the remainder of the RECP activities, which has taken place under close supervision of the CTA. As several of the project activity cycles will still be in progress by the time the project is scheduled to close in June 2020, ICPC will continue providing technical assistance to enterprises for a few months. The project and ICPC have pursued other grants that

[23] The evaluation team was informed that a well-known CEO had been identified and negotiations were in progress

will allow ICPC to continue operating for until September 2020[24] Considering the time it took to develop other NCPCs, the time left in the project, even when taking into account additional grants, is not sufficient to build the necessary capacities.

**Demand for RECP services**

One of the assumptions of the project document that is made explicit in the theory of change is that the enterprises and other stakeholders would be willing to pay for RECP services once the benefits of RECP were apparent. This is a reasonable expectation that is supported by the benefits that were generated by just a portion of the support provided by the project. As illustrated in figure 3 all participating enterprises derived benefits from the adoption of RECP and in most cases those who invested the most derived the highest benefits. Nevertheless, during interviews with enterprises, the opinions were mixed on the extent to which enterprises would be willing to pay for RECP services. In most cases this was not an issue that managers had thought about. This was partly because decisions on investments are made directly by the owners of the factories and not the managers. After prodding, most stakeholders interviewed indicated that if RECP could demonstrate financial payoffs, most likely the owners would consider paying for the services. A key issue in this regard is the credibility and reputation of the RECP service provided. ICPC is in its early stages of development and has yet to build such credibility and reputation.

In the countries in which reputable national cleaner production centers (NCPC) exist, the UNIDO/UNEP project dedicated up to two decades to build their reputation and capacity by supporting the implementation of RECP demonstrations and adoption of RECP methodologies (UNIDO /UNEP, 2015). Yet the emphasis on financial sustainability, which has been achieved by some NCPCs, led to business models that are very similar to those of consultancy firms. For many of the NCPCs the engagement of policy dialogue takes place when a grant supports the activity, or they are contracted to do so under specific terms of reference. Training on RECP capacities of other organizations is frequently not a high priority, as NCPCs would be training the competition (UNIDO, 2017). It is also important to point out that the NCPC in developing and emerging economies are held to standards not applied to similar centers in Western Europe. Most offices and centers supporting RECP in Western Europe are not fully financially independent as they receive considerable subsidies. Thus, there has long been a recognition that RECP promotion and services would require financial support trough government programmes, private-public partnerships and/or ODA (OECD, 2001).

**Government commitment to policy and regulatory factors affecting the incentives for RECP adoption**

One important assumption in the project document is that there was a genuine intent from the government of Indonesia to achieve sustainable industrial development. This assumption was partially met. As indicated earlier in this report, the government of Indonesia has been implementing a string of cleaner production and green industry programs and policies, regulations, standards and incentives since the mid-1980s. But pollution and inefficient use of resources continued to expand.

The challenges in implementing regulations and standards are enormous given the vast number of enterprises involved and the scarce resources of regulators and enforcers. But at the same time the Government of Indonesia did little to remove policy barriers to the adoption of RECP and has a spotty record in enforcing regulations and standards. Without addressing policy and regulatory barriers and enforcement of regulations and standards adoption of RECP is unlikely to be mainstream in the country.

[24] At the time of the evaluation the project was negotiating a grant of Euro 50,000 from GIZ for RECP for Textile Industries in Citarum river catchment to be subcontracted to ICPC.

RECP has offered a promising option to help enterprises reduce costs through efficiencies, waste reduction and reuse. Yet there is more work to be done regarding policy incentives to support this development trajectory. There are regulatory changes that have the potential of strong incentives for the adoption of RECP and green industry at low or no cost to regulatory agencies. These are: 1. Regulations that allow private entities to sell or store energy in the grid. This could provide enterprises a powerful incentive to invest in renewable energy. 2. Regulations that define the conditions under which by-products can be traded or exchanged could result in the reduction of waste and a higher value across the production through the adoption of IS technology. 3. Regulation of the conditions by which enterprises can reuse water in their industrial processes could help address water scarcity, provide incentives for reuse of water and reduce contamination and discharges water bodies.

**Financial constraints for the MSEs adoption of RECP**

The project team preparing the project identified several financial instruments that could finance cleaner production technology. The team also anticipated that many enterprises would face financial barriers in the implementation of RECP. This assumption is confirmed by the findings presented above, which indicate that the few firms which invested the most were precisely those who benefited the most from RECP. The project staff typically considered the financial conditions of the enterprises when formulating their RECP recommendations. Thus, the relatively low level of rejection of recommendations is not a reliable indicator of the extent to which financial factors constrained the adoption of RECP. The uneven distribution of investments across enterprises is a much more reliable indicator of the extent to which the access to financial resources is a barrier for RECP adoption.

Most of the investments (98.4 percent) reported by the project were carried out by a handful of enterprises, all from the textile and garment sector.[25] Small enterprises in the rice mill found it particularly difficult to access credit. Other evaluations of RECP projects have also conducted that financial programmes for MSEs frequently carry high transaction costs to enterprises, and requirements are often too onerous considering the management capacities of these enterprises (UNIDO, 2019b).

## 8.6. Cross cutting issues

### 8.6.1. Monitoring and evaluation

With respect to the monitoring of RECP demonstrations in participating enterprises, the UNIDO RECP methodology provides very clear guidance to develop baselines, carry out reporting and assess economic and environmental benefits from interventions. There is no record of the activities and project results in the early phases of the project. While it is not clear when the records were lost, there is evidence from the CTA reports to the PMC that records were being kept and turned over to the new CTA. During the last phase the CTA kept records which allowed an assessment of the results and impacts realized at the level of the enterprise. In respect to other components of the project, the project document provides an extensive documentation of the

[25] The total investments reported were of USD10 254 908, of these USD10, 087,826 (98.4%) were investments reported by textile and garment enterprises and USD167, 082 (1.6%) were reported by tourist sector enterprises. There was no information available on the investments made by enterprises in industrial parks. Enterprises in industrial parks were reluctant to disclose this information. Some industrial park enterprises interview during the evaluation indicated that the main factor in deciding on investments was related to the rates of return from investments. In one case of a cosmetic industry the enterprise was in the process of renovating the full industrial plant.

state of institutions, capacities, and policies related to RECP. This description was used to assess the contributions of the project in those areas. The project allocated budget resources for the MTE, and the evaluation took place in a timely fashion. The findings and recommendations of the evaluation were reviewed in two special meetings of the PMC, and the recommendations of the MTE were used by the PMC to restructure the project. Funding for monitoring of the result of RECP demos was integrated as part of the operational budget.

### 8.6.2. Gender

The project did not report on gender issues. UNIDO RECP methodology does not make provisions for tracking or addressing gender issues. In addition, UNIDO Gender Strategy that required technical programmes and projects to promote gender equality and empowerment only came into effect in 2015 long after the project was designed in 2011-2012.

## 9. Conclusions, Lessons and Recommendations

The project helped improve resource productivity and environmental performance in enterprises in the targeted sectors. Many options for improvement identified during the RECP audits and implemented by the participating enterprises were low hanging fruits such as changes related to good housekeeping (34%), better process control (23%) and onsite reuse and recycling (12%). Recommendations that required some investments were mostly related to technology change (15%) and equipment modification (7%).

In total the participating firms invested just over 10 million dollars to implement the identified opportunities with a total return of 19.6 million dollars. Without considering operational costs or maintenance costs, this would represent a net present value (NPV) over a ten-year period of around 60 million dollars[26]. The number of RECP opportunities and extent of improvements achieved varied widely among the different sectors addressed by the project and the type of firms the project supported.

While the project helped specific enterprises adopt RECP, Cradle-to-Cradle (C2C) and IS approaches, particularly in the textile and garment sectors, its contributions to the enabling conditions for the widespread adoption of RECP were modest and unlikely to be sustainable. Most benefits of the projects have taken place through stakeholders directly reached by the project.

While the project supported the formation of a RECP Network in Indonesia that has a membership of around 140 persons, most of these members are part-time RECP professionals and have various levels of expertise.

The project also supported ICPC to become an independent organization that would provide RECP support services and training to enterprises. Yet the organization is in its early stages of development and while there are some short-term prospects for subcontracts, funding in the long-run is uncertain. So far only the H&M supply chain is likely to function as a robust mechanism in place to support replication, mainstreaming or scaling up of project results.

Thus, while the broader adoption of RECP in this supply chain is likely to result in considerable environmental benefits, the economic benefits that will be generated are likely to be for those sectors involved in this supply chain. Missing conditions for a broader adoption of RECP are: 1) a center or several centers of national cleaner production that are technically robust, acknowledged for their RECP excellence, and are financially sustainable; 2) robust capacities in the national and provincial governments to continue supporting the adoption of RECP and enforce regulations; 3) a regulatory framework that provided incentives for the adoption of RECP; and 4)

26 NPV was calculated using the total cash flow estimated by the investments over a 10 year period considering a discount rate of 10%.

the availability of financial resources that can support the development and adoption of technology by medium, small and micro enterprises. While UNIDO cannot be held responsible for the low capacities of national and provincial governments, the weak regulations and the lack of financial support mechanisms, these are key areas in which barriers need to be removed if widespread adoption of RECP is to take place more widely across sectors. These are conditions that are not likely to come about without a strong government commitment to carry out the needed reforms and an area in which international organizations like UNIDO can contribute by cultivating the necessary political will.

This project helped pioneer a new generation of UNIDO RECP projects informed by the experience of 2.5 decades of UNIDO support to RECP (and its predecessor concepts) in developing countries which indicated that to achieve a wide spread adoption of RECP, projects needed to overcome barriers in the context in which enterprises operate. The original approach proposed by the project was no longer limited to RECP demonstrations at the enterprise level and to the strengthening of a NCPC. The broader conditions affecting the incentives to enterprises would also need to be addressed. This made the case for a much more comprehensive but also more complex operation. However, several factors hampered the development of the project from the start. These factors include tradeoffs made during project design in the selection of the sectors that would be targeted, a prolonged inception phase and delays in the appointment of the CTA. But also, some assumptions during project design proved not to be present. One is the existence of a cadre of specialists, institutions and examples that the project builds on to adopt a broader strategy for the promotion of RECP in the country. And the other is a robust commitment within the country to the necessary changes to transition to green industry. The project thus had to focus on building capacities and supporting examples of RECP adoption by local enterprises.

Given the delays experienced by the project, by mid-term the PMC decided to reduce the number of localities and sectors in which the project was engaged. This was a sensible decision as the project reach may have expanded too wide. But at the same time the PMC also emphasized the need to move away from addressing broader system barriers and instead to focus on achieving impacts that were sustainable. This required the project to give more attention to demonstrate resource efficiency and pollution reduction in specific enterprises and move away from activities that addressed long-term transformation at a broader level.

**Lessons learnt**

1. The long delay of more than three years at the start of the project ultimately affected negatively on the performance and achievement of the project. Some of the key conditions that were designed to promote the wider adoption of RECP in Indonesia could not be implemented such as a regulatory framework that would provide incentives for the adoption of RECP. As a result, although the project was designed to contribute to a long-term transformation at a broader level, it ended up producing results mainly at enterprise level.

2. Interventions at enterprise level alone were not sufficient for projects to achieve transformational changes, regardless of the good results achieved at enterprise level. This project enabled the companies it supported to achieve good results, but it did not manage to remove key regulatory, financial and capacity barriers that would help the wide spread adoption of RECP in the country.

## Recommendations

### Recommendations to UNIDO and SECO

1. **Consider a no-cost project extension to enable ICPC to finish ongoing activities (to December 2020) to allow for oversight and reporting of the project activities that are still in operation.** ICPC present subcontract (2nd subcontract from July 2019 to June 2020) is up to 30th June 2020, which is also the end date of the Project. To conclude the project results additional time may be required after final report of the subcontract is received from ICPC. Additionally, ICPC requested for 2 months extension for the 1st subcontract (original period from July 2018 - June 2019 extended up to Aug 2019). If the activities are delayed due to unforeseen reasons under the present subcontract, this would lead to conclude the project with unfinished activities and may jeopardize ICPC and Project objectives.

2. **Support the MOI and the MOEF to strengthen NCPCs to deliver public good services required for the broader adoption of RECP.** UNIDO has been quite successful in supporting NCPCs around the world. Several of these centers are acknowledged as authorities on CP and are financially independent. These achievements have taken place in the context of collaborations with other agencies (UN Environment, for example) and with donors such as SECO over two decades. ICPC had gone through several phases before its participation in the project. But given its recent change in legal status, financial autonomy and high rates of staff turnover, it is not realistic to expect it to have developed a robust technical capacity and a track record to command the credibility of a national champion institution for RECP. Thus, it is important to continue to look for opportunities for UNIDO to continue to collaborate with MOI and MOEF to strengthen ICPC. Given the size of the country, it is also justified to seek to support more than one NCPC in Indonesia. The broad adoption of RECP will require that key public good services or functions are provided (such as awareness raising, training, dissemination of lessons, facilitation of access to information on RECP technology, and independent policy advocacy). But such services will be unlikely to be paid by private clients, and thus will probably require grants or some form of compensation that is not related to the market.

3. **The next UNIDO project, and future projects should more clearly identify the system and the boundaries of the system that the project seeks to transform.** This will help in designing projects that tackle barriers to RECP adoption in a comprehensive but realistic way in specific industrial sectors and type of enterprises, so that RECP can results in benefits across the targeted sectors. This is because the opportunities for eco-efficiencies and the stakeholder incentives for RECP adoption, the relevant regulations, and mechanisms to catalyze replication and mainstreaming vary considerably among different sectors and types of enterprises. The RECP Indonesia project targeted at least three complex systems that had very different characteristics and different types of enterprises (large, medium and small) that would have required different strategies, and possibly different projects, as well as more time.

4. **Future projects of UNIDO need to step up their efforts to build commitment of the GOI and other governments it supports to address key regulatory barriers by making available technical assistance, building countries know-how, facilitating access to information to options that have worked and supporting the generation of knowledge and information on the costs and benefits of reform and non-action.** Government ownership is considered a key factor affecting project effectiveness, but also a factor that is often lightly addressed during project design. The RECP Indonesia project, like many other projects, assessed government ownership based on broad policies statements and programs. But the project document also pointed out important gaps in regulations, weak enforcement of regulations and different priorities among participating ministries.

5. **Future UNIDO projects should be required to develop theory of change to demonstrate how they will interact with the system that they seek to change.** The project document presents a robust analysis of root causes that approximates a theory of change. TOC that succinctly defined the transformational objectives of the project and the conditions to enable such transformations may have guided restructuring of the project in a different direction that could have allowed to target the project in ways that could made it more manageable but without losing its transformational objective. It is important to point out that at the time the project was designed, TOCs were not widely used and root cause analysis was among the best approaches for the design of a transformational project. Now TOCs are much more commonly used and these are particularly useful tools to identify system components and system boundaries that a project can realistically address to tackle barriers in the broader system. This is done by carefully defining the domains, scales (spatial and temporal), stakeholders, and system interactions that are relevant to the long-term objectives of the project.

**Recommendations to MOI, MOEF, and to the Government of Indonesia.**

The current incentives by the government of Indonesia in support of green industry, sustainable consumption and production include certification by Green Industry Awards, PROPER and Ecolabel. These programmes are structured to recognize industries already implementing RECP and other green industry technologies. Indonesia can provide incentives to a broad range of enterprises at low or no costs to the national budget by removing barriers to the adoption of resource-efficient and cleaner technologies. This is a complex process that will require time, but by structuring foreign assistance projects (such as those implemented by UNIDO and financed by SECO). Four strategies for high potential gains are:

1. Allow private companies to sell and store electricity in the grid as an incentive for the investment on renewable energy technology (based on concept of net metering).
2. Set the price of water for industries at levels that provide incentives for water conservation and reflect the costs of water; regardless whether they are served by a utility (PDAM) or whether they have direct access to water (springs, groundwater, surface water).
3. Regulate waste in ways that establish the safety standards and allow/incentivize the trade, exchange, and re-use of industrial byproducts across enterprises as incentives to improve efficiency in the use of resources and reduce waste and pollution.
4. Develop standards and allow the re-use and recycling of used water to provide incentives for conservation.

## ANNEXES

## Annex 1: Terms of Reference of the Evaluation (in a separate document)

## Annex 2: References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## Annex 3. List of Person Interviewed

**Terminal Evaluation of RECP – UNIDO**
17 – 26 November 2019

| No. | Name | Sector | Position |
|---|---|---|---|
| 1 | Mr. Salil Dutt | RECP-UNIDO | Chief Technical Advisor (CTA), RECP Indonesia Programme |
| 2 | Mr. Noer Adi Wardojo | Government | Director of Centre for Environment and Forestry Standards, Ministry of Environment and Forestry (MoEF), Jakarta |
| 3 | Mr. Agil Abdul Hakim | Government | Standardization Compliance Analyst, MoEF |
| 4 | Ms. Melia Agusni | Government | Head of Production Standardization Compliance, MoEF |
| 5 | Mr. Ignatius Warsito | Government | Director of Industrial Region, Ministry of Industry (MoI) Office Jakarta |
| 6 | Mr. Teddy Sianturi | Government | Director for Research and Development of Green Industry (MoI) Office Jakarta |
| 7 | Mr. Sunita Dasman | ICPC* | Textile Specialist, ICPC |
| 8 | Mr. Albert Forgian | ICPC | ICPC Coord for Industrial |
| 9 | Ms. Ika | ICPC | ICPC Coordinator for Club |
| 10 | Ms. Prilly Rondonuwu | ICPC | ICPC for Policy Expert |
| 11 | Mr. Timotheus Lesmana | ICPC | Chairman ICPC Office |
| 12 | Mr. Indra Ni Tua | Government | Deputy Assistant on Infrastructure Development and Tourism Ecosystem, Ministry of Tourism |
| 13 | Mr. Remy Duiven | Donor (SECO) | Counselor, Head of Swiss Cooperation Office |
| 14 | Ms. Dewi Suyeto Tio | Donor (SECO) | National Officer, Swiss Cooperation Office |
| 15 | Mr. Sulaeman Madi | Textile & Garment industry | Sustainability Program Manager, H&M; Demo Unit Implementor |
| 16 | Ms. Anya Saphhira | Textile & Garment industry | Regional Sustainability Manager, H&M Indonesia; Demo Unit Implementor |
| 17 | Mr. Esam Alqararah | UNIDO | UNIDO Representative for Indonesia & Timor Leste |
| 18 | Ms. Evi | Government | Head of Section of Development on Tourism in Yogyakarta; as RECP Facilitator for the Club |
| 19 | Mr Sunarto | Village Govt. | Head of Karang Tanjung Village, Sleman- Jogjakarta, Central Java; Member of Club |
| 20 | Ms. Narti | Hotel industry | General Manager of Paku Mas Hotel in Yogyakarta, Demo Unit Implementor; Member of Club |
| 21 | Mr. Bisma Jatmika | RECP | Field Expert Tourism Sector, Jogjakarta |
| 22 | Mr. Roni Sianturi | RECP | Field Expert Hotel Sector, Jogjakarta |
| 23 | Mr. Frans Dipa | RECP | Field Expert Restaurant Sector, Jogjakarta |
| 24 | Mr. Imam | Hotel industry | Chief Engineer on IBIS hotel, Jogjakarta; Demo Unit Implementor |
| 25 | Mr. Farid | Hotel industry | Assistant of Chief Engineer on IBIS hotel, Jogjakarta |

| No. | Name | Sector | Position |
|---|---|---|---|
| 27 | Mr. Vivek Shrivastava | Textile & Garment industry | Operational Director of PT Busana Remaja Agracipta (PT BRA), Jogjakarta; Demo Unit implementor |
| 28 | Mr. Syafei | Hotel industry | Chief Engineer of Indoluxe Hotel, Jogjakarta; Demo Unit implementor |
| 29 | Mr. Dwi | Hotel industry | Assistant Chief Engineer of Indoluxe Hotel |
| 30 | Mr. Imam Subikhi | NGO | Head of Amenity Division and Tourist Attraction, Borobudur Authority Agency (BOB), Jogjakarta; Demo Unit implementor |
| 31 | Mr Indra | NGO | Borobudur Authority Agency (BOB), Jogjakarta |
| 32 | Mr. Fauzi Adi Wiratama | Estate Industrial | Estate Department Head, Serang (Banten Province); Demo Unit implementor |
| 33 | Mr. Cahyo Harsanto | RECP | Industrial Estate Expert |
| 34 | Mrs. Leony Sagita | Cosmetic industry | President Director PT Multielok Cosmetic, Serang (Banten Prov.); Demo Unit implementor |
| 35 | Mr. Ferry Surianto | Feed mill industry | Business Dev. Manager of PT Malindo Feed Mil Tbk., Serang (Banten Prov.); Demo Unit implementor |
| 36 | Mr. Eko | Feed mill industry | Assistant of Business Dev. Manager PT Malindo Feed Mil Tbk. |
| 37 | Mr. Tamami | Textile industry | Compliance Manager of PT Kahatex, Bandung (West Java); Demo Unit implementor |
| 38 | Mr. David | Textile industry | HSE Officer of PT Kahatex |
| 39 | Mr. Fajrul | Textile industry | Energy Officer of PT Kahatex |
| 40 | Ms. Lisma | Textile industry | Energy Staff of PT Kahatex |
| 41 | Mr. Erhans H. | Textile industry | Environment Develop of PT Kahatex |
| 42 | Mr. Sarijo | Textile industry | Energy Staff of PT Kahatex |
| 43 | Mr Hendra Mulia, | Government | Expert on Centre of Textile Bandung (CTB) |
| 44 | Mr. Samsoel Maarif | NGO | Advisory Committee of APINDO (Textile industry Employer's Association), Cimahi (West Java) |
| 45 | Mr. Doni Zoelveri | RECP | Field Expert of RECP for Small Scale Textile Industry, Cimahi, Bandung (Wet Java) |
| 46 | Mrs. Siti Nurjanah | RECP | Facilitator for Rice Mill, Karawang (West Java) |
| 47 | Mr. Rahmat | Rice Mill | Rice Mill Owner, Karawang (West Java); Club Member |
| 48 | Mrs. Entuk | Rice Mill | Rice Mill Owner, Karawang (West Java); Club Member |
| 49 | Mrs. Anyanah | Rice Mill | Rice Mill Owner, Karawang (West Java); Club Member |
| 50 | Mr. Wiryo | Rice Mill | Rice Mill Owner, Karawang (West Java); Club Member |
| 51 | Mr. Asep Saepudin | Rice Mill | Rice Mill Owner, Karawang (West Java); Club Member |
| 52 | Mr. Endang | Rice Mill | Rice Mill Owner, Karawang (West Java); Club Member |

*ICPC: Indonesia Cleaner Production Centre

## Annex 4: Interview protocol

**Independent terminal evaluation**

**National Resource Efficient and Cleaner Production (RECP) programme**
**Indonesia**

Name of person/s _____

Date of Interview_____

Name of Institution/Enterprise/Organization_____

Place of interview_____

Type of Stakeholder: Government, Enterprise, Civil Society. Labor, Academia, Other_____

Questions

1. Why did your enterprise / institution decided to take part of this project and what is the project relevance to your policy objectives? (Probe on when and what activities and issues were addressed)
2. What are the key results or achievements of this collaboration?
3. What other programs or factors contributed to these achievements? Did you get support from other entities? (Probe on types of support and interactions)
4. Have you have adapted methods, replicated or shared with other the RECP approaches or other lessons learned from your participation in the project? (Probe on what lessons, with whom and how sharing took place)
5. Assuming the project had not taken place, what would be the condition now?
6. Are there any additional lessons, recommendations, or comments that you would like to share with us?

## Annex 5: Updated Logical Framework Outcomes (2018)

| A. Narrative Summary | B. Indicators | C. Means of Verification | D. Assumptions | E. Extent of achievement (1) | F. Assumptions not met or other Comment (2) |
|---|---|---|---|---|---|
| | | | | *by evaluators* | |
| **Objective** | | | | | |
| **Programme objective:** Improved resource productivity and environmental performance of manufacturing, tourism and micro-sector enterprises in Indonesia and thereby contribute **to inclusive and** sustainable industrial development | **Aspects:**<br>1. *Establishment & Capacity Building of RECP promotion institutions.*<br>2. *Environment:* reduced environmental footprint (3) of enterprises<br>3. *Production Efficiency*: increased resource productivity (4) and reduced operational and/or compliance costs of enterprises<br>4. *Policy and institutional*: conducive policies to facilitate regulations implementation and RECP applications promoted by strong national custodian<br>5. *Innovation and Investment:* Relevant techno- economical RECP technologies made available and RECP investment is promoted. | • Institution is established with legal framework and operational as per business plan.<br>• Final project evaluation<br>• Aggregated results from demonstration and replication components (outputs 2.1-2.4)<br>• Recommendation of policies, legislation and/or guidelines conducive to RECP promotion<br>• Introduction of efficient and existed/or adapted RECP technologies<br>• Compilation of existing financial instruments for RECP investments and at least 4 bankable projects are assisted. | • RECP promotion institution is building credentials for projects and income other than RECP Indonesia project.<br>• Policy recommendations by project are implemented by GOI.<br>• Identified and evaluated innovative technology and technology transfer is promoted by national policy and regulations and realistic resource pricing.<br>• RECP financing for micro and small industries are supported by policy instruments considering their inherent weaknesses. | Moderately satisfactory | The project helped improve resource productivity and environmental performance in the targeted sectors. The most improvements took place among participating enterprises in the garment and textile sector. Adoption of RECP was directly related to the extent of eco-efficiency opportunities in the sector and the management capacity of enterprises. Most benefits of the projects have taken place through stakeholders directly reached by the project. Broder adoption of RECP as a result of the project is likely to be modest. Several factors hampered project accomplishments. This include some trade offs made during project design, a slow start up, changes of CTAs and staff in the executing agency, project assumptions that were not fully met, and different visions on the ultimate objective of the project. Critical factors affecting sustainability and broader spread of RECP are a NCPC that is in its early stages of development, policy and regulatory incentives not conducive to RECP adoption, weak enforcement of regulations and for SMEs barriers to financial resources. |

| Outcome (Principal) | | | | | |
|---|---|---|---|---|---|
| **A. Narrative Summary** | **B. Indicators** | **C. Means of Verification** | **D. Assumptions** | **E. Extent of achievement (1)** *Evaluators assessment* | **F. Assumptions not met or other Comment (2)** *by evaluators* |
| RECP concepts, methods, practices, technologies, synergies and policies relevant to RECP implemented by enterprises, governments, and suppliers of technology, finance and business services in particular in the target enterprise groups | 1. RECP activities of enterprises<br>2. RECP activities of government<br>3. RECP initiatives of suppliers of technology, finance and business services | • Independent Final /Terminal project evaluation report<br>• Annual reports/RECP case studies of enterprises, RECP promotion institution government agencies and suppliers of technology, finance and business services | • RECP is proven to be beneficial for target enterprise with tangible and measurable benefits. It is assumed that multiplier effect of RECP practices and technologies will take off in due course. | Moderately satisfactory | RECP concept, methods, practices, technologies have been adopted by participating enterprise groups which received the benefits on cleaner productions by energy reductions, efficient on water used and improved waste management. However, the implementation for enterprises are voluntary. The weak regulations and enforcement, and low incentives for the adoption are factors that constrained adoption among participating enterprises in some of the participating sectors (such as the hospitality sector and the rice milling sector). |
| *Outcome 1:*<br>**RECP Capacity and Network**:<br>Improved capacity for and widespread utilization of RECP services that support adaptation and adoption of RECP methods, practices and technologies | 1.1. Cadre of National expert in RECP and related services are in place and ICPC /NRECPI capacity is strengthened.<br>1.2. Recognition and retraining of NRECPI by implementing agency to utilize their services by private and public sectors and civil society | • Independent final project evaluation<br>• Quarterly/Biannual/Annual activity, management and governance reports of **ICPC incl. NRECPI** | • Limited uptake of RECP services offered by ICPC to enterprises of the target group/region due to lack of credential, confidence of a newly established RECP institution.<br>• Nodal agencies for NRECPI complement and supplement each other | Moderately unsatisfactory | The project did deliver key capacity development outputs such as training, demonstrations (RECP, C2C and IS), case studies, training manuals, study Tours. Nevertheless, in most cases capacities are likely to remain at the level of enterprises that participated in the project. Changes in implementing partners and staff turnover resulted in limited capacities in partner institutions. The project supported the strengthening of a RECP national network which is composed of close to 140 professionals. Most are people who have attended training workshops of the project and are not necessarily full time RECP TA professionals. Many are also reported to have basic knowledge of RECP. |
| *Outcome 2:*<br>**RECP Implementation and Replication:** Increased implementation of RECP methods, practices and | 2.1. Reduced waste and pollution intensities of enterprises<br>2.2. Increased | • Environment, financial and/or sustainability reports of enterprises<br>• RECP case studies compiled and | • There is insufficient consideration and lack of confidence in the potential and benefits of RECP as a | Satisfactory | Most of the participating enterprises adopted recommendations and carried out the changes proposed by the RECP studies carried out by the project ( only 6 out of 87 participating did not adopt any recommendations) investments. The |

| Outcome (Principal) | | | | | |
|---|---|---|---|---|---|
| **A. Narrative Summary** | **B. Indicators** | **C. Means of Verification** | **D. Assumptions** | **E. Extent of achievement (1)** *Evaluators assessment* | **F. Assumptions not met or other Comment (2)** *by evaluators* |
| technologies by enterprises of the target groups with monitoring and verification of the environment, resource use and economic benefits accomplished | resource productivity of enterprises<br>2.3. Reduced operational and compliance costs of enterprises<br>2.4. Improved occupational health and safety of the employees and community. | published<br>• Annual reports of ICPC and UNIDO<br>• Independent final project evaluation report. | management tool. Business contributions to efficient use of resources, reduced environmental footprints environmentally sound management of chemicals and reduction of process wastes and emissions is not well documented.<br>• Availability of success stories with environmental, resource use and cost benefits of RECP implementation can accelerate the wider consideration and uptake of RECP concepts, methods, practices and policies | | 87 cases including some replication during the project and the project develop handbooks and 9 case studies for each of the sectors which are posted in the WEB. Nevertheless, the mechanisms to continue promoting adoption of RECP remain weak (mostly the Network, the NCPC and the partner government agencies) and are not likely to lead to a broad adoption of RECP, C2C and IS in the sectors targeted by the project. |

| A. Narrative Summary | B. Indicators | C. Means of Verification | D. Assumptions | E. Extent of achievement (1) *Evaluators assessment* | F. Assumptions not met or other Comment (2) *by evaluator* |
|---|---|---|---|---|---|
| *Outcome 3:*<br>**RECP Policy and Regulatory Framework: Policy frameworks strengthened and put in place that foster the utilization of RECP methods, practices and (policy) instruments for the realization of the aims and objectives of the government's key relevant sector policies (environment, industry, and tourism)** | 3.1. Increased role for RECP in environmental, industry, tourism, innovation, competitiveness and other relevant policies at appropriate administrative levels<br>3.2. RECP opportunities are recognized and utilized for achieving Multilateral Environmental Agreements (MEA's)<br>3.3. RECP practices and technologies embedded in relevant technical standards and policy guidelines | • Annual reports of ICPC and CADGIE and Ministry of Tourism (MOT)<br>• Independent final project evaluation report.<br>• Publication of relevant policies, strategies and guidelines by the Government of Indonesia<br>• Publication of booklets on standards like Green Industry Standards and Green Industry Award. | • Consideration and uptake of techno-economically viable RECP measures and their implementation by enterprises is constrained by lack of policy incentive (fiscal environmental and industrial) from government and other stakeholder organizations | Moderately satisfactory. | Indonesia developed the policy framework mostly independently of the project. The project did give attention to methods, manuals and case studies to support policy implementation. The project also worked with government staff (MoEF, MoI and MoT) at the national and provincial levels to implement RECP, C2C and IS, thus helping build capacity among government staff. Nevertheless, staff reassignment and turnover are likely to erode current institutional capacities. Key policy barriers for RECP adoption were not removed. These include Subsidies to electricity, low price of water and lack of weak enforcement of regulations. |
| *Outcome 4:*<br>**RECP Technology and Innovation: Increased availability and affordability of suitable RECP technologies for the target enterprise groups** | 4.1. RECP innovation projects/ Technology s identified, evaluated till 2017 and promoted and implemented.<br>4.2. Capacity building on Techno-economic viable and environmentally desirable benefits achievable from implementation of RECP technologies | • Reports of RECP implementation experiences (both success and failure) where identified technology has been applied<br>• Independent final project evaluation report<br>• Annual report of ICPC<br>• Case studies compiled on technology implementation | • Opportunities for implementation of RECP technologies exist in Indonesia but are not realized due to lack of economic viability principally due to availability of cheap resources particularly water and energy.<br>• Lack of customized technology innovation/transfer support services in the country. | Moderately satisfactory | The project did successfully tested and approach to help enterprises adopt RECP technology, technological options were also developed for each of the three sectors the project targeted after the project was restructures. Availability of technology will require a cadre of well informed and updated professionals and institutions committed to cleaner production. Given the institutional and staff turnover of partner institutions such key resources were not sufficiently strengthened by the project. |

| A. Narrative Summary | B. Indicators | C. Means of Verification | D. Assumptions | E. Extent of achievement (1) *Evaluators assessment* | F. Assumptions not met or other Comment (2) *by evaluator* |
|---|---|---|---|---|---|
| *Outcome 5:*<br>**RECP Investment and Finance:**<br>Identification of financial instruments for RECP investments in target enterprise groups | 5.1 Financial instruments are compiled from successfully implemented countries and adapted to Indonesian conditions<br>5.2 Training on financial tools for RECP | • Reports of financial intermediaries<br>• Bankable proposal of identified RECP measures.<br>• Independent final project evaluation report<br>• Annual report of ICPC | • Profitable RECP investments are not being realized due to absence and/or non-affordability of financing for RECP related investments.<br>• Clients from small enterprises are not assessed to be creditworthiness due to their existing balance sheets. | Moderately Satisfactory | The project did carry out several studies and consultations seeking to identify and adapt existing SME financial instruments for CP. The studies supported by the project identified the key obstacles (such as onerous administrative requirements by banks or programs and low financial planning capacities of enterprises). Jet the project did not test models to address obstacles, this was a decision taken by the PMC at the time of restructuring in 2015. |

## Annex 6: Achievement of project outputs

| A. Outcome | b.Outputs | C. Expected Results and KPIs | E. Extent of achievement *Evaluators assessment* | F. Comment *by the evaluators* |
|---|---|---|---|---|
| **1.RECP capacity building, Networking and Advocacy.** | 1.1 RECP capacity building | 1. Training and coaching programmes delivered for ICPC professional staff and NRECPI members 15 experts are trained in RECP assessment & implementation (CTA).<br>2. Five short term advance trainings delivered on advanced RECP topics<br>3. ICPC is trained and operating as RECP service provider<br>--2 workshops for International buyers (CTA)<br>--30 in company training modules for demo units (CTA/ICPC)<br>--Training module on C2C and IS with potential partners | Exceeded target (2737 people trained in total) | |
| | 1.2 RECP networking | 1. NRECPI strengthened and operating with active membership of 120 registered members.<br>2. 10 RECP cases contributed by CRECPI members to RECP compendium | Exceeded target | |
| | 1.3 RECP Advocacy | 1. Four national conference on RECP align with national RECP related activities.<br>2 RECP integrated in award schemes of MoI and MoEF<br>3 Information materials with results for targeted industry groups (4) published for dissemination.<br>4 16 RECP workshops both for generic and RECP club establishment around Indonesia<br>5 Internet based knowledge platform/help desk operational for advancing and disseminating RECP information and knowledge in Indonesia<br>6 12 socialization workshops with partner institutions | Met | |
| **2.RECP Implementation & Replication** | 2.1 Textile sector | 1. RECP implemented and resource efficiency and pollution intensity benefits documented for 20 textile/garment industries<br>2. RECP options replicated through self-help approach to at least **10 enterprises** in textile with clubs<br>3. Compilation and publication of 14 RECP case studies from textile sector and 2 from last year food sector | Mostly met | The clubs had different functions. Mostly used by small enterprises to share experiences that help address internal issues. Among larger enterprises mostly used to share experience to address external issues such as regulatory concerns |

| A. Outcome | b.Outputs | C. Expected Results and KPIs | E. Extent of achievement *Evaluators assessment* | F. Comment *by the evaluators* |
|---|---|---|---|---|
| | 2.2 Industrial Zones (Batam and Makassar | 1. RECP implemented and resource efficiency and pollution intensity benefits documented for ~**5 enterprises** per zone, total ~**10 industries**<br>1. RECP replication in each zone involving minimum **5 enterprises** per zone, total **10 enterprises**<br>2. Possible selection of new Industrial Zone with MOI for IS project | Partially met | 2 clubs as planned in industrial zones could not be established due to the diverse nature of relatively large industries in the industrial zones with the decision making in corporate offices located outside the industrial zones |
| | 2.3 Tourism Sector (Yogyakarta, Sleman/Magalen and Borobodur region) | 1. RECP implemented and resource efficiency and pollution intensity benefits documented for 10 hotels/tourism enterprises in 3 regions (lake Toba to be replaced by Borobudur region)<br>2. RECP options replicated through self-help approach to at least 10 enterprises per region total 30 enterprises<br>3. RECP audit manual for sustainable tourism drafted in 2017 to be edited, translated and printed | Partially met | Expected 10 demos and 10 replications units 3 regions. So far there are project has reached 13 enterprises in total. |
| | 2.4 Micro Enterprises (small rice milling) | 1. Appropriate RECP techniques promoted to 10 micro- enterprises in rice milling through self-help approach of RECP club in addition to on-going 2 clubs.<br>2. RECP audit manual drafted in 2017 to be edited, translated into Bahasa and printed | Met | |
| **3. RECP Policy and Regulatory Framework**<br>**RECP Technology & Innovation** | 3.1 RECP in SCP policy | 1. Policy mapping and drafting RECP conducive policies (ICPC)<br>2. Pilot activity on RECP professional retraining and data based on expertise in EIA Possible Synergy with PROPER team | Met | |
| | 3.2 RECP in GI policy | 1. Policy pilot in 2 regions (ICPC) & (CADGI)<br>2. Support for GI certification RECP in GI Certification (ICPC) & (CADGI) | Met | |
| | 3.3 RECP in Green /sustainable Tourism policy | 1. Assist in action plan for MOT (ICPC) & (UNIDO) | Partially met | In process |

| A. Outcome | b.Outputs | C. Expected Results and KPIs | E. Extent of achievement *Evaluators assessment* | F. Comment *by the evaluators* |
|---|---|---|---|---|
| **4 Appropriate RECP technologies for sustainable product innovation identified, through application of C2C** | 4.1 Industrial Symbiosis | 1. Profiling for two industrial zones (IS was assessed to be not feasible in the industrial zones the project engaged so far)<br>2. Potential IS projects identified promoted initiated for implementation in newly selected Industrial zones | Met | 3 IS cases were already ongoing at the time of study. |
| | 4.2 Cradle to Cradle | 1. C2C National Workshop and application in 1 unit (UNIDO)& MOI<br>2. Assist in C2C documentation for C2C accreditation (UNIDO & MOI) | Partially met | In progress C2C certification in 3 textile companies |
| **5.RECP Investment and Financing** | 5.1.1 RECP financing gap assessment | 1.Opportunities and Challenges mapped for RECP financing | Partially met | Little progress towards outcome. The project objectives and expected outcomes for this component were reduced during the first restructuring of the project. |
| | 5.1.2 Review of existing instrument s | 2.Support for application of good international practices (standard, procedures etc.) with Indonesian financial institutions (eg. Financial Service Authority/OJK) | Met expectations after restructuring | Little progress towards outcome |
| | 5.2. RECP financing capacity building | 1. RECP financial Engineering using tools like COMFAR training (UNIDO) | Not Rated, | This activity was reduced significantly during restructuring. Met the expectations after restructuring |
| **6.Project management** | 6.1 Project Management | 1. Management and administration of national RECP Programme, under the supervision of a joint Management Committee (comprised of MOEF, MOI, and donor) | Moderately satisfactory | The quality of project management varied. During the first 3 years the absence of a CTA was a key factor contributing to project delays. Subsequently three changes in the project CTA also contributed to management disruptions. Most of the project accomplishments took place with in the last two years of operation (The was no record of progress reports from June 2012 to |

| A. Outcome | b.Outputs | C. Expected Results and KPIs | E. Extent of achievement *Evaluators assessment* | F. Comment *by the evaluators* |
|---|---|---|---|---|
| | | | | May 2015). |
| | 6.2 Capacity Building in RECP financing | 1. Provision of technical inputs and quality control of national RECP Programme & ICPC as RECP promotion institution. | Moderately unsatisfactory | The project conducted extensive training of ICPC, staff or MOEF, and other executing institutions. Changes in executing institutions and staff turnover limited the extent to which the project built institutional capacities. The time left until the end of the project is also insufficient to expect that capacities of ICPC will be sufficiently strengthened to provide function as a NCPC. The implementation of the applying eco-industrial parks still lack implemented |
| | 6.3 Project evaluation | 1. Independent final evaluation of the national RECP Programme | | |

This annex is based on table 2: Overview of Key Performance Indicators of RECP Indonesia Program Revised Activity Plan, Log-frame and Budget allocation as presented in the 8th Meeting of the PMC on 18 April 2018 as the basis for an extension at no additional costs until 30 June 2020

(2) Columns D, E, and F pertain to assessments made by the evaluation team.

(3)Ratings in column E are: **Highly satisfactory** **Satisfactory** **Moderately Satisfactory** **Moderately Unsatisfactory** **Unsatisfactory** **Highly Unsatisfactory**

(4) Comments indicate major factor that affected attainment of objectives, particularly when ratings are low.