INDEPENDENT EVALUATION DIVISION
OFFICE OF EVALUATION AND INTERNAL OVERSIGHT

INDEPENDENT TERMINAL EVALUATION

CUBA

TECHNOLOGICAL AND ENTERPRISE UPGRADING PROGRAMME focused on AGRO- CHEMICALS AND AGRICULTURAL MACHINERY PRODUCTION SECTOR (INDUSTRIAL UPGRADING AND MODERNIZATION IN CUBA)

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The evaluation team, that comprised of Mr. Jorge Alfredo Carballo Concepción, team leader and Ms. María Isabel Romero Sarduy, Team Members, hopes that this report will be instrumental in discussions and decision-making by the project stakeholders regarding « the way forward ».

Acronyms

CEDEMA (Agricultural Machinery Development Center)

CIPIM (Research Center for the Metallurgical Mining Industry)

CITMA (Ministry of Science, Technology and the Environment)

EMPREQUIM (Liquid Calcium Nitrate Production Plant Chemical Company)

GELMA (Logistics Business Group of the Ministry of Agriculture)

GESIME (Business Group of the Steel-Mechanical Industry)

GEIQ (Chemical Engineering and Research Center)

CIIQ (Chemical Industry Business Group)

IAGRIC (Agricultural Engineering Research Institute)

INICA (Sugarcane Research Institute)

INIFAT (Institute for Fundamental Research in Tropical Agriculture)

MES (Ministry of Higher Education)

MINAG (Ministry of Agriculture)

MINCEX (Ministry of Foreign Trade and Investment)

MINDUS (Ministry of Industry)

TE (Terminal Evaluation)

Glossary of evaluation-related terms[1]

Term	Definition
Assumptions	Hypotheses about factors or risks, which could affect the progress or success of a development intervention. Necessary conditions for the achievement of results at different levels; conditions that must exist if the project is to succeed but which are outside the direct control of the project management (also called the external logic of the project because these conditions lie outside the project's accountability and can be related to laws, political commitments, political situation, financing, etc.)
Baseline	The situation prior to a development intervention against which progress can be assessed or comparisons made.
Conclusions	The factors of success and failure of the evaluated intervention, with special attention paid to the intended and unintended results and impact, and more generally to any other strength or weakness. A conclusion draws on data collection and analyses undertaken, through a transparent chain of arguments.
Effectivess	The extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance.
Efficiency	Measuring how economically resources/inputs (funds, expertise, time, etc.) are converted to results.
External evaluation/review	The evaluation/review of a development intervention conducted by entities and/or individuals outside the donor and implementing organizations.
Gender mainstreaming	Strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated (the ultimate goal being to achieve gender equality).
Indicator	Quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention.
Impact	Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.
Lessons learned	Generalizations based on evaluation that abstract from the

[1] Definition of main evaluation concepts based on OECD DAC Guidelines

Term	Definition
	specific circumstances to broader situations. Frequently, lessons highlight strengths or weaknesses in preparation, design, and implementation that affect performance, outcome, and impact.
Logical framework	Management tool used to improve the design of interventions, most often at the project level. It involves identifying strategic elements (inputs, outputs, outcomes, impact) and their causal relationships, indicators, and the assumptions or risks that may influence success and failure (thus aimed at facilitating planning, execution, monitoring and evaluation of a development intervention).
Milestones	Interim targets; points in the lifetime of a project by which certain progress should have been made, providing an early warning system and basis for monitoring the trajectory of change during the lifetime of the project.
Monitoring	A continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds.
Outcome	The likely or achieved short-term and medium-term effects of an intervention's output(s).
Outputs	The products, capital goods and services, which result from a development intervention; changes resulting from the intervention which are relevant to the achievement of outcomes.
Recommendations	Proposals aimed at enhancing the effectiveness, quality, or efficiency of a development intervention; at redesigning the objectives; and/or at the reallocation of resources. Recommendations should be linked to conclusions.
Relevance	The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities, partners' and donors' policies. Note: Retrospectively, the question of relevance often becomes a question as to whether the objectives of an intervention or its design are still appropriate given changed circumstances.
Results	The output, outcome or impact (intended/unintended, positive/negative; direct/indirect) of a development intervention.
Review	An assessment of the performance of an intervention, periodically or on an ad hoc basis. Note: Frequently "evaluation" is used for a more comprehensive and/or more in-depth assessment than "review". Reviews tend to emphasize operational aspects.

Term	Definition
Risks	Factors that may affect the successful achievement of an intervention's objectives (often outside the scope of the project).
Sustainability	The continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time.
Target	Definite ends to be achieved; specifies a particular value that an indicator should reach by a specific date in the future.
Target group	Specific individuals/organizations for whose benefit an intervention is undertaken.
Theory of Change	Assumed overarching intervention logic from outputs to impact; schematic conceptual basis of the interventions including assumptions.

Executive Summary

Purpose

This final evaluation (TE) covers the entire formulation and implementation stage of the project entitled "Technological and Business Modernization Program for the Agrochemicals and Agricultural Machinery Production Sector (Industrial Modernization and Upgrading in Cuba)", implemented in the period 2016- 2021. The main objective of the TE is to provide the main stakeholders of the project (the Government of Cuba, the Donor and UNIDO) with an independent assessment of:

(i) The design

(ii) Relevance

(iii) Efficiency

(iv) Effectiveness

(v) Progress towards impact

(vi) Sustainability of results

(vii) Cross-cutting dimensions, such as gender equality and environment.

The TE was carried out in the period September to December of 2021 by a team of two independent national evaluation consultants (Mr. Jorge Alfredo Carballo Concepción, Team Leader and Ms. María Isabel Romero Sarduy, Team Member). The evaluation is based on document review, visits to beneficiary centers, technical meetings, interviews and focus groups.

The project

UNIDO is supporting the efforts of the Cuba Program in the wanted transformation of the industrial sector through the formulation of a Country Framework, which focuses on three main outcomes: a) Improvement of the business environment and sustainability; b) Improvement of industrial competitiveness; and c) Attraction of foreign investment. This framework will enable the promotion of investments and strategic alliances to strengthen the capacities and competitiveness of its enterprises in the industrial sector. UNIDO aims to contribute to Cuba's inclusive and sustainable industrial development and improve food security through the modernization and upgrading of the fertilizer and agricultural machinery industrial sectors. The immediate goal of the Cuba IUMP (*Cuba Industrial Upgrading and Modernization Programme)* is to enhance industrial performance and competitiveness of pilot

enterprises operating in the Fertilizers and Agricultural Machinery industrial sectors within the existing industrial hubs.

The project is implemented through three main modules:

1. The sectorial analysis and the elaboration of a strategic action plan for the priority industrial lines/subsectors of fertilizers and agricultural machinery in Cuba;

2. The business diagnosis and industrial upgrading of selected pilot manufacturing enterprises operating within the identified priority sub-sectors/existing centers;

3. The strengthening of human and technical capacities of national counterpart institutions/experts in the provision of business diagnosis and industrial upgrading, sectorial analysis and other best practices.

Cuba's agriculture sector is struggling to meet local demand for basic foodstuffs. To overcome this deficit in food supply, Cuba is importing agricultural products, which has created additional demand for foreign exchange and increased its dependence on foreign currency. Thus, in particular, agricultural production is highly dependent on the supply of fertilizers, both from imports and local production. Domestic production of mineral fertilizers, such as nitrogen-, phosphate- and potash-based products, remains at a low level, while consumption is steadily increasing. As a result, demand is mainly met by imports.

Also, the limited production of machinery and equipment/implements in Cuba has made it necessary to import substantial quantities of agricultural machinery and implements. The main challenges are related to the limited availability of equipment and implements in the domestic market, accompanied by dependence on imports, inefficient use of existing capacities and low productivity, lack of entrepreneurial and management skills, as well as limited support from technical support institutions.

The project is funded by the Russian Federation with a total budget of US$ 2,000,000. The project is implemented in partnership with the Ministry of Industries (Chief Counterpart).

The project responds to two of the sustainable development goals defined by the 2030 agenda; SDG 2 "Achieve food security and improved nutrition and promote sustainable agriculture" and SDG 9 "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation"; contributes to food security through the upgrading and modernization of the fertilizer and agricultural machinery industrial sectors and all these aspects are in line with UNIDO's thematic priorities focused on poverty reduction through productive activities, trade capacity building, and environment and energy.

Summary of the findings

The design of the project document is correct in terms of the formulation and description of the objectives to be achieved. It builds on UNIDO's support to Cuba's efforts to promote investments and strategic alliances for the strengthening of its industrial capacities and competitiveness in priority industrial sectors. It describes in detail the background of the project, including the felt need to advance in the transformations of the country's industrial base. Regarding the logical framework, in terms of the formulation of indicators and their measurability, and its clearly defined objectives, the design is considered satisfactory.

The development and impact objective proposed by the project was sustainable economic and industrial development and sustainable food supply to the local market and to Cuba's growing tourism sector, and to move in this direction, the immediate result/objective was to increase, in line with demand, the reliable supply of fertilizers and agricultural machinery of higher quality and range for Cuba's agricultural sector.

Regarding the implementation of the project, it is considered very relevant in terms of its alignment with national policies and strategies, its contribution to the expansion and diversification of the country's industrial base, specifically with regard to the production of liquid fertilizers, as well as the efforts made to improve the business environment and the installed capacities of the sector. The ownership of the project by the actors and stakeholders is considered very strong, which is motivated by the country's social political context and the motivations of the sector's entrepreneurs and workers.

The project has contributed to increasing the production levels and quality of liquid fertilizers in the country. The CBFERT product was already a product developed by CIIQ, but thanks to the project it has been possible to expand its annual production capacity to 400 KL liters (production quantity of 10 KL before project support). In addition, a technological improvement has been made to reach an annual calcium nitrate production capacity of 2800 KL/year in 2 work shifts (production quantity of 480 KL/year in 2 work shifts before project support).

In terms of overall effectiveness and potential impact, the results are satisfactory. The project developed the technological and management capacities of liquid fertilizer producers. It advanced in the appropriation of the importance of liquid fertilizers for the country's agricultural production and in the use of agricultural machinery for the application of these products. The project contributed to the implementation of comprehensive measures focused on productivity, industrial performance of the companies and process quality, leading to increased production of efficient and environmentally friendly fertilizers. This not only increased the production of crops in

high demand in the Cuban diet, but also the ability to safeguard human health and the environment.

The evaluation process showed that progress was made towards the impact objective, based on the improvement of the industrial performance and competitiveness of the companies participating in the project. The CIIQ obtained an international patent for the CBFERT product, which will have an impact on its exportation. In this sense, the project had tangible results attending to the development/impact objective.

1. Productive Impacts: Increased production and quality of two liquid fertilizers: calcium nitrate and CBFERT. Yields were increased between 35% and 65% compared to the reference samples in the following crops: carrots, beans, cucumbers, lettuce, peppers and tomatoes and increase in the number of grains in the cobs of soybean crops in relation to the control sample.

2. Economic impacts: Improvements in the export/import balance of liquid fertilizers and production equipment. The economic results of the CBFERT factory increase workers' salaries by 30% (with the pay-for-performance system). CBFERT's production is increased by 40 times and the production potential in the country is raised by having two factories, in the west and in the center.

3. Technological and social impacts: CBFERT fertilizer was already a product developed by CIIQ, but thanks to UNIDO it was possible to expand its production capacity and automate its processes. Quality control of liquid fertilizer production is achieved by improving and certifying laboratories.

4. Scientific impacts: It has been experimentally demonstrated that CBFERT, via its foliar application, supplies nutrients that are directly absorbed and assimilated with the simultaneous contribution of amino acids, vitamins, and minerals that optimize metabolic processes, acting as a stimulant for plant growth, increasing plant resistance to adverse conditions, phytotoxicity, pests, or diseases, increasing crop yields and product quality, and reducing harvesting time, application costs, and use rates.

There were also achievements beyond those foreseen in the project document, including positive changes in workers' motivations, constant willingness to improve technically, which includes the implementation of the companies' technical and economic plans, and higher production levels in line with the new installed capacities. It was also possible to patent the use of the generic CBFERT trademark in Austria and Antigua and Barbuda under the denomination of VITAPLIC Foliar, which places the product in question in an advantageous position for export.

The project coordination office in Cuba, in conjunction with the Ministry of Industry, became a support center for the sector. Execution was generally smooth in terms of

quality and timeliness, and synergies were created with other related initiatives. These positive results mentioned above can be considered a desired effect of the project.

In addition, progress reports were regular and provided excellent input to this final evaluation (following the activity-based format of UNIDO progress reports). Evidence was found, with respect to sustainability, that the results will be maintained after the end of the project, hence the satisfactory rating. In terms of cross-cutting dimensions, gender equality is given limited attention in the project (according to UNIDO's checklist), however, the evaluation process found results that address strategic gender interests by contributing to the improved status and position of women. The environmental perspective was rated Highly Satisfactory in the project, based on the production of fertilizers that prevent pollution and the reuse of waste, contributing to increased agricultural production and safeguarding human health and the environment.

Conclusions

The evaluation made it possible to verify the productive impacts of the project based on the manufacture in the country of two fertilizers: calcium nitrate and CBFERT, both liquid substances. The use of the latter has increased the yields of crops that are highly demanded in the diet of Cuban men and women, as well as crops for animal feed. This has been possible thanks to its incorporation into the state fertilization strategy, carried out by the Cuban Ministry of Agriculture as the institution responsible for agricultural production and food security in the country.

The project has made important achievements in the two years of implementation. Resources have been allocated to the improvement and technological upgrading of liquid fertilizer production plants. Improvements in the machinery production sector will have to be addressed in later phases.

Likewise, economic impacts were verified, among which stand out the improvement in the external balance of the fertilizer and production equipment sector; technological impacts from the improvement of the CIIQ and EMPREQUIM plants, since they have better laboratory equipment; positive environmental impacts because soil contamination is avoided by using a product that incorporates spirulina, reduces chemicals, and protects crops from pest attacks. Finally, social impacts have been proven: working conditions have been improved, technologists have been trained, new jobs have been created, and a contribution has been made to the food security line of the local development strategy of the municipality where the CIIQ is located.

The project has great relevance. It has contributed to the economic and social development policies and strategies implemented in Cuba since 2011. As a result of its actions, local food production has been boosted and higher productive yields have been generated, which translates into higher income. Likewise, companies that produce

agrochemicals and agricultural machinery in Cuba have been modernized in order to renew their technology for the production of liquid fertilizers.

Various actions were taken to ensure that the results of the project are maintained after its completion, guaranteeing its sustainability. The knowledge and skills acquired from the training sessions, the communication campaigns in various media to disseminate the results through the marketing strategy, the participation in national and international events, the appropriation of the results by prestigious scientific institutions and central government agencies, as well as the financial self-sustainability strategies designed by participating institutions, stand out.

The project paid special attention, from the review of the reports and the visits to the organizations, to the achievement of a collaborative and articulated work environment between departments and management, from a perspective of responsibility in the compliance with regulations and processes. In addition, it emphasized the values, attitudes and responsibilities of workers and leaders, together with the constant willingness to improve technically, from a culture of commitment, rooted in the people of these organizations, and a motivating process to learn to deal with difficulties and achieve the expected results.

With respect to the cross-cutting dimensions, gender equality received limited attention in the project; nevertheless, the evaluation process made it possible to confirm results that address strategic gender interests by contributing to a better condition and position for women. The environmental perspective had a positive impact on the project's results, based on the production of fertilizers that prevent pollution and the reuse of waste, helping to increase agricultural production and safeguard human health and the environment.

Recommendations on "the way forward"

To UNIDO

1. Make equipment purchases with firms registered in the country in order to have guarantees against breakage or other start-up problems, as well as spare parts.

Justification

It is difficult to find spare parts for equipment whose firms are not registered in the country and this has a negative impact on the sustainability of the project's actions.

2. Include in the formulation, implementation, monitoring and evaluation of the next project the cross-cutting issues (gender and, environment), with their specific indicators.

Justification

UNIDO's impact dimensions include environmental protection and social inclusion. In order to advance towards gender equality, it is essential to investigate existing inequalities with a view to overcoming them. Although there are public policies in Cuba (health, education, social security) that benefit women, the patriarchal culture persists in the public and private spheres, hence the importance of mainstreaming the gender perspective in projects to avoid widening gaps. With respect to environmental issues, it is very important that the actions developed favor the environment. In this regard, it is important to define indicators for monitoring and evaluation of both perspectives, disaggregate all information by sex, prioritize and benefit women through project actions, among others.

3**. Have a full time international technical expert on the project.**

4. In addition to ensuring that the logical framework includes intelligent and, to the extent possible, quantified indicators and target values, it is useful to include as an Annex to a logical framework a matrix describing how each of the indicators will be measured, including by whom and how often.

5. It is proposed for future projects to introduce the Environmental and Social Safeguards toolbox for risk management to ensure the monitoring of the project's negative externalities.

To CIIQ and EMPREQUIM

1. Strengthen, update and fully implement the marketing strategy to maintain the existing domestic market share and position the company in new markets, both in Cuba and abroad.

Justification

Expanding markets with the CBFERT product would allow for greater income, which favors financial self-sustainability and the well-being of the workers who produce it. Exploring international markets will ensure increased exports of the product.

2. Develop the product for specific productions, e.g. CBFERT pineapple, CBFERT citrus, particularizing it according to crops and soil conditions.

Justification

It is important to diversify the product portfolio, which would involve raising the quality of products for participation in specific market segments.

To GEIQ

1. **Deconcentrate CBFERT production through the creation of other plants in the country, as well as the possibility of technology transfer to other production centers.**

2. **To train in project management the people who will assume responsibilities in the management of social, environmental and financial projects.**

Justification

The training received in the project shows the relevance of creating CBFERT plants in the center and east of the country, since fertilizer plants should not be more than 200 km from the final client.

3. **Establish partnerships with companies that produce packaging of various assortments for CBFERT.**

Justification

This allows ensuring the production and commercialization of the product for **customers of different sizes.**

4. **Prioritize the diversification of raw material sources for the production of CBFERT fertilizer.**

Justification

Instability in obtaining raw materials for CBFERT delays production and marketing, which negatively impacts the supply to producers and therefore food security.

To the Donor (Russian Federation)

1. **Extend the project for two more years and contribute the remaining resources to complete the pending actions, particularly in the area of agricultural machinery.**

Justification

The project has visualized potentialities for the production of agricultural machinery for liquid fertilizer irrigation. There is significant knowledge of fertigation and spray application processes in farmhouses, which have increased as a result of the project. It would be desirable for the Center for the Development of Agricultural Machinery (CEDEMA) to manufacture a fertilizer spreader for protected crops, which would allow the use of liquid fertilizers produced in the country's industries. The diagnosis carried out by the project identified the spray truck with nozzle arms as the most suitable for these purposes.

2. Identify suppliers willing to trade their products with Cuba.

Justification

Unilateral sanctions against Cuba hindered the acquisition of the Filter Press for the Nuevitas factory, since 3 bids were necessary and this delayed the installation of this equipment. Identifying the supplying companies willing to trade with Cuba would favor the implementation of a future project.

Resumen ejecutivo

Objetivo

Esta Evaluación Final (ET) abarca toda la etapa de formulación y ejecución del proyecto titulado *"Programa de Modernización Tecnológica y Empresarial del Sector de Producción de Agroquímicos y Maquinaria Agrícola (Modernización y Perfeccionamiento Industrial en Cuba)"*, ejecutado en el período 2016- 2021. El objetivo principal de la ET es proporcionar a los principales actores del proyecto (el Gobierno de Cuba, el Donante y la ONUDI) una evaluación independiente de:

(i) El diseño

(ii) Pertinencia

(iii) Eficiencia

(iv) Eficacia

(v) Progreso hacia el impacto

(vi) Sostenibilidad de los resultados

(vii) Dimensiones transversales, como la igualdad de género y el medio ambiente

La ET se llevó a cabo en el período de septiembre a diciembre de 2021 por un equipo de dos consultores de evaluación independientes (el Sr. Jorge Alfredo Carballo Concepción, jefe de equipo, y la Sra. María Isabel Romero Sarduy, miembro del equipo). La evaluación se basa en la revisión de documentos, visitas a los centros beneficiarios, reuniones técnicas, entrevistas y grupos focales.

El proyecto

La ONUDI está apoyando los esfuerzos del Programa Cuba para la deseada transformación del sector industrial a través de la formulación de un Marco de País, que se centra en tres resultados principales: a) Mejora del entorno empresarial y la sostenibilidad; b) Mejora de la competitividad industrial; y c) Atracción de la inversión extranjera.

Este marco permitirá la promoción de inversiones y alianzas estratégicas para fortalecer las capacidades y la competitividad de sus empresas en el sector industrial. La ONUDI pretende contribuir al desarrollo industrial inclusivo y sostenible de Cuba, y mejorar la seguridad alimentaria a través de la modernización y mejora de los sectores industriales de fertilizantes y maquinaria agrícola. El objetivo inmediato del Programa de Mejoramiento y Modernización Industrial de Cuba (IUMP) es mejorar el

rendimiento industrial y la competitividad de las empresas piloto que operan en los sectores industriales de los fertilizantes y la maquinaria agrícola dentro de los núcleos industriales existentes.

El proyecto se ejecuta a través de tres objetivos principales:

1. El análisis sectorial y la elaboración de un plan de acción estratégico para las líneas/subsectores industriales prioritarios de fertilizantes y maquinaria agrícola en Cuba;

2. El diagnóstico empresarial y la modernización industrial de las empresas manufactureras piloto seleccionadas que operan dentro de los subsectores prioritarios/centros existentes identificados;

3. El fortalecimiento de las capacidades humanas y técnicas de las instituciones/expertos nacionales de contraparte en la provisión de diagnóstico empresarial y modernización industrial, análisis sectorial y otras mejores prácticas.

El sector agrícola cubano tiene dificultades para satisfacer la demanda local de alimentos básicos. Para superar este déficit en el suministro de alimentos, Cuba está importando productos agrícolas, lo que ha creado una demanda adicional de divisas y ha aumentado su dependencia de las monedas extranjeras. Así, en particular, la producción agrícola depende en gran medida del suministro de fertilizantes, tanto de las importaciones como de la producción local. La producción nacional de fertilizantes minerales, como los productos a base de nitrógeno, fosfato y potasa, se mantiene en un nivel bajo, mientras que el consumo aumenta constantemente. En consecuencia, la demanda se satisface principalmente con las importaciones.

Asimismo, la limitada producción de maquinaria y equipos/implementos en Cuba ha hecho necesaria la importación de importantes cantidades de maquinaria e implementos agrícolas. Los principales retos están relacionados con la limitada disponibilidad de equipos e implementos en el mercado nacional, acompañada de la dependencia de las importaciones, el uso ineficiente de las capacidades existentes y la baja productividad, la falta de habilidades empresariales y de gestión, así como el limitado apoyo de las instituciones de apoyo técnico.

El proyecto está financiado por la Federación Rusa con un presupuesto total de 2.000.000 de dólares. El proyecto se ejecuta en colaboración con el Ministerio de Industrias de Cuba (contraparte principal).

El proyecto responde a dos de los objetivos de desarrollo sostenible definidos por la agenda 2030; el ODS 2: *"Lograr la seguridad alimentaria y la mejora de la nutrición y promover la agricultura sostenible"*; y el ODS 9: "*Construir infraestructuras resilientes, promover la industrialización inclusiva y sostenible y fomentar la innovación"*; lo que contribuye a la seguridad alimentaria a través de la actualización y modernización de los sectores industriales de los fertilizantes y la maquinaria agrícola. Estos aspectos están en línea con las prioridades temáticas de la ONUDI centradas en la reducción de la pobreza a través de actividades productivas, la creación de capacidad comercial y el medio ambiente y la energía.

Resumen de los hallazgos

El diseño del documento del proyecto es correcto en cuanto a la formulación y descripción de los objetivos a alcanzar. Se basa en el apoyo de la ONUDI a los esfuerzos de Cuba por promover inversiones y alianzas estratégicas para el fortalecimiento de sus capacidades industriales y su competitividad en sectores industriales prioritarios. Describe en detalle los antecedentes del proyecto, incluyendo la necesidad sentida de avanzar en las transformaciones de la base industrial del país. En cuanto al marco lógico, a la formulación de indicadores y su mensurabilidad, y sus objetivos claramente definidos, el diseño se considera satisfactorio.

El objetivo de desarrollo e impacto propuesto por el proyecto es el desarrollo económico e industrial sostenible y el abastecimiento sostenible de alimentos al mercado local y al creciente sector turístico de Cuba, y para avanzar en esta dirección, el resultado/objetivo inmediato es aumentar, en función de la demanda, el suministro fiable de fertilizantes y maquinaria agrícola de mayor calidad y gama para el sector agrícola cubano.

En cuanto a la ejecución del proyecto, se considera muy relevante en cuanto a su alineación con las políticas y estrategias nacionales, su contribución a la ampliación y diversificación de la base industrial del país, específicamente en lo que respecta a la producción de fertilizantes líquidos, así como los esfuerzos realizados para mejorar el entorno empresarial y las capacidades instaladas del sector. La apropiación del proyecto por parte de los actores y las partes interesadas se considera muy fuerte, lo que está motivado por el contexto político social del país y las motivaciones de los empresarios y trabajadores del sector.

El proyecto ha contribuido a aumentar los niveles de producción y la calidad de los fertilizantes líquidos en el país. El producto CBFERT ya era un producto desarrollado por el CIIQ, pero gracias al proyecto se ha podido ampliar su capacidad de producción anual a 400 KL de litros (cantidad de producción de 10 KL antes del apoyo del proyecto). Además, se ha realizado una mejora tecnológica para alcanzar una capacidad de producción anual de nitrato de calcio de 2800 KL/año en 2 turnos de trabajo (cantidad de producción de 480 KL/año en 2 turnos de trabajo antes del apoyo al proyecto).

En términos de eficacia general y de impacto potencial, los resultados son satisfactorios. El proyecto desarrolló las capacidades tecnológicas y de gestión de los productores de fertilizantes líquidos. Avanzó en la apropiación de la importancia de los fertilizantes líquidos para la producción agrícola del país y en el uso de maquinaria agrícola para la aplicación de estos productos. El proyecto contribuyó a la aplicación de medidas integrales centradas en la productividad, el rendimiento industrial de las empresas y la calidad de los procesos, lo que permitió aumentar la producción de fertilizantes eficientes y respetuosos con el medio ambiente. Esto no sólo aumentó la producción de cultivos de gran demanda en la dieta cubana, sino también la capacidad de salvaguardar la salud humana y el medio ambiente.

El proceso de evaluación mostró que se avanzó hacia el objetivo de impacto, basado en la mejora del rendimiento industrial y la competitividad de las empresas participantes en el proyecto. El CIIQ obtuvo una patente internacional para el producto CBFERT, lo que repercutirá en su exportación. En este sentido, el proyecto tuvo resultados tangibles atendiendo al objetivo de desarrollo/impacto.

1. Impactos productivos: Aumento de la producción y la calidad de dos fertilizantes líquidos: nitrato de calcio y CBFERT. Los rendimientos se incrementaron entre un 35% y un 65% respecto a las muestras de referencia en los siguientes cultivos: zanahorias, judías, pepinos, lechugas, pimientos y tomates y aumento del número de granos en las mazorcas de los cultivos de soja respecto a la muestra control.

2. Impactos económicos: Mejoras en el balance de exportación/importación de fertilizantes líquidos y equipos de producción. Los resultados económicos de la fábrica CBFERT aumentan los salarios de los trabajadores en un 30% (con el sistema de pago por rendimiento). La producción de CBFERT se incrementa en 40 veces y se eleva el potencial de producción en el país al contar con dos fábricas, en el oeste y en el centro.

3. Impactos tecnológicos y sociales: El fertilizante CBFERT ya era un producto desarrollado por el CIIQ, pero gracias a la ONUDI fue posible ampliar su capacidad de producción y automatizar sus procesos. El control de calidad de la producción de fertilizantes líquidos se logra mediante la mejora y certificación de los laboratorios.

4. Impactos científicos: Se ha demostrado experimentalmente que el CBFERT, a través de su aplicación foliar, suministra nutrientes que se absorben y asimilan directamente con el aporte simultáneo de aminoácidos, vitaminas y minerales que optimizan los procesos metabólicos, actuando como estimulante del crecimiento vegetal, aumentando la resistencia de las plantas a condiciones adversas, fitotoxicidad, plagas o enfermedades, incrementando el rendimiento de los cultivos y la calidad del producto, y reduciendo el tiempo de cosecha, los costos de aplicación y las tasas de uso.

También se obtuvieron logros más allá de los previstos en el documento del proyecto, entre los que destacan los cambios positivos en la motivación de los trabajadores, la constante voluntad de mejora técnica, que incluye la ejecución de los planes técnicos y económicos de las empresas, y el aumento de los niveles de producción en función de las nuevas capacidades instaladas. También se logró patentar el uso de la marca genérica CBFERT en Austria y Antigua y Barbuda bajo la denominación de VITAPLIC Foliar, lo que coloca al producto en cuestión en una posición ventajosa para la exportación.

La oficina de coordinación del proyecto en Cuba, junto con el Ministerio de Industrias, se convirtió en un centro de apoyo para el sector. La ejecución fue, en general, fluida en términos de calidad y entraga en tiempo, y se crearon sinergias con otras iniciativas relacionadas. Estos resultados positivos mencionados pueden considerarse un efecto deseado del proyecto.

Además, los informes de progreso fueron regulares y proporcionaron una excelente aportación a esta evaluación final (siguiendo el formato basado en actividades de los informes de progreso de la ONUDI). Con respecto a la sostenibilidad, se encontraron pruebas de que los resultados se mantendrán tras la finalización del proyecto, de ahí la calificación satisfactoria. En cuanto a las dimensiones transversales, la igualdad de género recibe una atención limitada en el proyecto (según la lista de control de la ONUDI), sin embargo, el proceso de evaluación encontró resultados que abordan

intereses estratégicos de género al contribuir a la mejora de la condición y la posición de las mujeres.

La perspectiva medioambiental fue calificada como altamente satisfactoria en el proyecto, sobre la base de la producción de fertilizantes que evitan la contaminación y la reutilización de los residuos, contribuyendo al aumento de la producción agrícola y salvaguardando la salud humana y el medio ambiente.

Conclusiones

La evaluación permitió comprobar los impactos productivos del proyecto a partir de la fabricación en el país de dos fertilizantes: el nitrato de calcio y el CBFERT, ambas sustancias líquidas. El uso de este último ha incrementado los rendimientos de cultivos altamente demandados en la dieta de los cubanos y cubanas, así como de cultivos para la alimentación animal. Esto ha sido posible gracias a su incorporación a la estrategia estatal de fertilización, llevada a cabo por el Ministerio de la Agricultura de Cuba como institución responsable de la producción agrícola y la seguridad alimentaria del país.

El proyecto ha conseguido importantes logros en los dos años de ejecución. Se han destinado recursos a la mejora y actualización tecnológica de las plantas de producción de fertilizantes líquidos. Las mejoras en el sector de la producción de maquinaria deberán abordarse en fases posteriores.

Asimismo, se han verificado impactos económicos, entre los que destacan la mejora del balance externo del sector de fertilizantes y equipos de producción; impactos tecnológicos por la mejora de las plantas del CIIQ y de EMPREQUIM, al contar con mejores equipos de laboratorio; impactos ambientales positivos porque se evita la contaminación del suelo al utilizar un producto que incorpora espirulina, se reducen los productos químicos y se protegen los cultivos del ataque de plagas. Por último, se han comprobado impactos sociales: se han mejorado las condiciones de trabajo, se han formado tecnólogos, se han creado nuevos puestos de trabajo y se ha contribuido a la línea de seguridad alimentaria de la estrategia de desarrollo local del municipio donde se ubica el CIIQ.

El proyecto tiene una gran relevancia. Ha contribuido a las políticas y estrategias de desarrollo económico y social implementadas en Cuba desde 2011. Como resultado de sus acciones, se ha impulsado la producción local de alimentos y se han generado mayores rendimientos productivos, lo que se traduce en mayores ingresos. Asimismo,

se han modernizado las empresas productoras de agroquímicos y maquinaria agrícola en Cuba para renovar su tecnología en la producción de fertilizantes líquidos.

Se han llevado a cabo diversas acciones para asegurar que los resultados del proyecto se mantengan tras su finalización, garantizando su sostenibilidad. Destacan los conocimientos y habilidades adquiridos a partir de las sesiones de capacitación, las campañas de comunicación en diversos medios para difundir los resultados a través de la estrategia de marketing, la participación en eventos nacionales e internacionales, la apropiación de los resultados por parte de prestigiosas instituciones científicas y organismos del gobierno central, así como las estrategias de autosostenibilidad financiera diseñadas por las instituciones participantes.

El proyecto prestó especial atención, a partir de la revisión de los informes y las visitas a las organizaciones, al logro de un ambiente de trabajo colaborativo y articulado entre los departamentos y la dirección, desde una perspectiva de responsabilidad en el cumplimiento de las normas y procesos. Además, se destacaron los valores, actitudes y responsabilidades de los trabajadores y líderes, junto con la constante voluntad de mejorar técnicamente, desde una cultura de compromiso, arraigada en las personas de estas organizaciones, y un proceso motivador para aprender a enfrentar las dificultades y lograr los resultados esperados.

Con respecto a las dimensiones transversales, la igualdad de género recibió una atención limitada en el proyecto; sin embargo, el proceso de evaluación permitió confirmar resultados que atienden a intereses estratégicos de género al contribuir a una mejor condición y posición de las mujeres. La perspectiva medioambiental tuvo un impacto positivo en los resultados del proyecto, basado en la producción de fertilizantes que evitan la contaminación y la reutilización de residuos, contribuyendo a aumentar la producción agrícola y a salvaguardar la salud humana y el medio ambiente.

Recomendaciones sobre "el camino a seguir"

A la ONUDI

1. Realizar las compras de equipos con empresas registradas en el país para tener garantías contra roturas u otros problemas de puesta en marcha, así como repuestos.

Justificación

Es difícil encontrar repuestos para los equipos cuyas empresas no están registradas en el país y esto tiene un impacto negativo en la sostenibilidad de las acciones del proyecto.

2. Incluir en la formulación, ejecución, seguimiento y evaluación del próximo proyecto los temas transversales (género y medio ambiente), con sus indicadores específicos.
Justificación
Las dimensiones de impacto de la ONUDI incluyen la protección del medio ambiente y la inclusión social. Para avanzar hacia la igualdad de género es imprescindible investigar las desigualdades existentes con el fin de superarlas. Si bien existen políticas públicas en Cuba (salud, educación, seguridad social) que benefician a las mujeres, persiste la cultura patriarcal en el ámbito público y privado, de ahí la importancia de incorporar la perspectiva de género en los proyectos para evitar la ampliación de las brechas. Con respecto a los temas ambientales, es muy importante que las acciones desarrolladas favorezcan al medio ambiente. En este sentido, es importante definir indicadores de seguimiento y evaluación de ambas perspectivas, desagregar toda la información por sexo, priorizar y beneficiar a las mujeres a través de las acciones de los proyectos, entre otros.

3. Contar con un experto técnico internacional a tiempo completo en el proyecto.

4. Además de garantizar que el marco lógico incluya indicadores, es útil incluir como anexo a un marco lógico una matriz que describa cómo se medirá cada uno de los indicadores, incluyendo por quién y con qué frecuencia.

5. Se propone que en futuros proyectos se introduzca la caja de herramientas de Salvaguardias Ambientales y Sociales para la gestión de riesgos, a fin de garantizar el seguimiento de las externalidades negativas del proyecto.

A CIIQ y EMPREQUIM

1. Fortalecer, actualizar y aplicar plenamente la estrategia de comercialización para mantener la cuota de mercado nacional existente y posicionar la empresa en nuevos mercados, tanto en Cuba como en el extranjero.

Justificación

La ampliación de los mercados con el producto CBFERT permitiría obtener mayores ingresos, lo que favorece la autosostenibilidad financiera y el bienestar de los trabajadores que lo producen. La exploración de los mercados internacionales garantizará el aumento de las exportaciones del producto.

2. Desarrollar el producto para producciones específicas, por ejemplo, CBFERT piña, CBFERT cítricos, particularizándolo según los cultivos y las condiciones del suelo.

Justificación

Es importante diversificar la cartera de productos, lo que implicaría aumentar la calidad de los productos para participar en segmentos de mercado específicos.

A GEIQ

1. Desconcentrar la producción de CBFERT mediante la creación de otras plantas en el país, así como la posibilidad de transferencia de tecnología a otros centros de producción.
2. Formar en gestión de proyectos a las personas que asumirán responsabilidades en la gestión de proyectos sociales, ambientales y financieros.

Justificación

La capacitación recibida en el proyecto muestra la pertinencia de crear plantas de CBFERT en el centro y este del país, ya que las plantas de fertilizantes no deben estar a más de 200 km del cliente final.

3. Establecer alianzas con empresas que produzcan envases de diversos surtidos para la CBFERT.

Justificación

Esto permite asegurar la producción y comercialización del producto para clientes de diferentes tamaños.

4. Priorizar la diversificación de las fuentes de materias primas para la producción del abono CBFERT.

Justificación

La inestabilidad en la obtención de materias primas para el CBFERT retrasa la producción y la comercialización, lo que repercute negativamente en el suministro a los productores y, por tanto, en la seguridad alimentaria.

Al donante (Federación de Rusia)

1. Prorrogar el proyecto dos años más y aportar los recursos restantes para completar las acciones pendientes, especialmente en el ámbito de la maquinaria agrícola.

Justificación

El proyecto ha visualizado potencialidades para la producción de maquinaria agrícola para el riego con fertilizantes líquidos. Existe un importante conocimiento de los procesos de fertirrigación y de aplicación de pulverización en las explotaciones agrícolas, que se ha incrementado como consecuencia del proyecto. Sería deseable que el Centro de Desarrollo de Maquinaria Agrícola (CEDEMA) fabricara una abonadora para cultivos protegidos, que permitiera el uso de fertilizantes líquidos producidos en las industrias del país. El diagnóstico realizado por el proyecto identificó el camión pulverizador con brazos de boquilla como el más adecuado para estos fines.

2. Identificar proveedores dispuestos a comercializar sus productos con Cuba.

Justificación

Las sanciones unilaterales contra Cuba dificultaron la adquisición del Filtro Prensa para la fábrica Nuevitas, ya que fueron necesarias 3 licitaciones y esto retrasó la instalación de este equipo. Identificar a las empresas proveedoras dispuestas a comerciar con Cuba favorecería la implementación de un futuro proyecto.

1. Introduction

1.1. Evaluation objectives and scope

This report covers the final independent/terminal evaluation (TE) of the project "Technological and Enterprise Upgrading Program on agro- chemicals and agricultural machinery production sector (Industrial Upgrading and Modernization in Cuba)". The overall objective of this evaluation is to provide the main stakeholders of the project (the Government of Cuba, the Donor - the Russian Federation - and UNIDO) with an independent assessment of the project design, relevance, efficiency, achievement of expected outputs, outcomes and impact based on the objectives and indicators according to the logical framework (i.e. project effectiveness and progress towards impact), as well as an assessment of the likely sustainability of the project results. In addition to following the standard evaluation criteria mentioned above, the evaluation covers cross-cutting dimensions such as gender equality and environmental issues.

The evaluation results in a set of conclusions and recommendations, as well as lessons learned from the project, which are expected to contribute to the design and implementation of the new phase of the project, as well as to similar ongoing or future UNIDO projects elsewhere in the field of enterprise upgrading and modernization.

This TE covers the entire duration of the project from its start date, June 2016, with completion date originally estimated for February 2021, extended at no cost to the project until December 2021.

1.2. Methodology and process

The TE has been conducted in accordance with the UNIDO Evaluation Policy (June 2018), which in turn corresponds to the UNEG Norms and Standards. The evaluation was guided by the Terms of Reference (ToR), which provided an overview of the project background and its implementation, and included the core evaluation questions to be addressed by the TE structured around the standard evaluation criteria and listing a number of additional cross-cutting issues to be addressed by the evaluation.

The TE has been conducted in accordance with the UNIDO Evaluation Policy. The evaluation was guided by Project Document (Prodoc) which provided a general overview of the project background and its implementation and included the general lines of the evaluation addressed by the TE, structured

around the standard evaluation criteria and listing a number of additional cross-cutting issues to be addressed by the evaluation. The evaluation framework (included as Annex 3) is driven in essence by the following key evaluation criteria/questions (based on the Prodoc):

(a) What are the key drivers and barriers to achieving the long-term objectives, and to what extent has the project contributed to creating the conditions necessary to address the drivers, overcome the barriers and contribute to the long-term objectives?

(b) To what extent has the project worked, and has the project done well, with a good cost/outcome ratio?

(c) What have been the main results of the project (outputs, outcomes and impact)? To what extent have the expected results been achieved or are likely to be achieved? To what extent will the results achieved be sustained after the end of the project?

(d) What lessons can be learned from successful and unsuccessful practices in project design, implementation and management?

The TE was carried out by two national evaluation consultants, who worked as a team and brought to this evaluation exercise complementary perspectives (knowledge of the project context in Cuba, evaluation experience and understanding of UNIDO interventions, including in the area of enterprise upgrading). Based on an initial round of document review, the inception report was designed and delivered.

The evaluation framework guided the collection, analysis and triangulation of baseline data/information from (i) the reconstructed Theory of Change (discussed in section 2.3 below), (ii) document review, interviews with (iii) counterparts and other project partners, (iv) project teams in Vienna and Havana (Online), (v) interviews with beneficiary companies and (vi) observations during the field mission.

The evaluation design was carried out in consultation with the project coordination office in Havana and in cooperation with the local project coordination office. Appointments were made and logistics arranged to visit one company outside Havana and several institutions in the capital (7 institutions). Several meetings with the national project team provided the necessary elements and information to carry out the evaluation, as well as to share with the national team the preliminary observations of the TE. In summary, the evaluation team met with the following stakeholders:

- ✓ All institutional partners (Ministry of Industries, Chemical Business Group, Ministry of Agriculture, several public sector members of the project Advisory Board (AB). In addition, representatives of other project partner institutions.
- ✓ The project team (the project team leader at UNIDO headquarters, the project coordination team in Havana and several other project experts);
- ✓ The UNIDO project officer in Cuba;
- ✓ The companies that have benefited from the support of the project, except for the factory in Holguin, which was interviewed by telephone (see list in Annex 4).

As per the UNIDO Evaluation Guidelines, the assessment includes a six-point rating for each of the evaluation criteria using a scale from highly satisfactory to highly unsatisfactory.

Finally, based on the triangulation of the information gathered, the team prepared this evaluation report. It was shared with the project management team in Vienna and Havana, relevant national stakeholders, the Donor and UNIDO's Independent Evaluation Office for review and comments. Based on written comments received after sharing, the evaluation team addressed/reflected these comments and finalized the evaluation report.

1.3. Limitations

The epidemiological situation in the country, as a result of COVID-19, prevented visiting CEDEMA in Holguin, as visits to other provinces were not allowed before November the 1st, 2021. This led to an extension of the time foreseen for the evaluation in order to visit EMPREQUIM, which took place between December 12 and 14.

There were no significant limitations as regards the evaluation, other than the following challenges that were however addressed during the evaluation exercise, in particular:

- Need for certain information beyond the project documentation provided at the start of the assignment: the request of the evaluators for additional documents was addressed by the project teams in Havana and by the UNIDO Program Officer. The evaluation team prioritized the design and writing of the report in a timely manner.

- Since there were no Terms of Reference for the project[2], the Evaluation Team worked with the project document, which clearly defined the basis and goals to be achieved. Additional project information was also available on site:

  https://open.unido.org/projects/CU/projects/150262

- The focus has been on capturing achievements within the framework of the expected results:

  1. Sectorial analysis and elaboration of a strategic action plan for the development of the priority industrial lines/subsectors of Fertilizers and Agricultural Machinery in Cuba, based on the key development needs of food and agricultural crops.

  2. Business diagnosis and industrial modernization of the selected pilot manufacturing enterprises operating within the identified priority fertilizer and agricultural machinery product lines/subsectors/existing centers, through technological modernization, optimization of business processes and improvement of the enterprises' performance and competitiveness.

  3. Establishment/strengthening of human and technical capacities of national counterpart institutions in the provision of business diagnostic and industrial upgrading services, sector analysis and competitiveness promotion; and other related best practices and services to the respective priority industrial sectors.

- Data were collected to assess the results of project work that goes beyond the expected outputs, namely targeted policy advice and support to the implementation of specific policies (aimed at helping to make the business environment more conducive).

2. Project background

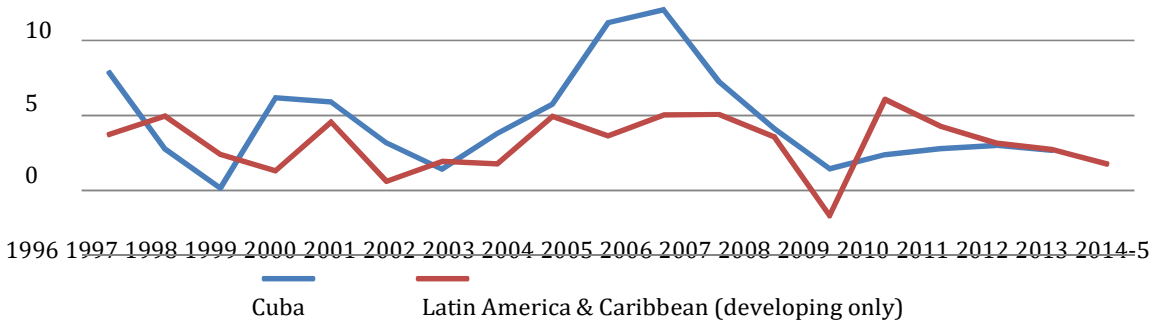
2.1. Country context including sector specific issues

After 1989 as a result of drastic reduction in trade and frequent changes in domestic economic policies, GDP dropped 35% between 1989 and 1993. In 1999-2001, the structural reforms towards the economy of services were reflected in growing participation of services exports, representing around two thirds of total exports sales in 2001 (10% in 1989). The country achieved some progress in structural reforms, such as productive activity by

[2] Terms of Reference are produced as per the Government requirements and not part of UNIDOF TC Guidelines.

the non-State economy. The State continued to play a predominant role in the economy and thus the private sector had a reduced space to develop its activities. In contrast, the 3,700 agricultural co- operatives and the 147 000 private farmers continued as a viable option supported by the State.

Figure1. GDP growth (annual %)



Source: World Bank Data (2015).

In 2004-2007, GDP increased at an annual average of 9.2%, mainly due to trade with Venezuela, as well as the economic aid and price subsidies. Improvements were also observed in the social servicesin the same period.

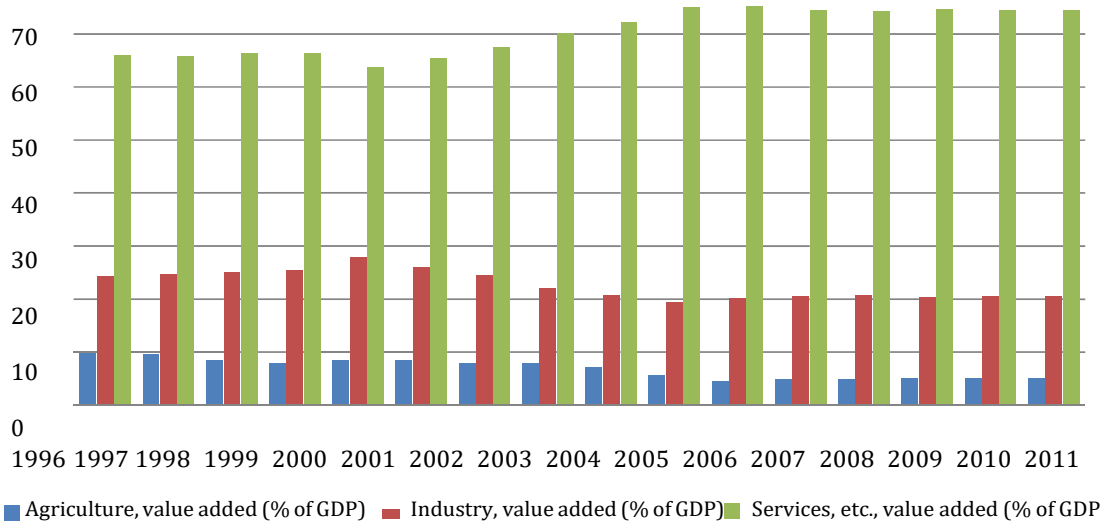
Despite a period of improved socio-economic situation in the above mentioned period, the country was adversely affected by the global economic crisis of 2008-2009[3]. The rate of GDP decelerated from 7.3% in 2007 to 4.1% in 2008. Exports stagnated at 21% of GDP and the trade balance turned negative (-2.9% of GDP in 2008). Trade in products and services were affected due to lower demand,such as a decrease in sales of Cuban professional services (physicians, nurses, teachers, etc.) to Venezuela, the main source of expansion for Cuba's exports of services in that period. Domestically, inefficient manufacturing operations, lack of sufficient financing for upgrading of the manufacturing base and infrastructure issues were of significant challenge.

Since 2011, a process of structural transformation has taken place, including reforms in economic andadministrative organization, such as the economic reform moving some of the small and medium stateenterprises in services and small scale industry to non-state forms of management, especially cooperatives. The social impact of changes was also reflected in the number of self-employed workers, thus, while in 2010 a total of 157,371 workers

[3] Mesa-Lago C.; Vidal-Alejandro, P: "The impact of the Global Crisis on Cuba's Economy and Social Welfare", J. LAt.Amer. Stud. 42, 689-717, Cambridge University Press, 2010.

were self-employed, by 2014 this figure reached 467,000. However, the structural reforms have not significantly improved the macroeconomic indicators, which are also attributed to other factors that influence the economic performance. Thus, despite partial recovery after the global crises, growth slowed to 2.7% in 2013 with an average of 2.5% in 2009-2013.

Figure 2: Structure of Cuba's value added as % of GDP (1996-2011)



Source: World Bank Data (2015).+

The main industrial challenges of Cuba are:

- ✓ Need to increase share of industry in GDP: in 2013 industry contributed only to 13.7% of GDP.
- ✓ Need to decrease import dependency: currently 58%.
- ✓ Need for diversification of export industry: nickel, pharmaceuticals, sugar, beverages andCuban cigars represent over 80% of industrial exports.
- ✓ Most activities are based on natural resources with little manufacturing value added and lowtechnology products accounting for 70% of industrial GDP.
- ✓ Poor utilization of installed industrial capacities and need for modernization of the existingtechnological infrastructure.
- ✓ Less than 5% of the total energy generated comes from renewable energy sources.
- ✓ Weak linkage between different actors in value chains. Low efficiency and productivity of the sector.

Trends and challenges in the agricultural industry and food production

As mentioned, in 1991 Cuba faced drastic external changes that provoked a prolonged economic crisis that resulted in shortages of fuel and major fertilizers and pesticides, thus depriving the country of a reliable food supply, which threatened food security. Growth in the agricultural sector has been insufficient and domestic food production has traditionally been far below domestic consumption needs. As a result, approximately 80% of the demand for agricultural products is met by imports.

In the period of 2007-2011, agricultural sector of Cuba employed about 19% of labor force. In Cuba as a whole, agriculture is now practiced by some 40,000 urban workers on an area estimated at 33,500 ha. It includes 145,000 small farm plots, 385,000 backyard gardens, 6,400 intensive gardens and 4,000 high-yielding organoponics. Agricultural production volumes, however, were not sufficient to meet the local demand, mainly due to low productivity levels, insufficient resources, low levels of capitalization and outdated technology.

Among the major agricultural crops produced in Cuba sugar cane remains the dominant good, reaching about 76% of the total crops produced in the country. Sugar cane has historically been an export crop providing the major part of the country's income. Despite considerable production volumes of the sugar crops, the production quantity has dropped in 2003, while the production of vegetables and fruits has drastically increased since 1990s. These changes were mainly a result of the limitations imposed by the crises that had a negative impact on the yields, in addition to other challenges such as the aging plantations, inadequate attention to the crop, shortage of fuel, shortage of fertilizers and pesticides, and reduction of water[4].

Along with the increasing domestic demand for agricultural and food products, **the boom in tourism sector[5]** and expected growth of tourist inflow also pressurizes the country to address the challenges ofthe lack of local production and reliance on imports.

[4] FAO, Fertilizer use by crop in Cuba, 2003

[5] As a result of the COVID 19 pandemic, the tourism sector in Cuba has suffered a severe contraction in terms of foreign visitor arrivals and demand for agricultural supplies.

Major mineral fertilizers production and consumption trends in Cuba

In 1989, Cuba produced about 146 thousand tons of Nitrogen, 15 thousand tons of Phosphate and 161 thousand tons of Potash based fertilizers, thus, covering about 28% of the domestic consumption of fertilizers through local production, while relying on the imports for the rest. Between 1999 and 2001, Cuba already imported all mineral fertilizers. After major decline in the use of mineral fertilizers by 80% during the 1990s, the consumption has been increasing, which resulted in higher local demand that is exceeding the limited supply of produced and imported fertilizers. The local production of mineral fertilizers remains low, while consumption is steadily increasing, mostly coveredby imports.

Currently, there are three major public enterprises producing fertilizers and pesticides in Cuba, which are Fertilizer Company October Revolution Camagüey, Fertilizer Company Rayonitro, and Artemis Pesticides. Two of those were established in 1970s, while Fertilizer Company Rayonitro was established in 2013. About 777 people are currently employed by these enterprises.

All the above-mentioned public enterprises producing fertilizers are associated members of "*Grupo Empresarial de la Industria Química", **GEIQ** (Cuban Chemical Industry Enterprise Group)*. Among the Group's objectives are to promote the local development and production of fertilizers and to reduce the country's export revenues of large magnitude spent to purchase these products abroad. The production capacities of the major fertilizer and pesticide enterprises are provided in the Table below.

Sugar cane production dominating the agricultural industry in Cuba also accounts for almost half of the cultivated area and consumes most of the fertilizers. In the period of 1986 and 1990, other categories of crops, including vegetables and cereals, consumed a total of 856,416 tons of complexfertilizers, while in 1995 the consumption has drastically fallen to 50,843 and even less in 2009 to the level of 15,000 tons. This drastic decrease in supply of fertilizers made it necessary to optimize the use of fertilizers and lead to increase of the use of organic and organo-mineral products and bio fertilizers, among other measures.

Table 1: Major fertilizer and pesticide producers and their production capacities

Name	Main products	Annual production capacity
Fertilizer Company OctoberRevolution Camagüey	Ammonium nitrate fertilizer	120 000 tons
	Calcium nitrate solutions	480000 litters
	Nitric acid	300 tons
Fertilizer Company Rayonitro, Matanzas	Granular NPK fertilizer mixed	150 000 tons
Artemis Pesticides	Insecticide and fungicides dry powders	12000 tons
	Insecticide concentrates with emulsifying agents	1400 litters
	Herbicides water-soluble concentrates	3600 litters
	Rodenticides granules	800 tons

Major issues as identified by the key producers of fertilizers and pesticides in Cuba are as following:

- ✓ Local demand in fertilizers is exceeding the limited supply of produced and importedfertilizers.
- ✓ Production of mineral fertilizers remains low, while consumption is steadily increasing, mostlycovered by imports.
- ✓ Production of crops other than sugar cane (vegetables and cereals) requires optimization ofthe use of fertilizers.
- ✓ Damages to production equipment and loss of goods produced occurring in the productionprocess due to limitations in storage capacity.
- ✓ Insufficient skills and knowledge and limited availability for reliable provision of maintenanceservices.
- ✓ Installed equipment at the production units is estimated to be between 30 to 60 percent in aregular condition, while the rest of equipment is outdate.

Government development priorities

To reach a new stage in the economic development, the Cuban Government has decided to update the country's economic model. The new context is based on:

- ✓ The Guidelines for Economic and Social Policy approved in 2011.

- ✓ Creation of the Ministry of Industries (MINDUS) in 2012, with the aim of ensuring sustainable and inclusive industrial development.
- ✓ The change process to boost the economy or economic development on the basis of greater efficiency and competitiveness, preserving social progress, without leaving any unprotected person.
- ✓ Approval of new foreign investment law and the creation of the Special Development Zonein Mariel.
- ✓ The adoption of a UNDAF signed by the Cuban Government (including 22 different actors)and the UN system (15 agencies) in June 2013 where UNIDO can contribute to three of the four outcomes agreed in line with the UNIDO Inclusive and Sustainable Industrial Development (ISID) approach.

The economic policy is aimed at achieving greater income generation, increase in efficiency, and motivation for work and income distribution, creating the infrastructure for productive activities to reach a higher stage of development. At the same time, the longer-term goal is to achieve high food and energy self-sufficiency, efficient use of human potential, high competitiveness in traditional productions, as well as developing new productions of goods and services with high added value. All these aspects are in line with the thematic priorities of UNIDO: poverty reduction through productive activities, trade capacity-building, and environment and energy.

In response to the priorities and a focus on sustainability, authorities responsible for economic sectorshave been proposing a policies package to leverage the change. Therefore, several new policies have been approved for: food production, packaging, energy, water and recycling. Currently the industrial, environmental and transportation policies are being reviewed and updated.

In line with the above economic and industrial transformations decided by the Government, UNIDO is supporting Cuba's efforts in investment and strategic alliance promotion endeavors for strengthening its industrial capabilities and competitiveness in priority industrial sectors through the formulation of a Country Programme Framework (CPF).

One of the priority CPF areas as per main outcomes agreed with the Government of Cuba is enhancing industrial performance and competitiveness of national food industries and improving food supply and security through technological and enterprise upgrading of agro-chemical and agriculture machinery production sector.

2.2. Project summary

Project focus and structure

The project "Program for technological and business upgrading in the agrochemical and agricultural machinery production sector (industrial upgrading and modernization in Cuba), is the realization of UNIDO's support to Cuba's efforts (financed by the Russian Federation and designed/implemented by UNIDO), for the revitalization of industrial performance and competitiveness of the national food industries, and the improvement of food supply and security, through technological and business upgrading of the agrochemical and agricultural machinery production sector.

The global objective is to contribute to inclusive and sustainable industrial development of Cuba and improve food security through upgrading and modernization of industrial sectors of Fertilizers and Metal Finishing for Agricultural Machinery. The immediate goal of the Cuba IUMP is to enhance industrial performance and competitiveness of pilot enterprises operating in the Fertilizers and Agricultural Machinery industrial sectors within the existing industrial hubs.

Project's outcome is increased, demand-driven and reliable supply of fertilizers, and agricultural machinery of enhanced quality and range to the agricultural sector of Cuba. Overall expected impact of the proposed project is sustainable economic and industrial development and sustainable supply of food to the local market and the growing tourism sector of Cuba.

The project has the following three outputs or expected results (ER):

1. Sectorial analysis and building a strategic action plan for development of the Cuban priority Fertilizers and Agricultural Machinery industrial product lines/sub-sectors based on the key food and agricultural crop development needs.

2. Enterprise diagnosis and industrial upgrading of selected pilot manufacturing enterprises operating within the identified priority Fertilizers and Agricultural Machinery product lines/sub-sectors/existing hubs through technological modernization, optimization of business processes and improvements of enterprise performance and competitiveness.

3. Human and technical capacities of national counterpart institutions/expertise established/strengthened in the provision of enterprise diagnosis and industrial modernization, sectorial analysis and competitiveness building and other best practices and related services to the respective priority industrial sectors.

The project's main counterpart is the Ministry of Industry of Cuba (MINDUS). During the project inception phase, a Project Advisory Group was created, with representatives from MINDUS, the Ministry of Foreign Trade and Foreign Investment, the Cuban Metallurgy and Machinery Business Group (GESIME), the Cuban Chemical Industry Business Group (GEIQ), other institutions in charge of industrial and agricultural development, related support and research institutions, industrial groups/centers/cooperatives.

Project steering

An inter-institutional cooperation approach has been used among project stakeholders, including national business associations, exporting and investment agencies, as well as other business support institutions in Cuba, in order to complement Cuban public sector capacities to meet the growing demand in the local market, investment and the development of other technical capacities.

This allowed the project to have been in line with the main national development strategies, including the Economic and Social Policy Guidelines approved in 2011, and other related national programs; as well as with UNIDO commitments within the United Nations Development Assistance Framework (UNDAF) for the Republic of Cuba 2014-2018 approved in June 2013.

The overall technical management, and coordination of project implementation, was undertaken by a team of male and female project experts, consisting of the International Expert/Team Leader, international experts and national staff headed by the National Technical Project Coordinator, under the technical guidance and supervision of the UNIDO Project Manager (DTA/DTI/IDD, HQ). The International Expert led the project's team of experts, and worked closely with the National Technical Project Coordinator and key national stakeholders, and liaised with UNIDO and the Project Working Group.

An Advisory Group was established to support the project implementation team, including the International Expert/Team Leader and the National Technical Project Coordinator, responsible for overall project coordination and management. The Advisory Group served as a platform for public-private sector dialogue, enabling greater cooperation and helping to increase the role and participation of the private sector in the country's efforts towards inclusive and sustainable industrial development.

The Advisory Group consisted of representatives of the Ministry of Industry (MINDUS), and other institutions in charge of industrial and agricultural development, as well as support and research institutions, industrial

groups/centers/cooperatives, the Donor and the executing agency (UNIDO). Project Advisory Group meetings were held at least twice a year. Donor representatives participated in the main meetings as observers.

This governance format allowed for effective project management. Five annual reports (2016/2020) and one partial report in 2021 were reviewed. The project kick-off workshop was held on 21 June 2016 with the participation of more than 20 representatives of local chemical and metal-mechanical sectors, agriculture-soil, and the Embassy of the Russian Federation representing the Donor.

Project funding and Budget

The Russian Federation expressed interest in principle in co-funding of the UNIDO Country Programme for Cuba. In particular, the Russian Federation indicated its readiness to consider co-funding of the "UNIDO Technological and Enterprise Upgrading Programme focused on agro- chemical and agriculture machinery production sector" (or Cuba Industrial Upgrading and Modernization Programme, Cuba IUMP) from the budget of the special purpose contribution of the Russian Federation to the UNIDO IDF upon receipt of the project document (Letter of H.E. Mr. Georgy V. Mikhno, Deputy Permanent Representative of the Russian Federation to the International Organizations in Vienna, dated 10 August 2015).

USD 4 million was planned at the beginning of the project (see Annex 4). Of this, USD 1,755,371 (see Annex 6) was obtained from the donor[6]. This constituted a challenge for product management in terms of redirecting resources to the activity that the management group determined as fundamental to achieving the project's objectives, now with half of the available resources. USD 950 thousand had been earmarked for international experts, of which approximately USD 420 thousand were executed under the new financial conditions. This represents 44% of the planned USD 4 million and 24% of the total resources obtained. These expenditures were approved by the project management group, with the participation of key stakeholders.

For the item "local travels" USD 27246 are allocated, which represents 1.6% of the total. USD 146 228, or 8.3 % of the total, is allocated to the item "national experts". In addition, USD 57 080, or 3.3% of the total, is allocated to "training". It is worth noting that USD 807 186 is allocated to the "equipment" item, or 46% of the total. Staff Travel, Contractual Services, Other Direct Costs are the source

[6] By unilateral decision of the donor.

of the remaining balance, USD 314,877, representing 18% of the total (see Annex 6).

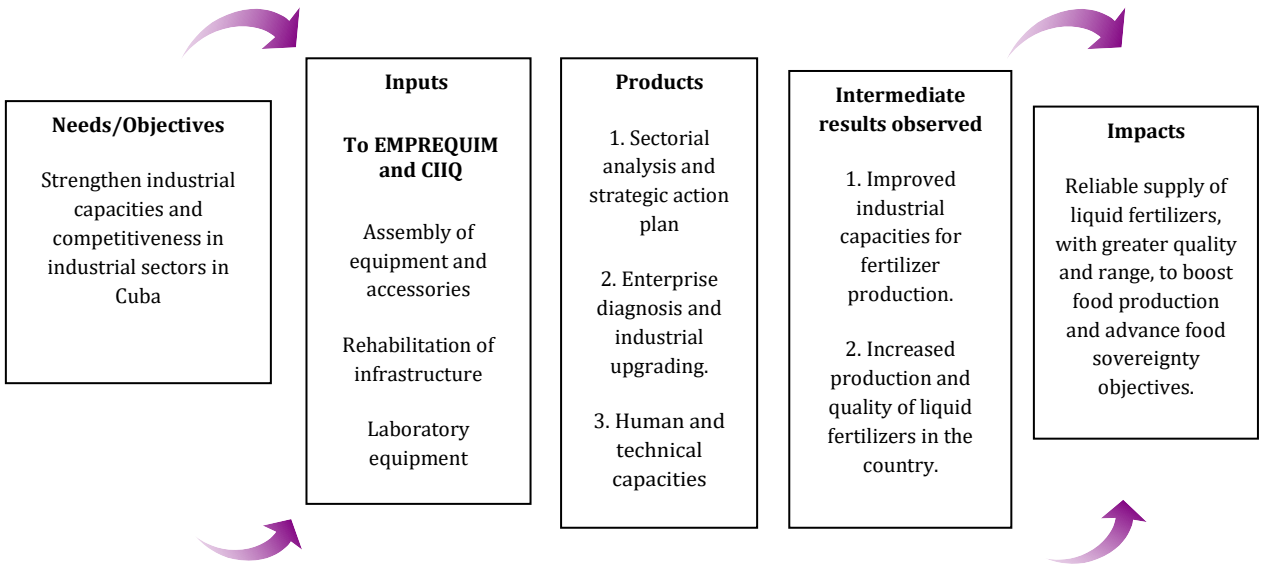
2.3. Theory of Change

Based on the structure and intervention logic of the project and in accordance with the evaluation guidelines, this TE reconstructed the project's Theory of Change (ToC, see below), identifying the project's causal and transformational pathways from project outputs/components to expected longer-term impact. It schematizes also the conditions to bring about behavioral changes required for long-term impact to take place. These conditions constitute drivers or barriers – some of which are outside the control of the project or of its target enterprises, yet could affect project performance. Regarding results, a distinction is made between intermediate changes expected to occur by the end of the project as well as likely impact in the longer run.

ToC represents the causal chain between:

Needs/Objectives; inputs; products; intermediate results; impacts (expected and undesired); facilitates definition of hypotheses to verified; construction of indicators to measure different goals of the program.

Diagram 1 shows the theory of change logic for this project.



3. Assessment

3.1. Project design

As already described in section 2.2 (project summary), the current project is the realization of UNIDO's support to Cuba's efforts (financed by the Russian Federation and designed/implemented by UNIDO), for the revitalization of industrial performance and competitiveness of the national food industries, and the improvement of food supply and food safety, through technological and business modernization of the agrochemical and agricultural machinery production sector.

The project was formulated during the last semester of 2015. It was designed with the participation of stakeholders and potential direct beneficiaries. Priority was given to fertilizer production, over agricultural machinery, attending to the available resources: in this sense, the organizations EMPREQUIM of Nuevitas, Camagüey, and the Center for Chemical Research and Engineering, CIIQ, were selected.

The approach followed made it possible to support a Cuban innovation in terms of innovative product: CBFERT, a liquid fertilizer whose potential for guaranteeing a supply to agricultural producers could be verified.

Context analysis

The situation analysis provided a comprehensive overview of the local situation in these sub-sectors, including factors hindering or contributing to the development (internal strengths and weaknesses, external threats and opportunities).

The project was based on and aligned with the identified needs and priorities set out in a number of national policies and strategies. In particular, with Cuba's National Economic and Social Development Plan to 2030, specifically with “Macro program # 2”: Productive Transformation and International Insertion, among other high-level documents adopted by the Government.

The Government gives priority to this sector through the lines of work "Agro-industrial development and food security" and "Productive reconversion and competitiveness", in order to apply innovative approaches to productive restructuring aimed at maximizing the advantages of development in an environment of the 4th industrial revolution. The project played an active role in promoting the adoption of such perspectives. The project also played an active role in promoting the adoption of these mechanisms and in their implementation (the latter by raising awareness and assisting the selected pilot companies in the necessary steps to benefit from this scenario).

Target beneficiaries

The project document clearly specified the direct beneficiaries: Industrial enterprises/centers and cooperatives in the fertilizer and agricultural machinery industrial sectors; and national technical and business support institutions, ministries and other institutions.

Indirect beneficiaries were identified as: Final consumers – both the local population of Cuba and tourists – as they will have improved and sustainable access to high quality products that meet their demand and needs; In the medium term, a broader industrial and business community in Cuba that will benefit from the business support services put in place.

The project promoted initiatives that contributed to the continuity and improvement of gender equality, in particular to promote the inclusion of women in productive activities. The project aims to ensure that women and men benefit likewise from capacity building and other project activities, equal participation of women and men both in project management arrangements and as project beneficiaries, partners and key stakeholders, as well as ensuring coordination among key development actors to further enhance gender mainstreaming and promote gender equality and women's empowerment.

Furthermore, the project aimed to improve articulation and cooperation with beneficiary institutions, including research centers, local governments, private producers' organizations, etc.

Stakeholder analysis

According to the project document, the main coordinating agency was assigned to the Ministry of Industries (MINDUS), who is responsible for establishing the policies and strategies for Cuba's industrial development in the branches of the light, steel-mechanical, chemical, packaging, recycling, electronics and automation industries. This includes the creation of an enabling environment for the development of the sector in order to improve the competitiveness of Cuban companies.

All the organizations that are relevant stakeholders in the project have made contributions and shared project decisions. The main contribution of the Donor, the Russian Federation, as well as the Ministry of Foreign Trade and the national team, is acknowledged.

Implementation strategy

The implementation strategy focused on the modernization of two fertilizer production plants to ensure a stable supply of liquid fertilizers to agricultural producers, with competitive prices and export possibilities. The project designed a marketing strategy for the promotion of the industrial activities supported by the UNIDO project.

The strategy was geared to industrial upgrading and market share recovery, and was based on the methodology applied by UNIDO (including lessons learned from previous projects elsewhere). The sectorial approach prevailed throughout the project. The beneficiary companies expressed interest in exploring markets other than Cuba for the promotion and sale of their products.

A significant element is that the project provided the industry with work tools, in terms of technological upgrading and capacity building for leaders and workers. However, the prevailing idea is that production is not enough, but that better coordination with input suppliers, better contracting of demands, application of the marketing strategy and strengthening (and identifying new) export channels are necessary.

Logical framework

In general, the Logical Framework Matrix (LFM) is a core document in the assessment and measurement of the effectiveness of project implementation on all levels, i.e., the project goal (intended impact), outcomes, and outputs. Logical and precise design of a project including its LFM makes the project implementation process structured, result oriented, and traceable. The analysis below covers the following dimensions of the LFM:

The Global Objective of the project is "*to contribute to inclusive and sustainable industrial development of Cuba and improve food security through upgrading and modernization of industrial sectors of Fertilizers and Metal Finishing for Agricultural Machinery*." The immediate goal is to enhance industrial performance and competitiveness of pilot enterprises operating in the Fertilizers and Agricultural Machinery industrial sectors within the existing industrial hubs.

While this contribution is ambitious considering the size of the project, the formulation reflected in the logical framework is more precise in terms of the project outcome: "Increased, demand-driven, reliable supply of fertilizers and higher quality, higher-end agricultural machinery for Cuba's agricultural sector," with an impact target expressed in advancing the goal of sustainable economic and industrial development and sustainable food supply to the local market and Cuba's growing tourism sector.

Having said this, the following are expressed:

1. Overall objective of the Project

2. Immediate Objective

3. Project Impact

4. Project Outcome

It is important to take these elements into account for the analysis.

The indicator to evaluate the degree of achievement of the development objective could not be reviewed in its entirety, because the Nuevitas factory, the larger of the two productive organizations, has not yet come into operation. This indicator is reflected in the company's performance, reduction of factor costs, turnover, value added, exports, by the beneficiary companies to the regional market. It is verified that the political situation of the country is stable and that the project financing is timely, which allowed the disbursement of the committed amounts. Likewise, there is a solid contribution to environmental improvement, as a result of the technology installed, which allows for a considerable improvement in the economic and financial performance of the organizations, in a more inclusive manner, through capacity building of researchers, technicians and managers.

As regards results, their achievement is expected to lead to a large extent to the attainment of the project's objectives: goal and impact. In addition, the definition of indicators to measure results is generally adequate, some of which are quantified and others are qualitative. It is worth noting that after a major technological upgrading process, the technical and economic performance of the pilot companies is expected to be at the expected levels.

In summary, there is a logical connection between activities, outputs and expected results. Although some activities would require further specification to enable performance measurement, e.g. "complete diagnosis", "implementation of.... strategies", "Analyze local distribution", to ensure a common understanding by all stakeholders and to avoid different parties (project experts, beneficiaries, evaluators, etc.) understanding these indicators differently.

Regarding risks and assumptions, the project's LFA specified the assumptions for the execution and achievement of the expected result, as well as the indicators for their measurement. But there is no element referring to risk management in the Logical Framework. There is a section on risks (C.13 of the project document), where the risks of political instability assumptions, staff turnover, slowdown of economic growth in the beneficiary country and/or priority markets, as well as the

responsibilities of stakeholders are mentioned. In this regard, it is proposed that for future projects the Environmental and Social Safeguards toolbox for risk management be introduced to ensure monitoring of negative externalities of the project.

Monitoring, reporting and evaluation

Chapter F.2 of the project document adequately addresses the monitoring, reporting and evaluation aspects of the project. Their implementation is discussed in section 3.2.4. The project document designates the National Technical Project Coordinator as responsible for monitoring and periodic reporting, with the reports of the international experts, and based on the evidence collected during the visits carried out by the UNIDO Project Manager. The monitoring was carried out taking into account the indicators listed in the Logical Framework Analysis (Annex I). The document refers to a results-based management mechanism, but a comprehensive monitoring framework in the form of a single database to record and collect data on enterprise performance against all of the log frame indicators was not tested.

It is worth mentioning that the project document includes a chapter on communication and visibility (C.6) that covers an extensive list of tools/means that are planned to be used (public relations efforts) by the project to raise and maintain awareness of its work and achievements. The section clarifies the use of visual elements in relation to the Donor and the recipient country.

With regard to gender mainstreaming, the document outlines Cuba's results in this area and makes general reference to MINDUS' priority of facilitating women to benefit likewise from the project's results. But there are no indicators to verify this claim, nor is there any mention of gender in the logical framework[7].

3.2. Project implementation

3.2.1. Progress towards impact

Behavioral change

There are clear signs of change, especially in the technical-economic field, in the motivation of the people who drive processes in the companies, as well as the workers.

[7] Even though the project is classified as 1 by the "Gender Marker", which implies limited expectations on the subject, for the Cuban context it is necessary to address the gender perspective in greater depth, in coherence with the Program for the Advancement of Women, a Cuban presidential decree on the subject.

Wider adoption

The efficiency of one of the pilot factories in the CIIQ, after technological upgrading, has been proven. However, it is still unknown the impact that the increased production of liquid fertilizers may have on the market, especially outside Cuba.

With respect to integration, replication and scaling up, the following are highlighted:

Integration

The role of the project coordination went beyond the project objectives and became in fact a reference center for information and support to the fertilizer industry. It is hoped that this project will be the start of a stronger cooperation between UNIDO, the project donor or a wider donor community, and MINDUS.

Replication and expansion

The implementation of EMPREQUIM, by its magnitude, will lead to a larger scale production of liquid fertilizers, which will place the sector in a better market position and dominance of the domestic segment. In any case, it is too early to assess to what extent the work done in the fertilizer industry has generated interest in other sectors, based on the need/opportunities for company modernization and market development (targeting both the local market and exports).

3.2.2. Effectiveness

Overall, the project has significant achievements, with tangible results and impact. This is the case of the technological upgrade to which two fertilizer production plants were subjected. In addition, there is better coordination among the project's key stakeholders and beneficiaries. It is considered that the positive results at the level of the beneficiary organizations can be explained to a large extent as the effect of the project work, in terms of promotion/development of the novel products and with a working environment where motivation and training opportunities prevail.

Guidance and advisory services were provided to national counterparts and beneficiaries on an ongoing basis. MINDUS, MINCEX, MINAG, CIIQ, GEIQ and CEDEMA are the main beneficiaries of these services in response to the needs identified in the sectorial strategy. The advisory services were extended to CIIQ and EMPREQUIM, to ensure the sustainability of the knowledge and skills acquired, thus providing the opportunity to apply the skills acquired during the development of the modernization plans for two fertilizer plants in Cuba, which are currently being carried out as part of the UNIDO Project. Three workshops were designed (one for each region: East, Central and West Cuba) to identify skills and knowledge

gaps between companies, farmers and cooperatives by introducing efficient practices that will allow them to apply liquid fertilizers developed within the project.

The selected beneficiary companies have been advised on the implementation of integral measures focused on productivity, quality and industrial performance through continuous coaching and training based on international best practices to build management capacity and extend them to other companies in the participating sectors. Communication campaigns have been developed to promote the project and its results in national and international forums, conferences and exhibitions. Business alliances and investment promotion for modernization purposes have been fostered.

The following table 4 shows the achievements and the evaluation of each one of them, following the logical framework method.

Project logic/ structure ***(as formulated in logical framework)***	**Concise overview of achievements against planned results and activities**
Development Goal	**Assessment**
Sustainable economic and industrial development and sustainable supply of food to the local market and the growing tourism sector of Cuba.	To verify progress on the project's overall impact goal, given that the logical framework does not have specific indicators, a review is made of the project's annual reports, which show ongoing follow-up and monitoring from the initial formulation and start-up phase. It is noted that the annual reports are based on the results achieved up to the date they are written, although it should be noted that the sources of verification set out in the logical framework show this progress at a slower pace. These are the main achievements: 1. The project has contributed to increasing production levels and the quality of **liquid fertilizers** in the country. The CBFERT product was already a product developed by the CIIQ, but thanks to the project it was possible to expand its production capacity. The calcium nitrate product (previously produced solid fertilizer) was rejected by consumers for its poor quality because it contained solids in suspension, which clogged the irrigation system. 2. Yield increased between 35% and 65% over the reference samples in the following crops: carrots, beans, cucumbers, lettuce, peppers and tomatoes, and the number of grains in the ears of soybean crops increased relative to the control sample. This was field/crop tested and validated on a large scale at the "Indio Hatuey" Experimental Station in Matanzas province. 3. CBFERT's production volume amounted to 200,000 liters between January and December 2020, which is achieved as a result of the implementation of the UNIDO project to modernize/expand the Havana plant. Annual production can reach more than 400,000 liters in an 8-hour working day. The achievement of such

Project logic/ structure ***(as formulated in logical framework)***	**Concise overview of achievements against planned results and activities**
Development Goal	**Assessment**
	production volumes depends on the limitations and restrictions imposed by COVID-19, in terms of the application of measures to close productive entities by the health protocol. Likewise, the impact of unilateral sanctions against Cuba has a significant weight as it affects the financial resources of the entities demanding these products in Cuban territory. 4. In this case, it refers to the potential installed capacity after the implementation of the project. There is NATIONAL DEMAND from the Ministry of Agriculture to assimilate the 400 thousand liters, which is the potential standard of these factories for the production of liquid fertilizers. This is a consequence of the implementation of the project and the increased perception among producers of its benefits. Based on the interviews conducted during the field mission, additional information was obtained that allows for greater precision in terms of impact-level achievements related to potential productive levels at EMPREQUIM, as well as at CIIQ, that can be attributed to the work of the project: while at the end of 2016, based on the results of the sector analysis report and the beneficiary product lines in the fertilizer sector, the project would focus on the development of a (liquid) calcium nitrate fertilizer investment and the overhaul of a CBFERT production unit. A major promotional/support effort for CBFERT was noted, including continuous participation in specialized exhibitions, trade fairs and business networking events in Cuba, as well as a trip to Spain to learn about experiences and present the product. This led to an increase in the portfolio of potential orders for the following years due to the gradual increase in the number of agricultural companies and producers that began to use these products, which has led to linkage with supply companies of the Ministry of Agriculture. In terms of unexpected outcomes and impacts, the following stand out:

Project logic/ structure ***(as formulated in logical framework)***	**Concise overview of achievements against planned results and activities**
Development Goal	**Assessment**
	1. The research and promotion efforts of the project allowed the CBFERT product and its field-level results to be presented at the GEIQ National Forum, in November 2019 in Havana, where it received the First Prize from the Science, Technology and Environment Commission. CBFERT field results were presented to the Delegation of Science, Technology and Environment in Havana and obtained the "Technological Innovation Award". 2. During the "CubaIndustria 2018" week, the liquid fertilizer producer CBFERT received a Quality Award for the development of its innovative liquid fertilizer highlighting its performance and contribution to Cuba's sustainable industrial development, as well as for its technical relevance and agronomic efficiency in addressing the Country's food security objectives. 3. The project team supported the international patenting and (re)branding of the CBFERT product to "VITAPLIC Foliar". 4. In the general thematic category entitled "Popularization of production and application of organic liquid fertilizers CBFERT", the foliar fertilizer supported by the project and its results at field level were presented in several regional and national reports. Conferences and exhibitions receiving awards and recognitions. 5. The results of CBFERT's research have been certified by recognized research institutes in the country, such as the "Liliana Dimitrova" horticultural production institute and the "Indio Hatuey" pasture and forage institute.
Outcomes/immediate objectives	The logical framework defines precisely how the immediate outcome indicator "Increased demand-driven, reliable supply of fertilizer and improved quality and range of agricultural machinery for Cuba's agricultural

Project logic/ structure ***(as formulated in logical framework)***	**Concise overview of achievements against planned results and activities**
Development Goal	**Assessment**
Increased, demand-driven and reliable supplyof fertilizers, and agricultural machinery of enhanced quality and range to the agricultural sector of Cuba **Indicators:** Enterprise performance indicators e.g.reduced factor costs, turnover, value added, % exported, etc. % increase in export of goods producedby the beneficiary enterprises to the regional market.	sector" is expected to be measured. In addition, the outputs produced and services delivered, as well as the results observed, can be used for this purpose. The economic results of the CBFERT Plant increased workers' pay by 30% (with the payment by results system). By allowing precise dosage and better access to plants (roots and leaves), liquid fertilizers avoid over-fertilization and are more in demand in the market, which has an impact on company income. The decision of the Ministry of Agriculture to ensure the supply of foliar fertilizer based on local production of improved CBFERT allows the incorporation of a new product and substantial savings for the country. A 40-fold increase in CBFERT production was requested for 2019 and 2020. The Center for the Development of Agricultural Machinery (CEDEMA) developed a prototype fertilizer maker for protected crops, which will use liquid fertilizers to be produced by the country's industries. Although there are still no data reflecting substantial changes in the results of the "EMPREQUIM" company, the largest of its kind in the country, because it is still in the start-up process, it has been possible to verify a revival of business volumes at CIIQ, creator and producer of CBFERT, which allows us to establish the following as the project's achievements: 1. Transfer of technological Equipment for the Calcium nitrate production plant (Nuevitas, Camagüey Province) and the CBFERT production plant (CIIQ, Havana). Includes new laboratory equipment and production plant from different suppliers and countries. See table 4 and 6. 2. Technological Modernization of the CBFERT Plant (CIIQ, Havana). See table 4 and 6. The project has facilitated the structural maintenance of CBFERT production in the plant at CIIQ, which included the assembly of 2 geared motors in the reactors, assembly of the three extractors to improve ventilation,

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities
Development Goal	**Assessment**
	assembly of the two centrifugal pumps, a mobile filtration unit and a dosing machine. Also, the assembly of the 20-liter laboratory reactor to obtain essential oils that can be used to obtain new formulas combined with CBFERT for agricultural use. 3. Technological Modernization of the Calcium nitrate plant in EMPREQUIM (Nuevitas, Camagüey province). Identification of specific equipment and machinery. Engineering plan to upgrade liquid fertilizer pilot plants following international best practices and respective procedures (mass balance, flow sheet, plot plan, equipment specification). The new equipment for the production of liquid fertilizers has been installed in the new premises. See table 4 and 6. 4. Equipment for infrastructural improvement consisting of a service water pressurization, 2 compressed air units for service and instrument air and an acid wash unit for the fabrics. 5. Upgrading of agricultural machinery sector (Holguin). See table 6 According to the formulation of the outcome as per the logical framework (which covers different dimensions), the assessment is as follows: **Attending to the development/impact objective.** **Productive Impacts:** Increased production and quality of two liquid fertilizers: calcium nitrate and CBFERT. Yields were increased between 35% and 65% compared to the reference samples in the following crops: carrots, beans, cucumbers, lettuce, peppers and tomatoes and increase in the number of grains in the cobs of soybean crops in relation to the control sample. The annual supply volume of CBFERT amounts to 400,000 liters as a result of the modernization/expansion project of the Havana plant. Annual production has

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities
Development Goal	**Assessment**
	doubled despite the limitations and restrictions imposed by COVID-19 and the unilateral sanctions against Cuba. Several agricultural entities evaluated the use of CBFERT and recommended its use based on the productive and ecological results. Due to its quality and nutritional effects on crops, the Ministry of Agriculture has taken steps for large-scale production chaining, since its results have been proven in the cultivation of rice, sugar cane, tobacco, soybeans, etc. **Economic impacts:** Improvements in the exporter/importer balance of solid fertilizers and production equipment. The economic results of the CBFERT Plant increased workers' pay by 30% (with the pay-for-performance system). CBFERT production is increased by 40 times. Increased efficiency potential by having two factories, in the west and in the center of the country. The Center for the Development of Agricultural Machinery (CEDEMA) developed a prototype fertilizer maker for protected crops, which will use the liquid fertilizers produced by the country's industries, which is expected to materialize at a later stage. The evolution of orders seems to indicate that the quality is in line with market requirements/customer expectations. **Technological and social impacts**: CBFERT fertilizer was already a product developed by CIIQ, but thanks to UNIDO it was possible to expand its production capacity and automate its processes. Quality control of liquid fertilizer production is achieved by improving and certifying laboratories. The Horticultural Research Institute "Liliana Dimitrova" endorsed the technological and social advantages of CBFERT by satisfying the demand for quality fertilizers for fertigation in the cultivation houses, and the use of formulas that are easy to handle at the time of making the mixtures. EMPREQUIM plans to increase the number of people working at the plant and will prioritize women. The waste generated by CBFERT's production is reused as fertilizer

Project logic/ structure ***(as formulated in logical framework)***	**Concise overview of achievements against planned results and activities**
Development Goal	**Assessment**
	in the municipality where the CIIQ is located, which has a social impact for agricultural producers. **Scientific impacts:** It has been experimentally demonstrated that CBFERT, via its foliar application, supplies nutrients that are directly absorbed and assimilated with the simultaneous contribution of amino acids, vitamins, and minerals that optimize metabolic processes, acting as a stimulant for plant growth, increasing plant resistance to adverse conditions, phytotoxicity, pests, or diseases, increasing crop yields and product quality, and reducing harvesting time, application costs, and use rates. The project team supported the international patenting and (re)branding of the CBFERT product to "VITAPLIC Foliar", which were presented in several regional and national reports, conferences and exhibitions receiving awards and recognitions.

Project logic/ structure *(as formulated in logical framework)*	**Concise overview of achievements against planned results and activities Outputs/Results**	
Output No.	**Planned activities**	**Achievements/Assessment**
Sectorial analysis and preparation of a strategic action plan for development of the Cuban priority Fertilizers and Agricultural Machinery industrialproduct lines/sub-sectors based on the key food and agricultural crop development needs. **Indicators:** Strategic positioning report (identifying principal suppliers, market and customerneed coverage, product margins, relationbetween industrial hub units, affiliation to hubs, distribution channels and terms aswell as key sector-specific bottlenecks and constraints affecting overall agricultural productivity and reliable/sustainable supply of food) available.	1.1 Identify key pilot beneficiary product lines/sub-sectors within existing Fertilizers and AgriculturalMachinery industrial hubs based on the country's priority food andagricultural crop developmentneeds	***Achievements*** 2 types of liquid fertilizers are determinedand production equipment is being currently engineered/procured/installed. Cooperation with the main consumer sector of liquid fertilizers, the Ministry of Agriculture, is strengthened. 1: Liquid Calcium Nitrate/MagnesiumNitrate. 2: CBFERT ecological liquid fertilizer ***Assessment*** It was decided by the project management committee to focus resources on the top priority areas: Fertilizers for food production. Two organizations were identified: EMPREQUIM with an obsolete technology and for being the largest fertilizer factory in the country; and CIIQ, a closed-cycle research center that had a product with recognition and development prospects. Note: See indicators listed in Outcome 1 (see first column). Strategic report is available at UNIDO website: https://www.unido.org/sites/default/files/2017-05/Cuba_report_v_2.3_-print_ES-LS2_0.pdf Actions for the modernization of priority product lines/subsectors and production of fertilizers and agricultural machinery can be observed in the annual reports.

Project logic/ structure *(as formulated in logical framework)*	**Concise overview of achievements against planned results and activities Outputs/Results**	
Output No.	**Planned activities**	**Achievements/Assessment**
Demand-driven tailored action plan for modernization of priority Fertilizers and Agricultural Machinery product lines/sub-sectors	1.2 Conduct comprehensiveanalysis of production and supply of the identified products to the agricultural sector (both quantitative and qualitative).	***Achievements*** Comprehensive analysis completed and productivity capacities defined in a pre- feasibility study and reflected in the Sectorial Strategy for Technological and Enterprise Upgrading of Fertilizers and Agricultural Machinery Industries in Cuba. Local capacities are installed to meet about 90% of the country's current and future demand for liquid fertilizers. ***Assessment*** UNIDO conducted comprehensive analysis of the Cuban fertilizers and agricultural machinery production sectors resulting in a Sectorial Strategy that helps prioritize and focus developmental efforts of the current Project and of the National Government, in general, on the development, production and application of liquid fertilizer, in order to significantly contribute to the country's efforts in enhancing the sustainable food production using, inter alia,Cuban know-how and accompanied by the best international practices and technological upgrading measures. The priority product lines/subsectors and production of fertilizers and agricultural machinery are modernized.
	1.3 Analyze local distribution, after-sales services and maintenance network (quantitative and qualitative).	***Achievements*** A draft strategy for an optimized value and supply chain reaching the final client was developed by the CIIQ. Current constraints were analyzed as part of the working process within the one-year Marketing Plan for CBFERT and liquid Calcium nitrate fertilizers. The results were integrated into the final proposition for an improved

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities Outputs/Results	
Output No.	**Planned activities**	**Achievements/Assessment**
		fertilizer value chain, as well as its implementation. Specification for value and supply chain contributions, including marketing and distribution channels, was provided. ***Assessment*** Key suppliers, coverage of market and customer needs, product margins, relationship between industry hub units, affiliation to hubs are identified. Emphasis is placed on distribution channels by considering bottlenecks and key sector-specific constraints affecting the sector. A demand-driven action plan is designed for the modernization of priority fertilizer lines/subsectors.
	1.4 Analysis of current local demand and supply and future local demand and supply to cover Cuba´s food demand (including general quantitative and qualitativetrends in consumption) and of customer and consumer behavior related to Fertilizers and Agricultural Machinery.	***Achievements*** Based on the analysis conducted as part of the working process within the one-year Marketing Plan for liquid fertilizers, the crop supply and demand correlation was defined by the UNIDO technical expert in close cooperation with the Cuban experts representing main project counterparts and stakeholders. The results obtained from the analysis supported a proposal for the development of two liquid fertilizers in Cuba, calcium nitrate and CBFERT. Due to its high quality and positive impact on crop yields, the Ministry of Agriculture (MINAG) has requested to increase the production of CBFERT to meet the national demand. According to the MINAG, in 2018 this demand was 10.000 liters, while the demand for 2019 was 200.000 liters. In 2020, according to MINAG, it is likely to reach 400.000 liters. With the support of the UNIDO project, in 2019 the supply of CBFERT satisfied the demand accompanied by an improved

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities Outputs/Results	
Output No.	**Planned activities**	**Achievements/Assessment**
		quality control measures. Additionally, during 2020, the CBFERT production exceeded 200,000 liters (1950% increase was estimated) despite the C19-induced lockdown. In order to achieve the foreseen production of 400.000 liters, additional equipment will be necessary for the modernization of the CBFERT production plant, including second reactor; small manual filter press; and pump. ***Assessment*** The sectorial strategy for the technological and business upgrade of agrochemical products and agricultural machinery is developed which responds directly to the indicators of output 1.
	1.5 Analysis of local demand and supply (including general quantitative and qualitative trends in consumption) of Fertilizers and Agricultural Machinery products for farming practices. Consideration of fertilizer composition and application formulas/recipes based on local food crops and soils avoiding over-	***Achievements*** The analysis of local supply and demand of fertilizers composition based on the analysis of food supply and demand in Cuba was conducted. The Ministry of Agriculture of Cuba (MINAG) provided relevant information and inputs for this analysis benefiting from the information provided by several highly qualified soil and nutrition institutes distributed over the country. The fertilizer's composition and application technique adapted/customized to the Cuban conditions was formulated in close cooperation with these institutes. As a result of the successfully completed analysis, the UNIDO project recommended to focus on production of two liquid fertilizers in Cuba, namely, Calcium nitrate and liquid CBFERT. Jointly with the national counterparts, the UNIDO Project focused on the adaptation of identified agro-machinery to suit the specific application of the selected liquid fertilizers. In this sense, the fertilizers' composition

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities Outputs/Results	
Output No.	**Planned activities**	**Achievements/Assessment**
	fertilization and with respective rationalization (or adoption, adaption, customization) in fertilizer production.	was decided upon, the engineering aspects were designed accordingly and procurement specifications were prepared to request offers from potential suppliers. ***Assessment*** The comprehensive analysis of liquid fertilizer demand demonstrated the capabilities of the Cuban industrial sector to articulate and integrate with other sectors of the national economy. Although the participating companies have a powerful tool in these demand analyses, there are still no activity indicators that show relevant results, especially in EMPREQUIM.
	1.6 Carry out benchmarking of priority Fertilizers and Agricultural Machinery product lines/sub-sectors at the local market and compare with appropriate international levels.	***Achievements*** Benchmarking focusing on comparison of Cuban fertilizer production practices with the best international practices, in particular, in Spain (benefiting from the information collected during the Study Tour to Spain) was completed. Additional studies for international- level benchmarking of priority fertilizer and agro-machinery products is being conducted based on the technical information collected from international producers. Based on the results of the benchmarking and analysis of collected data, the UNIDO Project focused on the industrial modernization of two pilot liquid fertilizer plants (based on existing solid fertilizer plants) and equipment design required for appropriate fertilizer application. ***Assessment*** It fits perfectly with the output 1 indicators. There are no statistics

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities Outputs/Results	
Output No.	**Planned activities**	**Achievements/Assessment**
		available that reflect the impact on the country's exports.
	1.7 Produce Gap Analysis Studies for selected and relevant products.	***Achievements*** The conducted gap analysis study identified a number of weaknesses and advantages concerning the application of selected fertilizers. In particular, the gap analysis study has identified the following major constraints for food production in Cuba: ✓ Outdated technology at all stages of the value chain (30-60% of equipment is in good condition); ✓ Inefficient utilization of existing capacities and low productivity; ✓ Limited access to inputs, including fertilizers, agricultural machinery and related equipment and parts; ✓ Production of crops other than sugar cane (vegetables and cereals) requires optimization of fertilizers; ✓ Limited transportation possibilities; ✓ Insufficient financial resources for stable supply of raw and other inputs needed for production of major crops; ✓ Limited storage capacity; ✓ Weak facilities maintenance, shortage of spare parts for agricultural machinery; ✓ Fertilizer demand exceeds supply of produced and imported fertilizers; ✓ Production of mineral fertilizers is at a low level, while consumption is increasing; ✓ Heavy reliance on imported fertilizers ***Assessment***

Project logic/ structure *(as formulated in logical framework)*	**Concise overview of achievements against planned results and activities Outputs/Results**	
Output No.	**Planned activities**	**Achievements/Assessment**
		It is stated that the results of the gap analysis study were duly taken into account for the project implementation activities, thus contributing significantly to addressing the identified weaknesses, as well as highlighting the advantages for the development of the liquid fertilizer value chain identified in Cuba. Similarly, the UNIDO project is contributing to the efficient utilization of existing capacities, thus ensuring a sufficient increase in the supply of locally produced fertilizers to meet agricultural needs, inter alia, through the transfer of technologies and know-how and the use of local raw materials in the production of liquid fertilizers. It cannot be verified that all these weaknesses have been mitigated by the project, nor is there a specific plan to manage them. (Out of 11 listed, the Project addressed 8 weaknesses (not covering financing, transportation and storage only – which are rather infrastructural or macro-level deficiencies.)
	1.8 Build a road map for further development of the Cuban priority industrial sectors identifying the bottlenecks, constraints and opportunities (SWOT) affecting the productivity and supply and define appropriate intervention areas to obtain an enhanced food	***Achievements*** Road map for development of fertilizers and agro-machinery sectors in Cuba in line with the Sectorial Strategy was prepared. Major constraints that affect efficiency, productivity and supply of the selected fertilizers were identified and integrated as suggested intervention areas for further consideration by the Government of Cuba and respective technical support of the UNIDO Project, mainly within the value and supply chain recommendations. ***Assessment*** A detailed schedule is identified for each intervention area. Based on the roadmap agreed with national counterparts, the design of the

Project logic/ structure *(as formulated in logical framework)*	**Concise overview of achievements against planned results and activities Outputs/Results**	
Output No.	**Planned activities**	**Achievements/Assessment**
	supplylevel.	fertilizer application equipment was developed and complementary activities were identified. Elements with some degree of dispersion can be found in the annual reports.
	1.9 Identify partnership opportunities offered by bilateral/friendship agreements(trade, finance, technology, joint venture)	***Achievements*** Current opportunities were identified in accordance with the selected Sectorial Strategy. Partnership with the Moscow based "Research and Design Institute of Industry and Nitrogen products of organic synthesis" (JSC "GIAP") was established. Additional potential partnership opportunities are being explored, including Venezuelan partners. Additional research and academia cooperation opportunities were explored during the Study Tour to Spain. ***Assessment*** Based on the partnerships established, the project states that additional information was received, which contributed to the exchange of the best international expertise and the transfer of know-how, including contributions to benchmarking studies and the identification of the most appropriate and efficient methodologies and technologies for the production of liquid fertilizers and agricultural machinery in Cuba. It is in line with the indicators although it is difficult to evaluate.
Output No. 2		
Enterprise diagnosis and industrial upgrading of selected pilot manufacturing enterprises	2.1 Conduct full-fledged diagnosis study and assist in the	***Achievements*** Full-fledged diagnostic study leading to the development of the Sectorial Strategy was conducted. As per the results obtained from the

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities Outputs/Results	
Output No.	**Planned activities**	**Achievements/Assessment**
operating within the identified priority Fertilizers and Agricultural Machinery product lines/sub-sectors/existing hubs through technological modernization, optimization of business processes and improvements of enterprise performance and competitiveness. **Indicators** • Improved economic performance of beneficiary enterprises e.g. reducedfactor costs, (manufacturing) value added, customer satisfaction, etc. Increase in turnover by beneficiaryenterprises/hubs • Increase in quality and quantity of goods And services produced by the selected beneficiary enterprises/hubs. Post-upgrading performance and satisfaction degree of the	formulation and implementation of industrial modernization activities at the selected beneficiary enterprises operating within existing industrial hubs.	diagnosis and in line with the respective Sectorial Strategy, the UNIDO Project focused on the introduction of a liquid fertilizer system to the Cuban market. One of the two identified liquid fertilizers, CBFERT, is considered as potential export product. The identified pilot liquid fertilizer production plants were diagnosed and industrial modernization plans for selected beneficiaries including establishment of modern production processes, were developed as follows: For the EMPREQUIM Calcium Nitrate plant: • Upgrading of the Calcium Nitrate production technology including delivery of all needed technological equipment**; (See Annex 4)** • Delivery of laboratory equipment for further improvement of the Calcium Nitrate technology. For CBFERT technology at CIIQ in Havana: • Significant improvements and expansion of CBFERT technology including delivery of key components; **(See Annex 5)** • Complete modernization of laboratories for further R&D and production works. ***Assessment*** A liquid fertilizer system is being introduced in Cuba and industrial modernization plans are being implemented, including the technological upgrading of liquid fertilizer pilot plants and their application machinery, hence the ongoing acquisition of fertilizer production equipment in Havana and Nuevitas, and the planned modernization of agricultural machinery in Holguín. This is leading

Project logic/ structure *(as formulated in logical framework)*	**Concise overview of achievements against planned results and activities Outputs/Results**	
Output No.	**Planned activities**	**Achievements/Assessment**
beneficiarycompanies. Security and creation of employment Number of enterprise employees trained(management and production; female and male)		to a substantial improvement in the creation of new jobs, in the quality of the product, etc.
	2.2 Coach selected beneficiary enterprises on the implementation of comprehensive measures with focus on productivity, quality and industrial performance of enterprises.	***Achievements*** Continuous coaching regarding application of the best international practices focusing on project management procedures for technical investments has been conducted along with the technological modernization of beneficiary enterprises. Hence, along with installation of the equipment, a specific technological and managerial capacity-building program has been being implemented ***Assessment*** Ongoing training of technicians and workers is being carried out for the application of international best practices in project management procedures for technical investments, together with the technological modernization of the beneficiary companies. Therefore, together with the installation of the equipment, a specific technological and management capacity building program is being implemented. There is a higher degree of satisfaction of the beneficiary companies after the improvement and greater job security.
	2.3 Identify and procure selected number of appropriate technologies and	***Achievements*** Based on the identified criteria for production capacities and the identified processes (production of Calcium nitrate/Magnesium nitrate and CBFERT at two plants in Cuba), the specific equipment and

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities Outputs/Results	
Output No.	**Planned activities**	**Achievements/Assessment**
	equipment at the pilot enterprises to improve productive performance in compliance with international standards and technical requirements.	machinery were identified and engineering plan prepared for upgrading the pilot liquid fertilizer plants following the best international practices and respective procedures (mass balance, flow sheet, plot plan, equipment specification). The Calcium nitrate plant in Nuevitas: The import of all equipment in accordance with the equipment list with the exemption of electrical installation material and infrastructural improvement equipment (water and compressed air) finished by the end of December 2020 and February 2021. The CBFERT plant in Havana/CIIQ: All equipment is already in place. The Sprayers/liquid fertilizer application equipment is already in place. Therefore, upgrading and modernization of the involved fertilizer production facilities can proceed as planned. ***Assessment*** Upon the obtaining the Project-supported technical and feasibility study (EFTE) and construction license as basic pre-conditions required for refurbishment, and their subsequent approval by the national authorities (took several months in 2018 and 2019), the refurbishment works started only in July 2019. However, the refurbishment was paralyzed in October 2019 due to the lack of funding related to additional sanctions. Despite the COVID 19-induced lockdown in the country, the refurbishment restarted in June 2020. To overcome hard-currency deficit, Cuban counterparts requested the UNIDO Project to support with the purchase of the construction steel. Additionally, the project supported with the electrical material and the compressed water and air systems for the filter press. The project's management of these activities is evaluated

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities Outputs/Results	
Output No.	**Planned activities**	**Achievements/Assessment**
		as satisfactory, due to its capacity for articulation and management skills in the midst of COVID 19.
Output No. 3	**Planned activities**	**Achievements/Assessment**
Human and technical capacities of national counterpart institutions/expertise established/ strengthened in the provision of enterprise diagnosis and industrial modernization, sectoral analysis and competitiveness buildingand other best practices and related services to the Fertilizers, Agricultural Machinery and other priority industrial sectors. **Indicators** • Number of new demand-driven servicesprovided to local industrial and relevant agricultural activities • Number of persons equipped with state-of-the-art skills and quality of the technical and	3.1 Capacity building activities targeting staff of relevant Ministries, technical support institutions, sectorial associations, national experts (experts, trainers, engineers and technicians), consultancy centers on UNIDO's approach, techniques, tools and the best practices in the area of industrial modernization, sectorial analysis and market awareness and positioning.	***Achievements*** Capacity building activities have been conducted in various forms, including workshops, trainings, on-the-job coaching sessions, study tours with involvement of the national counterpart representatives, including MINDUS, MINAG, CIIQ, GEIQ, EMPREQUIM, GESIME, CEDEMA and other stakeholders. A capacity-building program was drafted and shared with the National Partners to ensure it compliance with their needs. Trainings were organized in parallel with the completion of procurement and installation of the equipment at the respective production/research facilities. Notably, the capacity building activities have been continuously expanded and adapted based on additional requests and guidance received from the project team and affiliated institutions. During and following the Study Tour of Cuban national experts from MINAG, CIIQ, GEIQ, EMPREQUIM, CEDEMA to Spain, conducted between 30 September - 13 October 2017, the best international practices and know how were demonstrated to national experts and they received specialized training in the area of liquid fertilizer production and application. Following the Study Tour that demonstrated a promising potential of liquid fertilizer production systems internationally, and taking into account high quality of project-supported CBFERT liquid fertilizer and

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities Outputs/Results	
Output No.	**Planned activities**	**Achievements/Assessment**
professional training programmes Number of experts, trainers, engineersand technicians certified		its positive effects on crop yields, the Ministry of Agriculture decided to incorporate CBFERT into state fertilizer strategies. **NOTE** The project had a limited scope in terms of machinery production due to the partial (50%) funding of the Project's initially programmed. GESIME only designed a fertilizer spreader for protected agricultural crops, capable of mechanically and efficiently supplying liquid fertilizers to protected crops, having as a background and justification the modernization of fertilizer production plants for the increase and quality of these products, a determining factor in agricultural production. The expenses incurred for the design were paid by OSDE GESIME. GESIME representatives participated in meetings of the coordinating committee and a designer received on-site training in Spain for this type of fertilizer. This design was completed and remained in the working documentation to be manufactured if there is a demand for its use. ***Assessment*** The project as such can be considered as oriented towards national capacity building with regards to the transfer of best practices in engineering and contracting management including sophisticated demands towards process design, equipment specifications and precise procurement procedures to obtain the appropriate goods. National experts representing MINDUS, CIIQ, EMREQUIN, GEIQ contributed to the completion of the engineering plan for industrial

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities Outputs/Results	
Output No.	**Planned activities**	**Achievements/Assessment**
		modernization of the two pilot liquid fertilizer production plants, including development of flow sheet, mass balance, overall budget planning and distribution of required equipment between the national investor and UNIDO. Furthermore, the basics for the technical specifications of the fertilizer production and agro-machinery were provided by trained national experts. The national counterparts were invited to define additional areas of interest to be integrated into the suggested capacity-building concept. The number of people trained and their gender is not available.
	3.2 Provide guidance andadvisory services to the national (technical support) institutions, sectorial associations, professionaland vocational training centers on: (I) Developing/revising technicalprocedures related to sustainable industrial modernization according to best international practices; (ii)	***Achievements*** The advisory services were extended to CIIQ and EMPREQIN (to ensure sustainability of the acquired knowledge and skills, thereby providing opportunity to apply them during the development of modernization plans for two fertilizer production plants in Cuba) as part of the UNIDO Project. The project has been regularly supporting the national counterparts in producing communication materials (9 publications issued), as well as in promoting the project and its results in a number of Global Fora (incl. international, regional and national conferences, exhibitions, briefings) as well as in advocacy, news materials and social media publications (national, regional and international TV, radio, periodic, online editions, social media platforms). As part of the marketing strategy, a campaign to promote and disseminate the benefits of locally produced fertilizers was developed and implemented. Accordingly, a TV-spot about CBFERT was launched on

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities Outputs/Results	
Output No.	**Planned activities**	**Achievements/Assessment**
	Conducting respective training activities, including training sessions for development of suppliers, enterprise partnershipsand investment promotion for the purposes of modernization; and (iii)Producing communication materials related to modernization.	the Cuban national television and a special episode of a television program has been prepared to disseminate the results of the UNIDO Project. Additionally, a video to promote the benefits of CBFERT application was filmed and aired on the national television. ***Assessment*** Guidance and advice was provided to national institutions, sector associations and vocational and professional training centers. A communication and marketing strategy was designed to promote the benefits of the project for liquid fertilizer production. UNIDO capacity building activities took place until the completion of the project (December 31, 2021). This included all matters related to technology advice, management advice and logistical advice for the completion of all delivery obligations as indicated in the equipment table (see pages 3-5 above). Additional implementation and marketing advice for the product groups involved was also included.
	3.3 Build inter-institutional cooperation between national enterprise associations, export and investment promotion agencies and other enterprise support institutions in Cuba in order to	***Achievements*** The Project's Advisory Board served as a new national-level platform to coordinate/unite interests, development needs and goals of all local governmental actors and industry representatives whose activities are directly related to ensuring better food security. Institutional cooperation was further facilitated between the major national institutions, such as MINCEX, MINDUS, MINAG, CIIQ, GEIQ, CEDEMA, GESIME, ACINOX and, immediately, the industry – EMPREQUIM. In consultations with the Ministry of Agriculture of Cuba (MINAG),

Project logic/ structure *(as formulated in logical framework)*	Concise overview of achievements against planned results and activities Outputs/Results	
Output No.	**Planned activities**	**Achievements/Assessment**
	supplement Cuba's public sector capacities to meet the growing demand at the local market, investment and other technical skills development.	close cooperation was established within the network of highly qualified soil and nutrition institutes distributed across the country. New joint efforts of the CIIQ and IAGRIC were supported to validate the CBFERT application for the soybeans and corn crops with reference benchmarking compared to the effectiveness of the World's leader in this area. The results are being processed. Another inter-institutional cooperation is being developed with the Experimental Station "Indio Hatuey" of the Matanzas University to validate the CBFERT application for herbs/grasses/meadows. At the same time, the CBFERT is being tested in the "Experimental Rice Station" in Los Palacios, Pinar del Río province where the favorable results are being achieved. Another circular economy related R&D activities were supported jointly with CIPIM (the Research Center for the Metallurgical Mining Industry) in relation to the production of new fertilizers based on solid waste generated by the CBFERT manufacturing. Additional potential industrial and R&D partnership opportunities are being explored with Venezuelan partners in the area of innovative fertilizers. ***Assessment*** Closer linkages and strengthened partnerships between the major national stakeholders in fertilizer production, agro-machinery and food production at all levels (e.g. the continuous integration of MINAG, and IAGRIC, missions from CIIQ, GEIQ to Nuevitas and from Nuevitas to CIIQ/GEIQ) have been established. Accordingly, an integrated approach for sustainable development of fertilizer production and agro-machinery value chains is being applied. This helps to ensure the

Project logic/ structure *(as formulated in logical framework)*	**Concise overview of achievements against planned results and activities Outputs/Results**	
Output No.	**Planned activities**	**Achievements/Assessment**
		most efficient use of available input materials, human resources, technologies and targeted efforts of all involved partners. An R&D Project proposal for the use of the solid waste from the CBFERT production for agricultural purposes has been developed in coordination with the Ministry of Agriculture.

3.2.3. Relevance and ownership

Relevance

This topic shows how the project has made an important contribution to the implementation of national policies and strategies. Since 2011, Cuba has been in the process of updating its economic and social model of socialist development, which has entailed a series of changes reflected in guiding documents of Cuban policy. Among these changes, the creation of the Ministry of Industries (MINDUS) in 2012 stands out, with the objective of guaranteeing sustainable and inclusive industrial development and promoting greater efficiency and economic competitiveness, while preserving the country's social achievements.

The project is in line with the country's Economic and Social Policy Guidelines of April 2011, which refer to the Agro-industrial Policy:

- ✓ Guideline 177: Ensure that this sector progressively contributes to the country's balance of payments, in order to stop being a net importer of food and reduce the high dependence on financing that is currently covered by income from other sectors.
- ✓ Guideline 185. Organize agricultural production, applying a systemic or production chain approach that includes not only primary production, but also all the links that are linked to the agro-industrial complex.
- ✓ Guideline 200. Develop a comprehensive training system in line with structural changes, aimed at training and retraining managers and workers in agronomy, veterinary science, industrial and food technology, economics, administration and management, including aspects related to cooperative and environmental management.
- ✓ Guideline 205. Effectively develop the municipal food self-sufficiency program, relying on urban and suburban agriculture.
- ✓ Guideline 215. Prioritize in the industrial policy, as a fundamental objective, the promotion of exports and the reduction of costs, especially of its imported component.
- ✓ Guideline 218. Give priority attention to the environmental impact associated with existing and projected industrial development, particularly in the chemical, petroleum and petrochemical industries; mining, especially nickel; cement and other construction materials; as well as in the most affected territories; including the strengthening of control and monitoring systems.

- ✓ Guideline 230. Increase fertilizer production with the recovery of the ammonium nitrate plant; the rehabilitation of the granulated fertilizer plant in Matanzas, promoting the use of domestic raw materials such as phosphorite and zeolite.

The project has responded to the needs of the beneficiary companies that were identified in the diagnostics carried out as part of Output 2.

1. The diagnosis at CIIQ's CBFERT production pilot plant revealed that in order to increase production capacity, it was necessary to:

- ✓ Improve the dosing system.
- ✓ Introduce a heating system to the reactor.
- ✓ Use diaphragm pumps for transferring solutions with suspended solids.
- ✓ Incorporate a new filtration stage.
- ✓ Incorporate a filling system.

2. The diagnosis of the Calcium Nitrate Plant yielded the following results:

- ✓ The plant, which currently has several levels, does not allow the integration of all the elements of the process.
- ✓ The laboratory is in poor condition.
- ✓ The delivery of calcium nitrate to the settling tanks is by gravity, thus increasing the process time.
- ✓ Clarification of the final product is delayed by 24 hours due to the sedimentation process.

From which it was proposed the incorporation of a filter press to improve the quality of the product and replace the settling tanks, thus avoiding waiting 24 hours to obtain a liquid calcium nitrate without suspended solids.

3. Diagnosis of the fertilizers used in the farmhouse

The diagnosis provided the need to design the appropriate agricultural machinery for the distribution of liquid fertilizers to the plantations within the cultivation houses, for this reason UNIDO in coordination with the business group GESIME, agreed that the Center for the Development of Agricultural Machinery (CEDEMA), develop a fertilizer for protected crops, for the use of these liquid fertilizers that will produce the industries of the country, reducing imports.

It was determined that the ideal fertilizer spreader to work in areas of protected crops to be developed would be a spray cart with nozzle-carrying booms because it has the following advantages:

- Lower losses of fertilizer in the soil.
- Greater efficiency and uniformity in the fertilization of the plantations.
- Less exposure of the operator to chemical products.
- It was also decided to adjust this equipment with a view to greater operator health care.

On the other hand, a diagnosis of the fertilizer industry in Cuba was made, from which the following decisions were taken:

a. The rehabilitation and modernization of the largest and most important ammonium nitrate fertilizer plant in Nuevitas, which will make it possible to significantly reduce imports of other nitrogen carriers; and
b. The introduction of a Cuban fertilizer production that is based on Cuban proprietary technology and is intended to promote a niche strategy. This strategy consists in the introduction of a liquid fertilizer system – calcium/magnesium nitrate and the introduction of CBFERT, a Cuban brand fertilizer.

Since both fertilizers are liquid (of foliar application), the upgrading program is defined as "Introduction of a liquid fertilizer system". Both directions (a) and (b) serve as the basis for securing Cuba's food supply and contribute significantly to the sector's improved external balance as well as foreign exchange savings.

Ownership

Prestigious entities linked to the Cuban agricultural sector evaluated CBFERT and recommended its use based on productive and ecological data, incorporating it into their productive and scientific practices.

Table 5: Entities and crops on which CBFERT was evaluated

Entities	Crops
Soil Institute	• Potato (Agricultural Extension) • Vegetables in organoponic conditions
Liliana Dimitrova Horticultural Research Institute (Mayabeque)	• Ornamental flowers • Tomato (Protected cultivation and agricultural extension
Grain Research Institute	• Rice (Rice production in Pinar del Río and Camagüey)
Institute of Agricultural Engineering	• Tomato (Crop Houses) • Use of magnetized water in tomatoes
Institute for Fundamental Research in Tropical Agriculture (INIFAT)	• Tomato (Seeds in root balls)
Indio Hatuey Pasture and Forage Experimental Station (Matanzas)	• Pastures (Agricultural extension) • Various vegetables
Strengthened credit and service cooperatives in the municipalities of La Lisa and Cotorro (Havana). (Urban and Suburban Agriculture Movement).	• Various vegetables (Chard, Tomato, lettuce) • Medicinal and aromatic plants • Beans • Dwarf guava
Alamar Organoponic (Havana)	• Various vegetables
Batabanó Miscellaneous Crops Company (Mayabeque)	• Potato (Agricultural Extension)
Agricultural Business Group	• Cucumber • Bell pepper • Melon • Tomato • Protected crop houses in 4 provinces

In addition, the Ministry of Agriculture (MINAG) has considered CBFERT within the state fertilization strategies, particularly in vegetables and grains, increasing the quantity and variety of vegetables, beans, tomatoes and tobacco.

3.2.4. Efficiency in implementation

The project is financed on the basis of the Russian Federation's willingness to allocate USD 2 million (including UNIDO support costs) from its voluntary contribution to the UNIDO Industrial Development Fund (IDF). Coupled with this, although the exact figure is not made clear in the Project Document, national co-financing was envisaged. In the case of CIIQ, the contribution was approximately 500 thousand Cuban pesos and in EMPREQUIM, seven million, 230 thousand 470 cuban pesos, for a total co-financing of approximately seven million, 730 thousand 470 Cuban pesos.

The national counterparts provided the project with qualified personnel and venues for training activities and expert meetings. The Ministry of Industry of Cuba (MINDUS) allocated an office in the Ministry's facilities for the project staff, including the provision of facilities such as power supply, telephone, other communication services and other related facilities, which ensured the efficient work of the project.

As far as UNIDO's inputs and services are concerned, there are no indications of major problems in terms of quality and dedication to the work. The UNIDO Project Manager supervised project implementation from the UNIDO Headquarters and through in-country supervision missions. UNIDO also recruited a highly qualified international expert for technical accompaniment. The participating companies appreciated the support received from the project team of experts and their availability. The international and national experts worked together. However, an international expert was not available to accompany the implementation of the project on a full-time basis.

Smooth cooperation between the different main levels of coordination was verified: the UNIDO Headquarters, the National Project Coordination Team and the UNIDO Project Officer in Cuba. All are highly motivated and very committed to the project work. The project team in Cuba served as a focal point for issues related to the industry sector, specifically liquid fertilizer production.

The Project is aligned with the United Nations Development Assistant Framework (UNDAF) approved in Cuba for the period 2014-2018 (extended to December 2019) and with the new United Nations Cooperation Framework 2020-2024. In particular, it has been agreed that the Project intervention will focus on two priority areas: Sustainable economic development and Food security improved based on fertilizer availability and agro-machinery supplies. The Sectorial Strategy for technological and enterprise upgrading of fertilizers and agricultural machinery prepared as part of the UNIDO Project, has been considered for the projection under formulation for the UN Cooperation

Framework 2020- 2024 (in particular, in relation to the outcome focusing on the food security).

The results of the project are linked to the fulfilment of the Integrated Inter-Agency Working Plan developed with the participation of all the Agencies of the United Nations in Cuba as per the mandate of the UN Resident Coordinator in Cuba and according to the recent changes in the UN System's global structure. The most important aspects are implemented with a view to establish synergies with the actions developed by other agencies of the UN in Cuba in order to increase the food production in the country.

The results of the project are also linked with the new COVID-19 Economic and Social Response Plan, specifically with chapters covering food security. The Plan was submitted by the UN System in Cuba to the Government for review and was approved to be implemented 2020-2021. Additionally, continuous and fruitful collaboration is maintained with the main national project counterparts, including the Ministry of Industry (MINDUS), Ministry of Agriculture (MINAG) and Ministry of Foreign Trade (MINCEX), in order to jointly achieve the best project performance and greater impact on the inclusive and sustainable industrial development in Cuba. Sustainable cooperation has been established with the project beneficiaries, namely CEDEMA in Holguin, CIIQ in Havana, and EMPREQUIM in Nuevitas. MINAG has put a high priority on supporting the fertilizer production of the project beneficiaries in order to accomplish the food production targets set by the Cuban Government.

The monitoring, evaluation and results-based management criteria allowed comparison of the project's performance with other experiences in the UNIDO system. The evaluation used the theory of change and mixed methods approach to collect data and information from a variety of sources and informants. Attention was given to triangulation of the data and information collected.

This was essential to ensure a reliable, evidence-based and analytically sound evaluation. The theory of change identified causal and transformational pathways from project outputs to long-term outcomes and impacts, as well as drivers and barriers to achieving them. The lessons from this analysis are useful for informing the design of future projects so that management teams can effectively manage them based on results. The evaluation team developed interview guidelines, including key questions.

The analysis of the budget use during project implementation indicates that the actual utilization of the budget is overall in line with the planned utilization. The table 6 shows the purchases for EMPREQUEIN and CIIQ according to the January-June 2021 report.

Table 6: Purchases for EMPREQUIM and CIIQ according to the January-June 2021 report.

Customer		Equipment	DeliveryStatus
Calcium nitrate Plant (EMPREQUIM, Nuevitas)			
1.	Laboratory equipment	Flame photometer	delivered
2.		Air Compressor, M851, 230v	delivered
3.		Regulator, Propane, Primary Assy	delivered
4.		Waterproof, portable pH/ORP/ISE and Temperature	delivered
5.		Professional Warerproof portable pH/ORP/ISE Meter	delivered
6.		Instrument for sieve analysis 100/200/230 mesh.	delivered
7.		UV-1900 UV VIS spectrophotometer; including Accessories	delivered
8.	Production plant	Stainless steel sheets	delivered
9.		Stainless bars	delivered
10.		Welding consumables	delivered
11.		2 gear agitators+motor for reactors	delivered
12.		5 centrifugal pumps	delivered
13.		Sheets, profiles, tools, etc for refurbishment; outside ofcontract	delivered
14.		Filter press including accessories	delivered
15.		Complete lot of piping	delivered
16.		Complete lot of 64 valves	delivered
17.		Complete lot of electricals for installation	delivered

Customer		Equipment	DeliveryStatus
18.		Compressed air and service water units for upgradinginfrastructure	expected end of August 2021
CBFERT plant (CIIQ, Havana)			
19.	Laboratory equipment	4 Fans, 2 ventilators	delivered
20.		Filtering Tissue	delivered
21.		Mechanical agitator with accessories	delivered
22.		Electronic contact thermometer with digital reading	delivered
23.		Magnetic stirrer with accessories	delivered
24.		Set of equipment for oftermination of nitrogen	delivered
25.		Ultraviolet and visible range spectrophotometers withaccessories	delivered
26.		Water distiller	delivered
27.		Muffle furnace	delivered
28.		Flame photometer	delivered
29.		Technical precision scale	delivered
30.		Analytical precision scale	delivered
31.		Multiformeter pH meter and accessories	delivered
32.		Laboratory Reactor 20 Liters	delivered
33.	Production plant	1 Mobile filtration unit	delivered
34.		Agitator with gear motor	delivered
35.		1 Semiautomatic dosing machine	delivered
36.		2 Centrifugal Pumps	delivered
37.		1 Vacuum Pump	delivered

Customer		Equipment	DeliveryStatus
CEDEMA (Holguin), CIIQ & IAGRI			
38.	Liquid fertilizer distribution	3 Sprayers	delivered

Additionally, the equipment listed above, including the previous steel deliveries provided, are made available to the Cuban counterparts by UNIDO beyond the equipment delivery obligations initially agreed upon, although within the budget available for the project, under "Other direct cost" with the amount of USD 75 710.33 (Seventy-five thousand seven hundred and ten dollars and thirty-three cents).

These deliveries were to be covered by the national contribution, for the material conditioning and installation of equipment, as well as for the necessary infrastructure (water, compressed air) for the Nuevitas production plant. Due to financial limitations on the national side, this was covered by project funds. Equipment for infrastructural improvement consisting of service water pressurization, 2 compressed air units for service and instrument air and an acid wash unit for the fabrics were in manufacturing by July. Accordingly, the arrival in Havana occurred by end of August 2021.

It can be said that there were problems with deadlines and the arrival of materials and structures, although UNIDO accompanied the project management unit at all times. There were limitations due to the COVID issue and internal organizational issues. Due to the need for the Camagüey plant, resources that were planned for other activities were allocated to that factory. It is considered that the inputs and services were provided in an efficient, adequate and optimal manner, taking into account the availability of resources.

3.2.5. Sustainability prospects

The project document (C7-Project Sustainability) states: "Since capacity building at the institutional and enterprise level is crucial to ensure project sustainability, the project aims to facilitate the continuation of the benefits of a development intervention after the main development assistance is completed. The experience and skills acquired during the UNIDO project will enable MINDUS and other project counterparts and beneficiaries to replicate these experiences and practices also in other industrial sectors in Cuba, not covered within this intervention."

It is agreed that the project's sustainability is assured because it is in the government's interest, it gives sovereignty to the country and it has been proven that CBFERT is a competitive product. Among the actions proposed by the project to ensure that the results achieved are maintained after the end of the project are the following:

- Guidance and advisory services to national counterparts and beneficiaries. MINDUS, MINCEX, MINAG, CIIQ, GEIQ and CEDEMA are the main beneficiaries of these services in response to the needs identified in the sector strategy.

- The advisory services were extended to CIIQ and EMPREQIM, to ensure the sustainability of the knowledge and skills developed, thus providing the opportunity to apply the skills acquired during the development of the modernization plans for two fertilizer plants in Cuba, which are currently being carried out as part of the UNIDO

Project.

- Three workshops were designed (one for each region: East, Central and West Cuba) to identify skills and knowledge gaps between companies, farmers and cooperatives by introducing efficient practices that will allow them to apply liquid fertilizers developed within the project.

- The selected beneficiary companies have been advised on the implementation of integral measures focused on productivity, quality and industrial performance through continuous coaching and training based on international best practices to build management capacity and extend them to other companies in the participating sectors.

- Communication campaigns have been developed to promote the project and its results in national and international forums, conferences and exhibitions.

- Business alliances and investment promotion for modernization purposes have been encouraged.

- Value chains are being implemented in consultation with the Ministry of Agriculture. GELMA, a trading company of the Ministry of Agriculture, finances the imported raw materials and buys the finished product for distribution throughout the country. This allows us to optimize technological processes, increase production, achieve greater customer loyalty and improve the quality of our products.

- Inter-institutional cooperation was developed with the "Indio Hatuey" Experimental Station of the University of Matanzas and with the "Rice Experimental Station" in Los Palacios, province of Pinar del Río for the validation of CBFERT with favorable results.

- A study trip was made to Spain to strengthen the capacities of a delegation of Cuban experts and facilitate cooperation in possible areas of collaboration for the sustainable development of fertilizers and agrochemical production in Cuba.

- The project was presented at various global forums, international, regional and national conferences, exhibitions, briefings and a wide variety of promotional and news materials.

- As part of the marketing strategy, a campaign was developed to promote and disseminate the benefits of locally produced fertilizers on national television and in other media such as radio and the press.

- Large platforms of locally produced fertilizers are being developed for the implementation and application of the project results.

- This CIIQ Plant was modernized with the project, the unit is going to finance with its own resources the repair of the Plant, the most critical situation has always been in Nuevitas,

EMPREQUIM.

- CIIQ has alliances with the non-state sector; these people provide maintenance to the pumps. CIIQ also provides technical assistance to the non-state sector for painting.

- In alliance with diverse international economic associations the production of CBFERT for sale in the international market will be increased.

However, the people interviewed consider that the following issues need to be improved:

- The project does not guarantee spare parts. One unit arrived with problems with the thermostat and the new one has not yet been shipped; another unit has problems with the lamp, the warranty has expired and now it cannot be found.

- In this regard, it is suggested that equipment purchases be made with firms registered in the country in order to have start-up guarantees.

- The marketing strategy should be strengthened and updated to guarantee new markets in the new scenario of the national economy.

3.2.6. Cross-cutting issues

Gender mainstreaming

While the project document (C.8 Gender Mainstreaming Strategy) states: "The project will promote initiatives that contribute to the continuity and improvement of gender equality, in particular to promote the inclusion of women in productive activities. The project aims to ensure that women and men benefit equally from capacity building and other project activities, the equitable participation of women and men both in project management arrangements and as beneficiaries, partners and key project stakeholders, as well as ensuring coordination among key development actors to further improve gender mainstreaming and promote gender equality and women's empowerment"; in the implementation, monitoring and evaluation of the project the gender perspective is not appreciated.

An example of this is that there is no data disaggregated by sex, the objectives and indicators do not incorporate gender; among the beneficiaries, women do not appear as a priority group. This prevents the identification of gaps on which the project could have had an impact. Likewise, the business diagnostics, sector strategy and capacity building do not include a gender perspective, due to the classification 1(limited expected contribution on gender) assigned to the project.

Following UNIDO's checklist for gender mainstreaming in projects, it can be stated that this project pays limited attention to gender (1), therefore a moderately satisfactory

evaluation (4) is given according to UNIDO's evaluation scale, insofar as the following could be verified in the evaluation process:

- Women have benefited from the improvement of working conditions as mainly women work in the laboratories.

- Women have benefited from the training promoted by the project.

- Women manage business entities and research projects in these entities.

- Women are well represented in the positions in the companies interviewed.

- Women are well represented in the project coordinating team. The project manager is a young female manager in the Business Group and the UNIDO country representative is a woman.

- Women are well represented on the project's Board of Directors.

- The results of the project have generated jobs for women.

- Families have benefited from the results of the project.

These results serve strategic gender interests insofar as they contribute to a better status and position of the women involved in the project.

Environment

The project document (C9 Environmental and Social Assessment) states: "The success of the project will also be evaluated in relation to the level of pollution avoided, including the reduction in the amount of waste generation, the potential for reduced toxicity, improved quality and productivity, employee and customer satisfaction, among other factors that will be considered in this project".

From the project's objective, the environmental perspective is appreciated by stating that "the project will help implement comprehensive measures focused on productivity, industrial performance of the companies and quality, which will enable the production of efficient and environmentally friendly fertilizers, which will contribute not only to increase agricultural production, but also to safeguard human health and the environment". The environmental perspective is also included in the business diagnostics, the sectorial strategy and training activities, which point out the positive impact of these products on human health and the environment. The project has incorporated the environmental perspective to the extent that it promotes the use of liquid fertilizers, the advantages of which for the environment are presented below:

- The environmental impact of these products (CBFERT and Calcium Nitrate), is less than that of other fertilizers. CBFERT incorporates spirulina and reduces the use of chemicals in the soil.

- CBFERT, via its foliar application, provides assimilable nutrients of direct absorption with the simultaneous contribution of amino acids, vitamins and minerals that optimize metabolic processes, acting as a stimulant of plant growth, increasing plant resistance to adverse conditions, phytotoxicity, pests or diseases.

- Calcium nitrate is very suitable to prevent and correct calcium deficiencies in citrus, fruits, lettuce, melon, bell pepper, tomato and vegetables in general, as well as to reduce the dangers of sodification of non-calcareous soils when irrigated with saline-sodic waters.

- In trials carried out with CBFERT on rice crops in different soils, a 25% decrease in the degree of sodification was obtained compared to traditional fertilization, which had a positive impact on increasing yields and protecting the crop from pest attacks.

- Endorsements were obtained on the agroeconomic and environmental benefits derived from the application of the tested CBFERT formulations. The endorsements come from research centers and productive institutions; among them the Horticultural Research Institute "Liliana Dimitrova", which applied it on carnation seedlings and this allowed obtaining quality indicators of the plants significantly superior to the control variant, making it a nationally produced additive with ecological advantages for this crop.

- The spray truck with nozzle-carrying booms was chosen to be developed by CEDEMA for use in greenhouses because, from the environmental point of view, it has the advantage of guaranteeing less exposure of the operator to chemical products.

- By modernizing the plants, there is a positive change in terms of controlling the pollution potential of the plants, there is a treatment of the waste, turning them into new products, with new added value. An example of this is that in the calcium nitrate production plant in Nuevitas, solid waste is generated as part of the sedimentation process with the potential to be used for soil improvement in agriculture. Another example is that R&D activities related to the circular economy are being supported jointly with CIPIM (the Research Center for the Mining Metallurgical Industry) in relation to the production of new fertilizers based on solid waste from CBFERT production.

M&E including results-based management

Overall, project monitoring has been constant, effective and has contributed to mitigating disruptions that usually affect project management. This includes the preparation of periodic reports (semi-annual and annual), individual reporting by project experts, periodic missions from the UNIDO Headquarters and also the mid-term review.

However, the project would have benefited from a single database aligned with the logical framework with indicators that could give greater precision of the results achieved. In general, indicators are associated with project outputs, making it difficult to accurately measure more specific activities. There is no project expert on the team dedicated exclusively to monitoring.

The project design foresaw "a results-based management mechanism to ensure timely identification of potential implementation problems and provide support to resolve them." This RBM mechanism was to serve as a tool for balanced decision making, which appears to have been fulfilled, based on the analysis of the annual and semi-annual reports.

3.2.7. Performance of project partners

The "hard core" of project partners consists of the following three main actors: the Donor (Russian Federation), the Ministry of Industries and UNIDO. According to the conclusions of this final evaluation, the overall assessment of the performance of these partners is as follows:

Donor: in terms of inputs, funds for the main project were made available in a timely manner, which was facilitated by the fact that the project is financed by the annual voluntary contribution of the Government of the Russian Federation to UNIDO. In addition, the exchange with the local representatives of the Donor in Cuba indicates a clear commitment and interest in the project, as well as that the Donor is well informed about the implementation of the project and its results;

Head of Counterpart: despite the complex epidemiological scenario as a consequence of COVID 19, which explains the delays suffered, there was good cooperation throughout the project implementation, including decision making regarding the institutional anchoring of the project work, in particular with regard to the executing agency, i.e. the GIEQ;

UNIDO: the project achieved tangible results as a result of the leading role played efficiently by the UNIDO team of experts and its office in Cuba, which allowed the technological reactivation of the production of high quality liquid fertilizer; the facilitation of contacts with new markets; practical advice, etc. A UNIDO expert could have been appointed full time in Cuba for the implementation of the project, but this was not achieved.

3.2.8. Rating

The evaluation findings regarding the different criteria and dimensions of the project result in the following rating:

RATING TABLE:

Evaluation criteria / dimensions		Summary evaluation	Classification
A	**PROGRESS TO IMPACT (OVERALL)**	Achievements with expected lasting outcomes	S
B	**PROJECT DESIGN (OVERALL)**		MS
1.	Overall design	Design of the project according to the frontier of financial possibilities. Key stakeholders prioritize the most important needs.	S
2.	Logic frame	The logical framework consistently reflects the needs of the project.	S
C	**PROJECT PERFORMANCE (OVERALL)**		S
1.	Relevance	Significant contribution to the implementation of national policies/strategies, to the needs of participating enterprises and to UNIDO's objectives.	HS
2.	Effectiveness	The project has significant achievements, with tangible results and impact	HS
3.	Efficiency	Smooth cooperation between the different main levels of coordination. Adequate balance between co-financing and the amount provided by the donor.	S
4.	Prospects for sustainability	The sustainability of the project is guaranteed by the intention of public policies to strengthen institutional and entrepreneurial capacities. Solid technological improvement.	S
D.	**CROSS-CUTTING PERFORMANCE (OVERALL)**		S
1.	Gender mainstreaming	Consideration of gender aspects	MS
2.	Environment	The environmental perspective is included in business diagnostics, sector strategy and training activities.	HS

Evaluation criteria / dimensions		Summary evaluation	Classification
2.	M&E	Project monitoring has been constant, effective and has contributed to mitigating disruptions that usually affect project management.	HS
3.	Results-Based Management	Overall adequate	S
E	**PARTNER PERFORMANCE**		S
1.	UNIDO	Overall adequate	S
2.	National Counterparts	Overall adequate	S
3.	Donor	Overall adequate	S
F.	**OVERALL ASSESSMENT**		S

4. Conclusions

The evaluation made it possible to verify the productive impacts of the project based on the manufacture in the country of two fertilizers: calcium nitrate and CBFERT, both liquid substances. The use of the latter has increased the yields of crops that are highly demanded in the diet of Cuban men and women, as well as crops for animal feed. This has been possible thanks to its incorporation into the state fertilization strategy, carried out by the Cuban Ministry of Agriculture as the institution responsible for agricultural production and food security in the country.

The project has made important achievements in the two years of implementation. Resources have been allocated to the improvement and technological upgrading of liquid fertilizer production plants. Improvements in the machinery production sector will have to be addressed in later phases.

Likewise, economic impacts were verified, among which stand out the improvement in the external balance of the fertilizer and production equipment sector; technological impacts from the improvement of the CIIQ and EMPREQUIM plants, since they have better laboratory equipment; positive environmental impacts because soil contamination is avoided by using a product that incorporates spirulina, reduces chemicals, and protects crops from pest attacks. Finally, there are social impacts because working conditions have improved, technologists have been trained, jobs have been created, and the project has contributed to the food security line of the local development strategy of the municipality where the CIIQ is located.

The project has great relevance. It has contributed to the economic and social development policies and strategies implemented in Cuba since 2011. As a result of its actions, local food production has been boosted and higher productive yields have been generated, which translates into higher income. Likewise, companies that produce agrochemicals and agricultural machinery in Cuba have been modernized in order to renew their technology for the production of liquid fertilizers.

Various actions were taken to ensure that the results of the project are maintained after its completion, guaranteeing its sustainability. The knowledge and skills acquired from the training sessions, the communication campaigns in various media to disseminate the results through the marketing strategy, the participation in national and international events, the appropriation of the results by prestigious scientific institutions and central government agencies, as well as the financial self-sustainability strategies designed by participating institutions, stand out.

The project paid special attention, from the review of the reports and the visits to the organizations, to the achievement of a collaborative and articulated work environment between departments and management, from a perspective of responsibility in the compliance with regulations and processes. In addition, it

emphasized the values, attitudes and responsibilities of workers and leaders, together with the constant willingness to improve technically, from a culture of commitment, rooted in the people of these organizations, and a motivating process to learn to deal with difficulties and achieve the expected results.

With respect to the cross-cutting dimensions, gender equality received limited attention in the project; nevertheless, the evaluation process made it possible to confirm results that address strategic gender interests by contributing to a better condition and position for women. The environmental perspective had a positive impact on the project's results, based on the production of fertilizers that prevent pollution and the reuse of waste, helping to increase agricultural production and safeguard human health and the environment.

5. Recommendations

To UNIDO

1. **Make equipment purchases with firms registered in the country in order to have guarantees against breakage or other start-up problems, as well as spare parts.**

Justification

It is difficult to find spare parts for equipment whose firms are not registered in the country and this has a negative impact on the sustainability of the project's actions.

2. **Include in the formulation, implementation, monitoring and evaluation of the next project the cross-cutting issues (gender and environment), with their specific indicators.**

Justification

UNIDO's impact dimensions include environmental protection and social inclusion. In order to advance towards gender equality, it is essential to investigate existing inequalities with a view to overcoming them. Although there are public policies in Cuba (health, education, social security) that benefit women, the patriarchal culture persists in the public and private spheres, hence the importance of mainstreaming the gender perspective in projects to avoid widening gaps. With respect to environmental issues, it is very important that the actions developed favor the environment. In this regard, it is important to define indicators for monitoring and evaluation of both perspectives, disaggregate all information by sex, prioritize and benefit women through project actions, among others.

3. **Have a full time international technical expert on the project.**

4. **In addition to ensuring that the logical framework includes intelligent and, to the extent possible, quantified indicators and target values, it is useful to include as an Annex to a logical framework a matrix describing how each of the indicators will be measured, including by whom and how often.**

5. **It is proposed for future projects to introduce the Environmental and Social Safeguards toolbox for risk management to ensure the monitoring of the project's negative externalities.**

To CIIQ and EMPREQUIM

1. **Strengthen, update and fully implement the marketing strategy to maintain the existing domestic market share and position the company in new markets, both in Cuba and abroad.**

Justification

Expanding markets with the CBFERT product would allow for greater income, which favors financial self-sustainability and the well-being of the workers who produce it. Exploring international markets will ensure increased exports of the product.

2. **Develop the product for specific productions, e.g. CBFERT pineapple, CBFERT citrus, particularizing it according to crops and soil conditions.**

Justification

It is important to diversify the product portfolio, which would involve raising the quality of products for participation in specific market segments.

To GEIQ

1. **Deconcentrate CBFERT production through the creation of other plants in the country, as well as the possibility of technology transfer to other production centers.**

2. **To train in project management the people who will assume responsibilities in the management of social, environmental and financial projects.**

Justification

The training received in the project shows the relevance of creating CBFERT plants in the center and east of the country, since fertilizer plants should not be more than 200 km from the final client.

3. Establish partnerships with companies that produce packaging of various assortments for CBFERT.

Justification

This allows ensuring the production and commercialization of the product for **customers of different sizes.**

4. Prioritize the diversification of raw material sources for the production of CBFERT fertilizer.

Justification

Instability in obtaining raw materials for CBFERT delays production and marketing, which negatively impacts the supply to producers and therefore food security.

To the Donor (Russian Federation)

1. Extend the project for two more years and contribute the remaining resources to complete the pending actions, particularly in the area of agricultural machinery.

Justification

The project has visualized potentialities for the production of agricultural machinery for liquid fertilizer irrigation. There is significant knowledge of fertigation and spray application processes in farmhouses, which have increased as a result of the project. It would be desirable for the Center for the Development of Agricultural Machinery (CEDEMA) to manufacture a fertilizer spreader for protected crops, which would allow the use of liquid fertilizers produced in the country's industries. The diagnosis carried out by the project identified the spray truck with nozzle arms as the most suitable for these purposes.

2. Identify suppliers willing to trade their products with Cuba.

Justification

Unilateral sanctions against Cuba hindered the acquisition of the Filter Press for the Nuevitas factory, since 3 bids were necessary and this delayed the installation of this equipment. Identifying the supplying companies willing to trade with Cuba would favor the implementation of a future project.

6. Lessons learned and good practices

This review of the project (both its design and implementation) generated the following main lessons learned, as well as good practices followed:

- ✓ The market-oriented approach of the CIIQ and EMPREQUIM organizations, as an intangible resource for the value offer that fully satisfies the needs and preferences of the liquid fertilizer market in Cuba and abroad, is the guarantee that the technological modernization provided by the project will generate tangible results, including new competitive advantages for the market.
- ✓ The articulation of key actors and beneficiaries, as well as the clarification of the roles and responsibilities of each one, is fundamental for the achievement of the project's objectives.
- ✓ Communication of results through traditional media and social networks with messages about the benefits and how to take advantage of them, contribute to the visibility of the products and the creation of the necessary awareness of the benefits with a marketing and value chain approach.
- ✓ The process of technological upgrading requires a deepening of strategic planning tools, which implies strengthening the preparation of the people who formulate the projects.

6. ANNEXES

Annex 1: Summary of Document of the project

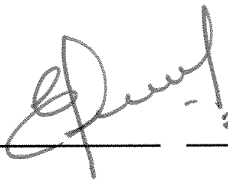
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Project of Cuba
Project number: SAP ID 150262
Project title: Technological and Enterprise Upgrading Programme on agro-chemicals and agricultural machinery production sector (Industrial Upgrading and Modernization in Cuba)
Thematic area code EC12 Business, Investment and Technology Services
Starting date: January 2016
Duration: 4 years
Project site: Havana, and other regions to be identified by the counterpart
Government co-ordinating agency:
Ministry of Industry of Cuba (MINDUS)
Counterpart: Ministry of Industry of Cuba (MINDUS)
Executing agency: UNIDO
Project Inputs:
- Project costs USD 3,539,824
- Support costs (13%): USD 460,177
- Total project costs: USD 4,000,000, of which, USD 2,000,000 are expected from the voluntary contributions to UNIDO IDF of the Government of the Russian Federation

Brief description:

UNIDO is supporting Cuba's efforts in investment and strategic alliance promotion endeavors for strengthening its industrial capabilities and competitiveness in priority industrial sectors through the formulation of a Country Programme Framework, in line with the economic and industrial transformations decided by the Government and with the UNDAF signed for 2014-2018.The Country Programme Framework (CPF) focuses on three main outcomes as agreed with Cuban authorities: a) Improvement of business environment and sustainability; b) Improvement of industrial competiveness; and c) Attraction of foreign investment. The UNIDO Country Programme Framework for the period of 2016-2020 was signed by UNIDO Director General, Mr. LI Yong and Minister of Industry of Cuba, Mr. Salvador Pardo Cruz, on 2 December 2015 in Vienna, Austria at the 16th Session of the UNIDO General

Conference. One of the priority CPF areas as per main outcomes agreed with the Government of Cuba is the development of an Industrial Upgrading and Modernization Programme (IUMP) focusing on priority agro-chemicals and agricultural machinery production sectors. UNIDO Country Programme Mission to Cuba was held between 29 June-3 July 2015 that included negotiations with key national stakeholders and several interested potential donors. During the mission, high level officials from the Ministry of Foreign Trade and Investment, the Ministry of Industry (MINDUS), and representatives from the Cuban Ferrous Metallurgy and Machine-Building Enterprise Group (GESIME), the Cuban Chemical Industry Enterprise Group (GEIQ) and other concerned stakeholders endorsed the project concept on Technological and Enterprise Upgrading Programme, focusing on agro-chemical and agriculture machinery production sector (Cuba IUMP). The project Preparatory Assistance phase mission to Cuba undertaken by the UNIDO Delegation in the period of 18-23 April 2016 that included meetings with national counterparts and visits to GESIME and GEIQ, as well as selected agricultural machinery and fertilizer producers in Cuba, provided inputs for finalization of a fully-fledged project document outlining scope and content of the technical assistance to be provided by the UNIDO project. Cuba IUMP aims to contribute to inclusive and sustainable industrial development of Cuba and improve food security through upgrading and modernization of industrial sectors of Fertilizers and Agricultural Machinery. This will be achieved through enhancement of industrial performance and competitiveness of pilot enterprises operating in the Fertilizers and Agricultural Machinery industrial sectors within the existing industrial hubs. The programme will be implemented via three mains modules: sectorial analysis and building a strategic action plan for the Cuban priority Fertilizers and Agricultural Machinery industrial product lines/sub-sectors; enterprise diagnosis and industrial upgrading of selected pilot manufacturing enterprises operating within the identified priority sub-sectors/existing hubs; and strengthening human and technical capacities of national counterpart institutions/expertise in the provision of enterprise diagnosis and industrial modernization, sectoral analysis and other best practices. In the Note Verbale from the Permanent Mission of the Russian Federation to the International Organizations in Vienna dated 18 April 2016, the Russian Federation expressed its readiness to allocate two million US$ (including the UNIDO support costs) from the voluntary contribution of the Russian Federation to the Industrial Development Fund of UNIDO (IDF) for years 2016-2019.

Approved:

	Signature:	Date:	Name and Title:
On behalf of:			
Ministry of Foreing Trade and Investment of the Republic of Cuba (MINCEX)		24-6-2016	Ileana Núñez Mordoche
On behalf of:			
Ministry of Industry of the Republic of Cuba (MINDUS)		24-6-2016	Eloy Alvarez
On behalf of:			
United Nations Industrial Development Organization (UNIDO)		24-6-2016	Amita Misra

Annex 2: Logical framework
PROJECT IMPACT:

Sustainable economic and industrial development and sustainable supply of food to the local market and the growing tourism sector of Cuba.

PROJECT OUTCOME:

Increased demand-driven and reliable supply of fertilizers, and agricultural machinery of enhanced quality and range to the agricultural sector of Cuba.

INTERVENTION LOGIC	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	ASSUMPTIONS
Development goal/impact			
Sustainable economic and industrial development and sustainable supply of foodto the local market and the growing tourism sector of Cuba.		Market statistics National statistical reports and UN reports Programme reports Other publications	
Outcomes/immediate objectives			
Increased, demand-driven and reliable supply of fertilizers, and agricultural machinery of enhanced quality and range to the agricultural sector of Cuba	• Enterprise performance indicators e.g. reduced factor costs, turnover, value added, % exported, etc. • % increase in export of goods producedby the beneficiary enterprises to the regional market	• Market statistics • Commercial performancereports • Enterprise annual reports • Project reports • Other publications	Political situation in the country is stable. Project funding is timely and sufficient
OUTPUTS/RESULTS			

INTERVENTION LOGIC	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	ASSUMPTIONS
Output 1. Sectorial analysis and building a strategic action plan for development of the Cuban priority Fertilizers and Agricultural Machinery[16] industrial product lines/sub-sectors based on the key food and agricultural crop development needs.	• Strategic positioning report (identifying principal suppliers, market and customerneed coverage, product margins, relationbetween industrial hub units, affiliation tohubs, distribution channels and terms aswell as key sector-specific bottlenecks	• Strategic positioningreport produced • Action plans developed • Programme reports	Political and economic situation in the country isstable
	and constraints affecting overall agricultural productivity and reliable/sustainable supply of food) available • Demand-driven tailored action plan for modernization of priority Fertilizers and Agricultural Machinery product lines/sub-sectors and production		

1.1 Identify key pilot beneficiary product lines/sub-sectors within existing Fertilizers and Agricultural Machinery industrial hubs based on the country's priority food and agricultural crop development needs.

1.2 Conduct comprehensive analysis of the production and supply of the identified products to agricultural sector (both quantitative and qualitative).

1.3 Analyze local distribution, after-sales services and maintenance network (quantitative and qualitative)

1.4 Analysis of current local demand and supply and future local demand and supply to cover Cuba´s food needs (including general quantitative and qualitative trends in consumption) and of consumer/ Fertilizers and Agricultural Machinery customer behavior.

1.5 Analysis of local demand and supply (including general quantitative and qualitative trends in consumption) of Fertilizers and Agricultural Machinery products for farming practices. Consideration of fertilizer composition and application formulas/recipes based on local food crops and soils avoiding over-fertilization and with respective rationalization (or adoption, adaption, customization) in fertilizer production.

1.6 Carry out benchmarking of priority Fertilizers and Agricultural Machinery product lines/sub-sectors at the local market and compare with appropriate international levels.

1.7 Produce Gap Analysis Studies for selected and relevant products.

1.8 Build a road map for further development of the relevant Cuban priority industrial sectors identifying the bottlenecks, constraints and opportunities (SWOT) affecting the productivity and supply of the sectors and define appropriate interventions areas to obtain an enhanced food supply level.

1.9 Identify partnership opportunities offered by bilateral/friendship agreements (trade, finance, technology, joint venture)

INTERVENTION LOGIC	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	ASSUMPTIONS
Output 2. Enterprise diagnosis and industrial upgrading of selected pilot manufacturing enterprises operating within theidentified priority Fertilizers and Agricultural Machinery product lines/sub-sectors/existing hubs through technological modernization, optimization of business processes and improvements of enterprise performance and competitiveness.	• Improved economic performance of beneficiary enterprises, e.g. reduced factor costs, (manufacturing) value added, customer satisfaction, etc. • Increase in turnover by beneficiary enterprises/hubs • Increase in quality and quantity of goods and services produced by the selected beneficiary enterprises/hubs • Post-upgrading performance and satisfaction degree of the beneficiary companies • Security and creation of employment • Number of enterprise employees trained (management and production; female and male)	Market study Commercial performancereports Enterprise annual reports Project reports Surveys	• Information on local manufacturing enterprises operating within identified priorityFertilizers and Agricultural Machinery industries and regional markets is available • Individual companies actively collaborate with the project throughout its different stages
2.1 Conduct full-diagnosis study, and assist in the formulation and implementation of the full scope of industrial modernization activities of selected beneficiary enterprises operating within existing industrial hubs *2.2 Coach selected beneficiary enterprises on the implementation of comprehensive measures with a focus on productivity, quality and industrial performance of enterprises.* *2.3 Identify and procure selected number of appropriate technology and equipment to the pilot selected enterprises to improve productive performance and ability to produce according to international standards and technical requirements.*			
Output 3. Human and technical capacities of national counterpart institutions/expertise established/ strengthened in the provision of enterprise diagnosis and industrial modernization, sectorial analysis and competitiveness buildingand other best practices and related services to the Fertilizers, Agricultural Machinery and other priority industrial sectors.	• Number of new demand-driven services provided to local industrial and relevant agricultural activities • Number of persons equipped with state-of-the-art skills and quality of the technical and professional training programmes • Number of experts, trainers, engineers and technicians certified	• Project reports • International and nationalexpert reports • Training reports	• National counterpart institutions and expertsare cooperating amongeach other and with theUNIDO project

INTERVENTION LOGIC	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	ASSUMPTIONS
3.1 *Capacity building of staff of relevant Ministries, technical support institutions, sectorial associations, national experts (experts, trainers, engineers and technicians), consultancy centers on UNIDO's approach, techniques, tools and the best practices in the area of industrial modernization, sectorial analysis and market awareness and positioning.* 3.2 *Provide guidance and advisory services to the national (technical support) institutions, sectorial associations, professional and vocational training centers on (i) Developing/revising technical procedures related to sustainable industrial modernization according to best international practices; (ii) Conducting respective training activities, including training sessions for development of suppliers, enterprise partnerships and investment promotion for the purposes of modernization; and (iii) Producing communication materials related to modernization.* 3.3 *Build inter-institutional cooperation between national enterprise associations, export and investment proportion agencies and other enterprise support institutions in Cuba in order to supplement Cuba's public sector capacities to meet the growing demand at the local market, investment and other technical skills development.*			

Annex 3: Evaluation framework

FRAMEWORK OF THE ASSESSMENT			
Criteria/dimensions	**Sub questions**	**Sources of information**	**Methods**
Impact What changes has the project brought about in the institutions involved and in the people?	1. Have there been changes in development (economic, productive, infrastructure, environmental, social) as a result of the project? Please elaborate on UNIDO's three dimensions of impact (safeguarding the environment, economic performance, social inclusion). 2. 2. Were there any other direct/indirect/intended/anticipated/unintended effects (positive/negative)? 3. 3. How has articulation with national and international organizations taken place? 4. 4. What achievements can be identified as a result of these articulations?	National counterparts, UNIDO experts, Advisory Council Minutes, Project document, Progress reports. Direct beneficiaries	Interviews, content analysis, online questionnaire, focus group, observation.
Project design (general design and logical framework). What have been the main factors that have favored the achievement of the long-term objectives? What have been the major obstacles?	5. To what extent was the project design based on an up-to-date needs assessment (problem/needs/deficiency analysis of the situation? 6. Was the selection of project stakeholders and their participation in the project appropriate? 7. Has the environment supported the implementation of the project, in what form (political, technical, administrative, financial or other)? 8. Is the hierarchy of results in the logical framework logical and coherent, from activities to outputs, outcomes and overall objective? 9. Have the desired results been achieved with the available resources? 10. What lessons can be learned from practices (successful or not) in project design, implementation and management? (Probe for good practices)	National counterparts, UNIDO experts, Advisory Board minutes, Project document, Progress reports.	Interviews, content analysis, online questionnaire, focus group,

PROJECT PERFORMANCE			
Effectiveness (achievements compared to expected results)	11. What have been the results of this project? Of the expected results, what was not achieved and why, and what were the limiting factors? 12. How do the beneficiaries and stakeholders value the results/outputs of the project and how have they used them? (Probe for integration into policies, plans, programs, replication/replication/adoption of methodologies/technology/lessons learned or scaling up to a larger geographic scale). 13. Has the implementation strategy been adequate to achieve the results? Are there external factors that have affected the effectiveness of the project and have mitigation measures been taken?	National counterparts, UNIDO experts, Advisory Board minutes, Project document, Progress reports.	Interviews, content analysis, online questionnaire, focus group
Relevance What are the relevance of the project to national development needs/priorities/strategies as well as those of the end-clients (companies), UNIDO and the donor?	14. What are the needs of the national context that the project responds to and is it in line with the country's development priorities (national economic and social development strategy, sectorial development strategy) and how? 15. What are the needs of the beneficiary enterprises addressed by the project, and was there a prior assessment to identify these needs? 16. To what extent does the project respond to UNIDO's corporate objectives, including the priorities of its inclusive industrial development program and the priorities of the donor?	National counterparts, UNIDO experts, Advisory Council Minutes, Project document, Progress reports. Direct beneficiaries	Interviews, content analysis, online questionnaire, focus group
Efficiency in execution Were all inputs and services provided efficiently? Were there synergies aimed at generating collective efficiencies?	17. Have resources (funds, human resources, time) been allocated strategically and appropriately to achieve the planned results? To what extent have the planned results been achieved within budget? If no, please explain why.	National counterparts, UNIDO experts, AC minutes, Project document, Progress reports.	Interviews, content analysis, online questionnaire, focus group

	18. Are the results being achieved at an acceptable cost? Would the same results be achieved with alternative approaches at a lower cost? 19. What steps have been taken during planning and implementation to ensure efficient use of resources? Were project expenditures in line with budgets? 20. Was the quality of UNIDO's inputs and services (expertise, training, methodologies, etc.) as planned and conducive to the delivery of the outputs? 21. Were UNIDO's procurement services delivered as planned and were they appropriate in terms of timing, value, process issues, responsibilities, etc.?		
Prospects for sustainability To what extent are the results obtained sustainable?	22. What actions/strategies has the project proposed to ensure that the results achieved will be maintained after the end of the project? 23. What are the capacities that have been installed in the direct and indirect beneficiaries of the project?	National counterparts, UNIDO experts, AC minutes, Project document, Progress reports.	Interviews, content analysis, online questionnaire, focus group
	CROSS-CUTTING PERFORMANCE CRITERIA		
Gender mainstreaming How has the gender perspective been integrated into the project's actions?	24. Has gender been taken into account in project formulation, implementation, monitoring and evaluation? Give examples. 25. How has the project sought to involve women and in which activities? 26. How have women or other vulnerable people benefited from the project?	National counterparts, UNIDO experts, AC minutes, Project document, Progress reports	Interviews, content analysis, online questionnaire, focus group
Environment How has the environmental perspective been integrated into the project's actions?	27. Has the environmental perspective been taken into account in the formulation, implementation, monitoring and evaluation of the project? Give examples. 28. What positive and/or negative environmental impacts has the project generated?	National counterparts, UNIDO experts, AC minutes, Project document,	Interviews, content analysis, online questionnaire, focus group

		Progress reports. Direct beneficiaries	
M&E (design and implementation) How has project monitoring and evaluation been designed and implemented?	29. Is there a monitoring and evaluation system in place to measure results and impact? 30. Has monitoring and evaluation been carried out, based on output, outcome and objective indicators according to the logical framework, and has this information been used for project steering and adaptive management?	National counterparts, UNIDO experts, AC minutes, Project document, Progress reports	Interviews, content analysis, online questionnaire, focus group
Management by results	31. Is there an integrated project management strategy? 32. Is it realistic in terms of expected results, and does it integrates lessons learned into the work strategies of the project management group? 33. Were the indicators clear, realistic and do they account for the achievement of results?	National counterparts, UNIDO experts, AC minutes, Project document, Progress reports	Interviews, content analysis, online questionnaire, focus group
Partner performance	34. Are stakeholders fulfilling their responsibilities and roles in project management and/or specific tasks?	National counterparts, UNIDO experts, AC minutes, Project document, Progress reports	Interviews, content analysis, online questionnaire, focus group
Overall evaluation	Responsibility of the evaluation team		

Annex 4: Project budget expenditures by output

	Programme Outputs	2016	2017	2018	2019	Estimated Budget (in USD)
1.	Sectorial analysis and building a strategic action plan for development of the Cuban priority Fertilizers and AgriculturalMachinery industrial product lines/sub-sectors	200,000	50,000	40,000	50,000	**340,000**
2.	Enterprise diagnosis and industrial upgrading of selected pilotmanufacturing enterprises operating within the identified priority Fertilizers and Agricultural Machinery product lines/sub-sectors/existing hubs	510,000	610,000	610,000	480,000	**2,210,000**
3.	Human and technical capacities of national counterpart institutions/expertise established/strengthened	200,000	250,000	260,000	279,823	**989,823**
	Subtotal	**910,000**	**910,000**	**910,000**	**809,823**	**3,539,823**
	UNIDO support costs at 13%	118,300	118,300	118,300	105,277	**460,177**
	TOTAL	**1,028,300**	**1,028,300**	**1,028,300**	**915,100**	**4,000,000**

Annex 5: Planned expenditures of the project budget by budget line.

	BL	Description	2016	2017	2018	2019	Total, USD
1.	11-00	International experts	258,500	258,500	258,500	174,500	**950,000**
2.	15-00	Local travel	50,000	50,000	50,000	50,000	**200,000**
3.	16-00	Mission costs of UNIDO staff	25,000	25,000	25,000	19,823	**94,823**
4.	17-00	National experts	175,000	175,000	175,000	175,000	**700,000**
5.	21-00	Subcontracts	50,000	50,000	50,000	50,000	**200,000**
6.	30-00	Trainings	75,000	75,000	75,000	65,000	**290,000**
7.	45-00	Equipment	260,000	260,000	260,000	260,000	**1,040,000**
8.	51-00	Sundries	16,500	16,500	16,500	15,500	**65,000**
	Subtotal		**910,000**	**910,000**	**910,000**	**809,823**	**3,539,823**
	Support cost (13%)		118,300	118,300	118,300	105,277	**460,177**
	TOTAL		**1,028,300**	**1,028,300**	**1,028,300**	**915,100**	**4,000,000**

Annex 6: Table 4: Actual expenditures of the project budget.

					Released Budget (a)	Unapproved Obligation (b)	Unreleased Budget	Obligation (c)	Payments (d)	Expenditure (c+d)	Funds Available (a-b-c-d)
Grant	Year	Sponsored Program	Sponsored Class		USD	USD	USD	USD	USD	USD	USD
2000003358	2016	150262-1-01-01	1100	Staff & Intern Consultants	58,664.95		0.00	-0.06	58,665.01	58,664.95	0.00
2000003358	2016	150262-1-01-01	1500	Local travel	2,149.49	0.00	0.00	2,058.91	90.58	2,149.49	0.00
2000003358	2016	150262-1-01-01	1600	Staff Travel	1,570.69		0.00	0.00	1,570.69	1,570.69	0.00
2000003358	2016	150262-1-01-01	1700	Nat.Consult./Staff	7,617.02		0.00	12.78	7,604.24	7,617.02	0.00
2000003358	2016	150262-1-01-01	3000	Train/Fellowship/Study	0.00		0.00				0.00
2000003358	2016	150262-1-01-01	5100	Other Direct Costs	4,969.32	0.00	0.00	0.00	4,969.32	4,969.32	0.00
2000003358	2016	150262-1-01-01	Result		74,971.47	0.00	0.00	2,071.63	72,899.84	74,971.47	0.00
2000003358	2016	150262-1-01-02	1100	Staff & Intern Consultants	21,342.11		0.00	-0.03	21,342.14	21,342.11	0.00
2000003358	2016	150262-1-01-02	1500	Local travel	0.00		0.00	0.00		0.00	0.00
2000003358	2016	150262-1-01-02	1600	Staff Travel	7,049.31		0.00	7,049.31		7,049.31	0.00
2000003358	2016	150262-1-01-02	1700	Nat.Consult./Staff	6,395.92		0.00	193.01	6,202.91	6,395.92	0.00
2000003358	2016	150262-1-01-02	2100	Contractual Services	0.00		0.00				0.00
2000003358	2016	150262-1-01-02	3000	Train/Fellowship/Study	0.00		0.00				0.00
2000003358	2016	150262-1-01-02	4500	Equipment	0.00		0.00				0.00
2000003358	2016	150262-1-01-02	5100	Other Direct Costs	14.35		0.00		14.35	14.35	0.00

					Released Budget (a)	Unapproved Obligation (b)	Unreleased Budget	Obligation (c)	Payments (d)	Expenditure (c+d)	Funds Available (a-b-c-d)
Grant	Year	Sponsored Program	Sponsored Class		USD	USD	USD	USD	USD	USD	USD
2000003358	2016	150262-1-01-02	Result		34,801.69		0.00	7,242.29	27,559.40	34,801.69	0.00
2000003358	2016	150262-1-01-03	1100	Staff & Intern Consultants	10,530.15		0.00	-0.07	10,530.22	10,530.15	0.00
2000003358	2016	150262-1-01-03	1500	Local travel	417.39		0.00	417.39		417.39	0.00
2000003358	2016	150262-1-01-03	1700	Nat.Consult./Staff	2,941.58		0.00	115.80	2,825.78	2,941.58	0.00
2000003358	2016	150262-1-01-03	2100	Contractual Services	812.70	0.00	0.00	0.00	812.70	812.70	0.00
2000003358	2016	150262-1-01-03	3000	Train/Fellowship/Study	0.00		0.00				0.00
2000003358	2016	150262-1-01-03	4500	Equipment	2,162.18	0.00	0.00	0.00	2,162.18	2,162.18	0.00
2000003358	2016	150262-1-01-03	5100	Other Direct Costs	2,857.37	0.00	0.00	674.14	2,183.23	2,857.37	0.00
2000003358	2016	150262-1-01-03	Result		19,721.37	0.00	0.00	1,207.26	18,514.11	19,721.37	0.00
2000003358	2016	Result			129,494.53	0.00	0.00	10,521.18	118,973.35	129,494.53	0.00
2000003358	2017	150262-1-01-01	1100	Staff & Intern Consultants	17,393.99		0.00	0.01	17,393.98	17,393.99	0.00
2000003358	2017	150262-1-01-01	1500	Local travel	7,460.89		0.00	1,974.54	5,486.35	7,460.89	0.00
2000003358	2017	150262-1-01-01	1600	Staff Travel	0.00		0.00				0.00
2000003358	2017	150262-1-01-01	1700	Nat.Consult./Staff	2,637.53		0.00	-12.80	2,650.33	2,637.53	0.00
2000003358	2017	150262-1-01-01	3000	Train/Fellowship/Study	0.00		0.00				0.00
2000003358	2017	150262-1-01-01	5100	Other Direct Costs	8,091.27	0.00	0.00	1,482.08	6,609.19	8,091.27	0.00

					Released Budget (a)	Unapproved Obligation (b)	Unreleased Budget	Obligation (c)	Payments (d)	Expenditure (c+d)	Funds Available (a-b-c-d)
Grant	Year	Sponsored Program	Sponsored Class		USD	USD	USD	USD	USD	USD	USD
2000003358	2017	150262-1-01-01	Result		35,583.68	0.00	0.00	3,443.83	32,139.85	35,583.68	0.00
2000003358	2017	150262-1-01-02	1100	Staff & Intern Consultants	65,608.87		0.00	0.03	65,608.84	65,608.87	0.00
2000003358	2017	150262-1-01-02	1500	Local travel	829.69		0.00	-0.01	829.70	829.69	0.00
2000003358	2017	150262-1-01-02	1600	Staff Travel	5,682.72		0.00	-7,049.31	12,732.03	5,682.72	0.00
2000003358	2017	150262-1-01-02	1700	Nat.Consult./Staff	23,635.37		0.00	-193.01	23,828.38	23,635.37	0.00
2000003358	2017	150262-1-01-02	2100	Contractual Services	0.00		0.00				0.00
2000003358	2017	150262-1-01-02	3000	Train/Fellowship/Study	18,577.48	0.00	0.00	0.00	18,577.48	18,577.48	0.00
2000003358	2017	150262-1-01-02	4500	Equipment	0.00		0.00				0.00
2000003358	2017	150262-1-01-02	5100	Other Direct Costs	4,385.18	0.00	0.00	0.00	4,385.18	4,385.18	0.00
2000003358	2017	150262-1-01-02	Result		118,719.31	0.00	0.00	-7,242.30	125,961.61	118,719.31	0.00
2000003358	2017	150262-1-01-03	1100	Staff & Intern Consultants	19,755.64		0.00	0.04	19,755.60	19,755.64	0.00
2000003358	2017	150262-1-01-03	1500	Local travel	229.91	0.00	0.00	-417.39	647.30	229.91	0.00
2000003358	2017	150262-1-01-03	1600	Staff Travel	1,023.97		0.00		1,023.97	1,023.97	0.00
2000003358	2017	150262-1-01-03	1700	Nat.Consult./Staff	16,244.68		0.00	-23.82	16,268.50	16,244.68	0.00
2000003358	2017	150262-1-01-03	2100	Contractual Services	0.00		0.00				0.00
2000003358	2017	150262-1-01-03	3000	Train/Fellowship/Study	32,002.03	0.00	0.00	0.00	32,002.03	32,002.03	0.00

					Released Budget (a)	Unapproved Obligation (b)	Unreleased Budget	Obligation (c)	Payments (d)	Expenditure (c+d)	Funds Available (a-b-c-d)
Grant	Year	Sponsored Program	Sponsored Class		USD	USD	USD	USD	USD	USD	USD
2000003358	2017	150262-1-01-03	4500	Equipment	41.21		0.00		41.21	41.21	0.00
2000003358	2017	150262-1-01-03	5100	Other Direct Costs	1,474.33	0.00	0.00	198.49	1,275.84	1,474.33	0.00
2000003358	2017	150262-1-01-03	Result		70,771.77	0.00	0.00	-242.68	71,014.45	70,771.77	0.00
2000003358	2017	Result			225,074.76	0.00	0.00	-4,041.15	229,115.91	225,074.76	0.00
2000003358	2018	150262-1-01-01	1100	Staff & Intern Consultants	18,587.70		0.00	0.03	18,587.67	18,587.70	0.00
2000003358	2018	150262-1-01-01	1500	Local travel	509.54		0.00	-2,942.54	3,452.08	509.54	0.00
2000003358	2018	150262-1-01-01	1700	Nat.Consult./Staff	11,527.98		0.00	0.00	11,527.98	11,527.98	0.00
2000003358	2018	150262-1-01-01	5100	Other Direct Costs	9,204.56	0.00	0.00	-309.18	9,513.74	9,204.56	0.00
2000003358	2018	150262-1-01-01	Result		39,829.78	0.00	0.00	-3,251.69	43,081.47	39,829.78	0.00
2000003358	2018	150262-1-01-02	1100	Staff & Intern Consultants	38,622.89		0.00	0.03	38,622.86	38,622.89	0.00
2000003358	2018	150262-1-01-02	1500	Local travel	1,147.29	0.00	0.00	0.00	1,147.29	1,147.29	0.00
2000003358	2018	150262-1-01-02	1600	Staff Travel	0.00		0.00				0.00
2000003358	2018	150262-1-01-02	1700	Nat.Consult./Staff	8,913.16		0.00	0.01	8,913.15	8,913.16	0.00
2000003358	2018	150262-1-01-02	2100	Contractual Services	8,372.73	0.00	0.00	8,372.73		8,372.73	0.00
2000003358	2018	150262-1-01-02	3000	Train/Fellowship/Study	0.00		0.00				0.00
2000003358	2018	150262-1-01-02	4500	Equipment	24,781.30	0.00	0.00	22,249.30	2,532.00	24,781.30	0.00

					Released Budget (a)	Unapproved Obligation (b)	Unreleased Budget	Obligation (c)	Payments (d)	Expenditure (c+d)	Funds Available (a-b-c-d)
Grant	Year	Sponsored Program	Sponsored Class		USD	USD	USD	USD	USD	USD	USD
2000003358	2018	150262-1-01-02	5100	Other Direct Costs	6,597.73	0.00	0.00	0.00	6,597.73	6,597.73	0.00
2000003358	2018	150262-1-01-02	Result		88,435.10	0.00	0.00	30,622.07	57,813.03	88,435.10	0.00
2000003358	2018	150262-1-01-03	1100	Staff & Intern Consultants	43,806.96		0.00	0.06	43,806.90	43,806.96	0.00
2000003358	2018	150262-1-01-03	1500	Local travel	2,740.76		0.00	1,432.00	1,308.76	2,740.76	0.00
2000003358	2018	150262-1-01-03	1600	Staff Travel	12,418.31		0.00	0.00	12,418.31	12,418.31	0.00
2000003358	2018	150262-1-01-03	1700	Nat.Consult./Staff	11,589.87		0.00	-92.00	11,681.87	11,589.87	0.00
2000003358	2018	150262-1-01-03	2100	Contractual Services	30,121.08	0.00	0.00	30,121.08		30,121.08	0.00
2000003358	2018	150262-1-01-03	3000	Train/Fellowship/Study	0.00		0.00				0.00
2000003358	2018	150262-1-01-03	4500	Equipment	0.00	0.00	0.00				0.00
2000003358	2018	150262-1-01-03	5100	Other Direct Costs	8,387.22	0.00	0.00	-872.63	9,259.85	8,387.22	0.00
2000003358	2018	150262-1-01-03	Result		109,064.20	0.00	0.00	30,588.51	78,475.69	109,064.20	0.00
2000003358	2018	Result			237,329.08	0.00	0.00	57,958.89	179,370.19	237,329.08	0.00
2000003358	2019	150262-1-01-01	1100	Staff & Intern Consultants			0.00				
2000003358	2019	150262-1-01-01	1500	Local travel			0.00				
2000003358	2019	150262-1-01-01	1700	Nat.Consult./Staff	0.00		0.00				0.00
2000003358	2019	150262-1-01-01	5100	Other Direct Costs	513.60	0.00	0.00	-1,172.90	1,686.50	513.60	0.00

					Released Budget (a)	Unapproved Obligation (b)	Unreleased Budget	Obligation (c)	Payments (d)	Expenditure (c+d)	Funds Available (a-b-c-d)
Grant	Year	Sponsored Program	Sponsored Class		USD	USD	USD	USD	USD	USD	USD
2000003358	2019	150262-1-01-01	Result		513.60	0.00	0.00	-1,172.90	1,686.50	513.60	0.00
2000003358	2019	150262-1-01-02	1100	Staff & Intern Consultants	45,784.90		0.00	0.04	45,784.86	45,784.90	0.00
2000003358	2019	150262-1-01-02	1500	Local travel	6,022.51		0.00	2,348.53	3,673.98	6,022.51	0.00
2000003358	2019	150262-1-01-02	1600	Staff Travel	2,481.72		0.00	0.00	2,481.72	2,481.72	0.00
2000003358	2019	150262-1-01-02	1700	Nat.Consult./Staff	19,653.30		0.00	0.00	19,653.30	19,653.30	0.00
2000003358	2019	150262-1-01-02	2100	Contractual Services	22,794.21	0.00	0.00	-8,372.72	31,166.93	22,794.21	0.00
2000003358	2019	150262-1-01-02	3000	Train/Fellowship/Study	0.00		0.00				0.00
2000003358	2019	150262-1-01-02	4500	Equipment	170,256.11	0.00	0.00	75,400.91	94,855.20	170,256.11	0.00
2000003358	2019	150262-1-01-02	5100	Other Direct Costs	6,398.30	0.00	0.00	0.00	6,398.30	6,398.30	0.00
2000003358	2019	150262-1-01-02	Result		273,391.05	0.00	0.00	69,376.76	204,014.29	273,391.05	0.00
2000003358	2019	150262-1-01-03	1100	Staff & Intern Consultants	13,920.65		0.00	0.02	13,920.63	13,920.65	0.00
2000003358	2019	150262-1-01-03	1500	Local travel	3,196.56		0.00	-17.82	3,214.38	3,196.56	0.00
2000003358	2019	150262-1-01-03	1600	Staff Travel	2,481.72		0.00	0.00	2,481.72	2,481.72	0.00
2000003358	2019	150262-1-01-03	1700	Nat.Consult./Staff	12,464.68		0.00	-0.01	12,464.69	12,464.68	0.00
2000003358	2019	150262-1-01-03	2100	Contractual Services	52,151.59	0.00	0.00	-14,156.36	66,307.95	52,151.59	0.00
2000003358	2019	150262-1-01-03	3000	Train/Fellowship/Study	0.00		0.00				0.00

					Released Budget (a)	Unapproved Obligation (b)	Unreleased Budget	Obligation (c)	Payments (d)	Expenditure (c+d)	Funds Available (a-b-c-d)
Grant	Year	Sponsored Program	Sponsored Class		USD	USD	USD	USD	USD	USD	USD
2000003358	2019	150262-1-01-03	4500	Equipment	103,913.13	0.00	0.00	72,859.00	31,054.13	103,913.13	0.00
2000003358	2019	150262-1-01-03	5100	Other Direct Costs	8,869.29	0.00	0.00	7,413.71	1,455.58	8,869.29	0.00
2000003358	2019	150262-1-01-03	Result		196,997.62	0.00	0.00	66,098.54	130,899.08	196,997.62	0.00
2000003358	2019	Result			470,902.27	0.00	0.00	134,302.40	336,599.87	470,902.27	0.00
2000003358	2020	150262-1-01-01	1700	Nat.Consult./Staff	-0.01		0.00	-0.01		-0.01	0.00
2000003358	2020	150262-1-01-02	1100	Staff & Intern Consultants	57,197.64		0.00	-0.02	57,197.66	57,197.64	0.00
2000003358	2020	150262-1-01-02	1500	Local travel	920.95		0.00		920.95	920.95	0.00
2000003358	2020	150262-1-01-02	1700	Nat.Consult./Staff	2,202.75		0.00	0.00	2,202.75	2,202.75	0.00
2000003358	2020	150262-1-01-02	2100	Contractual Services	61,021.53	0.00	0.00	4,404.70	56,616.83	61,021.53	0.00
2000003358	2020	150262-1-01-02	3000	Train/Fellowship/Study	0.00		0.00				0.00
2000003358	2020	150262-1-01-02	4500	Equipment	435,106.10	0.00	0.00	265,528.57	169,577.53	435,106.10	0.00
2000003358	2020	150262-1-01-02	5100	Other Direct Costs	5,504.83	0.00	0.00	69.29	5,435.54	5,504.83	0.00
2000003358	2020	150262-1-01-02	Result		561,953.80	0.00	0.00	270,002.54	291,951.26	561,953.80	0.00
2000003358	2020	150262-1-01-03	1100	Staff & Intern Consultants	6,070.87		0.00	0.00	6,070.87	6,070.87	0.00
2000003358	2020	150262-1-01-03	1500	Local travel	920.95		0.00		920.95	920.95	0.00
2000003358	2020	150262-1-01-03	1600	Staff Travel	0.00		0.00				0.00

					Released Budget (a)	Unapproved Obligation (b)	Unreleased Budget	Obligation (c)	Payments (d)	Expenditure (c+d)	Funds Available (a-b-c-d)
Grant	Year	Sponsored Program	Sponsored Class		USD	USD	USD	USD	USD	USD	USD
2000003358	2020	150262-1-01-03	1700	Nat.Consult./Staff	11,581.17		0.00	-0.01	11,581.18	11,581.17	0.00
2000003358	2020	150262-1-01-03	2100	Contractual Services	30,879.90		0.00	887.04	29,992.86	30,879.90	0.00
2000003358	2020	150262-1-01-03	3000	Train/Fellowship/Study	0.00		0.00				0.00
2000003358	2020	150262-1-01-03	4500	Equipment	6,067.29	0.00	0.00	-72,859.00	78,926.29	6,067.29	0.00
2000003358	2020	150262-1-01-03	5100	Other Direct Costs	818.87	0.00	0.00	-7,110.88	7,929.75	818.87	0.00
2000003358	2020	150262-1-01-03	Result		56,339.05	0.00	0.00	-79,082.85	135,421.90	56,339.05	0.00
2000003358	2020	Result			618,292.84	0.00	0.00	190,919.68	427,373.16	618,292.84	0.00
2000003358	2021	150262-1-01-01	1700	Nat.Consult./Staff	0.00		0.00				0.00
2000003358	2021	150262-1-01-02	1500	Local travel	0.00		0.00				0.00
2000003358	2021	150262-1-01-02	1700	Nat.Consult./Staff	3,031.51		0.00	452.91	2,529.43	2,982.34	49.17
2000003358	2021	150262-1-01-02	2100	Contractual Services	150.03		0.00	-4,404.71	4,554.74	150.03	0.00
2000003358	2021	150262-1-01-02	4500	Equipment	64,593.85	0.00	0.00	-363,178.78	427,772.06	64,593.28	0.57
2000003358	2021	150262-1-01-02	5100	Other Direct Costs	495.17		0.00		24.97	24.97	470.20
2000003358	2021	150262-1-01-02	Result		68,270.56	0.00	0.00	-367,130.58	434,881.20	67,750.62	519.94
2000003358	2021	150262-1-01-03	1500	Local travel	700.00		0.00	660.00		660.00	40.00

					Released Budget (a)	Unapproved Obligation (b)	Unreleased Budget	Obligation (c)	Payments (d)	Expenditure (c+d)	Funds Available (a-b-c-d)
Grant	Year	Sponsored Program	Sponsored Class		USD	USD	USD	USD	USD	USD	USD
2000003358	2021	150262-1-01-03	1600	Staff Travel	0.00		0.00				0.00
2000003358	2021	150262-1-01-03	1700	Nat.Consult./Staff	5,790.14		0.00	679.38	3,619.67	4,299.05	1,491.09
2000003358	2021	150262-1-01-03	2100	Contractual Services	5,191.32	0.00	0.00	-16,851.76	18,443.01	1,591.25	3,600.07
2000003358	2021	150262-1-01-03	3000	Train/Fellowship/Study	6,499.87		0.00				6,499.87
2000003358	2021	150262-1-01-03	4500	Equipment	265.24	0.00	0.00	0.00	265.24	265.24	0.00
2000003358	2021	150262-1-01-03	5100	Other Direct Costs	2,100.89		0.00	-302.83	13.94	-288.89	2,389.78
2000003358	2021	150262-1-01-03	Result		20,547.46	0.00	0.00	-15,815.21	22,341.86	6,526.65	14,020.81
2000003358	2021	Result			88,818.02	0.00	0.00	-382,945.79	457,223.06	74,277.27	14,540.75
2000003358	Result				1,769,911.50	0.00	0.00	6,715.21	1,748,655.54	1,755,370.75	14,540.75

Annex 7: Equipment, price for modernization of liquid calcium nitrate plant, EMPREQUIM.

Plant/RFx Number	Item	Name of item	Vendor/PO Number	Value USD
Calcium Nitrate 1st Tender RFx 7000002906	Laboratory equipment	Flame photometer (Ca-content in product)	Amex PO_3000065362	$ 27,764.60
		Transportable pH measurement for samples from reactor and from final product. pH measurement from 0 to 14.		
		Fixed pH measurement in the lab for measurement / continuous quality control for final product. pH measurement from 0 to 14.		
		Instrument for sieve analysis –230 mesh		
		Instrument for sieve analysis – 200 mesh		
		Instrument for sieve analysis – 100 mesh		
		UV-visible spectrophotometer (characterization of raw materials)		
		Aire Compresor		
		Regulator, propane		
Calcium Nitrate 2nd Tender RFx 7000003294	Materials for 2nd reactor	Materials for the reactor	PASI PO_3000068829	$ 75,710.33
	Welding Materials 2nd Reactor	Welding Materials		
	Geared-motor Agitators	Agitators		
Calcium Nitrate 3rd Tender RFx 7000003817	Pumps	4 centrifugal Pumps + Spare parts	PASI PO_3000078383	$ 97,650.21
	Piping	Piping	EGA PO 3000079264	$ 401,290.55
	Valves	Valves		
	Filter press	1 Filter press + 2 feeding pumps		
		Whasing unit + accessories		
		Compresor air unit + accessories		
		Stainless steel tube		
CaN Steel Materials PO 3000079267	Steel Materials	0,6 Tons Steel plate L / C 4x1500x6000 mm Specification: RST 37-2	MECHEL SERVICE STAHLHANDEL AUSTRIA GMBH PO 3000079267	$ 24,387.23
		0,5 Tons Steel plate L / C 10x1500x6000 mm Specification: RST 37-2		
		0,4 Tons Steel plate L / C 20 mm thick Specification: RST 37-2		
		2 Tons Flat iron L / C 5x1500x6000 mm Specification: ASTM A786 pattern 2 A36		
		0,25 Tons Flat iron L / C 4x100 mm Specification: RST 37-2		
		2,5 Tons IPN profile L / C 200x6000 mm Specification: RST 37-2		
		3,5 Tons UPN profile L / C 160x6000 mm Specification: RST 37-2		
		0,6 Tons Angular steel A / I, L / C 60x60x5x6000 Specification: RST 37-2		
		0,5 Tons Ø32x2.5 mm tube, carbon steel, S / C To build railings (pasamanos)		
		24 Pieces M10 mm mechanical expansions Specifications: Marca ANCLAPOLO		
		100 Pieces M12 mm mechanical expansions Specifications: Marca ANCLAPOLO		
		100 Pieces M16 mm mechanical expansions Specification: Marca ANCLAPOLO		
		5 Pieces Ø10 mm road auger		
		10 Pieces Ø12 mm road auger		
		10 Pieces Ø16 mm road auger		
		100 kg Electrodes E-7018 Ø2.4 mm		
		400 kg Electrodes E-7018 Ø3.25 mm		
		100 Pieces Cutting disc 125x22x3 mm		
		80 Pieces Roughing disc 125x22x6 mm		
		100 Pieces 180x22x3 mm cutting disc		
		80 Pieces 180x22x6 mm roughing disc		
		100 Pieces Steel brush with wooden handle		
		1 Hilti Bohrhammer TE 3-M 230V		
CaN Geared-motors	2 Geared Motors	2 Geared Motors	PASI	$ 5,720.70
Electrical materials PO 30000085	LIST OF ELECTRICAL	Elelctrical materials	BigMat	$26,342.23
TOTAL SPENT BUDGET SPENT IN EQUIPMENT				**$ 658,865.85**

Annex 8: List of equipment, price, acquired for CBFERT Pilot Plant and Laboratory.

Plant/RFx Number	Item	Name of item	Vendor/PO Number	Value USD
CBFERT 1st Tender RFx 7000003263	Geared-moter Agitators	Agitators with geared motors	Alfarez PO_3000069337	$ 14,636.00
	Fans	Fans		
	Filtering Tissue	Filtering tissue		
		Filtering tissue filter press		
	Laboratory Equipment	Helical extractor fans		
		Helical extractor fans		
		Ventilators		
		Mechanical agitator with accessories	Amex PO_3000069343	$ 29,713.85
		Electronic contact thermometer with digital reading		
		Magnetic stirrer with accessories		
		Set of equipment for determination of nitrogen		
		Ultraviolet and visible range spectrophotometers with accessories		
		Water distiller		
		Muffle furnace		
		Flame photometer		
		Technical precision scale		
		Analytical precision scale		
		Multiparameter pH meter and accessories		
CBFERT 2nd Tender RFx 7000003610	Mobile filtration units	1 Mobile filtration units	Lleal PO_3000075878	$ 50,221.00
	Semiautomatic dossing machine	1 Semiautomatic dossing machine		
Centrifugal Pumps CBFERT	Centrifual Pumps	2 Centrifual Pumps	Alfarez PO_3000077789	$ 22,638.00
CBFERT Vacuum Pump	Vacuum pump	1 Vacuum pump	Speck Pumpen PO 30000799024	$ 5,906.43
CBFERT Laboratory Reactors	Laboratory Equipment	Laboratory reactors of 20 L + acessories	Alfarez PO 3000079124	$ 41,170.00
TOTAL SPENT BUDGET SPENT IN EQUIPMENT				**$ 164,285.28**

Annex 9: List of organizations/persons met

Preliminary list of stakeholders to be interviewed CIIQ

GELMA (Logistics Business Group of the Ministry of Agriculture)

MINAG (Ministry of Agriculture)

GESIME (Business Group of the Steel-Mechanical Industry)

MINDUS (Ministry of Industry)

CEDEMA (Agricultural Machinery Development Center)

EMPREQUIM (Liquid Calcium Nitrate Production Plant Chemical Company)

Pasture and Forage Experiment Station "Indio Hatuey"

Rice Experimental Station "Los Palacios"

INICA (Sugarcane Research Institute)

IAGRIC (Agricultural Engineering Research Institute)

Cooperatives and producers

Annex 10: List of main documents used

Project Document, technical reports, minutes, briefings, minutes of technical meetings, interview and focus group transcripts, UNIDO Independent Evaluation Division, Evaluation Manual, Inception Report, Periodic reports of project experts, Back-to-Office reports of Project Manager, Project brochures/leaflets/collection catalogues, Enterprise diagnostics, UNIDO database project data (financial and HR related information), UNIDO, Thematic evaluation of UNIDO projects related to industrial upgrading.

Annex 11: Information on participating enterprises

EMPREQUIM

The Fertilizers and Pesticides Company, leader in chemical productions, mainly in nitrogen fertilizers and herbicides, adds to its five decades of existence, a highly qualified staff with experience in the operation and control of different technological processes. It also has a receiving base of cryogenic ammonia with a capacity of 20,000 tons, internationally approved. The quality of its productions is guaranteed by the control of the technological operations of the productive processes. It works with a Quality

Management System integrated with the International Standards ISO 9001, 2000. It is currently the largest public fertilizer and pesticide production company in Cuba, created in the 1970s.

Center of Engineering and Research of the Chemical Industry (CIIQ)

It is a scientific research center, which provides scientific-technical and engineering services, process analysis and control, graphic design, scientific-technical information, engineering, applied research, specialized production, scientific services, validation and feasibility studies. It is the creator of CBFERT.

Annex 12: Persons interviewed for the UNIDO evaluation

UNIDO

1. Farrukh Alimdjanov, Project Manager.

2. Bárbara Ivette Tortosa Ferrer, UNIDO Program Officer. Project Coordinating Group

3. Hireily Santana González, National Project Director in Cuba.

CIIQ

5. Yohandro Morón González. Director. Chemical Engineering and Research Center. Direct beneficiary of the project.

6. Rolando Gil Olavarrieta. Principal Investigator.

7. Bárbara Soto Santiesteban. Director of UEB Research.

8. Anisley Mollinedo Santana. Marketing Director.

EMPREQUIM

8. Reinier Tumbarell Silva. Technical and Investment Director.

CEDEMA

9. María de las Nieves Riverón Compte. General Manager.

GEIQ

10. Ariana Ferrero Campos. Senior Technical Management and Development Specialist.

11. Noel Villar Serrano. Technical and Development Director.

MINAG

12. Dagoberto Rodriguez Lozano. Soil Specialist of the Ministry of Agriculture, MINAG.

Annex 13: Project Terms of Reference

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE

Independent terminal evaluation of project

[Title]

UNIDO ID: [Status]

Time period: 2016-2020

February 2020

CONTENTS

I. PROJECT BACKGROUND AND CONTEXT

1. Project factsheet

Project title	[Title]
UNIDO ID	[Status]
Region	The Americas
Country(ies)	Cuba
Implementing agenc(ies)	UNIDO
Project donor(s)	Government of the Russian Federation
Project implementation start date	01 January 2016
Actual implementation end date	July 2020 (We will submit a request of a zero-cost extension to the Donor until December 2020)
Implementing agency(ies)	UNIDO
UNIDO RBM code	EC1 Poverty Reduction through Productive Activities EC12 Business, Investment and Technology Services
Donor funding	USD 2,000,000 are expected from the voluntary contributions to UNIDO IDF of the Government of the Russian Federation
UNIDO input (in kind, USD)	Not applicable
Total project cost (USD), excluding support costs and PPG	USD 3,539,824, however the project received only half of the funding USD 1,769,911.50
Planned terminal evaluation date	October – November 2020

(Source: Project document)

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2. Project context

a. Background

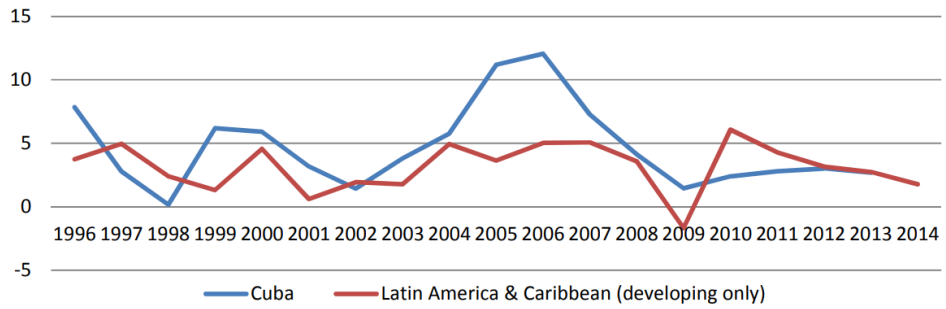
The industry of Cuba in the 1980s has encountered a number of development challenges that required structural changes of the industrial base. However, the country was not affected by the serious debt crisis of the 1980s in Latin America due to the external support and in the 1989 the country was at its economic peak and ahead of the region in all social indicators. After 1989, though, as a result of drastic reduction in trade and frequent changes in domestic economic policies, GDP dropped 35% between 1989 and 1993. Furthermore, real social expenditures per capita decreased. Following are some of the main structural characteristics of industry at this period:

- Considerable dependence on external sources of raw materials and components for products earmarked for the domestic market and imports of inputs tied to exports;
- Industrial plants and equipment were largely characterized by technological obsolescence, oversized facilities and difficulties in acquiring spare parts and other hurdles to their normal use;
- An industrial structure with little domestic linkages, dominated by large-scale companies that displayed an excessive degree of vertical integration, thus leaving little room in which smaller enterprises could function;

- Diminished plant efficiencies and flexibilities due to technological reasons, excessive machinery, a lack of inputs and other restrictions;
- Low levels of development of complementary industrial services, which existing plants were largely left to provide a practice that led to additional inefficiencies;
- Distortions in the characteristics and breakdown of management-level personnel with an excessive number of professional and technically skilled workers combined with a shortage of employees with experience in marketing, finances and business administration and management[8].

In 1999-2001, the structural reforms towards the economy of services were reflected in growing participation of services exports, representing around two thirds of total exports sales in 2001 (10% in 1989). During 1999-2001 advances were noticeable in the Cuban efforts to promote a greater integration with other Latin American and Caribbean countries. The diversification of foreign trade was characterized by significant share of trade with Europe (46% of total trade), followed by America and Asia with 39% and 14% respectively (the shares in 1989 were 89%, 6% and 4%, respectively). The main partners in Cuba's foreign trade were Spain, Venezuela, Canada, Russia and China[9]. Thus, in 1999-2001, the country achieved some progress in structural reforms, such as productive activity by the non-State economy. The State continued to play a predominant role in the economy and thus the private sector had a reduced space to develop its activities. In contrast, the 3,700 agricultural co- operatives and the 147 000 private farmers continued as a viable option supported by the State.

Figure 1. GDP growth (annual %)



Source: World Bank Data (2015).

In 2004-2007, GDP increased at an annual average of 9.2%, mainly due to trade with Venezuela, as well as the economic aid and price subsidies. Improvements were also observed in the social services in the same period.

Despite a period of improved socio-economic situation in the above mentioned period, the country was adversely affected by the global economic crisis of 2008-2009[10]. The rate of GDP decelerated from 7.3% in 2007 to 4.1% in 2008. Exports stagnated at 21% of GDP and the trade balance turned negative (-2.9% of GDP in 2008). Trade in products and services were affected due to lower demand, such as a decrease in sales of Cuban professional services

[8] UN Economic Commission for Latin America and the Caribbean (ECLAC), "The Cuba Economy. Structural Reforms and Economic Performance in the 1990s", 6 December 2001.

[9] Ibid.

[10] Carmelo Mesa-Lago, Pavel Vidal-Alejandro, "The impact of the Global Crisis on Cuba's Economy and Social Welfare", J. LAt. Amer. Stud. 42, 689-717, Cambridge University Press, 2010.

(physicians, nurses, teachers, etc.) to Venezuela, the main source of expansion for Cuba's exports of services in that period. Domestically, inefficient manufacturing operations, lack of sufficient financing for upgrading of the manufacturing base and infrastructure issues were of significant challenge.

Global economic crises also negatively influenced other economic sectors of Cuba, partly due to the low multiplier effect of professional service exports due to their poor linkages with the domestic economy, in comparison to the agro-industrial sugar and tourism sectors. In addition, the country's economy suffered from two external shocks in 2008 (collapse of the world market price of nickel and escalation in world prices of oil and food) and three hurricanes that caused losses in terms of housing and food production[11].

Since 2011, a process of structural transformation has taken place, including reforms in economic and administrative organization, such as the economic reform moving some of the small and medium state enterprises in services and small scale industry to non-state forms of management, especially cooperatives. The social impact of changes was also reflected in the number of self-employed workers, thus, while in 2010 a total of 157,371 workers were self-employed, by 2014 this figure reached 467,000. However, the structural reforms have not significantly improved the macroeconomic indicators, which are also attributed to other factors that influence the economic performance. Thus, despite partial recovery after the global crises, growth slowed to 2.7% in 2013 with an average of 2.5% in 2009-2013.

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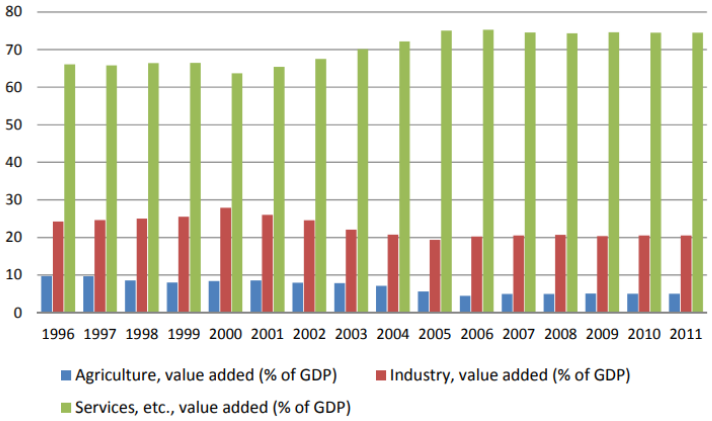
Figure 2. Structure of Cuba's value added as % of GDP (1996-2011)



Source: World Bank Data (2015).

In 2010, agricultural output decreased 5% and grew 0.5% in 2012, thereby remaining stagnant as a percentage of GDP from 2007 to 2013. Agricultural value added as a percentage of GDP continued to decrease from 9.6% in 1996 to 4.9% in 2011. Contribution of industry value added also diminished from its value of 27.8% in 2000 to 20.5% in 2011. Contrarily to other sectors, services sector has been steadily increasing from 66% of GDP in 1996 to 74% in 2011.

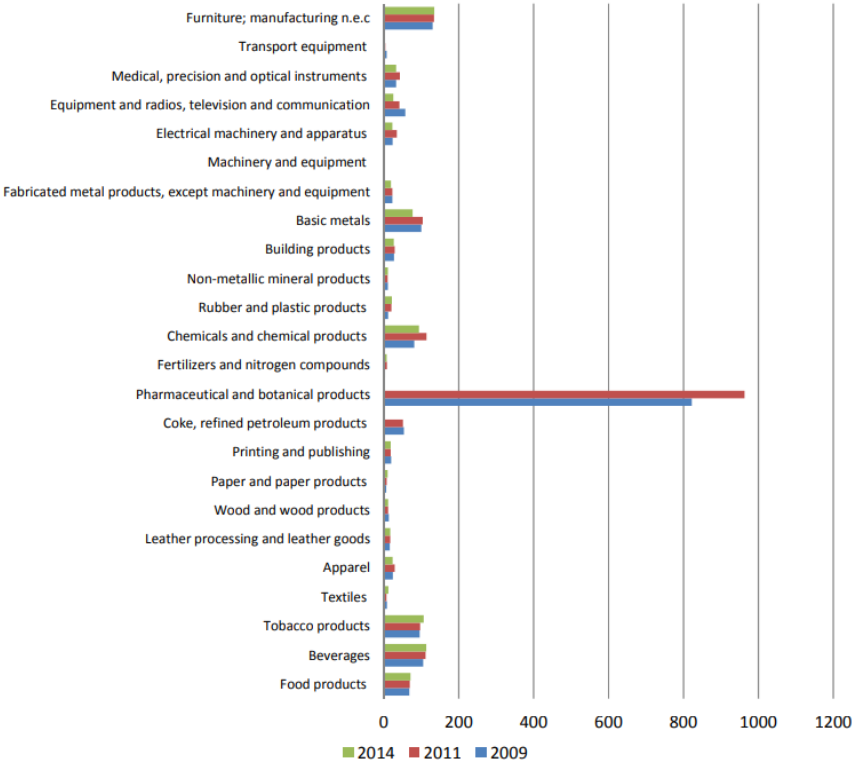
An expansion in production of fertilizers was observed with the 32.08%, rolled tobacco (22.8%), meat and meat products (8.09%) and an increase in manufacturing of construction materials (5.44%). The major contribution of the pharmaceuticals and biotechnology

[11] Carmelo Mesa-Lago, Pavel Vidal-Alejandro, "The impact of the Global Crisis on Cuba's Economy and Social Welfare", J. LAt. Amer. Stud. 42, 689-717, Cambridge University Press, 2010.

industries is associated with development of specialised biotech centres for the last two decades. Among products of those industries are vaccines, various drugs, with observed increase in oral liquid medicaments[12].

The services sector is mainly dominated by the tourism industry, as well as the medical services. The tourism industry remains one of the major activities contributing to both GDP and employment generation. Tourism sector increased by US$2 682 million compared to previous year, constituting 2.06%[13].

Figure 3. Industrial output index per product origin (1989 = 100)



Note: No data for industrial output index per pharmaceuticals and botanical products in 2014 on the date of this document preparation.

Source: Annual Statistical Report of Cuba, Manufacturing Industry 2014, Edition 2015, http://www.one.cu/

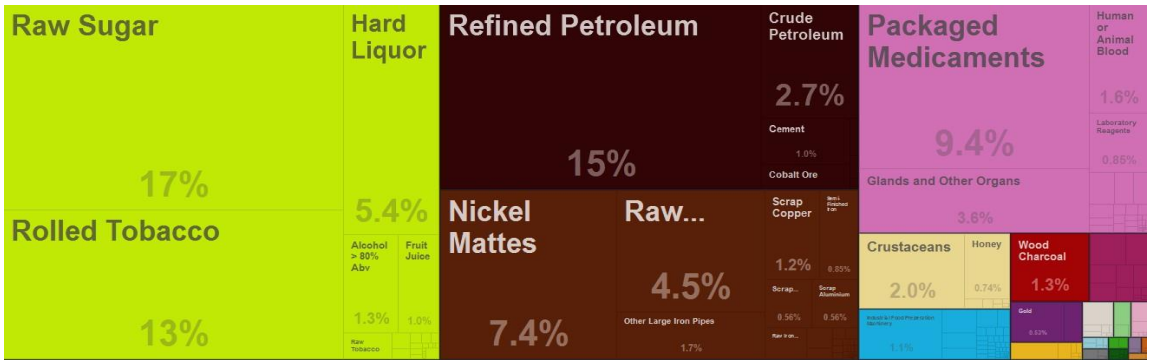
In 2013, Cuba exported US$2.43 billion and imported US$6.72 billion, resulting in a negative trade balance of US$4.29 billion. The top exports of Cuba are raw sugar with the value of US$419 million, refined petroleum amounting to US$356 million, rolled tobacco (US$306 million), packaged medicaments (US$227 million) and nickel mattes (US$179 million)[14]. Its top imports are refined petroleum (US$268 million), wheat (US$250 million), corn (US$246 million), poultry meat (US$198 million) and concentrated milk (US$194 million).

[12] Centre for Promotion of Foreign Trade and Foreign Investment of Cuba, Profile of Cuba, May 2015.

[13] Ibid.

[14] Using the 1992 revision of the HS (Harmonized System) classification.

Figure 3. Exports structure (2013)



Source: MIT The Observatory of Economic Complexity

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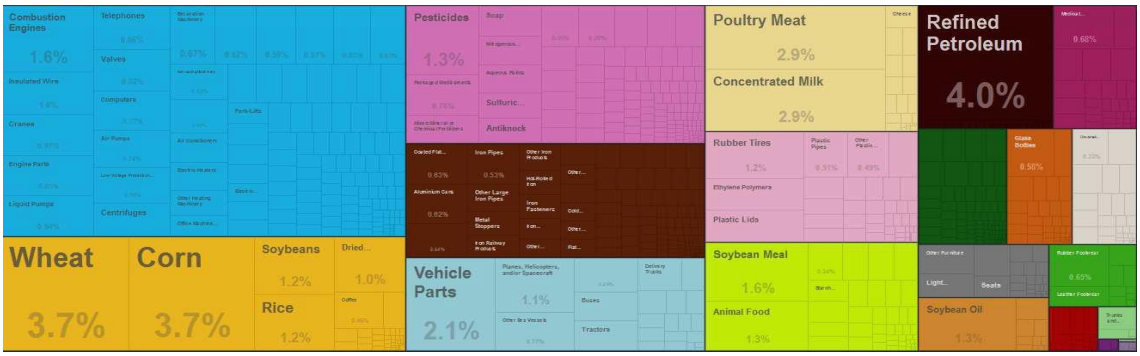
The top export destinations of Cuba are China (US$474 million), Venezuela (US$336 million), Spain (US$246 million), the Netherlands (US$176 million) and the United Kingdom (US$165 million). The top import origins are China (US$1.22 billion), Spain (US$1.06 billion), Brazil (US$528 million), Canada (US$431 million) and Mexico (US$368 million).

Figure 4. Imports structure (2013)



Source: MIT The Observatory of Economic Complexity

Traditional economic ties[15] of Cuba with the Russian Federation has deteriorated since the collapse of the Soviet Union, but recently both countries undertook steps to revive economic partnerships, in traditional areas, such as deliveries of the power equipment, machine and technical and transport production, as well as new areas of cooperation in the area of development of infrastructure of the railroads, deliveries of railway cars, localization of pharmaceutical industry. Countries are considering creation of the Russian Export Center (REC) with possibility of opening of its representation office in Cuba and also joint activities aimed at expansion of support through the Russian technology products. According to the Russian official statistics, the volume of direct Russian investments to Cuba accounted for about US$100 million in the recent years. Volume of the Russian exports to Cuba remains relatively small, but there is an indication of growth in exports in the last eight months of

[15] The importance of foreign trade with the Soviet Union was also reflected in the sales of sugar imported to Cuba from the Soviet Union for domestic consumption and reexport that accounted for 73% of the total exports of goods, while oil represented 32% of all imports at the end of the 1980s. Furthermore, 80% of Cuban trade was with the USSR and the Eastern European countries, thus, in 1990 70% of Cuban imports were originating from the Soviet Union. The Ernesto Che Guevara plant, located in the eastern province of Holguín, is an example of cooperation between Cuba and the former Soviet Union. Construction of the plant was concluded in 1986, with an annual production capacity of 30,000 metric tons of nickel+cobalt sulfide-grade product (Source: Economist Intelligence Unit, Country Report, February 2016; http://www.cepal.org/publicaciones/xml/8/9458/r746-rev1-parte5.pdf)

2015, mainly as result of work of the intergovernmental commission of the two countries[16]. At this time it is also relevant to consider that Cuba and the US Governments have been currently taking steps towards a favourable change in bilateral relations that may have a paramount impact on the industrial development and stakeholders in Cuba, including also the possibility of lifting the US economic embargo against Cuba in a near scenario.

The main industrial challenges of Cuba are:

- Need to increase share of industry in GDP: in 2013 industry contributed only to 13.7% of GDP;
- Need to decrease import dependency: currently 58%;
- Need for diversification of export industry: nickel, pharmaceuticals, sugar, beverages and Cuban cigars represent over 80% of industrial exports;
- Most activities are based on natural resources with little manufacturing value added and low technology products accounting for 70% of industrial GDP;
- Poor utilization of installed industrial capacities and need for modernization of the existing technological infrastructure;
- Less than 5% of the total energy generated comes from renewable energy sources;
- Poor linkage between different actors in value chains and low efficiency and productivity.

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b. Agricultural industry and food production trends and challenges to be addressed

Following launch of agricultural development programmes relying on intensive use of agrochemicals and agro machinery, Cuba was able to produce sufficient food for about 40 million, while the population of the country did not exceed 10 million in 1989. However, in 1991 Cuba faced dramatic external changes that led to extended economic crisis that resulted in shortages of fuel and major fertilizers and pesticides, thereby depriving the country of a reliable food supply.

Since the economic crises, agricultural industry and the system overall in Cuba faced significant challenges, threatening food security. Growth in the agricultural sector has been insufficient and domestic food production has traditionally been well below domestic consumption needs. As a result, approximately 80% of demand for agricultural products is covered by imports, which is striking in view of Cuba's abundant natural resources, including soil and water and the availability of human and technological capital. Furthermore, increase in the inflow of tourists and expected growth provides some foreign currency, but is not sufficient to cover much needed modernization and upgrading demand. Also, expanding inflow of tourists increases demand for quality food, thereby influencing already high reliance on imports of food.

In the period of 2007-2011, agricultural sector of Cuba employed about 19% of labour force. In Cuba as a whole, agriculture is now practiced by some 40,000 urban workers on an area estimated at 33,500 ha. It includes 145,000 small farm plots, 385,000 backyard gardens, 6,400 intensive gardens and 4,000 high-yielding organopónicos. Agricultural production volumes, however, were not sufficient to meet the local demand, mainly due to low productivity levels, insufficient resources, low levels of capitalization and outdated technology.

Among the major agricultural crops produced in Cuba sugar cane remains the dominant good, reaching about 76% of the total crops produced in the country. Sugar cane has historically been an export crop providing the major part of the country's income. Despite considerable production volumes of the sugar crops, the production quantity has dropped in

[16] http://economy.gov.ru/en/home/press/news/201511053

2003, while the production of vegetables and fruits has drastically increased since 1990s. These changes were mainly a result of the limitations imposed by the crises that had a negative impact on the yields, in addition to other challenges such as the aging plantations, inadequate attention to the crop, shortage of fuel, shortage of fertilizers and pesticides, and reduction of water[17].

Figure 5: Major crops produced in Cuba (% of total crops)

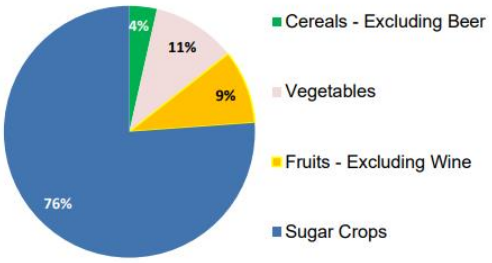
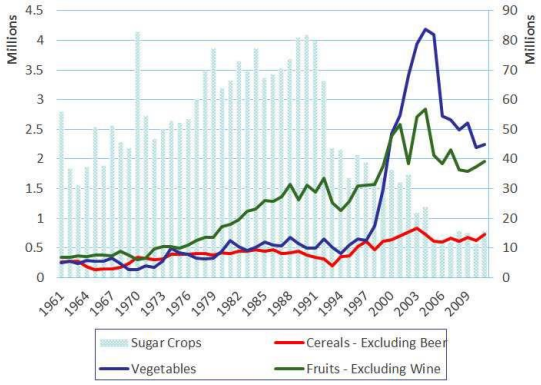


Figure 6: Production quantity of primary crops (tonnes)

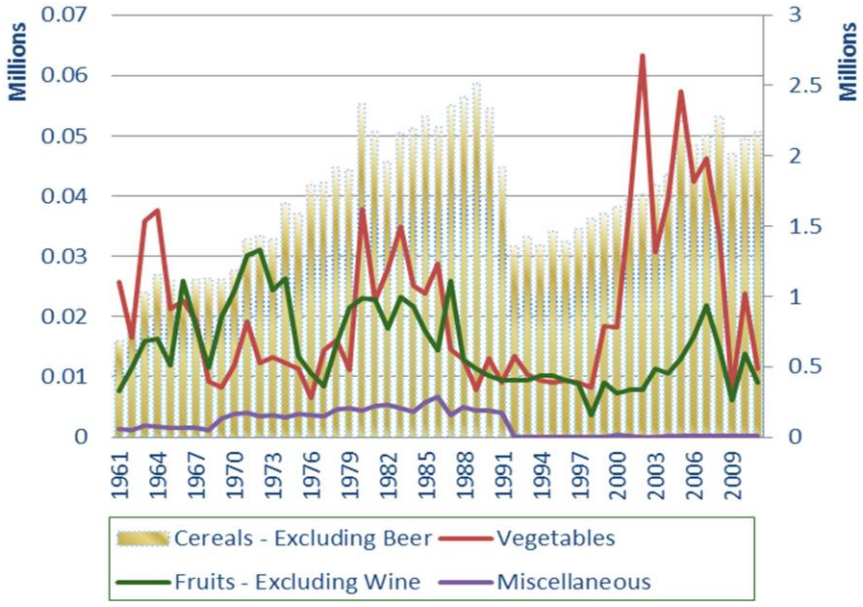


Source: FAO, Database, Commodity Balances - Crops Primary Equivalent

In response to food shortages, in 1993 the Government introduced structural reforms in agriculture that allowed establishment of production cooperatives and opening of farmer markets, which facilitated partial recovery of the non-sugar cane agricultural production. However, the country continues to experience declining food production trends and increasing imports of major agricultural food products.

[17] FAO, Fertilzer use by crop in Cuba, 2003.

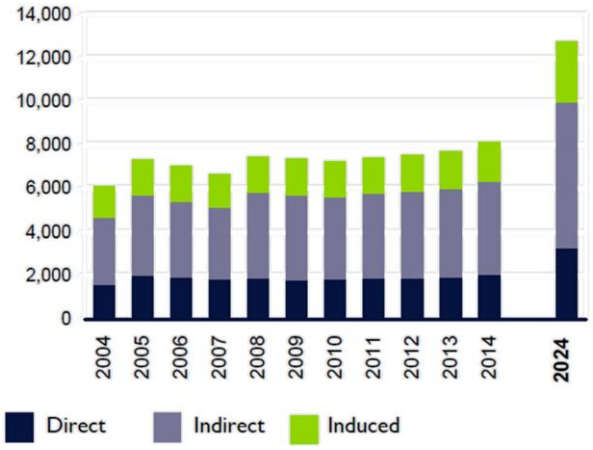
Figure 7: Import quantity of primary crops (tonnes)



Source: FAO, Database, Commodity Balances - Crops Primary Equivalent

Along with the increasing domestic demand for agricultural and food products, **the boom in tourism sector** and expected growth of tourist inflow also pressurizes the country to address the challengesof the lack of local production and reliance on imports. Thus, tourism contribution to Cuban GDP is forecasted to rise by 4.7% p.a. between 2014-2024, while the year 2015 recorded a 17% increase in number of tourists visiting the country compared to 2014. Currently, the tourism industry employs 9% of the total employment with expected growth by 1.4% per annum in 2024. Furthermore, tourism investment which was 12.2% of total investment in 2013, is expected to rise by 4.9% over the next 10 years. This, in turn, has a direct influence on the Cuban increasing demand for food imports and local production.

Figure 8: Total contribution of travel and tourism to GDP of Cuba (2004-2014, in 2013 CUP ml)



Source: World Travel and Tourism Council, 2014.

Hence, the country faces the scarcity of primary inputs for production of sufficient food for local consumption, as well as for the increasing demand due to developments in tourism

sector. As a result, Cuba's reliance on supply of primary crops and other agricultural products increases, posing a major issue for the reliable supply of sufficient amounts of food. Thus, domestic food production is well below domestic consumption needs with 70% to 80% of demand for agricultural products being covered by imports.
The following are the major constraints preventing development of the agricultural sector in Cuba, as identified on the preliminary information available:

- Agricultural sector at large relies on outdated technology at all stages of the value chain leading to weak agricultural productivity, low efficiency and high-post harvest losses, which is caused, *inter alia,* by limited access to inputs including fertilizers, agricultural machinery and related equipment and parts;
- At the same time, inefficient utilization of existing capacities and low productivity of existing local facilities/hubs producing agricultural equipment and implements to better serve food corps growing activities;
- Limited access to inputs, including fertilizers, agricultural machinery and related equipment and parts);
- Lack of technical capacity and professional training, including the capacity to purchase and use of modern technology;
- Shortages of fuel and petroleum derivatives.

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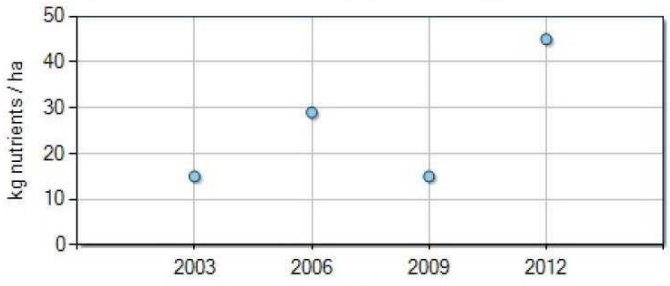
c. Major mineral fertilizers production and consumption trends in Cuba

In 1989, Cuba produced about 146 thousand tonnes of Nitrogen, 15 thousand tonnes of Phosphate and 161 thousand tonnes of Potash based fertilizers, thus, covering about 28% of the domestic consumption of fertilizers through local production, while relying on the imports for the rest. Between 1999 and 2001, Cuba already imported all mineral fertilizers. After major decline in the use of mineral fertilizers by 80% during the 1990s, the consumption has been increasing, which resulted in higher local demand that is exceeding the limited supply of produced and imported fertilizers. The local production of mineral fertilizers remains low, while consumption is steadily increasing, mostly covered by imports.

Figure 9: Evolution of fertilizer consumption on arable land and land under permanent crops (kg nutrients/ha)



Source: FAO, 2015

Currently, there are three major public enterprises producing fertilizers and pesticides in Cuba, which are Fertilizer Company October Revolution Camagüey, Fertilizer Company Rayonitro, and Artemis Pesticides. Two of those were established in 1970s, while Fertilizer Company Rayonitro was established in 2013. About 777 people are currently employed by these enterprises.
All the above mentioned public enterprises producing fertilizers are associated members of *El Grupo Empresarial de la Industria Química,* ***GEIQ*** *(Cuban Chemical Industry Enterprise*

Group). Among the Group's objectives are to promote the local development and production of fertilizers and to reduce the country's export revenues of large magnitude spent to purchase these products abroad.

The production capacities of the major fertilizer and pesticide enterprises are provided in the Table below.

Table 1. Major fertilizer and pesticide producers and their production capacities

Name	Main products	Annual production capacity
Fertilizer Company October Revolution Camagüey	Ammonium nitrate fertilizer	120 000 tonnes
	Calcium nitrate solutions	480000 litters
	Nitric acid	300 tonnes
Fertilizer Company Rayonitro, Matanzas	Granular NPK fertilizer mixed	150 000 tonnes
Artemis Pesticides	Insecticide and fungicides dry powders	12000 tonnes
	Insecticide concentrates with emulsifying agents	1400 litters
	Herbicides water-soluble concentrates	3600 litters
	Rodenticides granules	800 tonnes

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Source: Questionnaire responses received during the UNIDO Cuba Country Programme Formulation mission conducted 29 June-3 July 2015

Sugar cane production dominating the agricultural industry in Cuba also accounts for almost half of the cultivated area and consumes most of the fertilizers. In the period of 1986 and 1990, other categories of crops, including vegetables and cereals, consumed a total of 856,416 tonnes of complex fertilizers, while in 1995 the consumption has drastically fallen to 50,843 and even less in 2009 to the level of 15,000 tonnes. This drastic decrease in supply of fertilizers made it necessary to optimize the use of fertilizers and lead to increase of the use of organic and organo-mineral products and biofertilizers, among other measures.

Figure 10: Production and consumption of Phosphate Fertilizers (tonnes of nutrients)

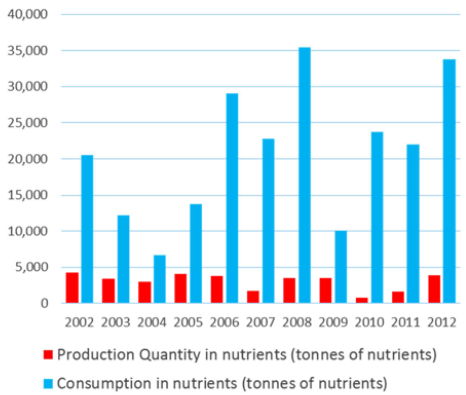
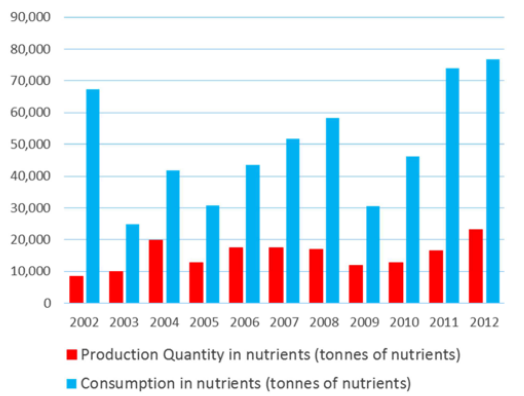


Figure 11: Production and consumption of Nitrogen Fertilizers (tonnes of nutrients)



Source: FAO, 2015

Production of fertilizers during the last few years has been decreasing and the industry is characterized by low participation in the local market and low utilization of installed capacities (about 5%)[18]. While the imports of fertilizers continue to grow due to increasing demand and expected boom in the tourism sector, despite availability of necessary facilities, trained personnel, technologies and products of competitive price and quality, local production has limited contribution to the supply.

Figure 12: Import value (1000 US$) in the period of 1969-2006

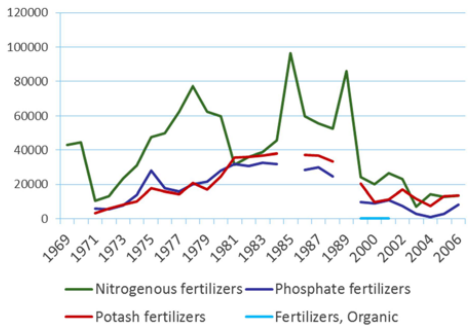
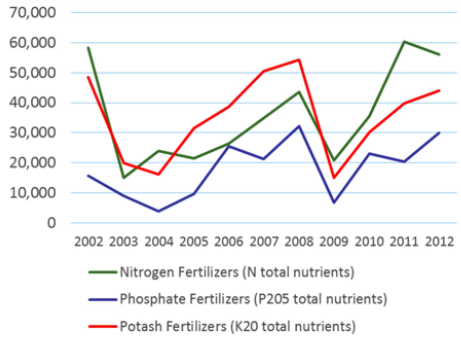


Figure 13: Import Quantity in nutrients in the period of 2002-2012 (tonnes of nutrients)



Source: FAO, 2015

Major issues as identified by the key producers of fertilizers and pesticides in Cuba are as following:

- Local demand in fertilizers is exceeding the limited supply of produced and imported fertilizers;
- Production of mineral fertilizers remains low, while consumption is steadily increasing, mostly covered by imports;
- Production of crops other than sugar cane (vegetables and cereals) requires optimization of the use of fertilizers;
- Damages to production equipment and loss of goods produced occurring in the production process due to limitations in storage capacity;
- Insufficient skills and knowledge and limited availability for reliable provision of maintenance services;
- Installed equipment at the production units is estimated to be between 30 to 60 percent in a regular condition, while the rest of equipment is outdated[19].

d. Agricultural machinery

Due to limited production of machinery and equipment/implements in Cuba, the country had to import substantial quantity of agricultural machinery and implements, with increasing amounts since 2005.

[18] Questionnaire responses received during the UNIDO Cuba Country Programme Formulation mission conducted 29 June-3 July 2015

[19] Questionnaire responses received during the UNIDO Cuba Country Programme Formulation mission conducted 29 June-3 July 2015

Figure 14: Agricultural machinery (tractors and combine harvesters) import quantity, 2001-2003

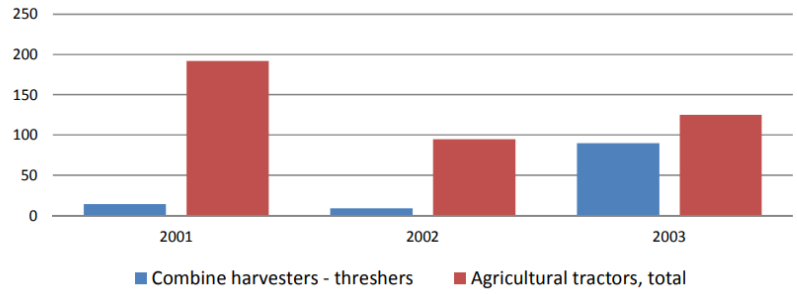
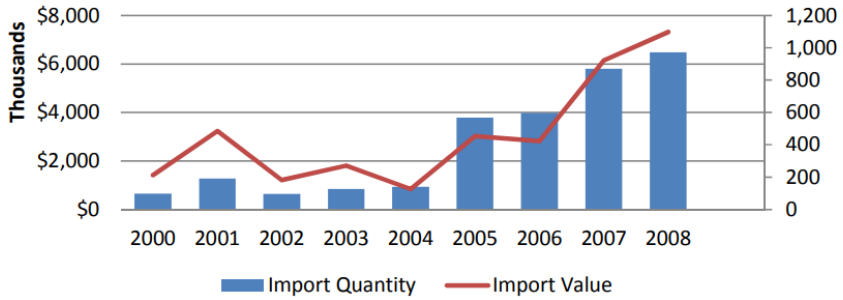


Figure 15: Agricultural tractors, imports, 2000-2008



Source: FAO, 2015

The major local producers of agricultural machinery and implements in the country are public and united under *El Grupo Empresarial de la Industria Sidero Mecánica,* ***GESIME*** (Cuban Ferrous Metallurgy and Machine-Building Enterprise Group). GESIME was established in December 2012 under the Ministry of Industries of Cuba with the aim to contribute to the development of the Ferrous Metallurgy and Machine-Building sector in Cuba and to organize and support the productive and trade (including exports) activities of the companies belonging to this sector.

The country's (and GESIME's) major producers of agricultural machinery is a public enterprise "Heroes of July 26", which is located in Holguin and currently employing about 500 persons. The enterprise estimated capacity utilization available for the production of main agricultural machinery and implements constitutes about 60 percent[20]. The enterprise was established in 1981 and produces agricultural equipment for land preparation and cultivation, harvesting, transportation and related implements and tools.

[20] Questionnaire responses received during the UNIDO Cuba Country Programme Formulation mission conducted 29 June-3 July 2015

Table 2: Quantity of agricultural machinery produced by enterprise "Heroes of July 26" in 2015

Agricultural equipment produced	Quantity of production in 2015
Tractors	115
Various types of trailers	925
Tractor implements	165
Tools and systems	3,206

Source: Questionnaire responses received during the UNIDO Cuba Country Programme Formulation mission conducted 29 June-3 July 2015

The following represent the major challenges of the Cuban agricultural machinery sector preventing development of the agricultural sector in Cuba:

- Limited availability of equipment and implements in local markets;
- Dependence on imports of costly mechanized agricultural machinery and implements;
- Inefficient utilization of existing capacities and low productivity of existing local facilities/hubs producing agricultural equipment and implements to better serve food crops growing activities;
- Lack of best business and management practices and technical capacity hindering industrial efficiency and competitiveness of local operators;
- Limited support from technical, research and professional training institutions to the industry.

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Based on preliminary information available and upon the collection and overview – during the project's inception phase – of more in-depth data from local operators (including from GEIQ and GESIME) on the range of fertilizers and agricultural machinery products produced, technologies available, product design capacities, and the local demand, the project will be able to facilitate full-fledged performance diagnosis and develop and implement respective upgrading plans.

e. Government development priorities

To reach a new stage in the economic development, the Cuban Government has decided to update the country's economic model. The new context is based on:

- The Guidelines for Economic and Social Policy approved in 2011;
- Creation of the Ministry of Industries (MINDUS) in 2012, with the aim of ensuring sustainable and inclusive industrial development;
- The change process to boost the economy or economic development on the basis of greater efficiency and competitiveness, preserving social progress, without leaving any unprotected person;
- Approval of new foreign investment law and the creation of the Special Development Zone in Mariel;
- The adoption of a UNDAF signed by the Cuban Government (including 22 different actors) and the UN system (15 agencies) in June 2013 where UNIDO can contribute to three of the four outcomes agreed in line with the UNIDO Inclusive and Sustainable Industrial Development (ISID) approach.

The economic policy is aimed at achieving greater income generation and import substitution, increase in efficiency, motivation for work and income distribution, creating the infrastructure

for productive activities to reach a higher stage of development. At the same time, the longer-term goal is to achieve high food and energy self-sufficiency, efficient use of human potential, high competitiveness in traditional productions, as well as developing new productions of goods and services with high added value. All these aspects are in line with the thematic priorities of UNIDO: poverty reduction through productive activities, trade capacity-building, and environment and energy.

In response to the priorities and a focus on sustainability, authorities responsible for economic sectors have been proposing a policies package to leverage the change. Therefore, several new policies have been approved for: food production, packaging, energy, water and recycling. Currently the industrial, environmental and transportation policies are being reviewed and updated.

In the area of agricultural industry development, the Government prioritizes modernization of agricultural sector and food production and, in particular:

- adaptation of the agricultural food production to both its demand and the changes in marketing practices;
- expansion and improvement of produce processing operations for enhanced product quality;
- substitution of imported foods that can be efficiently produced in the country; and
- development of the equipment for the agricultural sector.

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In line with the above economic and industrial transformations decided by the Government, UNIDO is supporting Cuba's efforts in investment and strategic alliance promotion endeavours for strengthening its industrial capabilities and competitiveness in priority industrial sectors through the formulation of a Country Programme Framework (CPF).

One of the priority CPF areas as per main outcomes agreed with the Government of Cuba is enhancing industrial performance and competitiveness of national food industries and improving food supply and security through technological and enterprise upgrading of agro-chemical and agriculture machinery production sector.

3. Project objective and expected outcomes

a. Objective of the project

Global objective

The overall objective of the project "UNIDO Technological and Enterprise Upgrading Programme focused on agro-chemical and agriculture machinery production sector" (or Cuba Industrial Upgrading and Modernization Programme, Cuba IUMP) is to contribute to inclusive and sustainable industrial development of Cuba and improve food security through upgrading and modernization of industrial sectors of Fertilizers and Metal Finishing for Agricultural Machinery.

Immediate objective

The immediate goal of the Cuba IUMP is to enhance industrial performance and competitiveness of pilot enterprises operating in the Fertilizers and Agricultural Machinery industrial sectors within the existing industrial hubs.

b. Expected Outcomes:

Project's outcome is increased, demand-driven and reliable supply of fertilizers, and agricultural machinery of enhanced quality and range to the agricultural sector of Cuba.

Overall expected impact of the proposed project is sustainable economic and industrial development and sustainable supply of food to the local market and the growing tourism sector of Cuba.

4. Project implementation arrangements

The project's main counterparts are the Ministry of Foreign Trade and Investment (**MINCEX**), which is responsible to lead, implement and monitor the government's policies in terms of trade, foreign investment and international economic cooperation, and the Ministry of Industry (**MINDUS**), which establishes the policies for the industrial development of Cuba. The Ministry of Industry is divided in several enterprise groups (Grupos Empresariales). Each of these groups specializes in promoting the development of the different productive sectors in the economy. More specifically, the project has been working with two enterprise groups; these are the Chemical Industry (**GEIQ**) and Ferrous Metallurgy and Machine-Building (**GESIME**) enterprise groups.

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In this context, the GEIQ is in charge of the development of productions at an industrial scale of rubber, gases, chlorine, caustic soda and its derivatives, paper, cardboard, glass, **fertilizers**, sulphuric acid, amongst others. While GESIME focuses in the industrial policies of Ferrous Metallurgy and Machine-Building sectors by promoting the strengthening, development and innovation activities to increase import substitution.

There are two project beneficiaries that fall under the hierarchy of the GEIQ; one is the Engineering and Research Center of the Chemical Industry (**CIIQ**), which besides the wide range of scientific and engineering services provided by the centre it also produces the nationally known CBFERT fertilizer. This fertilizer has been identified by the project as a priority to increase it produce at a larger scale.

Additionally, the Pesticide and Fertilizer Enterprise "*Revolución de Octubre*" (**EMPREQUIN**) located in the Municipality of Nuevitas is another project beneficiary, EMPREQUIN's services focus in providing NPK fertilizers to farmers at national level, and in the context of the project, an existing Calcium Nitrate plant is being upgraded to produce liquid Calcium Nitrate with a better quality.

A third beneficiary of the project is the Agricultural Machinery Development Center (**CEDEMA**), which falls under the hierarchy of GESIME. CEDEMA offers services of innovation, development and design of agricultural and industrial machinery, and in the context of the project, is in charge of the evaluation of machinery for liquid fertilizer application and the design of a prototype adapted to Cuban conditions.

A Project Advisory Board was formed during the project implementation to advise the project implementation team, it gathers representatives from the MINDUS, MINCEX, GESIME, GEIQ and other institutions in charge of industrial and agricultural development. This Advisory Board, inter alia, provides overall monitoring and ensures the follow-up of project implementation, endorses enterprise and centers selection criteria, facilitates and promotes synergies with national programmes, and carries out respective project promotion and resource mobilization activities.
The overall technical management and coordination of the project implementation was ensured by a

team of project experts composed of the International Expert/Team Leader, National Project Coordinator, international and national experts under the technical guidance and supervision from the UNIDO Project Manager, Business Environment, Cluster and Innovation Division, Department of Trade, Investment and Innovation (PTC/TII/BCI, Headquarters). The international expert was the team leader of project experts, working in close collaboration with key national stakeholders, reporting to UNIDO and to the project Advisory Board.

5. Main findings of the project progress

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1. UNIDO conducted comprehensive analysis of the Cuban fertilizers and agricultural machinery production sectors resulting in a Sectoral Strategy that helps prioritize and focus developmental efforts of the current Project and of the National Government, in general, on the development, production and application of liquid fertilizer1, in order to significantly contribute to the country's efforts in enhancing the sustainable food production using inter alia Cuban know-how and accompanied by the best international practices and technological upgrading.
2. In particular, the Sectoral Strategy and its implementation within the current project aim at upgrading the local capacities so to satisfy around 90% of the Country's current and future demand in liquid fertilizers.
3. The UNIDO Project-supported "Sectoral Strategy for technological and enterprise upgrading of fertilizers and agricultural machinery" served a reference for the new projection in the formulation of the UNDAF in its new cycle 2020-2024.
4. A tailor made specific technological and managerial capacity building program has been developed and being implemented for the enhancement of productive, technical and managerial skills of the Cuban experts, policy makers and producers.
5. The results of the sectorial analysis justified the Government's prioritization to increase the national supply of liquid Calcium Nitrate and CBFERT.
6. CBFERT's crop application of was validated at a large-scale level in areas of the "Indio Hatuey" Experimental Station in Matanzas province [geocode: RX9P+GG Espana Republicana, Cuba]. The project-supported innovative fertilizer was tested over the following crops: carrots, beans, cucumbers, lettuce, peppers and tomatoes. The test results recorded increase in yields at the rates between 35% and 65% compared to the reference samples. Samples of CBFERT were submitted to the Agricultural Engineering Research Institute (IAGRI) to be evaluated on the rice crops as well.
7. Due to the success of the quality and the effects on crops of CBFERT, the Ministry of Agriculture (MINAG) requested to increase its production to meet the national demand from 10,000 liters to up-to 400,000 liters (4000% increase) by 2020. This decision allows large savings in international exchange in order to support the Country's import-substitution policy.
8. The project team is supporting the (re-)branding of the CBFERT product with the objective to export this fertilizer to neighbouring countries in Latin America and the Caribbean.
9. A Study Tour from 30 September until 13 October 2017 to Valencia, Murcia, Almeria, Malaga and Seville, Spain. It aimed to improve the human capacities and facilitate a broader cooperation and discussion on potential areas of collaboration for Cuba's sustainable and inclusive industrial development, in particular in terms of sustainable development of fertilizer and agro-chemical production, as well as best practices in these sectors. Furthermore, Study Tour helped the Cuban

experts to acquire knowledge and know-how about the state-of-the-art technologies concerning liquid fertilizers and their application.

10. The UNIDO technical team assisted CEDEMA in the development of the first draft technical documentation on the potential of liquid fertilizer value chain and its application in Cuba. Similarly, the project has built capacities of the CEDEMA's Focal Team by supporting, together with CIIQ, the use of the procured equipment (sprayers) to improve the distribution and application of the two liquid fertilizers and optimize their performance.

11. Based on the Sectoral Strategy and the related technological upgrading plan, the procurement of equipment is being finalized, including the issuance of purchase contracts with selected suppliers and shipment of respective equipment to Cuba to be followed by installation, adaptation and launching of production. To February 25 2020, the following technology transfer activities were accomplished:

    a. The following transferred equipment and machinery for production and application of liquid fertilizers is being installed at the production factories:

        - A set of seven piece of laboratory equipment for the Calcium Nitrate Plant (EMPREQUIN) located in Nuevitas.

        - A set of welding and metal materials for the construction of a second reactor, as well as two geared-motors agitators for the Calcium Nitrate Plant of EMPREQUIN.

        - Three sprayers for application of liquid fertilizer. As part of the upgrading process for the application of liquid Calcium Nitrate and CBFERT, the project transferred agricultural equipment catering to the needs of the Cuban greenhouse agriculture. These sprayers serve as the first step to localize equipment for application of liquid fertilizers in Cuba. The sprayers were distributed amongst CEDEMA, CIIQ and IAGRI.

        - A ventilation system, geared-motors agitators and filtering tissues (for a vacuum pump and a filter press) for the CIIQ's CBFERT pilot plant in Havana.

        - A set of eleven pieces of laboratory equipment to strengthen the quality control system in the laboratory and modernize the CBFERT production pilot plant.

    b. The following machinery, equipment and parts are being manufactured and will be delivered to Cuba in the second/third quarter of 2020:

        - Two centrifugal pumps, a mobile filtration unit, a dosing machine, a vacuum pump, and a 20-liter laboratory reactor to facilitate further modernization of the CBFERT plant.

        - Four centrifugal industrial pumps, a piping and valves system, a filter press and the steel materials for the structural base of the filtration system to facilitate further modernization of the Calcium Nitrate Plant of EMPREQUIN.

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6. Budget information

Table. Budget status as of March 2019

Grant	Total allotment	Total expenditure	% Implementation	Donor
2000003358	USD 1,769,911.50	USD 1,552,801.96	80	Russian Federation

Source: UNIDO ERM Project budget availability report as of 19 February 2020.

Table. Breakdown by budget lines

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BL	Description	Total, USD
11-00	International experts	**950,000**
15-00	Local travel	**200,000**
16-00	Mission costs of UNIDO staff	**94,823**
17-00	National experts	**700,000**
21-00	Subcontracts	**200,000**
30-00	Trainings	**290,000**
45-00	Equipment	**1,040,000**
51-00	Sundries	**65,000**
Subtotal		**3,539,823**
Support cost (13%)		**460,177**
TOTAL		**4,000,000**

Source: UNIDO Project Document

Table: Project breakdown by output

	Programme Outputs	Estimated Budget (in USD)
1.	Sectoral analysis and building a strategic action plan for development of the Cuban priority Fertilizers and Agricultural Machinery industrial product lines/sub-sectors	**340,000**

	Programme Outputs	Estimated Budget (in USD)
2.	Enterprise diagnosis and industrial upgrading of selected pilot manufacturing enterprises operating within the identified priority Fertilizers and Agricultural Machinery product lines/sub-sectors/existing hubs	**2,210,000**
3.	Human and technical capacities of national counterpart institutions/expertise established/strengthened	**989,823**
	Subtotal	**3,539,823**
	UNIDO support costs at 13%	**460,177**
	TOTAL	**4,000,000**

Source: UNIDO Project Document

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Table. UNIDO budget execution (Grant 2000003445)

Budget Line		Released Budget (excluding UNIDO support costs of 13%)	Expenditure	Funds Available
1100	Staff & Intern Consultants	410,086.52	391,583.92	18,502.60
1500	Local travel	32,113.98	24,704.03	7,409.95
1600	Staff Travel	42,226.72	32,708.44	9,518.28
1700	National Consultants/Staff	159,093.53	135,310.87	23,782.66
2100	Contractual Services	156,534.22	146,814.92	9,719.30
3000	Train/Fellowship/Study	70,579.38	50,579.51	19,999.87
4500	Equipment	831,594.87	708,808.66	122,786.21
5100	Other Direct Costs	67,682.28	62,291.61	5,390.67
	TOTAL	**1,769,911.50**	**1,552,801.96**	**217,109.54**

Source: UNIDO ERM Project budget availability report as of 25 February 2020.

II. SCOPE AND PURPOSE OF THE EVALUATION

The purpose of the evaluation is to independently assess the project to help UNIDO improve performance and results of ongoing and future programmes and projects in the field of

enterprise upgrading. The terminal evaluation (TE) will cover the whole duration of the project from its starting date in to the estimated completion date in 31.07.2020. The originally estimated operational completion date was extended until 31 December 2020 based on the approval by the Donor of the project.

The TE should provide an analysis of the attainment of the project objective and the corresponding outputs and outcomes. Through its assessment, the Evaluation Team (ET) should enable the Government, counterparts, UNIDO, other stakeholders and the donor to verify prospects for development impact and sustainability, providing an analysis of the attainment of project objectives, delivery and completion of project outputs/activities, and outcomes/impacts based on indicators. The assessment shall include re-examination of the relevance of the objectives and other elements of project design according to the project evaluation parameters defined in chapter III below.

The overall purpose of the TE is to assess whether the project has achieved or is likely to achieve its main objective, i.e *The immediate goal of the Cuba IUMP is to enhance industrial performance and competitiveness of pilot enterprises operating in the Fertilizers and Agricultural Machinery industrial sectors within the existing industrial hubs.*, and to what extent the project has also considered sustainability and scaling-up factors for increasing contribution to sustainable results and further impact.

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The evaluation has two specific objectives:

(i) Assess the project performance in terms of relevance, effectiveness, efficiency, sustainability and progress to impact;

(ii) Identify key learning to feed into the design and implementation of the forthcoming projects; and

(iii) Develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO in the field of enterprise upgrading.

III. EVALUATION APPROACH AND METHODOLOGY

The TE will be conducted in accordance with the UNIDO Evaluation Policy[21] UNEG Norms and Standards for evaluation and the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle[22].

The evaluation will be carried out as an independent in-depth evaluation using a participatory approach whereby all key parties associated with the project will be informed and consulted throughout the evaluation. The evaluation team leader will liaise with the UNIDO Independent Evaluation Division on the conduct of the evaluation and methodological issues.

The evaluation will use a theory of change approach and mixed methods to collect data and information from a range of sources and informants. It will pay attention to triangulating the data and information collected before forming its assessment. This is essential to ensure an evidence-based and credible evaluation, with robust analytical underpinning.

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The theory of change will identify causal and transformational pathways from the project outputs to outcomes and longer-term impacts, and drivers as well as barriers to achieve them. The learning from this analysis will be useful to feed into the design of the future projects so that the management team can effectively manage them based on results.

1. Data collection methods

The ET will be required to use different methods to ensure that data gathering and analysis deliver evidence-based qualitative and quantitative information, based on diverse sources, as necessary: desk studies and literature review, statistical analysis, individual interviews, focus group meetings/discussions and direct observation. This approach will not only enable the evaluation to assess causality through quantitative means but also to provide reasons for why certain results were achieved or not and to triangulate information for higher reliability of findings. The specific mixed methodological approach will be described in the inception report.

Following are the main instruments for data collection:

(a) **Desk and literature review** of documents related to the project, including but not limited to:

- The original project document, monitoring data & reports (such as progress and financial reports), back-to-office mission report(s), end-of-contract report(s) of consultants and relevant correspondence
- Minutes of steering committee meetings/other relevant meetings pertaining to the project

[21] UNIDO. (2018). Director General's Bulletin: Evaluation Policy (DGB/2018/08, dated 1 June 2018)
[22] 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)

(b) **Stakeholder consultations** will be conducted through structured and semi-structured interviews and focus group discussion. Key stakeholders to be interviewed include:

- UNIDO Management and staff involved in the project; and
- Representatives of the donor and counterparts

(c) **Field visit to Cuba**

- On-site observation of results achieved by the project, including interviews of actual and potential beneficiaries of project intervention
- Interviews with the relevant UNIDO Country Office representative to the extent that he/she was involved in the project, the project's management team and the various national [and sub-regional] authorities dealing with project activities as necessary

(d) Other interviews or document reviews as deemed necessary by the evaluation team and/or by the Independent Evaluation Division for triangulation purposes

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2. Evaluation key questions and criteria

The evaluation team will develop interview guidelines. Field interviews can take place either in the form of focus-group discussions or one-to-one consultations.

The key evaluation questions are the following:

(b) What are the key drivers and barriers to achieve the long-term objectives? To what extent has the project helped put in place the conditions likely to address the drivers, overcome barriers and contribute to the long-term objectives?
(c) How well has the project performed? Has the project done the right things? Has the project done things right, with good value for money?
(d) What have been the project's key results (outputs, outcome and impact)? To what extent have the expected results been achieved or are likely to be achieved? To what extent the achieved results will sustain after the completion of the project?
(e) What lessons can be drawn from the successful and unsuccessful practices in designing, implementing and managing the project?

The evaluation will assess the likelihood of sustainability of the project results after the project completion. The assessment will identify key risks (e.g. in terms of financial, socio-political, institutional and environmental risks) and explain how these risks may affect the continuation of results after the project ends. Table 1 below provides the key evaluation criteria to be assessed by the evaluation. The details questions to assess each evaluation criterion are in annex 2 of the UNIDO Evaluation Manual.

Table 1. Project evaluation criteria

#	Evaluation criteria	Mandatory rating
A	**Impact**	**Yes**
B	**Project design**	**Yes**
1	• Overall design	Yes
2	• Logframe	Yes
C	**Project performance**	**Yes**
1	• Relevance	Yes
2	• Effectiveness	Yes
3	• Efficiency	Yes
4	• Sustainability of benefits	Yes
D	**Cross-cutting performance criteria**	
1	• Gender mainstreaming	Yes
2	• M&E: ✓ M&E design ✓ M&E implementation	Yes
3	• Results-based Management (RBM)	Yes
E	**Performance of partners**	
1	• UNIDO	Yes
2	• National counterparts	Yes
3	• Donor	Yes
F	**Overall assessment**	Yes

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3. 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) as per **Error! Reference source not found.**.

Table 2. 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).	

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IV. EVALUATION PROCESS

The evaluation will be implemented in phases which are not strictly sequential, but in many cases iterative, conducted in parallel and partly overlapping:

- UNIDO Independent Evaluation Division (IED) identifies and selects the Evaluation Team members, in consultation with project manager
- Inception phase
  - ✓ Desk review and data analysis: The evaluation team will review project-related documentation and literature and carry out a data analysis
  - ✓ Briefing of consultant(s) at UNIDO Headquarters (HQ)
  - ✓ Preparation of inception report: The evaluation team will prepare the inception report providing details on the methodology for the evaluation and include an evaluation matrix with specific issues for the evaluation; the specific site visits will be determined during the inception phase, taking into consideration the findings and recommendations of project progress reports or mid-term reviews.
  - ✓ Interviews, survey
- Field phase
  - ✓ Country field visit(s)
  - ✓ ET Debriefing in the field to project stakeholders
- Reporting phase
  - ✓ After field mission, HQ debriefing with preliminary findings, conclusions and recommendations by the ET leader
  - ✓ Data analysis and draft report writing
  - ✓ Draft report submission
  - ✓ Sharing and factual validation of draft report with stakeholders
  - ✓ Final evaluation report Submission and QA/clearance by IED, and
  - ✓ Two pages summary take-away message
- IED Final report issuance and distribution with the respective management response sheet and further follow-up, and publication of evaluation report in UNIDO intra/internet sites

1. Evaluation team composition

A staff from the UNIDO Independent Evaluation Division will be assigned as Evaluation Manager and will coordinate and provide evaluation backstopping to the evaluation team and ensure the quality of the evaluation. The UNIDO Project Manager and national project teams will act as resourced persons and provide support to the evaluation team and the IED evaluation manager.

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The evaluation team will be composed of two evaluation consultants. The evaluation team members will possess relevant strong experience and skills on evaluation and evaluation management, including social safeguards and gender. Expertise and experience in the related technical subject of the project is desirable. The evaluation consultants will be contracted by UNIDO.

The tasks of each team member are specified in the job descriptions in annex 3 to these terms of reference.

According to UNIDO Evaluation Policy, members of the evaluation team must not have been directly involved in the design and/or implementation of the project under evaluation.

V. TIME SCHEDULE AND DELIVERABLES

The evaluation is scheduled to take place from October 2020 to February 2021. Due the COVID-19 Pandemic there will be no international travel involved and local site visits and interviews will be conducted in compliance with local COVID-19 measures and restrictions, if necessary virtually. At the end of the data collection, there will be a presentation of the preliminary findings for all stakeholders involved in this project. The tentative timelines are provided in **Error! Reference source not found.**.

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After the evaluation date collection, the evaluation team leader provide a debriefing and presentation of the preliminary findings of the terminal evaluation. The draft TE report will be submitted 4 weeks after the end of the data collection. The draft TE report is to be shared with the UNIDO PM, UNIDO Independent Evaluation Division, and other stakeholders for receipt of comments. The ET leader is expected to revise the draft TE report based on the comments received, edit the language and form and submit the final version of the TE report in accordance with UNIDO ODG/EIO/EID standards.

Table 3. Tentative timelines

Timelines	**Tasks**
end September 2020	Finalization of TOR and recruitment of the evaluation team
December 2020	Desk review and writing of inception report
January 2021	Briefing with UNIDO project manager and UNIDO Independent Evaluation Division
January 2021	Field visit in Cuba
January/February 2021	Preparation of zero draft evaluation report
February 2021	Internal peer review of the report by UNIDO's Independent Evaluation Division and other stakeholder comments to draft evaluation report
End February 2021	Final evaluation report

VI. EVALUATION DELIVERABLES

Inception report

This Terms of Reference (ToR) provides some information on the evaluation methodology, but this should not be regarded as exhaustive. After reviewing the project documentation and initial interviews with the project manager, the Team Leader will prepare, in collaboration with the national consultant, a short inception report that will operationalize the ToR relating to the evaluation questions and provide information on what type of and how the evidence will be collected (methodology). It will be discussed with and approved by the responsible UNIDO Evaluation Manager.

The Inception Report will focus on the following elements: preliminary project theory model(s); elaboration of evaluation methodology including quantitative and qualitative approaches through an evaluation framework ("evaluation matrix"); division of work between the International Evaluation Consultant and national consultant; mission plan, including places to be visited, people to be interviewed and possible surveys to be conducted and a debriefing and reporting timetable[23].

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Evaluation report format and review procedures

The draft report will be delivered to UNIDO's Independent Evaluation Division (the suggested report outline is in Annex 4) and circulated to UNIDO staff and national stakeholders associated with the project for factual validation and comments. Any comments or responses, or feedback on any errors of fact to the draft report provided by the stakeholders will be sent to UNIDO's Independent Evaluation Division for collation and onward transmission to the project evaluation team who will be advised of any necessary revisions. On the basis of this feedback, and taking into consideration the comments received, the evaluation team will prepare the final version of the terminal evaluation report.
The ET will present its preliminary findings to the local stakeholders at the end of the field visit and take into account their feed-back in preparing the evaluation report. A presentation of preliminary findings will take place at UNIDO HQ after the field mission.

The TE report should be brief, to the point and easy to understand. It must explain the purpose of the evaluation, exactly what was evaluated, and the methods used. The report must highlight any methodological limitations, identify key concerns and present evidence-based findings, consequent conclusions, recommendations and lessons. The report should provide information on when the evaluation took place, the places visited, who was involved and be presented in a way that makes the information accessible and comprehensible. The report should include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

Findings, conclusions and recommendations should be presented in a complete, logical and balanced manner. The evaluation report shall be written in English and follow the outline given in

[23] The evaluator will be provided with a Guide on how to prepare an evaluation inception report prepared by the UNIDO ODG/EVQ/IEV.

annex 4. The ET should submit the final version of the TE report in accordance with UNIDO Independent Evaluation Division standards.

VII. Quality assurance

All UNIDO evaluations are subject to quality assessments by UNIDO Independent Evaluation Division. Quality assurance and control is exercised in different ways throughout the evaluation process (briefing of consultants on methodology and process of UNIDO Independent Evaluation Division, providing inputs regarding findings, lessons learned and recommendations from other UNIDO evaluations, review of inception report and evaluation report).

The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality, attached as annex 5. UNIDO's Independent Evaluation Division should ensure that the evaluation report is useful for UNIDO in terms of organizational learning (recommendations and lessons learned) and is compliant with UNIDO's evaluation policy and these terms of reference. The draft and final evaluation report are reviewed by UNIDO Independent Evaluation Division, which will issue and circulate it within UNIDO together with a management response sheet, as well as submit to relevant stakeholders as required.

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ANNEXES

Annex 1: Project Logical Framework
Annex 2: Job descriptions
Annex 3: Detailed questions to assess evaluation criteria: See Annex 2 of the UNIDO Evaluation Manual
Annex 4: Outline of an in-depth project evaluation report
Annex 5: Checklist on evaluation report quality
Annex 6. Guidance and checklist on lessons learned quality criteria
Annex 7. Guidance on integrating gender in evaluations of UNIDO projects and projects

ANNEX 1: PROJECT LOGICAL FRAMEWORK

INTERVENTION LOGIC	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	ASSUMPTIONS
Development goal/impact			
Sustainable economic and industrial development and sustainable supply of food to the local market and the growing tourism sector of Cuba.	DRAFT	• Market statistics • National statistical reports and UN reports • Programme reports • Other publications	
Outcomes/immediate objectives			
Increased, demand-driven and reliable supply of fertilizers, and agricultural machinery of enhanced quality and range to the agricultural sector of Cuba	• Enterprise performance indicators e.g. reduced factor costs, turnover, value added, % exported, etc. • % increase in export of goods produced by the beneficiary enterprises to the regional market	• Market statistics • Commercial performance reports • Enterprise annual reports • Project reports • Other publications	Political situation in the country is stable. Project funding is timely and sufficient
OUTPUTS/RESULTS			
Output 1. Sectoral analysis and building a strategic action plan for development of the Cuban priority Fertilizers and Agricultural Machinery[24] industrial product lines/sub-sectors based on the key food and agricultural crop development needs.	• Strategic positioning report (identifying principal suppliers, market and customer need coverage, product margins, relation between industrial hub units, affiliation to hubs, distribution channels and terms as well as key sector-specific bottlenecks and constraints affecting overall agricultural productivity and reliable/sustainable supply of food) available • Demand-driven tailored action plan for modernization of priority Fertilizers and Agricultural Machinery productlines/sub-	• Strategic positioning report produced • Action plans developed • Programme reports	Political and economic situation in the country is stable

[24] Fertilizers and Metal Finishing for Agricultural Machinery Sectors (Fertilizers and Agricultural Machinery)

	• sectors and production		
INTERVENTION LOGIC	**OBJECTIVELY VERIFIABLE INDICATORS**	**SOURCES OF VERIFICATION**	**ASSUMPTIONS**
1.1 Identify key pilot beneficiary product lines/sub-sectors within existing Fertilizers and Agricultural Machinery industrial hubs based on the country's priority food and agricultural crop development needs. *1.2 Conduct comprehensive analysis of the production and supply of the identified products to agricultural sector (both quantitative and qualitative).* *1.3 Analyse local distribution, after-sales services and maintenance network (quantitative and qualitative)* *1.4 Analysis of current local demand and supply and future local demand and supply to cover Cuba´s food needs (including general quantitative and qualitative trends in consumption) and of consumer/ Fertilizers and Agricultural Machinery customer behaviour.* *1.5 Analysis of local demand and supply (including general quantitative and qualitative trends in consumption) of Fertilizers and Agricultural Machinery products for farming practices. Consideration of fertiliser composition and application formulas/recipes based on local food crops and soils avoiding over-fertilisation and with respective rationalization (or adoption, adaption, customization) in fertiliser production.* *1.6 Carry out benchmarking of priority Fertilizers and Agricultural Machinery product lines/sub-sectors at the local market and compare with appropriate international levels.* *1.7 Produce Gap Analysis Studies for selected and relevant products.* *1.8 Build a road map for further development of the relevant Cuban priority industrial sectors identifying the bottlenecks, constraints and opportunities (SWOT) affecting the productivity and supply of the sectors and define appropriate interventions areas to obtain an enhanced food supply level.* *1.9 Identify partnership opportunities offered by bilateral/friendship agreements (trade, finance, technology, joint venture)*			
Output 2. Enterprise diagnosis and industrial upgrading of selected pilot manufacturing enterprises operating within the identified priority Fertilizers and Agricultural Machinery product lines/sub-sectors/existing hubs through technological modernization, optimization of business processes and improvements of enterprise performance and competitiveness.	• Improved economic performance of beneficiary enterprises, e.g. reduced factor costs, (manufacturing) value added, customer satisfaction, etc. • Increase in turnover by beneficiary enterprises/hubs • Increase in quality and quantity of goods and services produced by the selected beneficiary enterprises/hubs • Post-upgrading performance and satisfaction degree of the beneficiary companies • Security and creation of employment • Number of enterprise employees trained (management and production; female and male)	• Market study • Commercial performance reports • Enterprise annual reports • Project reports • Surveys	• Information on local manufacturing enterprises operating within identified priority Fertilizers and Agricultural Machinery industries and regional markets is available • Individual companies actively collaborate with the project throughout its different stages

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2.1 Conduct full-diagnosis study, and assist in the formulation and implementation of the full scope of industrial modernization activities of selected beneficiary enterprises operating within existing industrial hubs *2.2 Coach selected beneficiary enterprises on the implementation of comprehensive measures with a focus on productivity, quality and industrial performance of enterprises.* *2.3 Identify and procure selected number of appropriate technology and equipment to the pilot selected enterprises to improve productive performance and ability to produce according to international standards and technical requirements.*			
INTERVENTION LOGIC	**OBJECTIVELY VERIFIABLE INDICATORS**	**SOURCES OF VERIFICATION**	**ASSUMPTIONS**
Output 3. Human and technical capacities of national counterpart institutions/expertise established/ strengthened in the provision of enterprise diagnosis and industrial modernization, sectoral analysis and competitiveness building and other best practices and related services to the Fertilizers, Agricultural Machinery and other priority industrial sectors.	• Number of new demand-driven services provided to local industrial and relevant agricultural activities • Number of persons equipped with state-of-the-art skills and quality of the technical and professional training programmes • Number of experts, trainers, engineers and technicians certified	• Project reports • International and national expert reports • Training reports	• National counterpart institutions and experts are cooperating among each other and with the UNIDO project
3.1 Capacity building of staff of relevant Ministries, technical support institutions, sectorial associations, national experts (experts, trainers, engineers and technicians), consultancy centres on UNIDO's approach, techniques, tools and the best practices in the area of industrial modernization, sectoral analysis and market awareness and positioning. *3.2 Provide guidance and advisory services to the national (technical support) institutions, sectorial associations, professional and vocational training centres on (i) Developing/revising technical procedures related to sustainable industrial modernization according to best international practices; (ii) Conducting respective training activities, including training sessions for development of suppliers, enterprise partnerships and investment promotion for the purposes of modernization; and (iii) Producing communication materials related to modernization.* *3.3 Build inter-institutional cooperation between national enterprise associations, export and investment proportion agencies and other enterprise support institutions in Cuba in order to supplement Cuba's public sector capacities to meet the growing demand at the local market, investment and other technical skills development.*			

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ANNEX 2. JOB DESCRIPTIONS

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

Title:	National evaluation consultant, team member
Main Duty Station and Location:	Cuba, Home-based with site visits in the country if possible
Start of Contract (EOD):	1 December 2020
End of Contract (COB):	28 February 2021
Number of Working Days:	30 working days spread over 3 months

ORGANIZATIONAL CONTEXT

The UNIDO Independent Evaluation Division (ODG/EIO/IED) is responsible for the independent evaluation function of UNIDO. It supports learning, continuous improvement and accountability, and provides factual information about result and practices that feed into the programmatic and strategic decision-making processes. Evaluation is an assessment, as systematic and impartial as possible, of a programme, a project or a theme. Independent evaluations provide evidence-based information that is credible, reliable and useful, enabling the timely incorporation of findings, recommendations and lessons learned into the decision-making processes at organization-wide, programme and project level. ODG/EIO/IED is guided by the UNIDO Evaluation Policy, which is aligned to the norms and standards for evaluation in the UN system.

PROJECT CONTEXT

Detailed background information of the project can be found the terms of reference (TOR) for the terminal evaluation.

The evaluation consultant, team member will evaluate the project in accordance with the evaluation-related terms of reference (TOR). He/she will work closely together with the second team member.

He/she will perform, inter alia, the following main tasks:

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
Undertake a desk review of project documentation and relevant country background information (national policies and strategies, UN strategies and general economic data); determine key data to collect in the field and adjust the key data collection instruments accordingly (if needed); Assess the adequacy of legislative and regulatory framework relevant to the project's activities and analyze other background info.	Division of evaluation tasks with the National Consultant An adjusted table of evaluation questions, depending on country specific context A draft list of stakeholders to be interviewed during the evaluation field mission A brief assessment of the adequacy of the country's legislative and regulatory framework	5 days	Home-based
Prepare an inception report which streamlines the specific questions to address the key issues in the TOR, specific methods that will be used and data to collect in the field visits, detailed evaluation methodology confirmed, draft theory of change, and tentative agenda for field work	Inception report submitted to the evaluation manager	3	Home-based
Briefing with the UNIDO Independent Evaluation Division, project managers and other key stakeholders.	Detailed evaluation schedule with tentative mission agenda (incl. list of stakeholders to be interviewed and planned site visits) submitted to evaluation and project manager	1	Home-based
3. Undertake evaluation data collection to consult field project stakeholders, partners and beneficiaries to verify and complete preliminary evaluation findings from desk review and assess the institutional capacities of the recipient country	Evaluation/debriefing presentation of the evaluation's preliminary findings prepared, draft conclusions, recommendations and lessons learnt to stakeholders at the end of the mission Agreement with the National Consultant on the structure and content of the evaluation report and the distribution of writing tasks	8 days	Home-based, and site visits in Cuba as possible

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MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
4. Debriefing: Present preliminary findings, recommendations and lessons learnt to project stakeholders for factual validation and comments Hold additional meetings with and obtain additional data from evaluation/project manager and other stakeholders as required	Power point presentation Feedback from stakeholders obtained and discussed Additional meetings held as required	1 day	Home-based
5. Prepare the draft evaluation report, with inputs from the National Consultant, and in accordance with the evaluation TOR Submit draft evaluation report to the evaluation manager for feedback and comments	Draft evaluation report submitted to evaluation manager for review and comments	8 days	Home-based
6. Revise the draft evaluation report based on comments and suggestions received through the evaluation manager and edit the language and finalize the evaluation report according to UNIDO Independent Evaluation Division standards Prepare a two pages summary of a take-away message from the evaluation	Final evaluation report submitted to evaluation manager Two pages summary take-away message from the evaluation submitted to the evaluation manager	4 days	Home-based
	TOTAL	**30 days**	

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REQUIRED COMPETENCIES

Core values:

WE LIVE AND ACT WITH INTEGRITY: work honestly, openly and impartially.
WE SHOW PROFESSIONALISM: work hard and competently in a committed and responsible manner.
WE RESPECT DIVERSITY: work together effectively, respectfully and inclusively, regardless of our differences in culture and perspective.

Key competencies:

WE FOCUS ON PEOPLE: cooperate to fully reach our potential –and this is true for our colleagues as well as our clients. Emotional intelligence and receptiveness are vital parts of our UNIDO identity.

WE FOCUS ON RESULTS AND RESPONSIBILITIES: focus on planning, organizing and managing our work effectively and efficiently. We are responsible and accountable for achieving our results and meeting our performance standards. This accountability does not end with our colleagues and supervisors, but we also owe it to those we serve and who have trusted us to contribute to a better, safer and healthier world.

WE COMMUNICATE AND EARN TRUST: communicate effectively with one another and build an environment of trust where we can all excel in our work.

WE THINK OUTSIDE THE BOX AND INNOVATE: To stay relevant, we continuously improve, support innovation, share our knowledge and skills, and learn from one another.

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Managerial and Leadership competencies (as applicable):

WE ARE STRATEGIC, DECISIVE, PRINCIPLED AND INSPIRATIONAL: We are a source of inspiration, stand for norms and standards established in the UN Charter and duty bounded to defend these ideals with a principled approach.

WE ARE INCLUSIVE AND ACCOUNTABLE: We have the responsibility for our teams' results while creating a strong-performing and united team. We are inclusive in our approach and maintain constructive engagement with all our stakeholders.

WE ARE MULTI-DIMENSIONAL AND TRANSFORMATIONAL: We go beyond conventional methods to help our organizational units strengthen their own agility and adaptability to change.

WE ARE COLLABORATIVE AND CO-CREATIVE: We foster a team spirit that allows us to leverage synergies between individual team members. We create meaningful opportunities to hear the voices of those around us, while realizing that only by working together can we accomplish our mission.

MINIMUM ORGANIZATIONAL REQUIREMENTS

Education: Advanced degree in economics, business administration, engineering, development studies or related areas

Technical and functional experience:

- Minimum of 10 years' experience in project management and/or evaluation (of development projects)

- Experience in the evaluation of technical cooperation projects and knowledge of UNIDO activities an asset
- Knowledge about multilateral technical cooperation and the UN, international development priorities and frameworks
- Working experience in developing countries

Languages: Fluency in written and spoken Spanish and working knowledge of English is required.

Reporting and deliverables

1) At the beginning of the assignment the Consultant will submit a concise Inception Report that will outline the general methodology and presents a concept Table of Contents
2) The country assignment will have the following deliverables:

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- Presentation of initial findings of the mission to key national stakeholders
- Draft report
- Final report in Spanish including an executive summary in English and Spanish, findings regarding design, implementation and results, conclusions and recommendations

3) Debriefing:

- Presentation and discussion of findings
- Concise summary and comparative analysis of the main results of the evaluation report

All reports and related documents must be in English and presented in electronic format.

Absence of conflict of interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the UNIDO Independent Evaluation Division.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

Title:	National evaluation consultant, team member
Main Duty Station and Location:	Cuba, Home-based with site visits in the country if possible
Start of Contract (EOD):	1 December 2020
End of Contract (COB):	28 February 2021
Number of Working Days:	30 working days spread over 3 months

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ORGANIZATIONAL CONTEXT

The UNIDO Independent Evaluation Division (ODG/EIO/IED) is responsible for the independent evaluation function of UNIDO. It supports learning, continuous improvement and accountability, and provides factual information about result and practices that feed into the programmatic and strategic decision-making processes. Evaluation is an assessment, as systematic and impartial as possible, of a programme, a project or a theme. Independent evaluations provide evidence-based information that is credible, reliable and useful, enabling the timely incorporation of findings, recommendations and lessons learned into the decision-making processes at organization-wide, programme and project level. ODG/EIO/IED is guided by the UNIDO Evaluation Policy, which is aligned to the norms and standards for evaluation in the UN system.

PROJECT CONTEXT

Detailed background information of the project can be found the terms of reference (TOR) for the terminal evaluation.

The evaluation consultant, team member will evaluate the project in accordance with the evaluation-related terms of reference (TOR). He/she will work closely together with the second team member.

He/she will perform, inter alia, the following main tasks:

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
Undertake a desk review of project documentation and relevant country background information (national policies and strategies, UN strategies and general economic data); determine key data to collect in the field and adjust the key data collection instruments accordingly (if needed); Assess the adequacy of legislative and regulatory framework relevant to the project's activities and analyze other background info.	Division of evaluation tasks with the National Consultant An adjusted table of evaluation questions, depending on country specific context A draft list of stakeholders to be interviewed during the evaluation field mission A brief assessment of the adequacy of the country's legislative and regulatory framework	5 days	Home-based
Prepare an inception report which streamlines the specific questions to address the key issues in the TOR, specific methods that will be used and data to collect in the field visits, detailed evaluation methodology confirmed, draft theory of change, and tentative agenda for field work	Inception report submitted to the evaluation manager	3	Home-based
Briefing with the UNIDO Independent Evaluation Division, project managers and other key stakeholders.	Detailed evaluation schedule with tentative mission agenda (incl. list of stakeholders to be interviewed and planned site visits) submitted to evaluation and project manager	1	Home-based
3. Undertake evaluation data collection to consult field project stakeholders, partners and beneficiaries to verify and complete preliminary evaluation findings from desk review and assess the institutional capacities of the recipient country	Evaluation/debriefing presentation of the evaluation's preliminary findings prepared, draft conclusions, recommendations and lessons learnt to stakeholders at the end of the mission Agreement with the National Consultant on the structure and content of the evaluation report and the distribution of writing tasks	8 days	Home-based, and site visits in Cuba as possible
4. Debriefing: Present preliminary findings, recommendations and	Power point presentation Feedback from stakeholders obtained and discussed	1 day	Home-based

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MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
lessons learnt to project stakeholders for factual validation and comments Hold additional meetings with and obtain additional data from evaluation/project manager and other stakeholders as required	Additional meetings held as required		
5. Prepare the draft evaluation report, with inputs from the National Consultant, and in accordance with the evaluation TOR Submit draft evaluation report to the evaluation manager for feedback and comments	Draft evaluation report submitted to evaluation manager for review and comments	8 days	Home-based
6. Revise the draft evaluation report based on comments and suggestions received through the evaluation manager and edit the language and finalize the evaluation report according to UNIDO Independent Evaluation Division standards Prepare a two pages summary of a take-away message from the evaluation	Final evaluation report submitted to evaluation manager Two pages summary take-away message from the evaluation submitted to the evaluation manager	4 days	Home-based
	TOTAL	**30 days**	

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REQUIRED COMPETENCIES

Core values:

WE LIVE AND ACT WITH INTEGRITY: work honestly, openly and impartially.

WE SHOW PROFESSIONALISM: work hard and competently in a committed and responsible manner.

WE RESPECT DIVERSITY: work together effectively, respectfully and inclusively, regardless of our differences in culture and perspective.

Key competencies:

WE FOCUS ON PEOPLE: cooperate to fully reach our potential –and this is true for our colleagues as well as our clients. Emotional intelligence and receptiveness are vital parts of our UNIDO identity.

WE FOCUS ON RESULTS AND RESPONSIBILITIES: focus on planning, organizing and managing our work effectively and efficiently. We are responsible and accountable for achieving our results and meeting our performance standards. This accountability does not end with our colleagues and supervisors, but we also owe it to those we serve and who have trusted us to contribute to a better, safer and healthier world.

WE COMMUNICATE AND EARN TRUST: communicate effectively with one another and build an environment of trust where we can all excel in our work.

WE THINK OUTSIDE THE BOX AND INNOVATE: To stay relevant, we continuously improve, support innovation, share our knowledge and skills, and learn from one another.

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Managerial and Leadership competencies (as applicable):

WE ARE STRATEGIC, DECISIVE, PRINCIPLED AND INSPIRATIONAL: We are a source of inspiration, stand for norms and standards established in the UN Charter and duty bounded to defend these ideals with a principled approach.

WE ARE INCLUSIVE AND ACCOUNTABLE: We have the responsibility for our teams' results while creating a strong-performing and united team. We are inclusive in our approach and maintain constructive engagement with all our stakeholders.

WE ARE MULTI-DIMENSIONAL AND TRANSFORMATIONAL: We go beyond conventional methods to help our organizational units strengthen their own agility and adaptability to change.

WE ARE COLLABORATIVE AND CO-CREATIVE: We foster a team spirit that allows us to leverage synergies between individual team members. We create meaningful opportunities to hear the voices of those around us, while realizing that only by working together can we accomplish our mission.

MINIMUM ORGANIZATIONAL REQUIREMENTS

Education: Advanced degree in economics, business administration, engineering, development studies or related areas

Technical and functional experience:

- Minimum of 10 years' experience in project management and/or evaluation (of development projects)
- Experience in the evaluation of technical cooperation projects and knowledge of UNIDO activities an asset

- Knowledge about multilateral technical cooperation and the UN, international development priorities and frameworks
- Working experience in developing countries

Languages: Fluency in written and spoken Spanish and working knowledge of English is required.

Reporting and deliverables

1) At the beginning of the assignment the Consultant will submit a concise Inception Report that will outline the general methodology and presents a concept Table of Contents
2) The country assignment will have the following deliverables:
   - Presentation of initial findings of the mission to key national stakeholders
   - Draft report
   - Final report in Spanish including an executive summary in English and Spanish, findings regarding design, implementation and results, conclusions and recommendations
3) Debriefing:
   - Presentation and discussion of findings
   - Concise summary and comparative analysis of the main results of the evaluation report

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All reports and related documents must be in English and presented in electronic format.

Absence of conflict of interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the UNIDO Independent Evaluation Division.

ANNEX 3: DETAILED QUESTIONS TO ASSESS EVALUATION CRITERIA

See Annex 2 of the UNIDO Evaluation Manual

ANNEX 4: OUTLINE OF AN IN-DEPTH PROJECT EVALUATION REPORT

Executive summary (maximum 5 pages)

Evaluation purpose and methodology

Key findings

Conclusions and recommendations

Project ratings

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Tabular overview of key findings – conclusions – recommendations

1. Introduction

1.1. Evaluation objectives and scope
1.2. Overview of the Project Context
1.3. Overview of the Project
1.4. Theory of Change
1.5. Evaluation Methodology
1.6. Limitations of the Evaluation

2. Project's contribution to Development Results - Effectiveness and Impact

2.1. Project's achieved results and overall effectiveness
2.2. Progress towards impact
2.2.1. Behavioral change
2.2.1.1. Economically competitive - Advancing economic competitiveness
2.2.1.2. Environmentally sound – Safeguarding environment
2.2.1.3. Socially inclusive – Creating shared prosperity
2.2.2. Broader adoption
2.2.2.1. Mainstreaming
2.2.2.2. Replication
2.2.2.3. Scaling-up

3. Project's quality and performance

3.1. Design
3.2. Relevance
3.3. Efficiency

3.4. Sustainability

3.5. Gender mainstreaming

4. Performance of Partners

4.1. UNIDO

4.2. National counterparts

4.3. Donor

5. Factors facilitating or limiting the achievement of results

5.1. Monitoring & evaluation

5.2. Results-Based Management

5.3. Other factors

5.4. Overall assessment and rating table

6. **Conclusions, recommendations and lessons learned**

6.1. Conclusions

6.2. Recommendations

6.3. Lessons learned

6.4. Good practices

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Annexes (to be put online separately later)

- Evaluation Terms of Reference
- Evaluation framework
- List of documentation reviewed
- List of stakeholders consulted
- Project logframe/Theory of Change
- Primary data collection instruments: evaluation survey/questionnaire
- Statistical data from evaluation survey/questionnaire analysis

ANNEX 5: CHECKLIST ON EVALUATION REPORT QUALITY

Project title:
UNIDO Project ID:

Evaluation team
Evaluation team leader:
National evaluation consultant:
Evaluation manager (IED):
Quality review done by: Date:

Report quality criteria	UNIDO Independent Evaluation Division assessment notes	Rating
a. Was the report well-structured and properly written? (Clear language, correct grammar, clear and logical structure)		
b. Was the evaluation objective clearly stated and the methodology appropriately defined?		
c. Did the report present an assessment of relevant outcomes and achievement of project objectives?		
d. Was the report consistent with the ToR and was the evidence complete and convincing?		
e. Did the report present a sound assessment of sustainability of outcomes or did it explain why this is not (yet) possible? (Including assessment of assumptions, risks and impact drivers)		
f. Did the evidence presented support the lessons and recommendations? Are these directly based on findings?		
g. Did the report include the actual project costs (total, per activity, per source)?		
h. Did the report include an assessment of the quality of both the M&E plan at entry and the system used during the implementation? Was the M&E sufficiently budgeted for during preparation and properly funded during implementation?		
i. Quality of the lessons: were lessons readily applicable in other contexts? Did they suggest prescriptive action?		
j. Quality of the recommendations: did recommendations specify the actions necessary to correct existing conditions or improve operations ('who?' 'what?' 'where?' 'when?'). Can these be immediately implemented with current resources?		

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Report quality criteria	UNIDO Independent Evaluation Division assessment notes	Rating
k. Are the main cross-cutting issues, such as gender, human rights and environment, appropriately covered?		
l. Was the report delivered in a timely manner? (Observance of deadlines)		

Rating system for quality of evaluation reports

A rating scale of 1-6 is used for each criterion: Highly satisfactory = 6, Satisfactory = 5, Moderately satisfactory = 4, Moderately unsatisfactory = 3, Unsatisfactory = 2, Highly unsatisfactory = 1, and unable to assess = 0.

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ANNEX 6. GUIDANCE AND CHECKLIST ON LESSONS LEARNED QUALITY CRITERIA

UNIDO evaluation lessons learned

Definition

Focus on generalization

The Organisation for Economic Cooperation and Development's (OECD) Development Assistance Committee (DAC) (2002) defines lessons learned related to the evaluation of development assistance as follows: "***Generalizations based on evaluation experiences*** *with projects, programs, or policies that abstract from the specific circumstances to broader situations. Frequently, lessons highlight strengths or weaknesses in preparation, design, and implementation that affect performance, outcome, and impact."*[25]

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Focus on transferability & generalization

The International Labour Organisation (ILO) provides one of the most comprehensive definitions of lessons learned with relevance for evaluations in the UN system (2014) "***A lesson learned is an observation from project or programme experience which can be translated into relevant, beneficial knowledge by establishing clear causal factors and effects****. It focuses on a specific design, activity, process or decision and may provide either positive or negative insights on operational effectiveness and efficiency, impact on the achievement of outcomes, or influence on sustainability.* ***The lesson should indicate, where possible, how it contributes to 1) reducing or eliminating deficiencies; or 2) building successful and sustainable practice and performance***"[26]*.*
UNIDO evaluation lessons learned contain information about the context, challenges, causal factors, target users and success/failure, as also shown in below **Lessons learned quality criteria checklist.**

What is not a lesson learned?

Lessons learned are not:	• Simply restating or paraphrasing existing doctrine, policy, process, etc. This does not qualify as an appropriate and bona fide lessons learned[27]. • Just applicable to a specific situation but applicable to a generic situation[28] • The same as recommendations. Recommendations usually refer to very specific situations including who should take action on what by when

[25] http://www.oecd.org/dataoecd/29/21/2754804.pdf
[26] ILO Evaluation Unit, 2014: Guidance Note 3: Evaluation lessons learned and emerging good practices
[27] www.dtic.mil/ndia/2004cmmi/CMMIT2Tue/LessonsLearnedtc3.pdf
[28] *www.globalhivmeinfo.org/Pages/Glossary.aspx* globalhivmeinfo.org/DigitalLibrary/Digital%20Library/Glossary%20of%20Monitoring%20and%20Evaluation%20Terms.doc

Examples of lessons learned

Source	Well-identified lessons learned in UNIDO evaluations
UNIDO, 2016: Independent UNIDO country evaluation: Thailand	• A more effective collaboration between the government of Thailand and UNIDO *(context; target users)* will be more beneficial in developing a "country programme" that identifies the priority areas in which they should work together and then seek funding from potential sources *(success)* than the choice of the projects being driven by UNIDO on the basis of the financial support the latter is able to mobilize *(causal factor; challenge)*.
UNIDO, 2017: Evaluación final independiente del proyecto: Centro de Automatización Industrial y Meca- trónica (Uruguay)	• It is important that UNIDO projects get adequate technical in-house support *(context).* When this capacity is limited to persons that at a later stage get detached from the project the risk emerges *(challenge)* that UNIDO can't adequately met the expectations raised *(causal factor; failure).* UNIDO *(target user)* risks to loose its reputation as a strategic partner in such situations.
UNIDO, 2016: Independent Terminal Evaluation: Demonstration of BAT/BEP in fossil fuel-fired utilities and industrial boilers in response to the Stockholm Convention on POPs	• To UNIDO programme managers *(target users)*: The implementation of this regional project involving six countries *(context)* was very challenging and required more time and better planning to meet deadlines *(challenge).* One important lesson that emerged is that the design should be kept simple. For the same set of objectives, the design should consider to have smaller number of components meaning less administrative burden and more flexibility *(success)* resulting in a better and more successful implementation process (causal factor). *Lesson learned was amended for this guideline.*
UNIDO, 2016: Independent terminal evaluation. Industrial Energy Efficiency in Ecuador	• To UNIDO country director *(target user)*: Lack of synergies *(challenge)* between energy efficiency projects and Clean Production activities developed by UNIDO at local level *(context)* drives to lose opportunities *(failure)* for a more efficient achievement of shared goals *(causal factor). Lesson learned was amended for this guideline.*

Examples of statements that do not qualify as lessons learned

Statements identified in UNIDO evaluation reports in the lessons learned sections that are in fact no lessons learned
• "Focus on product development innovation methods and tools". *The context, challenge, causal factors, success/failure and target users are omitted. This statement resembles more to a recommendation with suboptimal formulation.*
• "UNIDO, as the International executing Agency, was instrumental in: a) introducing new technologies such as the Vallerani System, the use of Zander in tree planting; b) linking environmental preservation to economic development; c) providing support to the HCEFLCD for upgrading its nursery network". *The context, challenge, causal factors, success/failure and target users are omitted. This statement is a finding.*

- "Include in the peer review process also other agencies, such as UNEP and UNDP, which also support countries in the implementation of Enabling Activities and NIP update projects for the Stockholm Convention".
  The context, challenge, causal factors, success/failure and target users are omitted. This statement resembles more to a recommendation with suboptimal formulation.

Lessons learned quality criteria checklist

The evaluator should cite and explain the points below.
✓ **Context** – Explain the context from which the lesson has been derived (e.g. economic, social, political). If possible, point to any relevance to the broader UNIDO mandates or broader technical or regional activities.
✓ **Challenges** – Cite any difficulties, problems or obstacles encountered / solutions found - Positive and negative aspects should be described.
✓ **Causal factors** – Present evidence for "how" or "why" something did or did not work?
✓ **Target users affected by the lessons learned should be cited** (e.g. Management, programme managers, donors or beneficiaries)
✓ **Success or failure** – The lessons learned should cite any decisions, tasks, or processes that constitute reduced or eliminated deficiencies or built successful and sustainable practice and performance; or have the potential of success. Avoid repetition of failure
✓ **The lesson learned is not mistaken for a recommendation or conclusion**

(Source: ILO Evaluation Unit, 2014: Guidance Note 3: Evaluation lessons learned and emerging good practices, amended with UNIDO IEV)
For assessing the quality of evaluation lessons leaner UNIDO uses a 6-point (with one point for each criterion) rating scheme:

Ratings 4 - 6 are **satisfactory** and **meet quality criteria**.
Ratings 1 - 3 are **unsatisfactory** and **fail to meet quality criteria**.

The criterion "The lesson learned is not mistaken for a recommendation or conclusion" **is an exclusion criterion**, i.e. when this criterion is met the lesson learned automatically fails the quality check regardless the quality in other criteria.

ANNEX 7. GUIDANCE ON INTEGRATING GENDER IN EVALUATIONS OF UNIDO PROJECTS AND PROJECTS

A. Introduction

Gender equality is internationally recognized as a goal of development and is fundamental to sustainable growth and poverty reduction. The UNIDO Policy on gender equality and the empowerment of women and its addendum, issued respectively in April 2009 and May 2010 (UNIDO/DGB(M).110 and UNIDO/DGB(M).110/Add.1), provides the overall guidelines for establishing a gender mainstreaming strategy and action plans to guide the process of addressing gender issues in the Organization's industrial development interventions.

According to the UNIDO Policy on gender equality and the empowerment of women:

Gender equality refers to the equal rights, responsibilities and opportunities of women and men and girls and boys. Equality does not suggest that women and men become 'the same' but that women's and men's rights, responsibilities and opportunities do not depend on whether they are born male or female. Gender equality implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of different groups of women and men. It is therefore not a 'women's issues'. On the contrary, it concerns and should fully engage both men and women and is a precondition for, and an indicator of sustainable people-centered development.

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Empowerment of women signifies women gaining power and control over their own lives. It involves awareness-raising, building of self-confidence, expansion of choices, increased access to and control over resources and actions to transform the structures and institutions which reinforce and perpetuate gender discriminations and inequality.

Gender parity signifies equal numbers of men and women at all levels of an institution or organization, particularly at senior and decision-making levels.

The UNIDO projects/projects can be divided into two categories: 1) those where promotion of gender equality is one of the key aspects of the project/project; and 2) those where there is limited or no attempted integration of gender. Evaluation managers/evaluators should select relevant questions depending on the type of interventions.

B. Gender responsive evaluation questions

The questions below will help evaluation managers/evaluators to mainstream gender issues in their evaluations.

B.1. Design

- Is the project/project in line with the UNIDO and national policies on gender equality and the empowerment of women?
- Were gender issues identified at the design stage?
- Did the project/project design adequately consider the gender dimensions in its interventions? If so, how?

- Were adequate resources (e.g., funds, staff time, methodology, experts) allocated to address gender concerns?
- To what extent were the needs and priorities of women, girls, boys and men reflected in the design?
- Was a gender analysis included in a baseline study or needs assessment (if any)?
- If the project/project is people-centered, were target beneficiaries clearly identified and disaggregated by sex, age, race, ethnicity and socio-economic group?
- If the project/project promotes gender equality and/or women's empowerment, was gender equality reflected in its objective/s? To what extent are output/outcome indicators gender disaggregated?

B.2. Implementation management

- Did project monitoring and self-evaluation collect and analyse gender disaggregated data?
- Were decisions and recommendations based on the analyses? If so, how?
- Were gender concerns reflected in the criteria to select beneficiaries? If so, how?
- How gender-balanced was the composition of the project management team, the Steering Committee, experts and consultants and the beneficiaries?
- If the project/project promotes gender equality and/or women's empowerment, did the project/project monitor, assess and report on its gender related objective/s?

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B.3. Results

- Have women and men benefited equally from the project's interventions? Do the results affect women and men differently? If so, why and how? How are the results likely to affect gender relations (e.g., division of labour, decision making authority)?
- In the case of a project/project with gender related objective/s, to what extent has the project/project achieved the objective/s? To what extent has the project/project reduced gender disparities and enhanced women's empowerment?