UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Project number:	170052
Project title:	Support to the Government of Ethiopia on the improvement of its strategy and policy for the development of technology-based chemical industry
Thematic area code:	GC42 Industrial Policy Advice
Starting date:	1st Jun 2017
Duration:	12 months (Jun 2017 ~ May 2018)
Project site:	Vienna / Addis Ababa
Counterpart:	Ministry of Trade, Industry and Energy (MOTIE) of the Republic of Korea / Korea Research Institute of Chemical Technology (KRICT)
Executing agency/ Cooperating agency:	UNIDO
Project Inputs:	
	MOTIE inputs *USD 75,848*
	KRICT inputs *USD 82,115.29*
	Grand Total: USD 157,963.29

Brief description:

The industrial development strategy of Ethiopia is explained in two ways; the export promotion strategy for the labor intensive light industries and import substitution strategy for new priority sectors such as steel, chemicals, pharmaceuticals, petro-chemicals, packaging, ICT, electronics and biotechnology industries.

The chemical industry, which belongs to the new sectors, is increasing in importance in Ethiopia as a core industry to provide inputs for other domestic industries like textile, leather, food and agriculture, and accordingly strengthen inter-industrial linkages. However, despite some notable progress made until now, the chemical sector in Ethiopia is still in an early stage, suffering from lack of finance, shortage of skilled labor force and out of date technology.

Ethiopia has formulated its development strategy and policy for the chemical sector along with the development objectives and goals. It seems, however, not to be at an implementable level and lacks clear linkages between objectives, strategies and projects. The current Chemical Technology Roadmap also just lists the necessary technologies without any clear priority and timeline.

It is regarded by the Government that Ethiopia's chemical industry needs to be successfully transformed towards technology-based development to meet the demands from the rapidly growing economy and to compete with foreign products. In this sense, it is required to improve their current development strategy and policy in a more feasible and future-oriented way.

This project was formulated to contribute to the development of technology-oriented chemical industry of Ethiopia by reviewing their current strategies and policies and elaborating them to the sophisticated and implementable level, while securing clear linkages between objectives, strategies and policies. At the same time, the current Chemical Technology Roadmap also needs to be improved in terms of ensuring clarity in the order of priority and time frame. The project encompasses: 1) research on the current development status and policy framework in Ethiopia's chemical industry, and on sector selection and prioritization within the chemical sector; 2) delivery of foreign development experience and R&D policies; 3) elaboration of the current development strategy and policy in the chemical sector with a view that also incorporates potential environmental impacts of the chemical industry; and 4) improvement of the current Chemical Technology Roadmap.

A. CONTEXT AND BACKGROUND

Ethiopia has experienced more than a decade of high economic growth with an average of 8.1% growth rate in GDP per capita and an average of 11% economic growth rate over the last decade, taking the country into one of the top five countries in the world in terms of GDP growth rate. Ethiopia is now in the 2nd year of the 2nd Growth and Transformation Plan (GTP II, 2015/16-2019/20).

As part of the GTP II and GTP III (2020/21-2024/25), the Government of Ethiopia has formulated the Industrial Development Strategy Plan (IDSP) directed to guide interventions in the industrial sector over a 13-year period (2013-2025), which defines strategies, programs and projects for the implementation of the Industrial Development Roadmap (IDR) that provides a strategic framework for industrial development for the next 10 years. The overall goal of the IDSP is to bring about accelerated economic transformation in the country through enhancing industrialization, raising the share of the industrial sector in GDP from the current 13% to 27% by 2025 and the GDP share of the manufacturing sector from the current 4% to 17% by 2025 with the increase of the output share in the industrial sector from the current 33% to 63% by 2025. In 2015/2016, i.e. the 1st year of the GTP II, the GDP share of the industrial sector was 16.5% and manufacturing share is estimated to be around 5.2% of GDP. The industrial sector and manufacturing industry are expected to lead and underpin inclusive and sustainable economic growth as the country heads towards middle-income status by the conclusion of GTP III. The Government of Ethiopia identified five strategic objectives to achieve the above targets, two of which are closely linked to the development of specific manufacturing sectors; 1) further expanding and developing the existing manufacturing industry priority sectors and 2) diversifying the manufacturing industry to new sectors. In order to address the above mentioned strategic objectives effectively, the respective programs were designed by the Government of Ethiopia; Priority Sectors Expansion Program and New Manufacturing Sectors Development Program.

In line with this, the development directions of manufacturing in Ethiopia are explained in two ways; the export promotion strategy and import substitution strategy. While the former covers the already existing labor intensive light industries such as agro-processing, textile and garments, leather and leather products, footwear and tobacco industries, the latter mostly supports the new priority fields recently identified such as steel, chemicals, pharmaceuticals, petro-chemicals, packaging, ICT, electronics and biotechnology industries.

According to the IDSP, it is highlighted that the growth of industrial sector is very crucial to providing a more robust economic base to the Ethiopian economy, and particularly, emphasized to pursue technology-based development of the new industries. It is expected that those new sectors will continue to evolve to trigger a change in the structure of the manufacturing industry and create a bond with labor intensive light industries in Ethiopia, while the development of export oriented and labor intensive light industries will still be the main focus of the coming planning period. As part of the new sectors aforementioned, the chemical industry is recognized as one of the core industries in Ethiopia, which the Government wishes to develop to the level to sufficiently meet the demands from the rapidly growing Ethiopian economy. The willingness of the Government to provide strong supports for the development of chemical industry is well highlighted from the GTP I (2010-2015). According to the Manufacturing Industry's 2nd Growth and Transformation Plan (GTP II) produced by the Ministry of Industry of Ethiopia, the chemical sector in Ethiopia encompasses the sub-sectors such as 1) basic chemical products (caustic soda, chlorine,

HCL, sodium hypo chloride, ethyl dichloro ethane, calcium carbide, calcium hydroxide and soda ash), 2) soap, detergent, paint and related products, 3) plastics and rubber, 4) fertilizers and 5) pulp, paper and packaging, and furthermore it attempts to diversify into other sub-sectors such as petro-chemicals, special chemicals (construction chemicals, print and print mixtures) and alcohol based chemicals as well.

Although admitting there have been some notable progress until now including the establishment of Chemical and Construction Industry Development Institute and the implementation of capacity building program to make the institute capable and effective, and the design of related Technology Roadmaps in Chemical, Fertilizer and Petroleum sector, the chemical sector in Ethiopia is still in an early stage. Due to the shortage in domestic supply, most of the chemical products are imported from abroad for domestic manufacturing processes and direct consumption despite the time-consuming import procedures and high transportation costs. The figures released by the Ministry of Industry of Ethiopia show that in 2013, 49.5% of raw materials used in basic chemicals industry were imported.

During the course in the GTP I, much attention was given to using local resources for agriculture as well as to export-focused products, chemical plants setup including PVC productions plants as plastic products substitute, stepping up the paper and pulp sector and locally producing fertilizers, etc. However, the development goals set in the GTP I period have not been achieved mainly due to the failure to induce the huge investments needed. Specifically, it was planned to produce 1.5 million tons of urea fertilizer, however only a plant that produces 300 thousand ton of urea fertilizer out of coal is under construction. In plastic sector, the current more than 150 plastic factories produce very limited variety of items. Further, the amount of production is insufficient making the country spend 3.35 billion Birr (USD 148 million) annually to import plastic products. In paper and pulp industry, currently there are two new, all in all four companies that are engaged in paper production and there are not any factories producing pulp. Since the paper production is very small, a variety of papers, paper products and pulp are being imported. Moreover, although they use imported pulp raw materials, the quality of the locally produced papers is extremely low in comparison to the imported ones. It was assessed by the Government that the main obstacles existing in the chemical industry are lack of finance, shortage of skilled labor force and out of date technology.

It is envisaged that the Government will make more efforts to develop the chemical industry during the GTP II period. Aiming at supplying raw materials to substitute imported resources and accordingly, supporting the local production of chemicals for the domestic textile, leather, food and agriculture industries in terms of strengthening the linkages between labor intensive light industries and chemical industry, the Manufacturing Industry's 2nd Growth and Transformation Plan (GTP II) identified objectives, goals, strategies and projects for the chemical sector as follows:

A. **Objectives:** 1) Setup of chemical plants that produce the basic raw materials for industries that use locally produced raw materials and are export-oriented; 2) Fertilizer production using local raw materials and meeting domestic demands; 3) Soap and detergent production to completely substitute import; 4) Development of the paper and pulp industry to be completely self-sufficient; 5) Production of the plastic product substitutes; 6) Competence in producing every construction tools and exporting

B. Goals: Under the above objectives, the Government intends to reach 25.67 million tons of basic raw materials production, 1% of GDP share and USD 101.3 million of construction chemicals export in the chemical industry by the end of the GTP II as shown in the below tables.

Table 1. Goal of GDP share of Chemical Industry during GTP II period (%)

Year	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020
Manufacturing	5.2	5.5	6	7	8
Chemical	0.7	0.8	0.8	0.8	1

Source: Manufacturing Industry's 2nd Growth and Transformation Plan (Ministry of Industry of Ethiopia)

Table 2. Goal of Export of Chemical Industry during GTP II period (USD million)

Year	2013/ 2014	2014/ 2015	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020
Manufacturing	398	409	865	1,314	1,801	2,535	3,557
Chemical (construction inputs)	11	18	28	50	63	81	101

Source: Manufacturing Industry's 2nd Growth and Transformation Plan (Ministry of Industry of Ethiopia)

C. Execution Strategies: 1) Sponsorship and outreach programs to get finance for the plans at hand; 2) Upgrading project execution competence and investment attraction; 3) Advancement in technology to improve production quality; 4) Supplying sufficient labor force; 5) Reducing production cost by using cheap alternative power sources such as coal; 6) Strengthening the sector's production collaboration; 7) Establishing investment-friendly circumstances and business environment

D. Projects:

1) Institute's building construction, laboratory equipment and pilot plant set up project: Construction of the building; Food inspection and security protocol center/ laboratory founding project; Workshops and pilot plants set up
2) Capacity building project: Twining project
3) Advancement as well as expansion of production and productivity project: Kaizen project (initiative to improve quality, productivity and competitiveness); Industrial benchmarking (company upgrading project); Researching project
4) Industry unit win project
5) Investment tools and marketing potential upgrading project
6) Environment protection and energy utilization advancement project: Local coal factory research and development project
7) Roadmaps and strategic planning project

In addition to these projects, it is envisaged as well that petro-chemical industry development sub-program will be drafted as one of the programs for new manufacturing sectors development in the GTP II, which ultimately aims to produce inputs domestically for the manufacturing industry and agriculture sectors, fully capitalizing on great natural potential in petro-chemical raw materials such as Potassium and Coal.

It can be safely said that Ethiopia has relatively well-defined strategy and projects to support the chemical sector's development for the next five years. On the other hand, given the

weak competitiveness resulting from low technology and lack of skilled workforce, it is also recognized by the Government of Ethiopia that mapping out more relevant, concrete and feasible strategies and policies particularly, in collaboration with international communities is urgently needed to drive the technology-based chemical industry. Despite the fact that Ethiopia regards its own formulated strategy and policy as one of the development opportunities, it seems that the current strategies and projects have not matured yet to the implementable level. Only the titles of the projects are listed without any specific action plans. Also, not all the execution strategies are clearly linked to the projects planned. Some strategies seem to have no specific projects. Moreover, while the objectives are presented by sub-sector within the chemical industry, the strategies and projects are just enumerated without any clear linkage to each sub-sector addressed in the objectives. As for the Chemical Technology Roadmap produced by the Government of Ethiopia, it just lists the necessary technologies without any clear priority and timeline. Finally, it is not clear whether assessment of chemical technologies with respect to their potential environmental impacts has been undertaken.

Under this context, this project was formulated to contribute to the development of the technology-based chemical industry of Ethiopia by reviewing their current strategies and policies in the sector and elaborating them to the sophisticated and implementable level, while securing more clear linkages between objectives, strategies and policies. At the same time, the current Chemical Technology Roadmap also needs to be improved in terms of ensuring clarity in the order of priority and time frame.

In short, Ethiopia's chemical industry needs to be successfully transformed towards technology-oriented development to meet the domestic demands and compete with the foreign products, and in this sense, it is required to improve their current development strategy and policy in a more feasible and future-oriented way, including with measures to safeguard the environment. This is the basic background to the formulation of this project.

B. REASONS FOR UNIDO ASSISTANCE

The United Nations post-2015 development agenda reinforces the international community's commitment to poverty eradication. One of the major items on this agenda is Inclusive and Sustainable Industrial Development (ISID). The 2030 Agenda for Sustainable Development adopted as goal 9 "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation", in which UNIDO takes the lead. This confirms the provisions of the Lima Declaration and the relevance of ISID for the new global development architecture. ISID is credited with promoting value addition, realizing productivity gains and returns to scale, creating jobs and income, enhancing international competitiveness and trade, building efficient and effective productive capacity, supporting economic diversification, and building green industries. This structural transformation unleashes an enormous development potential as it features close linkages to infrastructure development, innovation and the efficient and sustainable use of resources, as well as to a wider range of other sustainable development priorities.

In this endeavour, UNIDO provides a variety of upstream functions such as industrial intelligence, advisory services and capacity building that supports the policy making process for ISID in its Member States. In particular, it is notable that recently UNIDO (PPS/PRS) has been increasingly placing an emphasis on developing projects which aim at reinforcing the

industrial development strategy and policy for the Member States beyond the delivery of industrial intelligence. To name a few examples, UNIDO has been actively involved in the formulation and implementation of industrial policy projects around the world, such as the "Support to the Government of Myanmar in the preparation of its industrial strategy and policy", "Support to the Government of Viet Nam in the formulation of sub-sector industrial strategy and of the related implementation policy through institutional capacity building" and "Support to the Government of Cuba for the review and development of its industrial strategy and policy". UNIDO's intervention in these projects is highly appreciated by the respective beneficiary countries. The proposed project for Ethiopia is also similar to the abovementioned projects in terms of its nature.

In order to operationalize its partnership approach, UNIDO developed a new type of assistance package for its Member States: Programme for Country Partnership (PCP). The PCP is not a static template, but a custom-built partnership formula with each beneficiary country maintaining ownership of the complete process by defining its needs and required support, and finally ensuring the success of its delivery. Each PCP is aligned with the national industrialization priorities and development plans of the beneficiary country. At the same time, the selected countries need to be fully aligned with ISID objectives and demonstrate full ownership of the Programme.

Ethiopia has been selected as a pilot partner country for the application of ISID assistance through PCP. UNIDO has been supporting Ethiopia to reinforce its industrial sector as a driving force for the sustainable economic growth, as the Government of Ethiopia pursues its goal to elevate the country to middle-income status within a decade. The focus for Ethiopia in the PCP is characterized by two directions of intervention: Sector-specific interventions focused on agro-food processing, textile and apparel, and leather and leather products; and Cross-cutting interventions covering capacity building, environment and energy, investment and industrial zones, and trade facilitation. UNIDO supports this process through the formulation of technical cooperation projects which target the following three thematic areas: Creating shared prosperity; Advancing economic competitiveness; and Safeguarding the environment. Currently, there are 11 ongoing projects for Creating shared prosperity such as "Improving the sustainability and inclusiveness of the Ethiopian coffee value chain", "Technical assistance project for the up-grading of the Ethiopian leather and leather products", "Support the African Union Commission in its efforts to promote inclusive and sustainable industrial development", "Technical support for the implementation of an integrated agro-industrial park and "Upgrading the livestock value chain", and 3 projects for Advancing economic competitiveness like "Integrated industrial upgrading and enterprise development approach", "First international agro-industry investment forum in Ethiopia" and "Engineering design work for integrated agro-industrial parks and rural transformation centers", and 4 projects for Safeguarding the environment such as "Investment promotion on environmentally sound management of electrical and electronic waste", "HCFC phase-out management plan" and "Support the local manufacturing of energy-efficient MITAD stoves".

As observed above, the ongoing projects for sector-specific interventions in Ethiopia are mainly for agro-based industries, and leather and leather products. The proposed project is not directly included in the PCP framework for Ethiopia, but will move beyond the initial selection of growth sectors by the PCP framework. However, in addition to being an important component to assist the Government of Ethiopia in achieving the strategic objective itself of New Manufacturing Sectors Development as an intervention in the

upstream areas, this project will also indirectly contribute to the ongoing interventions under the PCP framework because the chemical sector's development will result in the enhancement of the competitiveness of the industry sectors selected in the PCP by sufficiently supplying raw materials and inputs with quality for them. This point is already mentioned in the Chapter A. Consequently, this will also lead to supporting the realization of another strategic objective of Existing Priority Sectors Expansion of the Government of Ethiopia which is currently being pursued by UNIDO's PCP framework for Ethiopia.

This project will be implemented based on the long standing experience and expertise of UNIDO in the technical assistances provided to Ethiopia as well as in the similar industrial policy projects. The project has been formulated based on the explicit request for assistance from CCIIDI (Chemical and Construction Inputs Industry Development Institute) of the Ministry of Industry of Ethiopia in Dec 2016 and willingness for the financial contribution from the Ministry of Trade, Industry and Energy (MOTIE) of the Republic of Korea and the Korea Research Institute of Chemical Technology (KRICT).

C. THE PROJECT

C.1. Objective of the project

The objective of this project is to contribute to transforming the chemical industry of Ethiopia towards technology-based development in a sustainable manner and eventually to boosting its competitiveness through the improvement of the development strategy and related policy.

C.2. UNIDO approach

The above objective is to be addressed by capitalizing upon UNIDO's experience and expertise in the provision of strategic advice, process facilitation and capacity development for national industrial development in developing countries. On this basis, UNIDO will assist the country in the following activities under one Output. In principle, these activities will be conducted sequentially from Activity 1.1:

(Output 1) Supporting the improvement of the development strategy and policy for Ethiopia's technology-based chemical industry

As mentioned in Chapter A, the focus of the project will be on assisting the Government of Ethiopia in further improving and elaborating their development strategy and policy as well as R&D Roadmap with the aim of fostering the technology-based chemical industry. To this end, related researches, lectures and provision of strategic advice will be carried out in the project.

1.1 Conduct research on the current development status and policy framework in Ethiopia's chemical industry including its external cooperation networks with other African countries

First, research will be conducted to examine the current development status and policy framework in Ethiopia's chemical industry in great detail, which will be a base for the following Activity 1.4. This work will be a combination of primary, secondary data collection,

relevant documents search and interviews with the government officials and other stakeholders in Ethiopia, etc.

UNIDO will try to extensively identify the key features and bottlenecks existing in the Ethiopia's chemical industry, and major performances and issues existing in the current policy framework for Ethiopia's chemical industry. Given the significant impact of chemical industry on the environment and energy consumption, this research will also look into the existing environmental and resource efficiency issues caused by chemical sector in the country. At the same time, in terms of exploring the possibility of future international collaboration within the region, Ethiopia's external cooperation networks with other African countries will be also examined.

Furthermore, the cross-cutting industrial policies being applied over the whole industry sector will be also studied as an effort to avoid the possible conflicts or inconsistency in the course of developing the policy for the chemical sector in Activity 1.4.

1.2 Conduct research on sector selection and prioritization in Ethiopia's chemical industry

Given the limited resources and capacity facing Ethiopia, it is encouraged to select the priority sub-sectors within the chemical industry. Even though Ethiopia has identified the potential items in its development objectives aforementioned, it is important to have evidence-based grounds for the selection.

In this sense, an objective research will be carried out to propose the priority sub-sectors out of the items which the country is currently producing or planning to develop. On top of the view and practical inputs from the Ethiopia's stakeholders, this task will be done through the application of some objective tools such as SWOT analysis and/or UNIDO's related methodology, for example SCIDA (Structural Change and Industrial Diagnostic Approach), which is, in short, a tool to identify potential sectors for supporting prioritized development based on production (value-added), employment and trade capacity in a country. The usefulness of SCIDA in this project would depend on the availability and quality of Ethiopia's data needed. UNIDO will try and see if SCIDA can provide some analytical inputs for the sector selection. Potential environmental impacts of priority sub-sectors will be factored into the research and analyses on priority sub-sector identification.

1.3 Deliver the development experience and related R&D policies on chemical industry in other economies to the needs of Ethiopia

UNIDO will deliver the development experience and related policies especially including R&D policy on chemical industry in other economies (e.g. Republic of Korea) through documentations and lectures. The specific subjects to be addressed might be suggested by Ethiopia in the implementation process. This activity will give useful insights and practical recommendations to the Ethiopia's policymakers in their policy-making and implementing process.

1.4 Review and improve the development strategy for technology-based chemical industry of Ethiopia and elaborate industrial policy for the implementation of the development strategy

Based on the performances achieved in the above activities, UNIDO will assist in the

improvement and elaboration of the current development strategy and policy in the chemical industry.

Specifically, this task will be done with two focuses in mind. First, on a short term basis, UNIDO will assist Ethiopia in achieving its objectives and goals set in the chemical industry for the GTP II period (2015-2020) by providing more sophisticated and feasible strategies, policies and action plans. Here, UNIDO's recommendation will be presented in a tailor-made way by sub-sector identified in Activity 1.2 to the greatest extent possible to ensure clear linkages between objectives, strategies and policies. At the same time, on a mid and long term basis, UNIDO's intervention will be directed to provide strategic development directions covering up to 2025, when Ethiopia hopes to become a middle income country.

As an essential element to be addressed in the development strategy and policy, based on the research conducted in Activity 1.1, the project will duly take into consideration the degree of probable pollution for air, soil and water as well as CO_2 emissions by chemical sector in the country, and incorporate environmental and resource efficiency aspects into the final outcomes, especially by proposing the most suitable mitigating strategy and policy measures in Ethiopia's current context.

In view of ensuring successfully implementation of this activity, the process facilitation activities such as workshops, dialogues, etc. could be organized to bring the stakeholders in public and private sector on board and collect inputs/feedbacks from them in the process.

1.5 Improve "National R&D Roadmap" for the development of technology-based chemical industry of Ethiopia

As this project pursues the technology-oriented development in the chemical industry, needless to say, it is an integral part to clearly design "National R&D Roadmap" for the sector. UNIDO will improve the current Chemical Technology Roadmap by taking into careful consideration the prioritization and diversification of the products portfolio within the chemical sector as well as the clarification of R&D time frame for technologies listed in the Roadmap, including their potential environmental impacts. In addition, in order to be in line with Activity 1.4, the new Roadmap will be designed to cover a span of up to 2025 beyond the GTP II. Like Activity 1.4, the necessary process facilitation activities could be carried out here as well.

Gender mainstreaming strategy

The project will take into consideration the gender aspects to the extent possible over the whole implementation process. The data released by the Ministry of Industry of Ethiopia shows that women account for 36.8% out of the total labour force employed in the chemical sector in Ethiopia, which is lower than that of textile industry (56.2%), pharmaceutical industry (42.4%) and leather and leather products industry (38.0%), while higher than that of steel and engineering industry (17.8%), food and drinks industry (21.6%).

In the implementation process, it will be considered how the gender aspects could be reflected in the project activities and outcomes. Specifically, when conducting a research on the current development status and policy framework, any gender disparities in this sector based on sex-disaggregated data and qualitative information will be properly taken into

consideration. On this basis, if necessary and applicable, gender related elements will be duly reflected in elaborating development strategy and policy as well as improving R&D Roadmap.

C.3. RBM code and thematic area

RBM code: GC4 Cross-Cutting Services
Thematic Area code: GC42 Industrial Policy Advice

C.4. Expected Outcomes

The expected outcomes are the suggested development strategy and policy framework as well as the newly designed "National R&D Roadmap" for fostering technology-based chemical industry of Ethiopia.

C.5. Outputs and activities

Activities	Responsibility
Output 1: Supporting the improvement of the development strategy and policy for Ethiopia's technology-based chemical industry	
1.1 Conduct a research on the current development status and policy framework in Ethiopia's chemical industry including its external cooperation networks with other African countries	PPS/PRS/RPA
1.2 Conduct a research on sector selection and prioritization in Ethiopia's chemical industry, including potential environmental impacts	PPS/PRS/RPA
1.3 Deliver the development experience and related R&D policies on chemical industry in other economies to the needs of Ethiopia	PPS/PRS/RPA
1.4 Review and improve development strategy for technology-based chemical industry of Ethiopia and elaborate industrial policy for the implementation of the development strategy	PPS/PRS/RPA
1.5 Improve "National R&D Roadmap" for the development of technology-based chemical industry of Ethiopia	PPS/PRS/RPA

C.6. Timeline of the activities

Output and Activities	2017			2018	
	2Q	3Q	4Q	1Q	2Q
1. Supporting the improvement of the development strategy and policy for Ethiopia's technology-based chemical industry					
1.1. Conduct a research on the current development status and policy framework in Ethiopia's chemical industry including its external cooperation networks with other African countries					
1.2. Conduct a research on sector selection and prioritization in Ethiopia's chemical					

	industry, including potential environmental impacts					
1.3.	Deliver the development experience and related R&D policies on chemical industry in other economies to the needs of Ethiopia					
1.4.	Review and improve development strategy for technology-based chemical industry of Ethiopia and elaborate industrial policy for the implementation of the development strategy					
1.5.	Improve "National R&D Roadmap" for the development of technology-based chemical industry of Ethiopia					

C.7. Risks

The main risks of the project relate to the buy-in and serious commitment that can be achieved on the side of the Government of Ethiopia, e.g. with regard to:

- Interest and support from the leadership at the Ministry of Industry of Ethiopia for the project;
- Identification of the precise needs from the Ethiopian counterparts;
- Active involvement of the relevant department(s) within MoI and other institutions (public as well as private sectors) during the whole implementation process;
- Conducting successful process facilitation activities such as workshops, dialogues, etc. to bring the stakeholders on board and collect inputs/feedbacks from them;
- Well-working coordination mechanism among related institutions during the project implementation;
- Existence and collection of reliable data and qualitative information on the chemical industry of Ethiopia;

In sum, the successful implementation of the project rests on the assumption that it will be demand-driven rather than supply-driven, and that the Ethiopian counterparts will take an active role in shaping up the implementation, while maintaining the overarching objectives as stated in this document and in alignment with the national industrial development objectives.

UNIDO has managed to prevent these risks from derailing projects of a similar nature in other countries and is hence aware of the required measures to take (e.g. strategic dialogue with institutions to enable project to be successful, official integration of units created during the project into the organization of the institutions, etc.). Based on the previous experiences that UNIDO has accumulated, UNIDO will try to make sure that possible risks including but not limited to the above ones are identified, especially taking into consideration the unique context of the Ethiopian side, if any, and proper mitigation measures are taken accordingly by UNIDO itself as well as the counterparts from the outset of the project.

D. INPUTS

The general division of labour is such that UNIDO's focus is, to the extent possible, on technical support (such as the elaboration of industrial policy for chemical industry, including potential environmental impacts and mitigating measures for selected pathways), and less so on organizational tasks. Counterparts should provide support in the form of the organization of events and coordination of activities between stakeholders. Ethiopia should ensure best possible take-up of the initiative at a national level.

D.1. Project management

The project will be managed and implemented by UNIDO HQs, while overall technical management and coordination of the project implementation will be ensured by a project team to be composed of international and national experts (D.3 below). UNIDO will closely cooperate with national institutions including the Ministry of Industry of Ethiopia, which will act as the main national counterpart. The main roles of the Ministry are indicated in D.2 below. If necessary for effective project operation, a Project Coordinating Committee comprised of related officials of the counterpart institutions and UNIDO project manager will be able to be established, which will be co-chaired by Director General of CCIDI from the Ministry of Industry and UNIDO project manager. The committee will review the progress and advise on the future work plan.

D.2. Counterpart inputs (and responsibilities)

The general inputs and responsibilities of the counterpart are highlighted below.

1) **Ministry of Industry**

- Appointing a focal point within CCIIDI (Chemical and Construction Inputs Industry Development Institute) to liaise with UNIDO for the project implementation;
- Providing data and information on the chemical industry of Ethiopia;
- Providing management support and in-kind contribution to the extent possible (e.g. logistic supports for project-related meetings and events (free venue and so on));
- Supporting or arranging necessary dialogues/meetings between UNIDO project team and other stakeholders in Ethiopia's chemical sector;
- Providing other necessary inputs requested by UNIDO or the project team;

D.3. UNIDO inputs

1) **International staff:**

The project will recruit international experts with demonstrated expertise and experience in delivering industrial policy consultancy, including knowledge in environmental issues, especially for chemical industries. They will act as technical consultants for the formulation of development strategy and policy as well as R&D Roadmap for the chemical industry of Ethiopia. Also, UNIDO staff members from PPS/PRS/RPA will be relied upon for the project activities. In addition, relevant PTC Branches could be also roped in for the delivery of the project contents.

2) National staff:

If needed, a national project coordinator to contribute to the project implementation could be identified through consultation with Ethiopia. He/She will provide inputs and feedbacks to the project related works and coordinate activities as well as act as a liaison between UNIDO and Ethiopia. Also, national experts who have sufficient knowledge and experience in Ethiopia's chemical sector will be able to be recruited for contributions to grasping local contexts in project activities including the researches planned.

3) Subcontract:

During the inception phase, the possibility of concluding a subcontract with international or national institution/university will be explored in terms of considering the nature of this project that requires close linkage and consistency among the respective activities and securing efficiency over the whole project implementation. In case a sub-contractor is successfully identified, the deliverables to be produced by it and costs of production will be defined in detail. It is notable that the KRICT, one of the donors of this project, concluded a co-operation MoU with a local university - the Addis Ababa Institute of Technology (AAIT) - and has been maintaining close partnership with it to enhance the competitiveness of the chemical industry of Ethiopia. In this context, the AAIT might be considered as a potential sub-contractor.

4) Classroom lecture:

UNIDO will cover the costs for lectures required to share foreign development experiences and policies in case they are delivered. As mentioned in D.2 above, it is expected that Ethiopia provides in-kind contribution to the extent possible. In addition to this being a sign of ownership of the initiative from the counterpart, the saved budget can then be used for UNIDO to provide more technical support activities such as expert advice.

5) Equipment and supplies:

- Production and printing of necessary documents
- Purchase of access rights/software for usage of key data-bases (in case of need)

All procurement above will be undertaken in full adherence to the UNIDO procurement rules and regulations.

E. BUDGET

The total budget is around USD 157,963, which will be co-funded by KRICT and the Ministry of Industry, Trade and Energy (MOTIE) of the Republic of Korea. The full amount will be managed by UNIDO. Below a breakdown of the budget per output can be found:

Output	2017	2018	Total
Output 1: Supporting the improvement of the development strategy and policy for Ethiopia's technology-based chemical industry			
BL 11-00	30,000	20,000	50,000
BL 16-00	5,000	5,000	10,000
BL 17-00	10,000	5,000	15,000

BL 21-00	30,000	20,000	50,000
BL 35-00	-	5,000	5,000
BL 51-00	4,646	5,144.29	9,790.29
Total Cost of Activities (A)	**79,646**	**60,144.29**	**139,790.29**
Project Support Cost (13%) (B)	**10,354**	**7,819**	**18,173**
Total (A+B)	**90,000**	**67,963.29**	**157,963.29**

*****11-00 International experts / 15-00 Project travel / 16-00 Travel of UNIDO staff / 17-00 National Experts/Consultants / 21-OO Subcontract / 30-00 Training / 35-00 Conference & seminar / 45-00 Equipment / 51-00 Miscellaneous

F. MONITORING, REPORTING AND EVALUATION

UNIDO will be responsible for overall project monitoring and evaluation and reporting on the results to the donor. The monitoring targets will be based on the indicators developed in the log frame. According to the agreement with the donor, UNIDO will submit mid-term progress report and final project report along with financial report to the donor.

Type of Report	Expected Delivery Date
Mid-term Progress Report	6 months from project launch
Final Report (along with financial report)	Within 6 months from the completion of the project implementation

According to UNIDO's project evaluation criteria, self-evaluation on the following four categories will be conducted to review if the project has been managed in the proper directions: (i) relevance, (ii) efficiency, (iii) effectiveness, and (iv) sustainability. Reliability of comprehensive evaluation outcome is secured by adequately combining quantitative evaluation and qualitative evaluation. Sex-disaggregated data will be also collected to track gender equality results and assess gender impacts to the extent possible.

The final outcomes of the project will be documented and disseminated for policy dialogue and formulation in the chemical industry of Ethiopia after the UNIDO's intervention and for further reference in UNIDO's similar projects for other developing countries in the future.

G. PRIOR OBLIGATIONS AND PREREQUISITES

There are no special prior obligations and prerequisites. Timely delivery of the inputs detailed under section D.2 above is required to minimize the risks related to the delivery of the expected outcomes. The project counterpart confirms that they will provide in-kind and other contributions as outlined in section D.2.

H. LEGAL CONTEXT

The Government of the Federal Democratic Republic of Ethiopia agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed on 26 February 1981 and entered into force on 5 November 1984.

Logical Framework

Intervention logic	Objectively verifiable indicators of achievement	Sources of verification	Assumptions
Overall Objective			
The objective of this project is to contribute to transforming the chemical industry of Ethiopia towards technology-based development and eventually to boosting its competitiveness through the improvement of the development strategy and related policy.	•Strengthened competitiveness of chemical industry of Ethiopia can be verified by positive changes in the related indicators such as production, GDP share and export.	•National statistics	
Outcome			
The expected outcomes are the suggested development strategy and policy framework as well as the newly designed "National R&D Roadmap" for fostering technology-based chemical industry of Ethiopia.	•The responsible authority (Ministry of Industry) in Ethiopia manages to formulate its own strategy and policy for the development of technology-based chemical industry.	•Monitoring	•Ethiopia actively adopts and implements policy recommendations resulting from the project
Outputs			
1. Supporting the improvement of the development strategy and policy for Ethiopia's technology-based chemical industry 1.1 Conduct a research on the current development status and policy framework in Ethiopia's chemical industry including its external cooperation networks with other African countries	•Key features and bottlenecks existing in the current development status of Ethiopia's chemical industry (identifying any gender disparities if applicable) •Major performances and issues existing in the current policy framework for Ethiopia's chemical industry (identifying any gender disparities if applicable)	•Research report	

1.2 Conduct a research on sector selection and prioritization in Ethiopia's chemical industry, including potential environmental impacts	•Outcome (for example, number of sub-sectors selected) of sector selection and prioritization, also taking into consideration potential environmental impacts	•Research report	
1.3 Deliver the development experience and related R&D policies on chemical industry in other economies to the needs of Ethiopia	•Documentation of the development experience and related R&D policies on chemical industry in other economies •Number of lectures delivered and participants (ensuring gender balance to the extent possible, target: 40% of female trained) •Lessons learned from lectures •Proportion of participants having proper understanding of foreign best practices (target: 50%)	•Related documents •List of lectures and participants •Result reports •Survey	
1.4 Review and improve development strategy for technology-based chemical industry of Ethiopia and elaborate industrial policy for the implementation of the development strategy	•Concrete development strategies and policy instruments presented including the most suitable mitigating strategy and policy measures for any potential environmental impacts	•Document on the recommendations of development strategy and policy instruments	
1.5 Improve "National R&D Roadmap" for the development of technology-based chemical industry of Ethiopia	•Technologies identified in the Roadmap, taking into consideration their potential environmental impacts and costs of mitigating measures in case they are going to have adverse impacts on the environment	•Document on the R&D Roadmap	