**Industry Sectoral Assessment in**

**Mosul**

**By**

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**List of Acronyms**

UNDP [United Nations Development Program](https://www.undp.org/)

FFS Funding Facility for Stabilization

ISIS Islamic State of Iraq and Syria

ISA Industry sector assessment

IOM International Migration Organization

IFC International Finance Corporation

**1. Background**

Between 2017 and 2021, UNDP’s Funding Facility for Stabilization (FFS) has successfully completed more than 400 infrastructure projects in Mosul in all the major sectors, including health, electricity, water, housing, and education. In the past, project priorities were chosen based on discussions with the end-user (line directorates and Nineveh governorate) and based on the urgency of interventions. However, both the national context and the FFS have changed. While enormous needs remain, Mosul is largely ‘stable’, many basic services have been restored and most IDPs have returned; and the FFS is becoming more focused on sustainable projects and capacity building. This requires a different approach going forward. The problem is that there is very little information available, from the government, research institutes or international agencies (World Bank etc.) on how the various sectors the FFS has invested in currently function, who they reach and where the ‘gaps’ are.

UNDP/FFS has been requested to outline new project priorities for 2022-2023. To do so, it is imperative to undertake sectoral studies in seven areas where the FFS has a proven to have a clear added advantage: electricity, health, waste management, education, housing/municipality, productive industry, and police/justice.

**2. Executive Summary**

**2.1 Purpose and objective of industry sectoral assessment (ISA)**

The purpose of the consultancy is to draft a sectoral assessment in the field of industry in Mosul. The study will do the following:

1. Provide an overview of the current functioning of the sector, looking at particularly the type of works FFS implemented, impact on beneficiaries and existing ‘gaps.’
2. Identify the priorities of the sector’s line directorate(s), their reasoning, and their operational and maintenance capacity.
3. Provide a project list for the sector, with potential priorities for UNDP/FFS, including justification and (rough) costing. This will be UNDP’s basis for future project selection.

**2.2 Methodology of industry sector assessment (ISA)**

In order to best address the objectives, the consultant proposed a mixed methodological approach including:

* Conduct interviews with government actors, factory management and technical staff and workers.
* Collect any relevant studies and assessments into the sector done by government actors, universities, think tanks, specialized agencies, and others.
* Collect and analyze the data above.
* Draft the sectoral study and the project list for approval.
* Reporting and publishing the study.

The industry assessment conducts on governmental factories inside and outside Mosul district. Table 1 below represents the names of these factories and their locations.

**Table 1. Names of factories and the locations**

|  |  |  |  |
| --- | --- | --- | --- |
| **No**. | **Name of factory** | **MGRS coordinates** | **Note** |
| **1** | Dairy factory | 36° 40' 19.94"N, 43° 06' 44.65"E |  |
| **2** | Ethyl-Alcohol factory | 36° 19' 01.59"N, 43° 07' 06.28"E |  |
| **3** | Kokjali asphalt factory | 36° 21' 08.38"N, 43° 15' 53.25"E |  |
| **4** | Sugar factory | 36° 19' 01.59"N, 43° 07' 06.28"E |  |
| **5** | Intravenous solutions factory | 36° 34' 01.68"N, 43° 20' 02.29"E |  |
| **6** | Badosh-Extension cement factory | 36° 26' 39.06"N, 42° 55' 53.5"E |  |
| **7** | Spinning and textile factory | 36° 19' 05.39"N 43° 07' 09.86"E |  |
| **8** | Bandage and medical cotton factory | 36° 18' 57.40"N, 43° 06' 53.94"E |  |
| **9** | Nineveh drugs factory | 36° 28' 48.0"N,43° 04' 12.0"E |  |
| **10** | Vocational Training Center (VTC) | This study was conducted by education assessment | |

**3. Questions for the study**

Based on the tasks above, the following are some of the key questions that are answered in the industry sector in the city. The questions related to dairy factory, ethyl alcohol factory and Kokjali asphalt factory are answered in details. The questions related to the other factories were answered briefly which are intravenous solutions factory, Badoosh-extension cement factory, spinning and textile factory, bandage and medical cotton factory and Nineveh drugs factory.

**1. Dairy Factory**

**1.1 Overview of the functioning of the sector:**

* ***Map the existing (and planned, if any) publicly owned factories in Mosul, including levels of damage, productive capacity, items they produce, nr of staff / workers. Base this off a previous assessment UNDP did a few years before.***

Mosul dairy factory was established in 1976 with a production capacity of about 50 tons/day. The Mosul dairy factory is located in the center of Nineveh governorate, which is Mosul city, on the highway that links Nineveh governorate with Duhok governorate near Tigris river. The factory is located on GPS coordinates (36° 40' 05.89" N, 43° 11' 02.29" E). The factory was constructed on land with an area of 85000 m2 and the total area of the buildings is about 9000 m2. In 2014, ISIS took over Nineveh governorate followed by devastating the infrastructure of the governorate in general and Mosul dairy factory in particular as the damages was 90% and the factory is now functioning at 10%. The total number of the employees is 126 employees (106 males and 20 females). The company takes into consideration the gender issue and tries its best to achieve equality between males and females. Aerial image of the dairy factory has been shown in Figure 1.

**  
Figure 1 Aerial image of dairy factory**

* ***Assess risks. Identify factories with potentially hazardous inventory that can cause harm to the environment or nearby neighborhoods.***

The industrial water treatment unit in the factory is currently suspended and there is no recycling of the water leaving the production process, which may negatively cause harm to the environment or nearby neighborhoods.

* ***Assess whether factories have been seismically designed or retrofitted and have fire, explosion, and flooding protection.***

The factory is not designed to be seismically resistant. Although the factory has a civil defense department for emergencies, it lacks the equipment fire, explosion, and flooding protection. Thus, the factory needs new equipment for fire, explosion, and flooding protection. The costs for theses equipment are shown in Table 2.

* ***Do the factories have emergency response plans, and provide training in this to staff?***

The factory has an emergency plan with an emergency response committee of employees, but they do not have enough training in emergency situations. The staff needs training courses to face any emergency.

* ***Identify two or three top-priority factories in this list.***

Although all the factories in Mosul need to be rehabilitated, priority is given to the dairy factory, then the ethyl alcohol factory, and finally Badoosh-extension cement factory.

* ***For the products they produce, check the local market to see to what extent the factory is competitive with the private sector in terms of production costs, quality of the product and price in the market.***

Dairy factory management has a clear vision of the local market and they have the ability to develop the factory to compete with the private sector in terms of production costs, product quality and prices. The Mosul factory dairy produces six types of dairy products. All Mosul dairy products in the local market are cheaper than products from abroad. For example, the average price of one KG of Turkish yoghurt is $1. While the price of one KG of Mosul dairy is $0.75, which is 25% less than the prices of the yoghurt from abroad. Also, the quality of the Mosul dairy factory products is better than products from abroad because it has no preservatives.

* ***What would have to change for the factory-produced goods to be able to compete?***

The factory management has good ideas for competition in the local market including manufacturing dairy products in a very short time and selling them as quickly as possible to ensure that you get fresh dairy. E-marketing plays a big role in achieving the project's goal and contracting with advertising companies. Packing and storing the products professionally and appropriately with the weather, and this is to protect the products from spoilage after its manufacture. Increasing the product categories and opening a marketing window inside and outside Mosul city. Lack of financial funds prevented the implementation of these ideas. Therefore, the factory management is calling for UNDP, UNIDO, World Bank and IFC for support.

* ***How is the management of these factories organized, and how do they see the future of their factories, and their capacity to compete on the market?***

The factory management is organized with an organizational structure prepared by the ministry of industry and minerals, and at the present time there is a plan to invest in most of the ministry’s factories. If the dairy factory has operated as proposed by the factory management, the factory will have the ability to compete in the market strongly.

* ***What ideas do they have for public-private partnerships?***

The factory management asked the relevant authorities in the ministry for exploiting part of the vacant land in the factory through a partnership contract with the private sector to bring in product lines that do not exist within the factory’s products.

* ***What government actions do they want to see to improve their functioning?***

The factory management asked the relevant authorities (Baghdad government) for supporting the industrial sector financially, activating the national product protection law by taxing competing imports, supporting and marketing the local product through the rations card. For your information, all Iraqi citizens obtain ration cards each month at prices subsidized by the Iraqi government. Before 2003, dairy products were one of the items in the ration cards.

* ***Do they capacitate younger managers (with MBAs?) to develop new ideas?***

The factory has no young people who have an MBAs certificate, but the factory has a young staff who have ability to determine the best layout through simulation and interactive experience. Also, maximizing production and increasing the use of resources. The staff needs training courses in managing project tasks and leading work teams more efficiently and effectively.

* ***Are they aware of the GoI’s plans to privatize most factories in the country (see the 2021 government white paper), and what is their reaction to it?***

The factory management is aware of the GoI’s plans to privatize most factories in the country. The factory management do not supports the idea of privatizing the government factories, but with the exception of factories that need continuous government support. As for other factories that the private sector can invest in, they can be referred to the investor, whether local or foreign, provided that the rights of employees in those factories are taken into account so that nobody loses their job or their pension.

* ***Identify a few opportunities for public-private partnerships. Identify any existing investment funds at provincial, national and regional level, as well as any collaboration with existing agencies (such as UNIDO, World Bank/IFC, etc.)***

There are currently no partnership opportunities with the private sector ​at the moment, and there was a cooperation with an organization (IOM) after the liberation of Mosul by rehabilitating a part of the production hall (for civil works only). The factory management would like to make it clear that it is not within its authority to reach out with companies to suggest producing their yoghurt/dairy etc in Mosul.

**1.2 The priorities of factory management and line directorate(s)**

* ***Identify the key priorities of the Ninewah governorate and the ministry of industry for the factories: what sectors do they want to focus on and why?***

Food factories were reportedly the most urgent need in Nineveh, which was also reported in an IOM report released in September 2014.  Since dairy is a national product that affects the lives of the people in Nineveh, and most of the dairy products in the city are products imported from different countries at higher prices than the local product. Therefore, this sector must be supported by Nineveh governorate and the ministry of industry.

* ***Is there a budget?***

There is no budget.

* ***What is the reasoning for their choices, is there an economic white paper or other studies to base this on?***

The dairy factory is considered as a food source that affects the daily life of the citizen, the management choices were to increase and improve the production capacity in order to meet the needs of the local market because most of the dairy products in the city are products imported from different countries at higher prices than the local product. There are many studies at the ministry of industry in Baghdad to base this on. The factory management did not provide the research team with any study because it is considered outside their authority.

* ***Who is in charge of identifying economic opportunities and investment plans, and how does coordination between the MoInd and province work in setting priorities?***

The department of investment at the ministry of industry identifies economic opportunities and investment plans in coordination with the investment department in the Nineveh governorate because the dairy factory is administratively affiliated with Nineveh governorate.

* ***From when do the last (budgeted) priority plans date?***

Since 2014, there is no budgeted priority plans.

* ***Compare the views of the factory owners with the views of the government officials: what is the future of the factories? What government policies and investments are required? How do they feel about the GoI’s plans to privatize the factories?***

The views of the factory management with government officials are to rehabilitate the factory in all administrative, production and service departments to create new jobs opportunities with the rehabilitation of human resources skills in the factory to achieve the strategic goal with regard to enhancing product quality, price, and achieving competitive advantage in similar industry at the sector level whether it is local or imported productions. The department of investment at the ministry of industry identifies investment plans in coordination with the investment department in the Nineveh governorate. The factory management believes that the government's arguments to privatize the factory are not convincing, calling on it to find alternatives.

* ***What are the Ninewah governorate’s and Ministry of Industry’s plans to improve private investment in productive industry over the coming years? Who identifies these priorities? Are there formal plans to decrease bureaucracy, set up investment funds, ensure legal protection for companies, provide matching funds, etc.? From when do the last such?***

The ministry of industry confirmed that there is a plan for the ministry to return the suspended factories to work by offering them for investment or participation. The ministry of industry has approved  the process of rehabilitation and entering into partnership contracts with the private sector, and these contracts include rehabilitation work, modernization of technology and signing investment contracts that include the investor's rehabilitation and operation of the invested factories, and the investor's is obligated to pay a percentage of production according to the design capacity of those factories. The management and staff of the factory confirmed that no plan has been implemented yet. There is no clear vision for the factory management about how to decrease bureaucracy, set up investment funds, ensure legal protection for companies, and provide matching funds.  All the staff in the factory needs training course to know how to decrease bureaucracy, set up investment funds, ensure legal protection for companies, and provide matching funds.

* ***Identify any plans and budgets to shift to sustainable, more environmentally friendly and less risky forms of production and manufacturing? From when do the last plans for sustainability and risk date? Who in the province is in charge of developing plans to handle natural or man-made risk and response plans?***

The aging of existing factories and production lines is one of the causes of pollution. Most of the factories in Mosul were established in the sixties and seventies of the last century and need large sums of money to rehabilitate and modernize them in line with the current technological development. The industrial water treatment unit in the factory is currently suspended and there is no recycling of the water leaving the production process,  so it is thrown into the river which negatively affects the environment. Due to the lack of budgets, the dairy factory management do not have any plans to convert to sustainable forms. The ministry of health and environment in the province is in charge of developing plans to handle natural or man-made risk and response plans.

* ***Do the factories and governorate have the staffing, budget and spare parts to operationalize and maintain the factories that are currently functioning? If factories are rebuilt, would they have the capacity and budget to operationalize them effectively?***

 The dairy factory has a technical staff with experience in maintenance work. Currently, the factory is run by the factory staff. There is no enough budget and spare parts to run the factory. The factory management confirmed that if the factory is rebuilt would be a sufficient capacity and budget to operationalize the factory effectively by saving money that can be used for paying the salaries of the factory workers as well as for investments etc.

* ***How does revenue collection in the industry sector function? Who collects taxes or fees? Are these fees used for investments (and if so, in what) or only to pay salaries? How do the revenues compare to the running costs for operations and maintenance? What are the major challenges for revenue collection?***

Revenues and fees are collected according to a system defined by the central government in Baghdad. All revenues are sent to Baghdad and then they send back the salaries, expenses and supporting materials like fuel and electricity of the factory.

* ***What other international actors or national trust funds are active in this sector and what type of projects do they prioritize in general? What is their specific added value? Do they have major projects/initiatives coming up in this sector? Does the province pro-actively reach out to donors with industry priority plans?***

In 2018, part of the production hall of the factory was rehabilitated by the International Migration Organization (IOM), but this rehabilitation involved the civil works only with an area of 350 m2 of the total area of the hall 4500 m2.  In 2021, United Nations Development Program (UNDP) removed the debris of the damaged buildings and conducted all the sewage works that are related to the factory.

The consultant believes that the Nineveh province don’t have a clear vision of the reality of factories in the governorate. Also, they have no funds, no plans for outreach to the private sector, etc.

**1.3 Estimated cost of the project**

The estimating cost to rehabilitate the factory including buildings, equipment, and machines are shown in Table 2.

**Table 2 Estimated costs of the Mosul dairy factory**

|  |  |  |
| --- | --- | --- |
| **No.** | **Details** | **Amount** |
| **1** | Machines and equipment | $500000 |
| **2** | Civil works | $1000000 |
| **3** | Equipment for fire, explosion, and flooding protection | $50000 |
| **4** | Lab devices and equipment and chemical materials | $150000 |
| **Total** | | $1700000 |

**1.4 Beneficiaries of the factory products**

The beneficiaries are those who will derive some benefit from the implementation of the project. Two types of beneficiaries can be defined as direct and indirect.

1. Direct beneficiaries can be defined as those who will participate directly in the project, and thus benefit from its existence. Thus, all persons who will be employed by the project, supply it with raw materials or other goods and services, or who will use in some way the output of the project can be categorised as direct beneficiaries.

* Staff of the factory
* Several thousand farmers

The Mosul dairy factory purchases the fresh unprocessed milk from farmers across Nineveh.

1. Indirect beneficiaries are often, but not always, all those living within the zone of influence of the project.

* Ministry of health
* Ministry of defense
* Local markets

**Table 3 Beneficiaries of the dairy factory**

|  |  |  |  |
| --- | --- | --- | --- |
| **Factory** | **Beneficiaries** | | **Percentage** |
| **Dairy factory** | Direct beneficiaries | * Staff working in the factory | 5% |
| * Several thousand farmers | 15% |
| Indirect beneficiaries | * Ministry of health | 35% |
| * Ministry of defense | 25% |
| * Local markets | 20% |
|  |  |

**1.5 Annual profit of the factory**

The expected annual profit, which was calculated according to the design capacity of the production lines and in accordance with the local market need, is $500000 US Dollars. The profit value is 10% of the production value if there is total productivity (10% instead of the 10% right now) and if all products are actually bought.

**2. Sugar, Yeas and Ethyl-Alcohol Factories**

The factory consists of three main production lines, including the sugar factory, the ethyl alcohol factory, and bread yeast production factory. Below are the answers to the ethyl alcohol factory.

**2.1 Ethyl-Alcohol Factory**

**2.1.1 Overview of the functioning of the sector:**

* ***Map the existing (and planned, if any) publicly owned factories in Mosul, including levels of damage, productive capacity, items they produce, nr of staff / workers. Base this off a previous assessment UNDP did a few years before*.**

The ethyl alcohol factory has been exposed to massive waves of destruction. Most of the machines and devices have been stolen and the buildings destroyed with a ratio destruction of 60%. The location of ethyl alcohol factory is the right bank of Tigers river in Mosul city. The factory is located on GPS coordinates (36° 19' 01.59" N, 43° 07' 06.28" E) opposite to Mosul airport. The number of factory employees before 2003 was 600 employees, while the number of the current employees is 253. The number of male employees is 236 and the number of female employees is 17. The production of ethyl alcohol factory started in September 2002, with a production capacity of 600 m3/ year, with a concentration less than 96%. In 2018, some of the factory locations were cleaned from the debris and the explosives by Al-Fahd company which contracted with UNDP according to the contract number 18/522/ITB and the work was completed on 10/1/2019.

* ***Assess risks. Identify factories with potentially hazardous inventory that can cause harm to the environment or nearby neighborhoods.***

There is no potential hazardous inventory that could cause environmental damage, and there is a project to treat industrial water wastes drained from the factories and recycle of water for various uses with a capacity of 450 cubic m3 / hour, which is currently suspended and needs rehabilitation.

* ***Assess whether factories have been seismically designed or retrofitted and have fire, explosion, and flooding protection.***

The factory is not designed to avoid seismic hazards. There is currently no fire or explosions prevention or protection system and means to prevent flooding of the premises. There is one fire alarm system in the current warehouse, as well as manual extinguishers in administrative buildings and sites.

* ***Do the factories have emergency response plans, and provide training in this to staff?***

The factory has plans to respond to emergency cases and there is a specialized and well trained staff for these emergencies.

* ***Identify two or three top-priority factories in this list.***

As far as sugar, yeas and ethyl-alcohol factories are concerned, priority is given to the ethyl alcohol production factory.

* ***For the products they produce, check the local market to see to what extent the factory is competitive with the private sector in terms of production costs, quality of the product and price in the market.***

Despite the lack of support from the ministry of industry and minerals, local government in  
Nineveh, and international organizations, the staff worked with the University of Mosul to  
establish a simplified line for the production of ethyl alcohol from the available damaged  
equipment of factories. The factory operates at a very low production capacity. The work is continuing to reach the desired product in order to utilize the workforce and to provide what can be provided within available capabilities. Currently, it is not possible to compete in the market with imported ethyl alcohol, but if the factory is operated with a production capacity as planned, the factory can provide  a good quality product at competitive prices with the private sector.

* ***What would have to change for the factory-produced goods to be able to compete?***

Establish new production lines with modern technology to achieve a product with specifications according to the ISO standards because the current product does not comply with ISO standards. Also, achieving marketing objectives through applying digital technologies and media.

* ***How is the management of these factories organized, and how do they see the future of their factories, and their capacity to compete on the market?***

The factory management is organized with an organizational structure prepared by the ministry of industry and minerals. The management of the factory asks for comprehensive solutions for workforce and operations management in order to enhance efficiency, productivity and the safety of their operations. All activities require a consistent, organized and integrated approach aligned with an organization’s operational processes. The goal is for field and operations personnel to perform the right job at the right time with the right resources, whether a planned or an unplanned event. If establishing new factories and achieving marketing objectives, the production has the ability to compete in the local markets.

* ***What ideas do they have for public-private partnerships?***

The factory management has no ideas about partnership with the private sector. However, there is no objection to partnership between the private sector and the company if the capabilities and mechanisms of the private sector are available. Currently, the factory management proposes a public private partnership to exploit the spaces on the factories' sites to establish production lines related to the sugar and medical industries within the company's activity, as well as rehabilitating the stores to be used as an investment.

* ***What government actions do they want to see to improve their functioning?***

The factory management asks relevant authorities in the ministry of industry and minerals to invite investors to contribute to the investment of factories. In case that the investment is not realized, the public actors must provide financial support to the factory.

* ***Do they capacitate younger managers (with MBAs?) to develop new ideas?***

None of the factory staff have an MBAs certificate to develop new ideas for the factory. The staff needs training courses in project management and how to develop the performance of the factory.

* ***Are they aware of the GoI’s plans to privatize most factories in the country (see the 2021 government white paper), and what is their reaction to it?***

The factory management is aware of the GoI’s plans to privatize most factories in the country. The factory management believes that privatization is not the solution, and the government should provide financial support to restore the factory. Currently, there is no privatization of the ethyl-alcohol factory.

* ***Identify a few opportunities for public-private partnerships. Identify any existing investment funds at provincial, national and regional level, as well as any collaboration with existing agencies (such as UNIDO, World Bank/IFC, etc.)***

There are partnership offers from companies willing to invest and they are still under study and it is hoped that they will be resolved soon. The factory management would like to clarify that the decision to partnership opportunities with the private sector is all to the ministry of industry and minerals. Also, there are no existing investment funds at provincial, national and regional level, as well as any collaboration with existing agencies (such as UNIDO, World Bank/IFC, etc.). In 2018, some of the factory locations were cleaned from the debris and the explosives by Al-Fahd company which contracted with UNDP according to the contract number 18/522/ITB and the work was completed on 10/1/2019.

**2.1.2 The priorities of factory management and line directorate(s)**

* ***Identify the key priorities of the Ninewah governorate and the ministry of industry for the factories: what sectors do they want to focus on and why? Is there a budget? What is the reasoning for their choices, is there an economic white paper or other studies to base this on? Who is in charge of identifying economic opportunities and investment plans, and how does coordination between the MoInd and province work in setting priorities? From when do the last (budgeted) priority plans date?***

The key priorities of the Nineveh governorate and the ministry of industry are directed to the currently operating undamaged factories with low operating costs and with return on investment for individuals and the community. Currently the factory has no budget thus the factory management looks forward to investment and collaboration with existing agencies such as UNIDO, World Bank/IFC, etc. The reasoning for their choices is based on economic feasibility studies for the factories required to be established and restored to life. The investment department in the ministry of industry and ministry of planning identifies economic opportunities and investment plans in cooperation with the investment department in the Nineveh governorate. For more than six years, the ethyl alcohol factory has not been included in the budget.

* ***Compare the views of the factory owners with the views of the government officials: what is the future of the factories? What government policies and investments are required? How do they feel about the GoI’s plans to privatize the factories?***

The factory management supports the views of the government officials' idea of investing the factory, whether it is local or foreign, as long as there is no government support for the factory. Taking into account the rights of employees in the factory. The factory management do not encourage to privatize the factories because they believe that the privatization increases income inequality through the decline of contracted workers’ wages and benefits. When governments directly provide a service, they often provide living wages and decent benefits to workers. When private companies take control, they often slash wages and benefits in an attempt to cut labor costs, replacing stable, middle class jobs with poverty-level jobs. Reduced worker wages and benefits not only hurt individual workers and their families, but also local economies and the stability of middle and working class communities.

* ***What are the Ninewah governorate’s and Ministry of Industry’s plans to improve private investment in productive industry over the coming years? Who identifies these priorities? Are there formal plans to decrease bureaucracy, set up investment funds, ensure legal protection for companies, provide matching funds, etc.? From when do the last such plans date?***

The Nineveh governorate and ministry of industry has many plans to address the problem of destroyed factories, including restructuring, evaluating the existing production lines, and developing those that are economically viable. But, the lack of money impeded the implementation of these plans. The factory management does not know about how to decrease bureaucracy, set up investment funds, ensure legal protection for companies, provide matching funds, etc. All of the issues mentioned above are the responsibility of the ministry of industry and minerals and the Nineveh government.

* ***Identify any plans and budgets to shift to sustainable, more environmentally friendly and less risky forms of production and manufacturing? From when do the last plans for sustainability and risk date? Who in the province is in charge of developing plans to handle natural or man-made risk and response plans?***

Before the factory was destroyed, there was a water treatment unit and recycling of the waste materials generated from the manufacturing process. Currently, the factory and water treatment unit are completely destroyed. The ministry of health and environment in the province is in charge of developing plans to handle natural or man-made risk and response plans.

* ***Do the factories and governorate have the staffing, budget and spare parts to operationalize and maintain the factories that are currently functioning? If factories are rebuilt, would they have the capacity and budget to operationalize them effectively?***

The factory has a staff having wide and accumulative technical experience in the ethyl alcohol industry and skillful employees in the field of maintenance, operation, and production. There is no  budget and spare parts to run the factory because the factory was destroyed completely. If the factory is completed and operating at full production capacity, it is expected that the factory staff  have the capacity and budget to operationalize the factory effectively.

* ***How does revenue collection in the industry sector function? Who collects taxes or fees? Are these fees used for investments (and if so, in what) or only to pay salaries? How do the revenues compare to the running costs for operations and maintenance? What are the major challenges for revenue collection?***

Before the factory was destroyed, the revenues were collected according to specific instructions by the ministry of industry and minerals. All revenues are sent to Baghdad and then they send back the salaries, expenses and supporting materials like fuel and electricity of the factory. Currently, the factory is completely destroyed and there are no revenues.

* ***What other international actors or national trust funds are active in this sector and what type of projects do they prioritize in general? What is their specific added value? Do they have major projects/initiatives coming up in this sector? Does the province pro-actively reach out to donors with industry priority plans?***

As far as the ethyl alcohol factory management knows, there are no international actors or national trust funds active in this sector yet. Only  the factory locations were cleaned from the debris and the explosives by UNDP in 2018. The Nineveh province and  the factory management are reaching out with donors to rehabilitate the factory.

**2.1.3 Estimated cost of the project**

The details of estimated costs of the ethyl alcohol project 600 m3/day have been shown in Table 4.

**Table 4 Estimated costs of the ethyl alcohol project 600 m3/day**

|  |  |  |
| --- | --- | --- |
| **No.** | **Details** | **Amount** |
| **1** | Civil works | $400000 |
| **2** | Machines and Electrical engineering works | $2600000 |
| **Total** | | $3000000 |

**2.1.4 Beneficiaries of the factory products**

The beneficiaries are those who will derive some benefit from the implementation of the project. Two types of beneficiaries can be defined: direct and indirect.

1. Direct beneficiaries can be defined as those who will participate directly in the project, and thus benefit from its existence. Thus, all persons who will be employed by the project, supply it with raw materials or other goods and services, or who will use in some way the output of the project can be categorised as direct beneficiaries.
2. Indirect beneficiaries are often, but not always, all those living within the zone of influence of the project.

**Table 5 Beneficiaries of alcohol factory**

|  |  |  |  |
| --- | --- | --- | --- |
| **Factory** | **Beneficiaries** | | **Percentage** |
| **Ethyl-Alcohol** | Direct beneficiaries | * Staff working in the factory | 5% |
| Indirect beneficiaries | * Pharmaceutical labs and health institutions | 70% |
| * Local markets | 20% |
| * Academic institutions (scientific research) | 5% |

**2.1.5 Annual profit of the factory**

The expects annual profit, which was calculated according to the design capacity of the production lines and in accordance with the local market needs is shown in Tables 6 and 7.

**Table 6 Annual production value for the ethyl alcohol factory**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Details** | **Production value** | **Note** |
| **1** | Ethyl-Alcohol | $2068965 | \*Production value= piece price x production quantity |

\*This assumes that 100% of the factory is operating and 100% of the produce will be sold.

**Table 7 Expected annual profits for the ethyl alcohol factory**

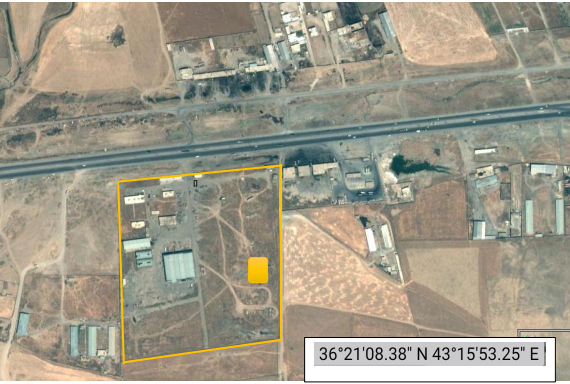
|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Details** | **Production value US dollar** | **Note** |
| **1** | Annual production value | $2068965 |  |
| **2** | Annual production costs | $1142119 |  |
| **3** | Annual profits | $926847 | Annual profits = annual production value- Annual production costs |

**3. Asphalt Factory**

**3.1 Overview of the functioning of the sector:**

* ***Map the existing (and planned, if any) publicly owned factories in Mosul, including levels of damage, productive capacity, items they produce, nr of staff / workers. Base this off a previous assessment UNDP did a few years before.***

The factory is located in Mosul, Kokjali industry area at GPS coordinates (360 21'08.38" N, 43015'53.25" E). The factory was installed in 1978 by Marini Fayat Group with a designed capacity of 95 tons/ hour. The factory and the land are owned by the ministry of construction, housing and public municipalities/ ashoor general construction contracting company. The factory was exposed to a huge wave of destruction during the occupation ISIS to Nineveh in 2014 and the liberation military operations of Nineveh in 2017, the destruction ratio reached more than 65%. The factory produces three types of asphalt mixtures including stabilizer, binder and Surface. The number of employees in the factory is 81 employees (72 male and 9 female). Aerial image of the Kokjali Asphalt factory has been shown in Figure 2.



**Figure 2 Aerial image of Kokjali Asphalt factory**

* ***Assess risks. Identify factories with potentially hazardous inventory that can cause harm to the environment or nearby neighborhoods.***

Gases, fumes and dust are generated during the production of the asphalt mixture. Excessive use of natural resources (raw materials) when road maintenance works are repeated.

* ***Assess whether factories have been seismically designed or retrofitted and have fire, explosion, and flooding protection.***

The factory is not designed to be earthquake-resistant. The factory has simple equipment to control fires, floods and explosions.

* ***Do the factories have emergency response plans, and provide training in this to staff?***

The factory has a plan to deal with emergencies and staff courses have been prepared to deal with emergencies.

* ***Identify two or three top-priority factories in this list.***

Developing the production of the Marini asphalt factory 95 tons / hour and reducing the environmental impact associated with the production of asphalt mixtures.

* ***For the products they produce, check the local market to see to what extent the factory is competitive with the private sector in terms of production costs, quality of the product and price in the market.***

The factory can offer this product of good quality and prices that are competitive with the private sector, since most of its employees have technical and engineering expertise and have worked in various Iraqi governorates. The average price of a ton of asphalt in the private sector is $30. While the price of a ton of asphalt in a government factory Kokjali asphalt factory is $27, which is 10% less than the prices of the private sector. According to the engineering laboratory tests and engineering consultant office at the university of Mosul, the quality of the asphalt in Kokjali factory is better than that of the private sector factories.

* ***What would have to change for the factory-produced goods to be able to compete?***

Improving the specifications and characteristics of the asphalt mixture to be able to withstand heavy weights and thus the product will be competitive with the products of the private sector.

* ***How is the management of these factories organized, and how do they see the future of their factories, and their capacity to compete on the market?***

The management of this factory is carried out by a number of engineers and technicians who have technical expertise in this field, and this work needs to be updated according to the global development in the manufacture of asphalt mixtures. Due to the current reconstruction campaign in the city of Mosul and the actual need to rehabilitate the roads, there are many indicators that indicate the continuing need in this sector due to the need for the asphalt mixture in the construction of new roads and periodic maintenance of existing roads.

* ***What ideas do they have for public-private partnerships?***

The factory management has no ideas about partnership with the private sector currently. However, there is no objection to partnership between the private sector and the company if the capabilities and mechanisms of the private sector are available.

* ***What government actions do they want to see to improve their functioning?***

Carrying out periodic maintenance work for factory and machinery and providing them with spare materials.

* ***Do they capacitate younger managers (with MBAs?) to develop new ideas?***

The factory has no young people who have a MBAs certificate, but the factory has a number of engineers and young staff who have leadership qualities in the management of factory and projects.

* ***Are they aware of the GoI’s plans to privatize most factories in the country (see the 2021 government white paper), and what is their reaction to it?***

The factory management does not have aware of the GoI’s plans to privatize most factories in the country. Currently, there is no privatization of the factory of the ministry of construction and housing. The factory management is not convinced the privatization of the factory and the government should find alternative solutions.

* ***Identify a few opportunities for public-private partnerships. Identify any existing investment funds at provincial, national and regional level, as well as any collaboration with existing agencies (such as UNIDO, World Bank/IFC, etc.)***

There are no partnership opportunities with the private sector at this stage. The factory management would like to clarify that the decision to partnership opportunities with the private sector is all to the ministry of construction and housing in Baghdad. Also there is no support from investment funds at provincial, national and regional level. In addition, in this moment there is no collaboration with existing agencies such as UNIDO and World Bank/IFC.

**3.2 The priorities of factory management and line directorate(s):**

* ***Identify the key priorities of the Ninewah governorate and the ministry of industry for the factories: what sectors do they want to focus on and why? Is there a budget? What is the reasoning for their choices is there an economic white paper or other studies to base this on? Who is in charge of identifying economic opportunities and investment plans, and how does coordination between the MoInd and province work in setting priorities? From when do the last (budgeted) priority plans date?***

The factories management criticize weakness of the Nineveh governorate and the ministry of industry to develop the industry sector. The factories management requested for the reconstruction of important factories, which have a very large impact on the economic reality of the governorate and the country in general. These factories will restore the wheel of industry in the province and that achieve self-sufficiency in a number of products. There is no budget for the reconstruction of government factories.

* ***Compare the views of the factory owners with the views of the government officials: what is the future of the factories? What government policies and investments are required? How do they feel about the GoI’s plans to privatize the factories?***

There is no clear vision for the government officials about the future of government factories. The management of factory emphasis to develop the factory by agencies such as UNIDO, World Bank/IFC and warned against granting the factory to investors, as this will affect the performance level of the factory and their employees according to what they see fit. The factory management does not support the idea of privatizing the factory and the government should find alternative solutions.

* ***What are the Ninewah governorate’s and Ministry of Industry’s plans to improve private investment in productive industry over the coming years? Who identifies these priorities? Are there formal plans to decrease bureaucracy, set up investment funds, ensure legal protection for companies, provide matching funds, etc.? From when do the last such plans date?***

The factory management believes that improving private investment in productive industry over the coming years will not be achieved, because of the lack of legislation, court laws and effective control system that guarantees the rights and duties of the investor. There is no clear vision for the factory management about how to decrease bureaucracy, set up investment funds, ensure legal protection for companies, provide matching funds. There is no privatization of the factories affiliated to the ministry of construction and housing yet.

* ***Identify any plans and budgets to shift to sustainable, more environmentally friendly and less risky forms of production and manufacturing? From when do the last plans for sustainability and risk date? Who in the province is in charge of developing plans to handle natural or man-made risk and response plans?***

Manufacturing a chimney filter for an asphalt factory to reduce emissions of gases, dust and fumes and to maintain public health adding a system of additives (polymer) to the factory to produce asphalt improved with additives. The department of environment in the Mosul province which is affiliated to the ministry of health is in charge of developing plans to handle natural or man-made risk and response plans.

* ***Do the factories and governorate have the staffing, budget and spare parts to operationalize and maintain the factories that are currently functioning? If factories are rebuilt, would they have the capacity and budget to operationalize them effectively?***

The factory has a well-trained technical and administrative staff to operate and manage the factory. Through this factory, a number of projects have been carried out in Nineveh governorate. Daily and periodic maintenance work is carried out by specialized staff, and many spare parts are available in the local markets.

* ***How does revenue collection in the industry sector function? Who collects taxes or fees? Are these fees used for investments (and if so, in what) or only to pay salaries? How do the revenues compare to the running costs for operations and maintenance? What are the major challenges for revenue collection?***

The revenue from the factory is used to pay the wages of workers and permanent employees. Revenues are collected by selling asphalt mixtures to projects implemented in the governorate and after isolating the amounts of raw materials and fuels and the administrative amount, profits are extracted.

* ***What other international actors or national trust funds are active in this sector and what type of projects do they prioritize in general? What is their specific added value? Do they have major projects/initiatives coming up in this sector? Does the province pro-actively reach out to donors with industry priority plans?***

As far as the factory management is concerned, the factory management is calling for UNDP, UNIDO, World Bank and IFC for support. So far, there are no projects/initiatives coming up in this sector to the Kokjali asphalt factory. The Nineveh province has a clear vision of the reality of factories in the governorate and proactively reach out to donors with industry priority plans.

**3.3 Estimated cost of the project**

The estimated cost to rehabilitate the factory including a system of additives, air filtration system and connecting a tank with mixers is shown in Table 8. This is all the funding needed to bring the factory back to 100% production capacity for better quality products and for the environmental issues.

**Table 8 Estimated costs of the Kokjali Asphalt factory**

|  |  |  |
| --- | --- | --- |
| **No.** | **Details** | **Amount** |
| **1** | Additives system | $220,000 |
| **2** | Air filtration system | $23,000 |
| **3** | Tank with mixers | $25,000 |
| **Total** | | $268,000 |

**3.4 Beneficiaries of the production**

The number of beneficiaries directly from the factory reaches up to 81 employees. The indirect beneficiaries include Mosul municipality, other municipalities (districts and sub-districts) and external roads. The number of beneficiaries as individuals is more than one million people.

**Table 9 Beneficiaries of Kokjali Asphalt factory**

|  |  |  |  |
| --- | --- | --- | --- |
| **Factory** | **Beneficiaries** | | **Percentage** |
| **Kokjali Asphalt** | Direct beneficiaries | * Staff working in the factory | 5% |
| Indirect beneficiaries | * Mosul municipality | 60% |
| * Other municipalities (districts and sub-districts) | 20% |
| * External roads | 15% |

**3.5 Annual profit of the project**

The expects annual profit, which was calculated according to the design capacity of the production lines and in accordance with the local market needs. Currently, the profits are 5%. If the factory is completed and systems are added, the expected profits will be around 10%.

**4. Intravenous Solutions Factory**

**4.1 Name of the factory**: Intravenous Solutions factory

**4.2 Site and Area of the factory**: The factory is located in the industrial quarter on the left side of Mosul city.  The factory was constructed on land with an area of 18000 m2 and the total area of the buildings is about 5500 m2. The factory consists of the following buildings:

* The main building includes a management building, production building, rat laboratory, warehouse, two information rooms, and a restaurant.
* Service buildings subsidiary outside the main building including (management building, guest house, final product warehouse, spare part warehouse, laboratory rat field, internal and external garages, and yards for car parking) where, all these buildings are established recently.

**4.3 Product**: The production started in 1984 with a capacity of 1200 bag 500 ml./hour (producing 10 types of intravenous solutions). Table 10 shows the projected production capacity and types of pharmaceuticals.

**Table 10 Product and types of pharmaceuticals**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Name of product** | **Concentration rate** | **Quantity** |
| **1** | Normal Saline | 0.9% | 9 g/L |
| **2** | Dextrose water | 5% | 50 g/L |
| **3** | Dextrose water | 10% | 100 g/L |
| **4** | Dextrose water | 20% | 200 g/L |
| **5** | Dextrose water | 50% | 500 g/L |
| **6** | Manitol | 10% | 100 g/L |
| **7** | Manitol | 20% | 200 g/L |
| **8** | Dextrose Saline (adult) 0.18% Nacl+4% Dextrose | 0.18%Nacl+ 4% Dex. | 1.8g/L NACL+40g/L Dex. |
| **9** | Dextrose Saline (Infant) | 0.13%Nacl+3.3% dex. | 1.3g/L Nacl+33.3g/L Dex. |
| **10** | Glycine | 1.5% | 15g/L glycine |

**4.4 Condition of the factory**: The factory was severely damaged during the liberation battles in 2017 which led to stop the production operation. The damage ratio reached more than 70%. The factory is now being rehabilitated by UNDP with an estimated cost of $1,300,000 US Dollars where the works of rehabilitation started on 30\12\2020 and is still going on.

**4.5 Staff of the factory**: The factory staff amounts to 202 permanent employees and 83 temporary contracts. The factory has a staff having wide and accumulative technical experience in this type of pharmaceutical industry such as technicians, engineers, and skillful employees in the field of maintenance, operation, production as well as in the field of management and calculation.

**4.6 History of the factory**:  Intravenous solutions factory was established in 1982 by Vifor Company/ Switzerland. The factory was destroyed in 2003. In 2011, the factory has been rehabilitated from the sums of investment plan where the company contracted with Bram company/Italy to import integral production line with all its supplements and lab and service apparatuses with a capacity of 2000 bottles of 500ml./hour (the factory is working in bottle system in contrast with the old one which was working in bag system). The company contracted with EKSEN MED Company/ Turkey to rehabilitate the building of the factory in accordance with the (G.M.P) system concerning pharmaceutical industries and sterilized rooms.

**4.7 Raw Materials**: Most of the raw materials are imported.

**4.8 Factory site features:**

* Not far away from Mosul airport.
* Near the highway that connect- Baghdad- Mosul - Zakhu.
* Near the Mosul railway station, fast transportation of goods and passengers.

**4.9 The strength points of the factory:**

* High local demand of the product due to that the factory is unique of its type in the country and covers more than 1/3 of the actual need in Iraq in case of operating the factory three work shifts /day.
* There are no competitors in region
* Availability of trained and experienced manpower.

**4.10 Estimated cost of the project**

Table 11 below shows the estimated cost for the civil, mechanical, and electrical works of the factory. These items are necessary for the completion and operation of the factory. The table of items are needed will be attached later to the report. It is noteworthy, these items were not included within the rehabilitation works because of the insufficiency of funds allocated by UNDP. The approximate amount required to complete these works is about $ 850,000 US Dollar. These works are required to bring the capacity up to full capacity.

**Table 11 Estimated costs of the intravenous solutions factory**

|  |  |  |
| --- | --- | --- |
| **No.** | **Details** | **Amount** |
| **1** | Civil works | $ 200000 |
| **2** | Mechanic works | $ 550000 |
| **3** | Electrical works | $ 100000 |
| **Total** | | $ 850000 |

**4.11 Beneficiaries of the factory products**

Project beneficiaries are those who will derive some benefit from the operation of the project.

**Table 12 Beneficiaries of the intravenous solutions factory**

|  |  |  |  |
| --- | --- | --- | --- |
| **Factory** | **Beneficiaries** | | **Percentage** |
| **Intravenous Solutions factory** | Direct beneficiaries | * Staff working in the factory | 5% |
| Indirect beneficiaries | * Ministry of health | 80% |
| * Private sector (private hospitals, pharmacies, and drug stores) | 15% |

**4.12 Annual profit of the project**

The sale price of one bottle is fluctuated between 0.5 US Dollar and 2 US Dollars according to the type of product. The expects annual profit, which was calculated according to the design capacity of the production lines and in accordance with the local market needs. If the factory is completed and systems are added, the expected profits will be around 15%.

**5. Badoosh-Extension Cement Factory**

**5.1 Name of the factory**: Badoosh-Extension cement factory

**5.2 Site and Area of the factory:** The factory is located in Badoosh area to the north west of Mosul city at GPS coordinates (36° 26' 39.06" N, 42° 55' 53.5" E).

**5.3 Product**: Ordinary Portland Cement

**5.4 Design Capacity**: 3200 tons of clinker/day.

**5.5 Current production capacity**: 2100 tons of clinker/day.

**5.6 Condition of the factory**: Due to shortage of funds, shortage of electricity, poor maintenance was performed with absence of standard spare parts, shortage in mining equipment, the result was low productivity of the factory. Although most of the construction projects in Mosul city use Badoosh cement, the factory needs modification works to change the production process and adopt "DRY PROCESS" technology to run the factory back to its full production capacity.

**5.7 Staff of the factory:** Number of employees in this factory is 419 employees (409 male and 10 female). The number of employees and academic attainment of Badoosh-Extension cement factory are shown in Table 13.

**Table 13 Number of employees and academic attainment**

|  |  |  |
| --- | --- | --- |
| **No.** | **Academic attainment** | **No. of employees** |
| **1** | Master degree | 4 |
| **2** | Bachelor degree | 141 |
| **3** | High diploma | 81 |
| **4** | Secondary school graduate | 100 |
| **5** | Under-Secondary school graduate | 93 |
| **Total** | | 419 |

**5.8 History of the factory**:

The factory was established in 1982 by the Iraqi government, it supplies the construction district in Nineveh with cement. The factory faced a huge wave of destruction during the occupation of ISIS to Nineveh in 2014 and the liberation military operations of Nineveh in 2017, the destruction ratio reached more than 65%. Many important departments of the factory have been destroyed and must be rehabilitated to run the factory back to its full production capacity. These departments are as follow:

* Clinker Cooler
* The Electrostatic Precipitator
* Cement Mills Main Gearboxes
* Cement Mills Rotating System
* High Tension Motors
* Spare Parts Warehouse

**5.9 Process and Brief Description of the Production Lines**:

* Limestone crusher
* Clay disintegrator
* Pre-blending
* Raw mill
* Two raw meal mixing silos
* Gepol pre-heater
* Rotary kiln
* Grate cooler
* Clinker storage yard
* Exhaust gases
* Cooler multi-cyclones
* Raw mill
* Electro-static
* Cement mill
* Cement Electro-static precipitator
* Cement silos
* Two rotor-packers HAVER & BOECKER
* Raw meal side

**5.10 Minimum Target Production Capacity after Rehabilitation:** Minimum target capacity is 90% of the design capacity.

**5.11 Economic Parameters:**

* **Local market:** The prediction for cement consumption shows that the consumption may reach 27 million ton/year in the coming years.
* **Availability of raw material:** Raw materials are available locally, next to the site of the factory such as limestone, clay and gypsum.

**5.12 Estimated cost of the rehabilitation**: Table 14 shows the estimating cost to rehabilitate the factory including buildings, equipment, and machines. It is noteworthy that the factory manager of the new Badoosh cement gave clarification regarding the referral of the new Badoosh cement factory to investment, the investing company will develop the factory and pay the salaries to employees. But, the factory manager confirmed that the factory has not been invested yet and the factory still public sector.

**Table 14 Estimated costs of Badoosh-Extension cement factory**

|  |  |  |
| --- | --- | --- |
| **No.** | **Details** | **Amount** |
| 1 | Cement Mills Main Gearboxes | $250,000 |
| **2** | Cement Mills Rotating System | $750,000 |
| **3** | High Tension Motors | $400,000 |
| **4** | Spare Parts Warehouse | $500,000 |
| **Total** | | $1,900,000 |

**5.13 Beneficiaries of the production**

The number of beneficiaries directly from the factory reaches up to 419 employees. The indirect beneficiaries include governmental construction sector, private construction sector (ready mix concrete factories, block factories) and the people in Mosul district. The number of beneficiaries from the private sector is more than three million people.

**Table 15 Beneficiaries of Badoosh-Extension Cement factory**

|  |  |  |  |
| --- | --- | --- | --- |
| **Factory** | **Beneficiaries** | | **Percentage** |
| **Badoosh-Extension Cement Factory** | Direct beneficiaries | * Staff working in the factory | 5% |
| Indirect beneficiaries | * Governmental sector | 40% |
| * Private sector | 20% |
| * People | 35% |

**5.14 Annual profit of the project**

The expects annual profit $147 million US Dolar, which was calculated according to the design capacity of the production lines and in accordance with the local market needs. Currently, the profits are 7%. If the factory is completed and systems are added, the expected profits will be around 15%.

**6. Spinning and Textile Factory/Bandage and Medical Cotton Factory**

The spinning and textilefactory in Mosul is considered one of the most important factories in Iraq. The factory is considered one of the largest factories in Iraq with a total area of about 25 hectares. The factory consists of two factories as given below:

A. **Spinning and Textile Factory**

**1. Name of the factory**: Spinning and textile factory

**2. Site of the factory:** The factory is located in al-Mansour neighborhood on the right coast of Mosul city at GPS coordinates (36° 19' 05.39" N, 43° 07' 09.86" E).

**3.** **Establishment and design capacity**: The factory was established in 1957 with poduction capacity of is 17 million linear meters/ year

**4. Condition of the factory**: The factory was destroyed during the operations to liberate the city from ISIS gangs by 90%.

**5. Staff of the factory**: The number of working employees is 1460, including a number of engineers and technicians. The staff consists of 117 females and 1343 males

**6. Estimated cost of the project:** The estimated cost of civil works and mechanical and electrical works are shown in Table 16.

**Table 16 Details of estimated cost to complete buildings and equipment**

|  |  |  |
| --- | --- | --- |
| **No.** | **Details** | **Estimated cost USD** |
| **1** | Civil works | $3000000 |
| **2** | Mechanical and electrical equipment | $7000000 |
| **Total** | | $10000000 |

**B**. **Bandage and Medical Cotton Factory**

**1. Name of the factory**: Bandage and Medical Cotton Factory

**2. Site of the factory:** The factory is located in al-Mansour neighborhood on the right coast of Mosul city at GPS coordinates (36° 44' 38.29" N, 42° 93' 50.53"E).

**3. Establishment and** **Design Capacity**: The factory was established in 2009 and began production in 2010 to produce medical cotton, gauze, bandage with a productivity of 105 tons annually.

**4. Condition of the factory**: The factory was exposed to complete destruction at a rate of 100% as a result of the military works to liberate the city from the terrorist gangs of ISIS.

**5. Staff of the factory**: The number of employees in the factory before the destruction was 100 employees. The number of male employees was 74 and the number of female employees was 26.

**6. Estimated cost of the project:** Table 17 shows the estimated cost to construct the factory including civil works and mechanical and electrical works.

**Table 17 Details of estimated cost to complete buildings and equipment**

|  |  |  |
| --- | --- | --- |
| **No.** | **Details** | **Amount USD** |
| **1** | Mechanical and electrical equipment | $2200000 |
| **2** | Civil works | $800000 |
| **Total** | | $3000000 |

**7. Beneficiaries of the factory products**

The number of beneficiaries directly from the factory reaches up to 2100 employees. The indirect beneficiaries include ministry of health, ministry of defense, private sector, and the people in Mosul district.

**Table 18 Beneficiaries of the factories**

|  |  |  |  |
| --- | --- | --- | --- |
| **Factory** | **Beneficiaries** | | **Percentage** |
| **Spinning and textile factory**  **&**  **Bandage and medical cotton factory** | Direct beneficiaries | * Staff working in the factory | 10% |
| Indirect beneficiaries | * Ministry of health | 25% |
| * Ministry of defense | 25% |
| * Private sector (private hospitals, health centers and markets) * People | 15% |
|  |
|  |
| 25% |

**8. Annual profits**

In 2013, before the factory was destroyed, the sales about $30 million USD annually. The profit rate is 15% of the production value. If the factory is restored according to the proposed plans, the expected profits rate will be 30%.

**7. Nineveh Drugs Factories**

**7.1 Name of the factory**: Nineveh Drugs Factories.

**7.2 Site and Area of the factory**: The factory is located in north of Mosul city, about 10 km from the city center. Total area of the factory is 800000 m2.

**7.3 Product**: Pharmaceutical items such as; Tablets, Capsules, Ointment & Cream, Suppositories, Syrup, Oral drop, Eye drop, Ampoules, and Inhalers.

**7.4 Design Capacity**:

* Tablets (1055 million tablet/ year).
* Capsules (202 million capsule/ year).
* Ointment & Cream (7.2 million tube/ year).
* Suppositories (10.6 million suppository/year).
* Syrup (13.4 million bottle/year).
* Oral drop (4.5 million droppers/year).
* Eye drop (6.7 million droppers/year).
* Ampoules (100 million ampoule),
* Inhalers.

**7.5 Condition of the factory**: The percentage of damage to the factory because of the military operations to liberate the city of Mosul from ISIS was 90%, which led to stopping work the factory completely.

**7.6 Staff of the factory**: Number of employees in this factory is 1307 employees including 971 male and 336 female. The number of employees and the position of Nineveh drugs factory are shown in Table 19.

**Table 19 Number of employees and the position**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Position** | **Male** | **Female** | **Total** |
| **1** | Accountant | 29 | 26 | 55 |
| **2** | Administration | 99 | 43 | 142 |
| **3** | Agriculture engineer | 5 | 7 | 12 |
| **4** | Auditor | 1 | 0 | 1 |
| **5** | Biologist | 39 | 49 | 88 |
| **6** | Chemist | 26 | 50 | 76 |
| **7** | Driver | 20 | 0 | 20 |
| **8** | Engineer | 52 | 22 | 74 |
| **9** | Geologist | 1 | 2 | 3 |
| **10** | Guard | 0 | 0 | 0 |
| **11** | Jurist | 19 | 15 | 34 |
| **12** | Medical staff | 1 | 1 | 2 |
| **13** | Pharmacist | 1 | 1 | 2 |
| **14** | Physicist | 7 | 4 | 11 |
| **15** | Programmer | 22 | 15 | 37 |
| **16** | Statistical | 4 | 4 | 8 |
| **17** | Technical | 320 | 25 | 345 |
| **17** | Translator | 18 | 13 | 31 |
| **18** | Veterinary medicine | 3 | 6 | 9 |
| **19** | Workman | 304 | 53 | 357 |
| **Total** | | **971** | **336** | **1307** |

**7.7 History of the factory**: The factory was established in 1990 by a joint cooperation between the staff of the factory and Al-Faw state company under supervision of engineering consulting Bureau of Mosul University. The construction period took about 5 years. The factory was a part of Samara drugs company, then it separated and became an independent company in 2002. The factory provides pharmaceutical preparations for people in the city of Mosul in particular and the rest of the cities of Iraq in general.

**7.8 Brief Description of the Production Lines:**  The factory is composed of the following departments:

* Milling unit.
* Mixing unit.
* Drying unit.
* Packing unit.

**7.9 Raw Materials**: Most of the raw materials are imported.

**7.10 Minimum Target Production Capacity after Rehabilitation:**

* Tablets (1000 million tablet/year),
* Capsules (300 million capsule/year),
* Ointment & Cream (14 million tube/wear),
* Suppositories (12 million suppository/year),
* Syrup (15 million bottle/year),
* Oral drop (4 million droppers/year),
* Eye drop (7 million droppers/year),
* Ampoules (100 million ampoule/year),
* Inhalers (2 million sprayer/year).

**7.11 The importance of factory:** The importance of the Nineveh drugs factory is summarized as follows:

 1. The factory provides medicine (pharmaceutical) for the biggest city citizen in Iraq after Baghdad at a population exceeding 4 million.

  2. The factory provides job opportunities for the people of Mosul city and other regions.

 3. Provides Drugs for Mosul city at appropriate and cheap price compared to imported drugs, which lack good quality and validity.

  4. Pharmaceutical rapid supply due to its closer location from health centers, hospitals, and drug stores.

**7.12 Estimated cost of the project**

The estimated cost for the civil, mechanical, and electrical works of the factory are shown in Table 20. These items are necessary for the completion and operation of the factory.

**Table 20 Estimated cost to rehabilitate the factory**

|  |  |  |
| --- | --- | --- |
| **No.** | **Details** | **Amount** |
| **1** | Civil works | $4,800,000 |
| **2** | Electrical works | $1,400,000 |
| **3** | Mechanical services | $5,000,000 |
| **4** | Mechanical works | $15,000,000 |
| **5** | Water treatment units | $170,000 |
| **Total** | | $26,370,000 |

**7.13 Beneficiaries of the factory products**

The number of beneficiaries directly from the factory reaches up to 1307 official employees and 360 daily payments. The indirect beneficiaries include ministry of health, private hospitals, health centers and private drug stores.

**Table 21 Beneficiaries of the Nineveh drugs factory**

|  |  |  |  |
| --- | --- | --- | --- |
| **Factory** | **Beneficiaries** | | **Percentage** |
| **Nineveh Drugs Factory** | Direct beneficiaries | * Staff working in the factory | 10% |
| Indirect beneficiaries | * Ministry of health | 75% |
| * Private sector (private hospitals, health centers and private drug stores) | 15% |
|  |
|  |
|  |

**7.14 Annual profits**

In 2013, before the factory was destroyed, the sales ranged between 20-25 million USD annually. The profit rate is 5% of the production value. If the factory is completed and operating at full production capacity, the expected annual profits will be more than 25% of the production value.

**4. Industrial Sector Limitations After 2014**

1. Factories, machines, and industrial tools are outdated and could not follow the technologic advancements in this sector.

2. Poor electricity services that led to unstable production and loss for factories.

3. Security instability after 2014 that led to the closing of many factories and robbing of many others.

4. Large quantities of imported materials and a lack of government laws to protect local products.

5. Lack of local raw materials for industrial factories and inability to import from outside.

Finally, the factories management, technical staff and workers extend their heartfelt thanks to everyone who contributes to the reconstruction of the factories in Mosul district, as it is a source of livelihood for many workers and technicians, in addition to being one of the leading landmarks in the city of Mosul.

**5. Recommendation**

The recommendations for this research study are summarised as follows:

1.  Providing the Mosul dairy factory with the equipment for fire, explosion, and flooding protection, and this would be a good UNDP project.

2.    Providing training courses to staff of Mosul dairy factory for emergency response plans.

3.   The staff of Mosul dairy factory needs training courses in managing project tasks and leading work teams more efficiently and effectively.

4.   All the staff in the Mosul dairy factory needs training course to know how to decrease bureaucracy, set up investment funds, ensure legal protection for companies, and provide matching funds.

5.  The staff of ethyl alcohol factory needs training courses in managing project tasks and leading work teams more efficiently and effectively.

6.   The staff of ethyl alcohol factory needs training courses to develop ideas about partnership with the private sector.

7.  The staff of Kokjali Asphalt factory needs training courses in managing project tasks and leading work teams more efficiently and effectively.