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Final Report
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DRAFT

Supporting Decent Work in Sahab Municipality's Stonecutting Area

Final Report

Findings and Improvement Plan

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Annex 5: Stakeholders' Workshop

INTRODUCTION (GENERAL OVERVIEW)

After the completion of the Environmental and OSH assessments, the study team proceeded on validating the effectiveness and applicability of the proposed interventions. This validation is crucial to the study since it can be incorporated in fine-tuning the recommendations in a manner that fits the context of the workplace. Therefore, the study team conducted a workshop for the stakeholders that are relevant to the operations, management and sustainability of the stonecutting area.

The purpose of this workshop is to better understand challenges faced in the stonecutting area, to enhance the gap analysis performed by the study team and ensuring the buy-in of stakeholders. The success of the workshop lies within the inclusion of the relevant stakeholders and giving them an opportunity to share their input. A participatory atmosphere allows room for deliberation between stakeholders in an environment where all perspectives are treated with equal significance to the interventions proposed by the study team. The 37 participants were from Sahab's Municipality, regulatory entities, workers/owners of stonecutting establishments, and citizens whose residents are of high proximity to the stonecutting area.

CONCEPT AND METHODOLOGY OF INTERACTIVE WORKSHOP

The concept and methodology of conducting an interactive workshop is organized into the following sections: preparation and facilitation.

Preparation

Selecting the Participants: The selection of the stakeholders was performed based on the level of relevance to the stonecutting area. Taking into consideration; manageability of the group size, maintaining a balance of interests, and ensuring a diversity of perspectives. Based on the aforementioned, the following stakeholders were selected as potential participants from:

- Governmental entities: Ministry of Environment, Ministry of Health, Ministry of Labor, Ministry of Housing and Public Works, Ministry of Municipalities, Amman Greater Municipality, [illegible] & Villages Development Bank, Chamber of Industry and Commerce, Civil Defense, General [illegible] of Construction Workers, Municipality of Sahab, and King Abdullah II Industrial City.
- Non-Governmental entities: bilateral and multilateral donors (SDC, ILO, GIZ, USAID, [illegible]siness owners, local citizens, in addition to local associations and CBOs.

The study team reached out to potential participants by sending them invitation letters (by [illegible], phone calls, fax, and social media platforms) a week before the workshop to allow them to plan their schedules accordingly. The invitation includes information on the project, the goals to be achieved, and the importance of the workshop.

At the beginning of the workshop, registration and welcome reception took place before the opening session. Including the registration in the attendance sheet, assigning personal badges, and assemble the participants packs and workshop agenda. Thirty-seven participants attended the workshop, one fifth of the attendants represented the environmental sector, while the remaining represented occupational safety and health specialists.

Presentation: In order to prepare participants for the group discussions, the Mayor of Sahab introduced the participants to the project interventions during the opening session, while bearing in mind the challenges with which the municipality has been coping for many years. Further clarification was presented by the study team, in order to give the participants a brief context of the issues, the gaps, and the proposed interventions. The opening session shed light on the environmental and OSH status in the stonecutting area of Sahab.

Mayor (His Excellency Mr. Abbas Maharma) Speech Highlights

In his speech, His Excellency Mr. Abbas Al-Mahrama discussed the history of the stonecutting area in Sahab that was founded 30 years ago. During that period, environmental and labor challenges have accumulated, and accompanied by a lack of hard work and negligence in many cases, in addition to limited financial and human resources. He also referred to some efforts placed by the municipality,

while providing examples of previous projects including road rehabilitation and maintenance of the stonecutting area.

While recognizing the importance of preserving the environment, sustaining OSH, and the necessity of investment opportunities, the mayor discussed the agreement signed between the SDC and the municipality of Sahab to tackle the challenges of the stonecutting area given the current circumstances. His Excellency also stressed that these efforts are preliminary, hoping to have them completed in later stages while highlighting the need to sustain cooperation and coordination with the embassy, the consulting firm and other concerned parties in this regard.

Presentation of Findings by the Study Team

The study team shared the methodology of the study with all participants, walking through the main stages of the work plan, starting from the design of the project, to the main findings of the Environmental and OSH assessments in the stonecutting area.

The team leader explained the process through which the study team acquired the data necessary for analysis. The data included the number of establishments, areas, age of each establishment, number of workers, and the type of ownership. She also presented a general overview of the production line of the stonecutting area, while briefly discussing the main inputs and outputs of the production.

For the assessment of Occupational Safety and Health, the team leader presented the assessment findings around 3 categories of risks:

- Risks prone to fatality.
- Risks prone to injury.
- Risks prone to diseases/illnesses.

For the assessment of Environmental Implications, the study team divided the challenges into 5 categories:

- Air Pollution.
- Waste Water.
- Solid Waste.
- Noise pollution.
- Vibration.

The team leader also presented the the socioeconomic challenges faced or perceived by owners, workers, citizens, the municipality and the city of Sahab as a whole. Finally, she concluded by sharing the following solutions of the study team who extracted the suggestions after multiple assessments, analyses, focus group discussions, and key informant interviews:

- Infrastructure.
- Regulatory and organizational aspects.
- Administrative aspects.
- Safety and Environment.
- Support for Establishments.

Facilitation

Grouping: The study team decided to split the participants into two different groups, in which each group has almost an equal number of participants divided by interest. Group I deliberated the environment, infrastructure and administrative interventions. And Group II deliberated the occupational safety and health interventions.

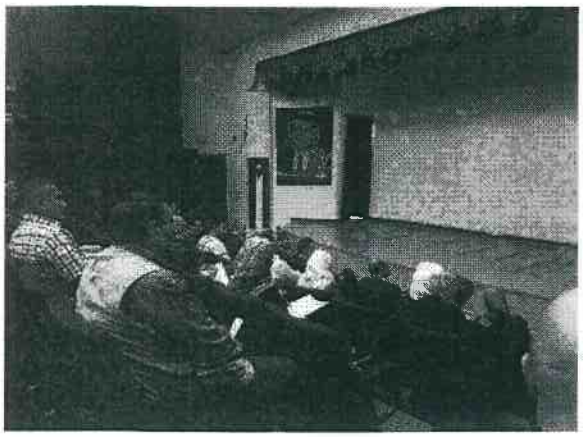
Results of the Group Discussion: Each group discussed a set of possible interventions, potential involvement of stakeholders, and assessed their impact on environment and occupational safety and health aspects. The discussion was facilitated by the research team and was summarized in a unified format. The following table include the priority of each intervention, on a scale of 1 (highest) to 5 (lowest), upon the agreement of all stakeholders.

Table 1: Interventions and Priorities

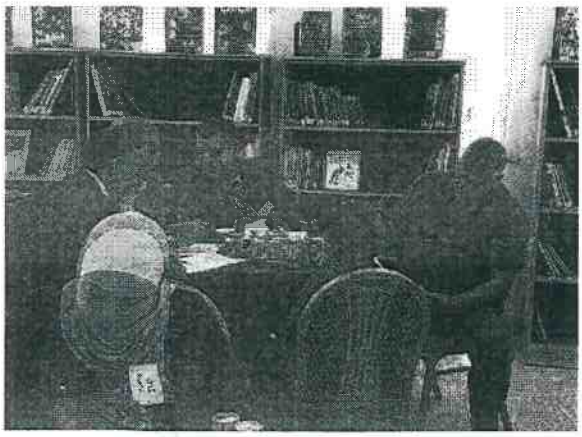
Intervention	Priority
Road rehabilitation- pavement, maintenance, numbering and lighting internal roads.	1
Identifying a single entrance and exit for the stonecutting area.	1
Allocating a secure parking area for trucks, along with a cleaning station to clean the trucks from the stone residues.	2
Establishment of a recycling station for the sludge resulting from the stonecutting operations.	2
Re-planning traffic routes to avoid passing through internal roads of the city or of populated areas.	2
Afforestation project.	3
Improving the performance of stonecutting enterprises and improving their services through providing technical and financial assistance.	1

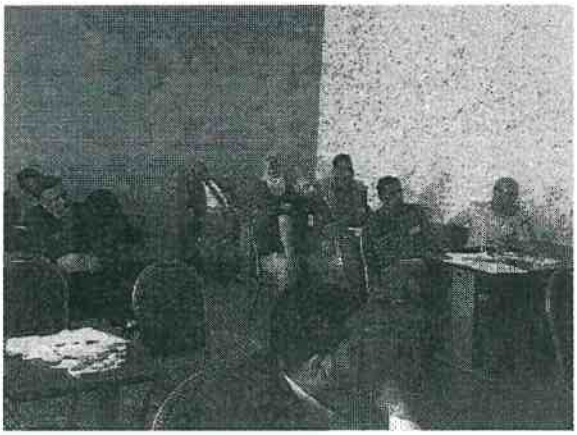
Intervention	Priority
Specialized training for workers and employers in the stonecutting area.	1
Providing technical assistance to the establishments from an expert or specialized body.	3
Gradually expand the license requirements by the municipality to cover occupational safety and health requirements.	3
Activating the role of the supervisory bodies to inspect the establishments according to their field of work.	2
Supporting the enterprises in marketing their products (e.g. participation in exhibitions and organizing specialized events to display products, organizing meetings with contractors, design and supervising companies, etc.).	2

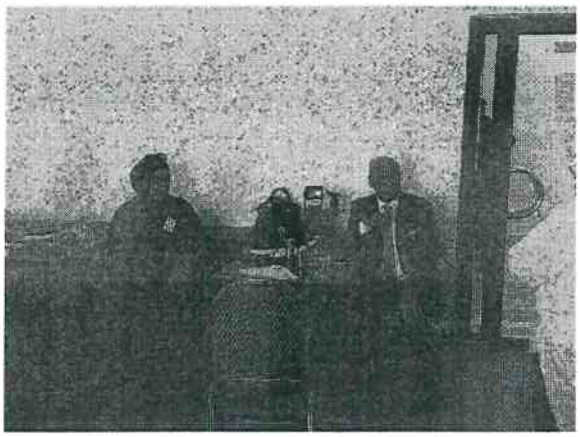
Workshop photos

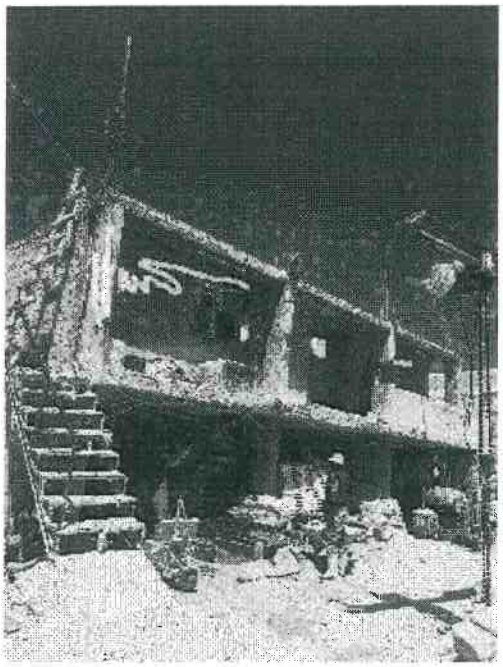




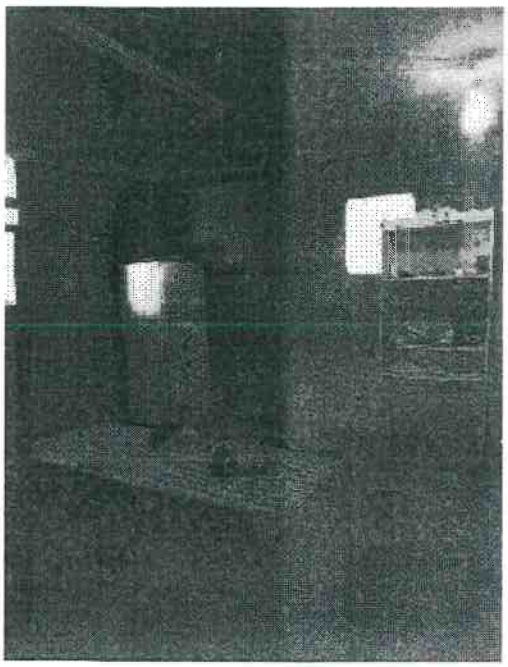


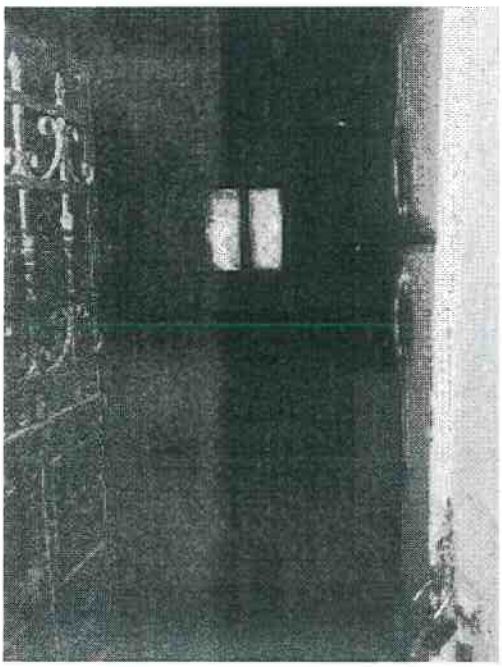




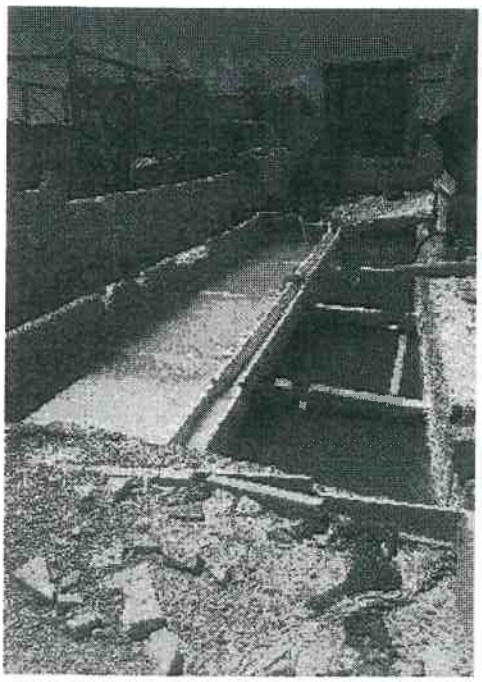


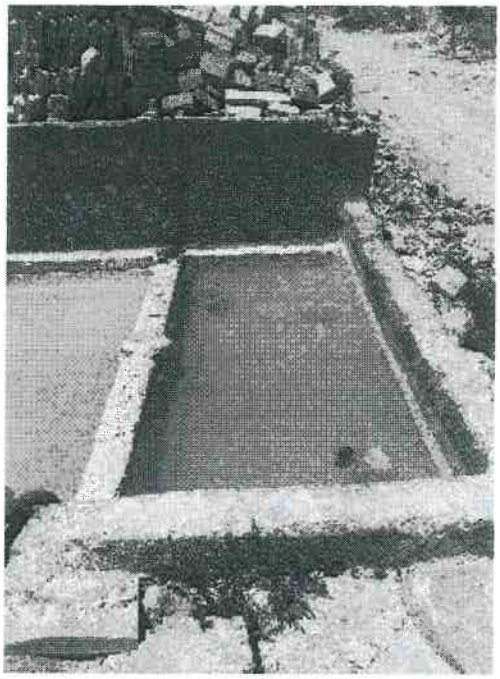
Automatic stonecutting below workers accommodation. Unsafe ladders and staircases.



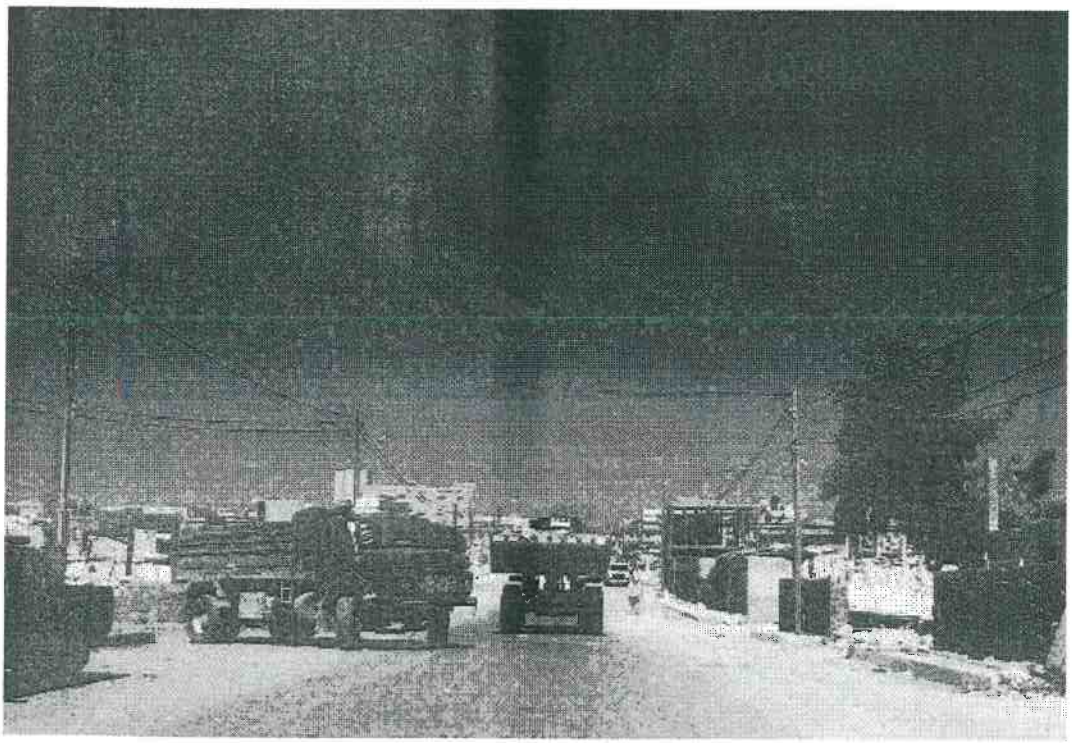


Workers accommodation lack cleanliness and usually do not meet requirements of relevant MOH instructions

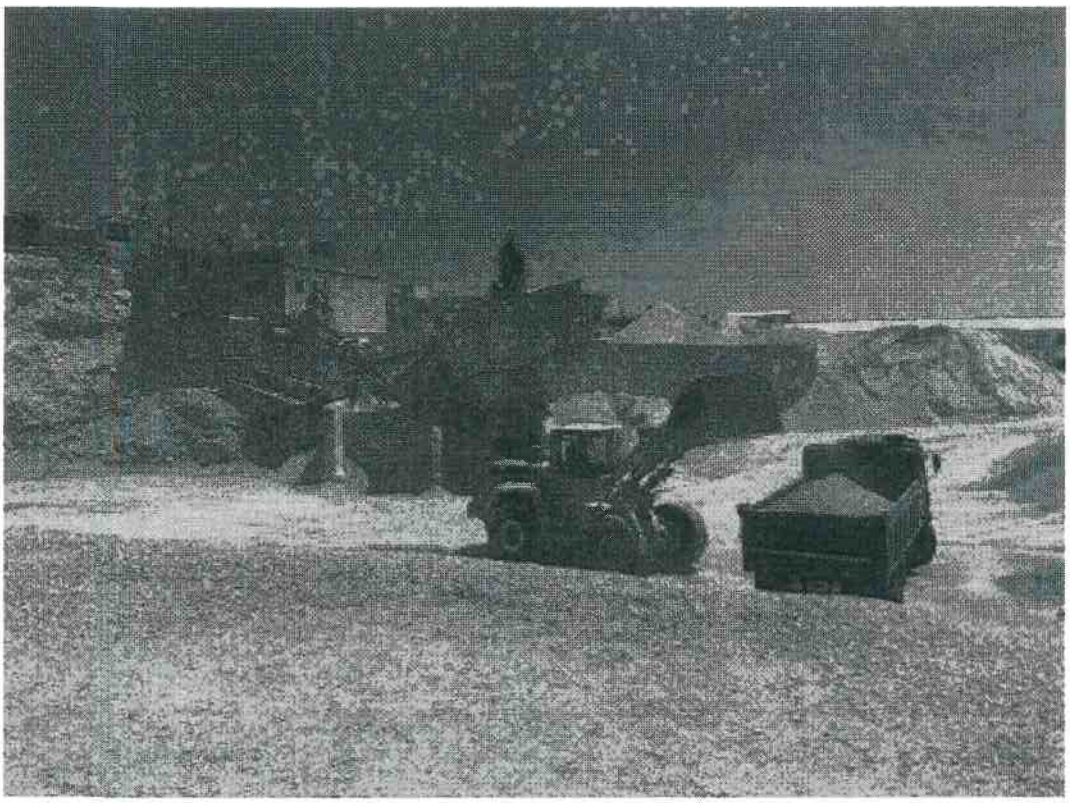




Cooling water pools, also used to store slurry, are 3 to 4 meters deep. These pools are usually not covered and some are located on the side of a road creating hazards not only to workers but for the public.



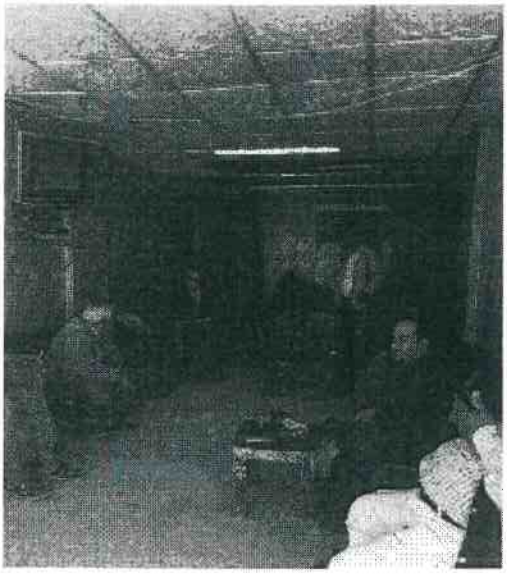
Loading of stonecutting residue in the main street of the stonecutting area. The residue was piled in the stonecutting enterprise at the right side of the picture.



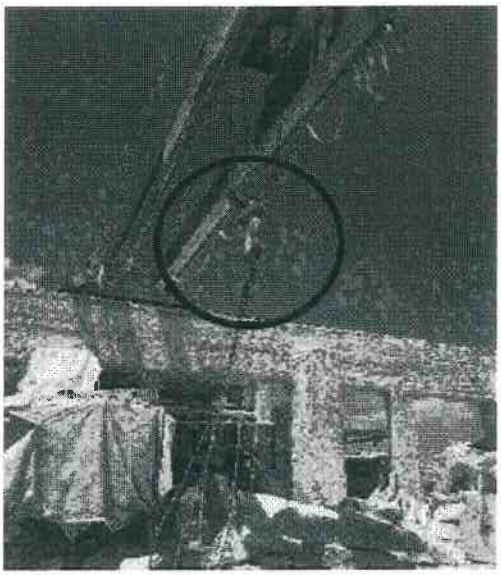
Stone crushers use the dry residue of stonecutting activities, but they operate in the open without any dust control measures.

Annex 5: Photos

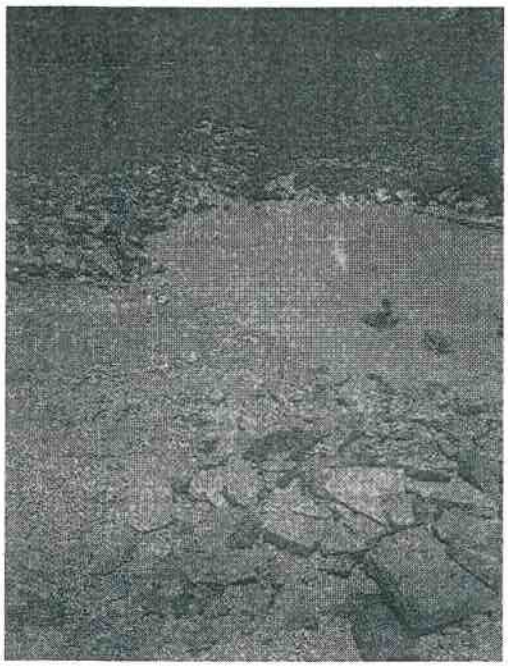
The photos below were taken during the field visits and the assessment that took place to few enterprises. Some details, such as faces and license plate numbers were covered for privacy reasons.



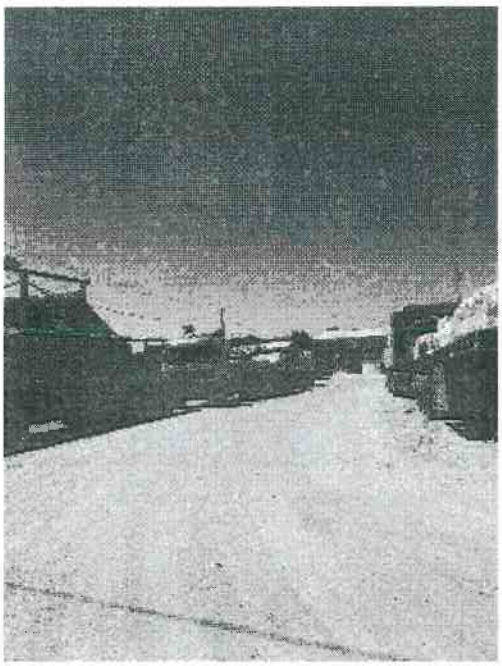
Group interview with truck drivers



Hazardous handling of raw material by cranes



Unorganized workplace lacking clear and safe pathways



Trucks parked in the main street of the stonecutting area. The paved street is covered with sand.



Technical Proposal

for

Social Services

Cash for Work- Green Infrastructure

Submitted To: GIZ

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Section I: Background

1 Introduction

Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ), Improvement of Green Infrastructure in Jordan through Labour-Intensive Measures (cash for work), seeks a provision of social services that aims to improve cash workers long-term employability prospects and current livelihood situation, and foster workers' self-awareness about their potentials, skills, needs, and daily stressors and facilitate referral systems for job placements and psycho-social support.

The target group includes 150 cash workers from the Sahab area; 50% Syrians, 50% Jordanians of which 20% are women. The workers will be employed by Sahab Municipality which is another partner to GIZ in the Green Infrastructure project. As these workers are under the supervision of the municipality, Future Pioneers for Empowering Communities (FPEC) will manage the provision of social services for them.

In this respect, FPEC is submitting this proposal that indicates the needed expertise to provide the required social services for the cash workers. The team has been carefully selected to cover the needed technical aspects and is equipped with experience from similar projects, and deep knowledge about the Jordanian context especially in Sahab which is vital to secure the best results for this project.

2 About FPEC

Future Pioneers for Empowering Communities' Members in the Environmental and Educational Fields (FPEC) is a non-profit organization established on March 20th, 2012 specialized in empowering community members to overcome poverty through building their capacities, raising their public awareness, and promoting SMEs in the educational, environmental, health and social fields with special focus on women, youth and marginalized groups. FPEC's strong and comprehensive partnerships have enhanced its chances in the local and regional market, within approximately six years; the total turnover of the organization has exceeded 4.0 million euros.

Part of FPEC's activities in Sahab was supporting the establishment of a local community organization (CBO) called "The Sustainable & Community Development Association (SCDA)" in 2016 to ensure more sustainability of results and community ownership. SCDA aims at raising the quality of life through focusing on rural areas and areas with less privileged inhabitants. Accordingly, and as part of FPEC approach to ensure sustainability of project results, FPEC has engaged SCDA in developing this proposal and will cooperate with it to be part of project implementation as a local CBO in Sahab.

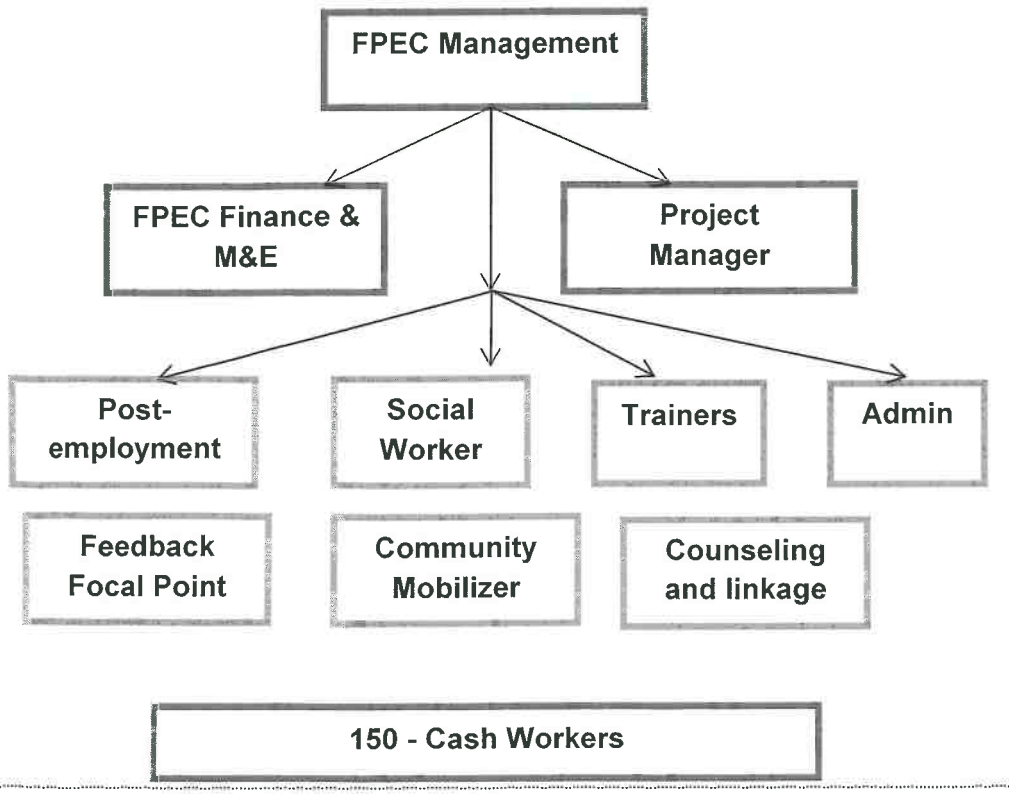
3 Objectives and measures

The primary aim of the project is to improve cash workers' long-term employability prospects and current livelihood situation.

- Fostering workers' self-awareness about their potentials, skills, needs, and daily stressors.
- Enhancement of workers' social and psychological status through the facilitation of referral systems for psycho-social support and livelihood counseling.
- Sensitization of supervisors and field staff about trauma and daily working stressors.
- Enhancement of social cohesion between Jordanian and Syrian cash workers and implementation of gender sensitive approaches.
- Improvement of the longer-term employment perspectives for the cash workers through on the job-trainings and job referrals.
- Building capacity of 150 vulnerable Jordanians and Syrians by offering on the job and needs-based trainings (max. 80% men and min. 20% women; 50% Jordanians and 50% Syrians)

In order to achieve those aims, the following measures are planned:

- Identification of cash worker skillsets and potentials (case management system).
- Provision of post-employment services (job referral and follow-up on case management).
- Support field staff and supervisors on sensitization of trauma and daily stressors.
- Psycho-social support and counseling for cash workers.
- Provision of livelihood counseling.
- Provision of referral systems.
- Provision of on the job training needs-based/specialized trainings.
- Development and follow-up on feedback mechanism.
- Provision of general information sessions on available rights and services.
- Provision of team building activities and sessions.



Section II: Provision of social services

With the provision of social services, FPEC aims to enhance the employability perspectives of 150 workers employed in Sahab for the improvement of public spaces and improve their psycho-social wellbeing.

1 Provision of employment and post-employment services

FPEC added value lies in its capacity to plan and implement large-scale community development projects in a wide range of topics while effectively utilizing the potential existing in these communities. FPEC has been a strategic partner for Sahab Municipality in the past four years as it helped the municipality to identify its challenges, develop needed programs and attract donors to support these programs.

1.1 Pre-employment

1.1.1 Mobilization

In order to undertake the proposal within the allotted time frame, the team will mobilize quickly and a kick off meeting will take place after the project commencement. A one day group trip will be organized to the three proposed sites in Sahab along with the core team members, GIZ, Municipality and cash workers representatives. This early mobilization and field visit will help in understanding the project, raise awareness and give an opportunity to brainstorm and discuss issues, increase the sense of belonging, and highlight the importance of public open space to inhabitants.

1.2 During employment

1.2.1 Case management system

1.2.1.1 Baseline survey to workers

Baseline surveys will be distributed by the post-employment and case management focal point to cash workers to be filled, collected, and filed. This survey will be the starting point to create the classification criteria needed to classify participating cash workers into groups. The form of the survey will be in Arabic language.

1.2.1.2 Classification criteria

The project's team, led by the post-employment and case management focal person, will start by assessing the case of each cash worker through analyzing the baseline survey in order to have deeper knowledge about each cash worker mainly, but not limited to:

- His/her professional and academic background,
- Household status,
- Existing skill sets,
- Personal aspirations and long-term professional goals,
- Understanding of the local market and analyzing the potential support offered to the individuals in order to have a clear understanding on the participating cash workers.

Based on the results of the baseline surveys and the livelihood counseling with workers, the workers will be divided into groups and they will be allocated into different needs-based / specialized training courses. On the job trainings will be also part of the process and offered generally to workers. The results of the surveys will provide a preliminary overview of each worker's skillset, capacities and needs.

It's important at the beginning to highlight that case management process must be documented from the start till the end and how the case baseline and other documents will be stored and protected confidentially. Filing each case is very important, so either the data will be managed through a simple system or could be done through software such as Commcare as software system to be used for data management to have strong history for each case including referrals.

FPEC will recruit the project field team from Sahab local community in cooperation with SCDA to facilitate implementation and mobilization. Accordingly, FPEC will train the project assigned team to ensure that they are able to do the following:

- Identify the case of the worker
    - Evaluate the case of each worker based on a standard evaluation template that is used by a majority of organizations.
    - Evaluate the resources and strength points that the project have and addresses the needs of the worker
    - Evaluate the threats due to lack of needed human and financial resources to address the needs of the worker.
- Plan for the case
    - Plan for the safety of the worker in cooperation with the worker him/herself to ensure addressing the worker needs and reflecting his /her wishes. Usually these plans focus on the main needs such as health care and safety.
    - Plan for the solution/action based on the case.
- Handle the case
    - FPEC will be creating and using a referral matrix to connect the needs with the services available.
    - The team will be educated how to refer the case to suitable parties or specialized organizations that are able to provide the needed service and keep close coordination with them.
- Follow up for the case
    - Scheduled, continuous contact with the relevant persons via their preferred communication channel (phone call, text, what's app email, etc.)
- Closure of the case.
    - Making sure that all paperwork is on file

1.2.2 **Provision of specialized trainings**

All training courses will be conducted during the 10 months project period, whereas all cash workers must attend at least one training course during their employment period. However, cash workers must additionally attend the introduction day training session for 3 hours.

On the other hand, the cash workers will still have the choice to attend other training courses before or after their employment period to fulfill their goals and ambitions. It is worth to note here that every two months there will be a variety of three training courses where the cash worker during his employment period can choose a training course to attend.

A number of the following trainings will be provided, according to the identified existing skillsets within the cash workers group.

- Work Success Training Course
  - This course will guide cash workers through the steps to become successful in their jobs and lives.
- English Language Course
  - This course aims at improving participants' basic English skills to ease communication throughout their jobs.
- Employability Training Course
  - This training course will build on the previous work success lecture given at the beginning of every training course. The employability skills are non-technical skills which contribute to an individual's effective participation in the workplace.
- Rights and Duties Course
  - This course will be given by an experienced lawyer. It will be divided into two courses to facilitate the information perception. The first course will cover the "Worker Rights" topic and the second course will cover the "Workers Duties" topic.
- Micro Business Grants Training Course
  - The aim of this course is to provide basic skills needed for starting up or improving a micro business.
- Economics Basic Course
  - Household economic skills: The course will be given by a well experienced accountant to cover "creating better socio-economic living conditions at the family level utilizing the available resources and saving for better future planning" topic.

After every training course an assessment survey will be distributed to the participants, to gather their feedback, comments, lessons learnt and recommendations. These results of analyzing these surveys will be taken into consideration later in the project.

FPEC commits to prepare certifications for all training courses for all participants and handling it to them through a small graduation ceremony.

1.3 Post-employment

1.3.1 Follow-up mechanism with cash workers

1.3.1.1 Livelihood counseling

The post-employment and case management focal person will offer general information sessions for the workers about the available information and services in Jordan for them. This includes information on different livelihood topics. Also, the workers will be educated on how to search for this information and access it. Such sessions will increase the workers' capacities during and after the project to know, understand and stand for their rights and the services available to them.

1.3.1.2 Job and training referrals

FPEC can build on its own strong referrals matrix through its referral specialists and strong referral networks with organizations that provide different services for the refugees such as education, health, emergency, and legal services.

FPEC will offer support and references to the post-employment and case management focal person to expand the referrals matrix and include the livelihood sector.

There will be a "services mapping" in the targeted area and for the identified vulnerabilities in order to map the available organizations and services for referrals. This will facilitate the job referrals for the workers which is mainly allocating the worker to a job that best suites his/her qualifications and skills. The workers will be referred based on the results of each case to increase their chances of employment.

A referral voucher will enable to (i) identify who referred the case and (ii) enable the actor that did refer the case to monitor effective access to services for the person he referred.

This will allow the focal point to know to which service a worker is mainly referred to and to evaluate which proportion of the referrals are effective. Also, this will allow the referred organization to have a better idea of who is mainly referring people to their services.

- Ensure close follow up for the case, proper coordination and proper feedback.
- Close monitoring and follow up for the case to ensure a positive response by the worker, e.g. through:
    - House visits.
    - Phone calls.
    - Regular meetings with the worker.
    - Coordinating with the organizations that received the case and affirmation that the worker is receiving the needed services.

2 Development of feedback mechanism

FPEC will design and implement a feedback mechanism that facilitates the exchange between employer and employee on working conditions during employment. FPEC will also use gender sensitive and inclusive approaches that consider specific needs of different target groups or people in this process (e.g. women, disabled, etc.).

2.1 Management of workers' suggestions and complaints

2.1.1 Tools and methods

Different tools will be used in order to gather the workers complaints and suggestions following a safe and comfortable approach. Main proposed tools and channels are:

- The hotline
- The suggestions and complaints box. This will be put in a suitable and accessible location for the workers in the field
- Encouraging an open door policy with management
- Approaching the feedback mechanism focal person
- Potentially also social media such as WhatsApp and Facebook. Syrian refugees like both tools, as proven in many studies

2.1.2 Classification criteria

The received suggestions and complaints will be followed up by the feedback focal person, analyzed on a regular basis, reviewed and classified to come up with solutions and recommendations that are responsive to the short employment duration of the workers.

First step will be reviewing all received written forms, phone calls, and recorded notes and classifying them into two categories:

- Complaints
- Suggestions

Second Step: Then the complaints will be further classified into a data base, including all relevant information and the case type. The complaints and their response matrix in brief can be classified as follow:

- Urgent cases – the focal point should take an urgent action and in case it cannot be solved in house, the focal point will accompany the worker to the specialized organization on the spot.
- Emergency cases – the focal point should take an urgent action and in case it cannot be solved in house, the focal point will refer the case over phone.
- Normal cases – the complaint can be solved in house

Third Step: Then the suggestions will be further classified into a data base where there will be a response matrix based on the type of suggestions:

- Project management related
- Working conditions

Currently, FPEC does not have specific software for classifying the complaints and suggestions, but this will be further investigated at the beginning of the project to develop a suitable system benefiting from FPEC's relevant experience and its networks.

2.2 Reflections and post-employment survey

The post-employment survey (document by CfWGI) will be distributed by the feedback focal person during the last week of the workers' employment. The focal person will make sure that all workers have completed the survey, have been given sufficient time, and are offered the needed support to answer it. The focal person will make sure that all surveys are properly filed and handed in to the M&E team hired by the municipality of Sahab.

Also, the feedback focal person will facilitate focus groups with workers whose contracts are finished to collect their reflections about different topics such as the project, supervision, management, activities, implementation, etc. and derive a set of recommendations for the upcoming groups and implementations.

3 Improvement of psycho-social wellbeing

The counseling and linkage focal person will sensitize supervisors and field staff regarding daily stressors for workers and trauma symptoms, and increase their realization of their own limits and responsibilities in dealing with daily incidents in the field. It will also provide support to cash workers through referral systems.

3.1 Offering psycho-social referrals for cash workers

The goal is to develop and update a referral system for psycho-social support that fits the short duration of employment. The counseling and linkage focal person will provide a gender sensitive system that aims for the provision of referrals for special cases or workers who are in needed. The counseling and linkage focal person will also offer on an optional one-on-one session for cash workers who seek for help once-a-week during their employment period. In these sessions every cash worker will have a private ten-minute session with the counseling and linkage focal person to discuss his/her issues and be offered referrals. There will also be an open hotline with the same focal person for the entire period of the project. The counseling and linkage focal person will also be available for any further medical assistance or psycho-social support two months after the employment of the worker ends. The counseling and linkage focal person will attend the introduction day session introduce the offer to the whole group. The following activities will be considered to ensure the development of a comprehensive referral system:

- An up-to-date and context-based mapping of local services.
- Acknowledge, analyze and integrate pre-existing referral system/service mapping in the project area.
- Ensure effective coordination between all stakeholders involved.
- Analyze condition of access to services for all members of the community. Develop mechanism to eliminate barriers to accessibility identified by communities.
- Develop emergency management mechanism and gap analysis.
- Acknowledge, analyze, integrate and apply specific and existing operational process of different actors. (i.e. if the health center has already its own forms and following up procedures, apply it and don't change it).
- Usually, spreading the referral system/service mapping to a wider public, in adapted format, language and location, is key part for the sustainability of the system and community's appropriation and use.
- Regular and continuous follow up.

The following chart explains the main steps to the psycho-social referral system:



Classifying cases according to the following types:

- Urgent cases – the team will accompany the worker to the specialized organization on the spot.
- Emergency cases – the team will refer the case over phone.
- Normal cases – referral can be done through the standard templates which are used to avoid repetition of services, or through e-mail.
    - Review the matrix of the organizations that provide such services.
    - Draft the case map to ensure close follow up for the case, proper coordination and proper feedback
    - Ensure proper documentation.

Regular updates of the referral system will be based on monitoring and evaluation of actual use of services by the beneficiaries. This can be done through

3.2 Sensitizing supervisors and field staff in trauma-related issues

An awareness raising program will be provided to the supervisors and field staff from the involved parties, especially those who work on daily basis with the cash workers. The counseling and linkage focal person will educate these supervisors about how to be sensitive and understanding to stress factors.

This is important to understand the impact of stressors on individuals, families, communities and organizations; and know the specific skills and techniques for providing services in an informed manner.

The participants will be informed about stressor and traumatic material which includes examples of traumatic events and daily stress factors. Some of these can be graphic and may elicit an overwhelming emotional response in a participant, even trigger a traumatic memory.

Main standards for the case are:

- Learning and defining communication tools.
- Ensuring safety and security.
- Providing the emotional support by showing attention and consideration.

- Providing the information needed to enable the worker to make wise decisions.
- Respecting the others' rights, decisions, thoughts and ideas, making sure to include him/her in the decision-making process.
- Ensuring confidentiality.
- Ensuring equality and avoiding discrimination.
- Ensuring having the best interest of the worker first

The program will include interactive discussions to ensure that participants gained basic knowledge on worker stressors and trauma. It aims to cover the following topics:

- Defining stressor symptoms.
- How to identify stressor symptoms.
- Recognizing the signs and symptoms of stressors in individuals.
- Integrating knowledge about stressors into policies, procedures, and practices; whilst seeking to actively resist re-traumatization (i.e., avoid creating an environment that inadvertently reminds patients of their traumatic experiences and causes them to experience emotional and biological stress).
- Explaining stressor consequences.
- Exploring Stressor-Informed Correctional Care especially if it evolved to be a trauma.
- Gaining knowledge and skill in using counseling strategies to alleviate distress symptoms and to empower those who are traumatized.
- Preventing secondary stress in staff.

4 Enhancement of social cohesion

FPEC will develop team building activities for the cash workers, considering gender sensitive and inclusive approaches that manifest the involvement of women for the aim to enhance the social cohesion between different groups and people.

4.1 The 10-min session

During the project, the Syrian and Jordanian cash workers will have the opportunity to get to know each other and build mutual trust. There will be periodical 10 minute morning sessions where cash workers are being introduced by the community mobilizer to different topics (e.g. life skills, gender related, peace building, conflict dialogue and transformation, interpersonal skills, inclusion of disabled people etc.) that will provide them with practical skills to improve their quality of life, and at the same time enhance the social cohesion between Jordanians and Syrians, and ensure women involvement.

4.2 "Our initiative"

Each group of cash workers will be guided by the social worker and community mobilizer and asked to organize a community event addressing one of the urgent needs identified in the local community. The aim of this initiative is to:

- Support GIZ and the municipality to take a more active role in addressing the local community's needs.
- Take the collaboration between Syrian and Jordanian cash workers to the next level, outside the training room.

- Support in building participant's self-esteem and confidence as active members of the society – at the same time expanding the positive impact of the program to workers' families, neighbors and the community as a whole.

Section III: Communication, monitoring and reporting

A With GIZ

- Progress emails sent to GIZ by the project manager, copying relevant team members.
- Bi-weekly progress meetings with the GIZ team.
- Monthly progress report (a template will be provided by GIZ) to clarify the progress of activities made, challenges, solutions, achievements against the scheduled deliverables, planned activities, any needed amendment and lessons learnt. Specifically, the report will include information about the case management system (baseline survey), the follow-up mechanism with cash workers, the management of workers' suggestions and complaints with annexes for the baseline survey and for all recorded suggestions and complaints.
- Training schedule for the whole project time (excel sheet with location, on-site training responsibility, number of planned participants, topic of training, date) which is then updated on a monthly basis.
- Documentation of conducted trainings (training report in 1 pdf document per training including minutes, signed participant list, pictures, number of participants split into men and women, Syrians and Jordanians).
- Documentation of community participation events (minutes including an estimation of how many participants – men, women, Syrians, Jordanians, further community members; pictures).

B With Sahab Municipality

- Regular updates to the Municipality.
- Handing over the filled post-employment surveys to the municipality's data entry persons

ملحق 2: الوثائق ذات الصلة والمراجع

References	المراجع
Air Protection By-law No. (28) For the Year 2005	نظام حمايه الهواء رقم (28) لسنه 2005
Environmental Impact Assessment By-law No. (37) For the Year 2005	نظام تقييم الاثر البيئي رقم (37) لسنه 2005
By-law of Professions System in Amman Municipality - By-law No. (177) for the year 2016 The system of control and regulation of public markets and crafts and industries, shops and businesses disturbing the public safety and health within the jurisdictions of the Greater Amman Municipality	نظام المهن في امانه عمان – نظام رقم (177) لسنه 2016 نظام مراقبه و تنظيم الاسواق العامه و الحرف و الصناعات و المحلات و الاعمال المقلقه للراحه العامه و المضره بالصحه ضمن حدود امانه عمان الكبرى
Environmental Inspection and Control By-law No. (65) For the Year 2009	نظام التفتيش و الرقابه البيئيه رقم (65) لسنه 2009
By-law of prevention and safety for machines and industrial machines and work sites No. (43) for the year 1998	نظام الوقايه و السلامه من الالات و الماكنات الصناعيه و مواقع العمل رقم (43) لسنه 1998
Formation of committees and professional health supervisors By-law No. (7) for the year 1998	نظام تشكيل لجان و مشرفي الصحه المهنيه رقم (7) لسنه 1998
The Labor Inspectors' By-law and its amendments No. 56 of 1996	نظام مفتشي العمل و تعديلاته رقم (56) لسنه 1996
Law of Professional Licenses and Its Amendments No. (28) Of 1999	قانون رخص المهن و تعديلاته رقم (28) لسنه 1999
The Public Health Law (47) for the year 2008 and its amendments	قانون الصحه العامه (47) لسنه 2008 و تعديلاته
Law of Professional Crafts - Law of Crafts and Industries (16) for the year 1953	قانون الحرف المهنيه – قانون الحرف و الصناعات (16) لسنه 1953
Municipal Law No. (41) for the year of 2015	قانون البلديات – قانون رقم (41) لسنه 2015
The Public Health Law No. (47) for the year 2008 - Health hazard related to the health damage caused by the housing units of the labor communities	قانون الصحه العامه رقم (47) لسنه 2008 – منه حدوث المكاره الصحيه المتعلقه بالاضرار الصحيه الناجمه عن الوحدات السكنيه للتجمعات العماليه
Labor Law and its amendments No. 8 of 1996	قانون العمل و تعديلاته رقم (8) لسنه 1996
Labor Law and its amendments No. (8) for the year - a decision concerning the records to be retained by the employer for the year 2002	قانون العمل و تعديلاته رقم (8) لسنه – قرار خاص بالسجلات الواجب على صاحب العمل الاحتفاظ بها لسنه 2002
Civil Defence Law No. (18) of 1999 on the management of industrial cities to establish their own fire stations equipped with self-protection requirements (clarification of these inputs)	قانون الدفاع المدني رقم (18) لعام 1999على ادارة المدن الصناعية بمستلزمات الحماية ان تنشا محطات اطفاء خاصة بها مزودة توضيح هذه المستلزمات - الذاتية
Civil Defence Law No. (18) for the year 1999	قانون الدفاع المدني – قانون رقم (18) لسنه 1999
The provisions of Article (5) of the system of forming committees and supervisors of public safety and occupational health No. (7) for the year 1998	احكام الماده (5) من نظام تشكيل لجان و مشرفي السلامه العامه و الصحه المهنيه رقم (7) لسنه 1998
Article (52) of the Labor Law No. (8) of the year 1996 - the minimum wage for Jordanians	الحد الادنى للاجور 1 الماده (52) من قانون العمل رقم (8) لسنه 1996 للاردنيين
Article (74) of the Labor Law No. (8) for the year 1996– youth hazardous jobs	الماده (74) من قانون العمل رقم (8) لسنه 1996 – خاص بالعمال الخطره او المرهقه او المضره بالصحه للاحداث
Article (69) of the Labor Law No. (8) of the year - a decision on the work and times when the employment of women is prohibited	الماده (69) من قانون العمل رقم (8) لسنه 1996 – قرار خاص بالاعمال و الاوقات التي يحظر تشغيل النساء فيها
Environmental Audit Regulations for the Year 2014 - Environmental Protection Law No. (52) of 2006	تعليمات التدقيق البيني لسنه 2014 - قانون حمايه البيئه رقم (52) لسنه 2006
A decision issued by the Minister of Labor concerning medical resources and equipment for workers in institutions - Article 78 Labor Law No. 8 of 1996	قرارا صادر عن وزير العمل خاص بوسائل و اجهزه الاسعاف الطبي للعمال بالمؤسسات – الماده (78) قانون العمل رقم (8) لسنه 1996

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August 31, 2018

Subject: Final Report, Findings and Improvement Plan

Dear,

Enclosed, please find the final report for the subject consultancy. Shall you have any questions or specific inquiries, please do not hesitate to contact us.

We thank you for the opportunity to provide our services.

Yours sincerely,

Tarawneh

Dr. Tarek Tarawneh
Managing Partner at **id:rc**

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Abbreviations

FGD	Focus Group Discussion
COx	Carbon Oxides
GIZ	German Society for International Cooperation
JD	Jordanian Dinar
MOENV	Ministry of Environment
MOH	Ministry of Health
MOL	Ministry of Labor
NOx	Nitrogen Oxides
OSH	Occupational Safety and Health
PM 2.5	Particulate Matter, 2.5 micrometers or less
PPE	Personal Protective Equipment
RSS	Royal Scientific Society
SDC	The Swiss Agency for Development and Cooperation
SOx	Sulfur Oxides
PPP	Public-Private Partnership

1.0 Introduction

This report present an overview of the findings of data collection activities conducted by the research team in relation to decent work in the stonecutting enterprises in the Municipality of Sahab. The methodology of the assignment have been structured to follow the main stages defined in the ToR which is also summarized in the table below. The following are data collection activities conducted so far.

- The research team conducted an extensive desk review of relevant legislations and references to understand the context and capture main legislative frameworks governing licensing and operation of stonecutting activities. A list of these references is included in Annex 1.
- Following that, the research team worked closely with the Municipality's team to identify the relevant stakeholders and which were met accordingly, as indicated by Annex 2. The research team also conducted multiple meetings with relevant directorates and departments of the Municipality including the zoning department, the vocational licensing department, the health department and others.
- Site visits to the stonecutting area were also conducted to assess the status of roads and other infrastructure.
- Enterprise assessment was conducted to 40 enterprises in the stonecutting area covering occupations safety and health, environment dimensions and aspects relevant to the objectives of the assignment. The assessment took place over three days and the municipality staff worked closely with the research team during the data collection phase. A pilot assessment took place beforehand to test the enterprise assessment tool.
- Individual and group interviews took place with workers, tank drivers, truck drivers and members of local communities living in close proximity to the stonecutting area.

The database of the stonecutting enterprises was shared with the research team in August and the research team improved the analysis conducted of the stone cutting enterprises in the findings section of this report but also conducted additional analysis of all enterprises on the database. Few main tables were created to provide the Municipality of Sahab with an improved understanding of the licensed enterprises and the review generated, have been developed and are included in the Annex. The research team also utilized the data in the development of GIS maps of these enterprises.

Suggested improvement measures were included in a findings report and were thereafter presented and discussed in a workshop with the relevant stakeholders. The workshop was designed to validate the effectiveness and applicability of the proposed interventions by the stakeholders that are relevant to the operations, management and sustainability of the stonecutting area.

Assessment of Occupational Health & Safety	Assessment of Environmental Impacts
Desk Review and Identification of Stakeholders	
• Literature review • Identification of stakeholders • Gathering of regulations and requirements of stakeholders	
Database Build Up	
• Listing exercise of registered stone cutting shops: o Size and number of employees (if available) o Licensing status, and business type o Location (plot number and plot area)	
Enterprises Database	
• Obtain the enterprises database from Sahab Municipality • Classify the enterprises to the extent possible • Develop GIS maps and add attributes for map layers (size, location, etc.) throughout the assessment (field audit activities)	
Develop OSH Audit Tools	**Develop Environmental Assessment Tools**
• Initial walk through and conditions evaluation • Development of audit tools • Review of tools	• Initial walk through and conditions evaluation • Definition of valued environmental components • Development of tools • Review of tools
Sample Selection and Field Audits	**Sample Selection and Field Audits**
• Develop selection criteria • Selection of sample • Conducting audits • Focus group discussions (FGD) (employees and employers)	• Conducting audits of establishments • Evaluation of surrounding areas • Field measurements (noise and air quality) • Focus group discussions and/or group interviews with truck and tank drivers) • Focus group discussions with local residents
Comparative Analysis	**Comparative Analysis**
• Review rules, laws, and regulations • Compare existing conditions to rules and regulations • Define gaps related to OSH	• Review rules, laws, and regulations • Compare existing conditions to rules and regulations • Define gaps related to Environment
Intervention Plan	**Mitigation Plan**
• Project design • Costing of interventions • Prioritization of interventions • Assigning responsibilities	• Project design • Costing of interventions • Prioritization of interventions • Assigning responsibilities

2.0 Assessment Findings

2.1 Mapping of Stonecutting Area

2.1.1 About Sahab City

With an area of 12 km² and population of 178,700 inhabitants[1], as well as thousands of Syrian refugees and expatriate of different nationalities mostly Egyptians, Sahab district is considered as a commercial gathering point for all surrounding cities and villages, and a stronghold for various investments and industries. This is signified in Sahab's Industrial City (King Abdullah II Industrial Estate) and Industrial Complex stretching the industrial zone over 150-200 dunums. Additionally, Sahab houses about 400 stonecutting enterprises, and brick factories.

2.1.2 Mapping of Sahab Stonecutting Area

Relevant Legal Information

Ownership: Most of the land plots in the Stonecutting Area are privately owned by citizens or corporations. Foreigners and locals get long term leases and utilize the land for stonecutting activities, providing an opportunity for the lessee to invest in the land and creating a recurring a reliable revenue stream.

Using the municipality licensing database, the study team found that 66% of the 375 enterprises were registered as sole proprietorship, and the remaining 34% were registered as companies - *Figure 1.* On the other hand, among the enterprises that were assessed, 53.8% were registered as sole proprietorship, and the remaining 46.2% were registered as companies - *Figure 2.*

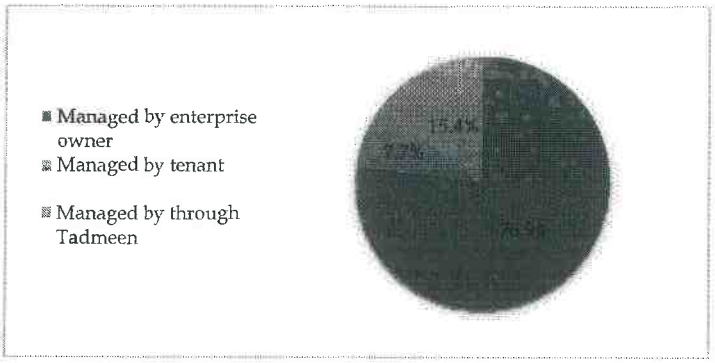




The enterprise assessment indicated that 92.3% of the enterprises are owned by Jordanian nationals, and 5.1% are owned jointly by Jordanian and Egyptian nationals. Meanwhile, the remaining 2.6% of the enterprises were owned solely by Egyptians. Operation and management of the stonecutting enterprises is usually done by the enterprise owner (77%) as indicated by the enterprise assessment. The remaining 25% are managed and operated by others who either lease the enterprise properties or rent it out for a fixed monthly amount (known locally as Tadmeen[2]) - *Figure 3.*

[1] *According to 2017 statistics: Department of Statistics (DOS)*

[2] *Both rent and Tadmeen entail paying the owner a fixed amount (rent) for a specific period of time, but rent is usually done formally through a contract while Tadmeen tend to be informal.*



Business Licensing and Corresponding Legislation: Enterprises that are registered as companies or sole proprietorship, can obtain a vocational license from the Municipality after they obtain an approval from the Central Licensing Committee.

- Registration of a legal entity, either a company or a sole proprietorship, at the Companies Controller Directorate or the Commercial Registry at the Ministry of Industry and Trade and Supply.
- Obtaining an approval from the Central Licensing Committee which include all entities responsible for licensing of business.
- Registering as a member at the Chamber of Industry.
- Obtaining a vocational license from the Municipality.
- Renewing vocational license on annual basis after renewing membership at the Chamber of Industry.

The vocational license, issued by municipality, is associated with the location of the enterprise and ensures that enterprises are operating within zones that allow their activity.

Meanwhile, and according to the Chamber of Industry located at King Abdullah II Industrial Estate, members are classified into two groups:

1) Manufacturer Enterprises: with registered capital of more than JD 30,000 and 10 or more Jordanian workers, and
2) Craftsman Enterprises: with a registered capital below JD 30,000 and less than 10 Jordanian workers.

Operation of the stonecutting enterprises follows a myriad of legislations (Annex 1) that the research team reviewed and found that it includes excellent best practices. These includes bylaws and instructions issued pursuant to the labor law by the Ministry of Labor (MOL) and the environment law by the Ministry of Environment (MoENV) and other government agencies including Ministry of Health (MOH). **Nevertheless, lack of capacity among relevant stakeholders to carry out regular inspections to the enterprises is limiting compliance with applicable legislations.** In many cases, the inspectors are not even able to identify or enter the stonecutting enterprise given the lack of signage. The research team found limited data available in all of these entities in relation to the stonecutting enterprises as a result. Interventions proposed in the following sections address many of the issues faced by these stakeholders. **On the vocational licensing requirements, the Municipality do not have a clear list of licensing requirements of stonecutting enterprises which is an area where improvement is needed.** Additionally, the municipality lacks staff, in number and capacity, to carry out control non-compliance enterprises in the area.

Size of the Stonecutting Area

Number of Enterprises, Number of Workers and Municipal Revenue. The research team obtained data on stonecutting enterprises who renewed their membership at the Chamber of Industry in 2017 and 2018. The data indicates that there are 171stonecutting enterprise who renewed their membership in these two years, employing 657 Jordanian workers. The vast majority of registered enterprises operating in

the Stonecutting Area are under the craftsman category. Consequently, they are not eligible to run for the Chamber's board, nor to vote during the board's election. On the other hand, the Chamber provides certificates of origin for the members classified as craftsmen if they need it to export, while the registered enterprises as manufacturers receives more technical support including supporting them to participate in trade fairs. This indicates that there might be a need for capacity building programs specifically addressing the businesses under the craftsmen category, or that more technical support is needed for those businesses since the chamber does not support them.

The study team had analyzed a database extracted from the vocational licensing department IT system at Sahab Municipality on August 2018 and identified 375 stonecutting **enterprises that renewed their vocational license at least once between the year 2015 and 2018**. It was found that 68.3% of them registered as stonecutting enterprises, 12.5% registered as (Stone and Marble) cutting and/or lathing enterprises, 6.7% as (Brick and Tile) factories, 8% as (Mixed) stone-marble cutting and brick/tile factories, 1.6% retailers of heavy equipment and spare parts used for stonecutting, 0.8% (Marble and Granite) cutting enterprises, and the remaining 2.1% specialized in selling natural and artificial stone, and stonecutting residue crushing. The research team also analyzed a database including vocational licenses issued or renewed on 2014 or before. The analysis indicated that all stonecutting enterprises in the earlier database are included in the current database.

On the other hand, the study team has assessed 40 enterprises in the stonecutting area of Sahab. Of those, 66.7% of them were (Stone) cutting enterprises, 10.3% were (Brick and Tile) factories, 7.7% specialized in (Marble and Granite), 5.1% as (Stone Crusher), 2.6% as (Stone Lathe) workshop, and the remaining 7.7% were (Mixed) stone-marble cutting and brick/tile factories.

Around 51.3% of the enterprises that were assessed has less than 5 employees, and around 38.5% has between 5 and 10 employees, and 2.6% has between 11 to 20 employees, and the remaining which is around 7.7% has more than 20 employees. **Using the findings of the assessment to provide a rough estimate of the number of workers in the stonecutting area, the research team estimates that the number of workers would range from 1,700 workers to 3,500, if not more.** Given that the quota for Jordanians in this sector is only 20%, the number of Jordanian workers provided by the Chamber of Industry could also be used to estimate the number of workers in the stonecutting enterprises. The resulting estimate is close to the upper limit of the range above.

When the database of the vocational licensing department was analyzed, the research team found that around 57% renewed their registration during 2018. In conclusion, **there are around 214 enterprises that have not renewed their vocational license in 2018 with 44% lost revenue that is around JD 29,500.** Based on vocational licensing fees data, about 69% of the stone cutting enterprise who renewed their license at least once between 2015 and 2018, paid 300 JD or less as vocational licensing fees, while a 31% of paid more than 300 JD.

Key Parameters, based on the Municipality Vocational Licensing Department Database	
Number of stonecutting enterprises that renewed their vocational license at least once between 2015 and 2018	375
Number of stonecutting enterprises that renewed their vocational license in 2018	214
Revenue generated from stonecutting enterprises that renewed their vocational license in 2018 in JD	30,613
Revenue if all stonecutting enterprises renewed their vocational licenses in 2018 in JD	60,089

The enterprise assessment findings indicates that there are four types of employment arrangements with the workers in the stonecutting enterprises. The study team found that 69.2% of the employees are hired on full-time basis, and work 6 day weeks. Around 20% of the employees are hired and paid on daily basis, and around 7.7% are temporary employed, whereby workers are engaged on an occasional and intermittent basis. The remaining 2.6% of the employees were hired by production unit and are paid accordingly regardless of their work hours -Figure 4.

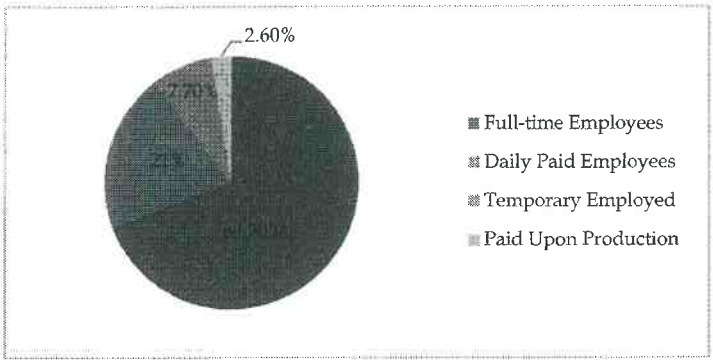


Figure 4: Assessed Enterprises by Employment Arrangement

Size of Enterprises: The criteria for defining the size of a business differ from country to country and in Jordan the definitions varies from one entity to the other. In the Stone-cutting Area, the study team has been able to identify major key factors that determine the business size. Those include operation type, land area, equipment, type of product, market structure, and number of employees.

The study team found that most of the registered enterprises in the Stone-cutting Area were mostly built on two lots; 252 enterprises in lot number 8 (Mawaris Al-Kibar), 114 enterprises in lot number 9 (Abu Rosum), and only 5 enterprises in lot number 10 (Mawaris Al-Eid, Mawaris Al-Dar). Once the study team reviewed the vocational licensing database, it was found that most of the enterprises obtained a vocational license most probably for the buildings within their land plot and not the plot as a whole. According to the Department of Land and Survey, most of land plots in the Stonecutting Area have been sorted into 500 square meters and more. The study team found that around 93% of the enterprises on the vocational licensing database obtained a license for an area that is less than 500 square meters, and the majority of which are even less than 100 square meters- *Figure 6*. Despite that assessment of enterprises exercise found that around 30.8% of operate on a land area that less than 500 square meters, and around 10.3% has an area between 500 and 1,000 square meters, 30.8% of the enterprises land area fall between 1,000 and 1,500 square meters. The remaining were more than 1,500 square meters - *Figure 5*. Consequently, it is clear that the enterprises, although utilize the whole area of the plot they are located on, tend to only license either the building area or parts of the land area but not all of it.

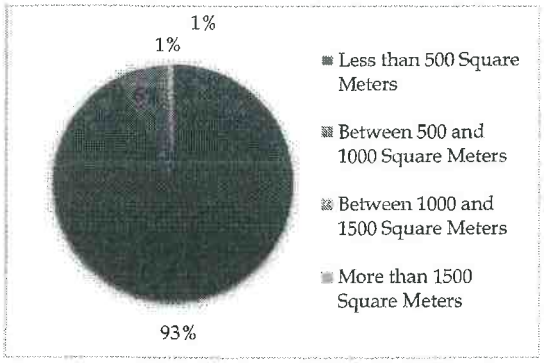


Figure 6: Registered Enterprises by Land Area

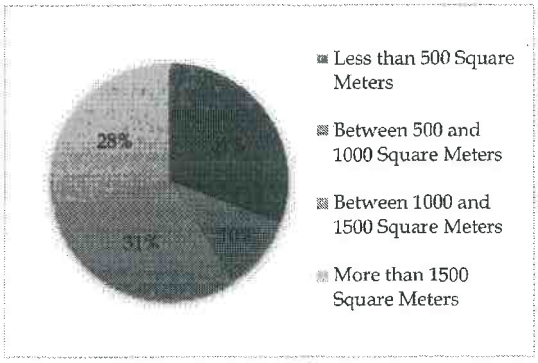


Figure 5: Assessed Enterprises by Land Area

Business and Market Status: Prior to the economic crises, the Jordanian stone and tile industry had been rapidly growing in response to demand for construction materials. Led by a booming construction market, neighboring countries in the Gulf and Middle East region make up the majority of Jordanian stone and tile exports. The largest importer of Jordanian stone is Saudi Arabia, accounting for 40% of the export market. The UAE, Kuwait and Lebanon, make up an additional 32%, while remaining

countries in the region absorb 13% of Jordan stone exports[3]. However, the crisis negatively impacted demand locally and in the export markets. The study team found that only 18% of the assessed enterprises production is exported mainly to Saudi Arabia and Gulf region, unlike 82% of the enterprises sell their product in domestic market.

The enterprises are suffering from a continuous decline of revenue due to market slowdown combined with loss of export markets, mainly to other Arab countries. During the field visits, the research team noted a number of closed enterprises, and others that are offered to sale, which indicates that demand decline had a severe impact on some stonecutting enterprises. Enterprises complained of lack of liquidity and revenue prospects and complained about debt. Middlemen, offering finical services took advantage of the situation and are now selling stone to the enterprise for a commission in return of flexible payment terms. These middlemen are mostly not registered nor licensed to provide such services but some enterprises are using their services since they do not have access to other sources of finance. The assessment also indicated that enterprise owners do not value the services provided by the municipality and are not keen to pay any additional fees.

Consequently all of the measures suggested in this report to overcome the OSH and environmental issues cannot succeed, unless the enterprises have the financial means to invest in these measures. Additional measures to expand the businesses of the stonecutting enterprises could be implemented by the Municipality in collaboration with relevant actors and government agencies include arranging a regular business-to-business fair, and explore export potential to non-traditional markets.

Local community: Members of the local community that were met as part of the data collection activity expressed serious health concerns to themselves and their family members as a result of the stonecutting activities. Nevertheless, the research team noted that citizens do usually complain about other industrial activities taking place in Sahab including plastic factories and the factories in King Abdullah II Industrial Estate. They believe that the only solution to reduce the negative impact of the stonecutting activities is relocation. Furthermore, they are under the assumption that the main municipality is the only entity responsible to control the negative impact of industrial activity in Sahab.

[3] *http://www.jostone.com/*

2.2Occupational Safety and Health Assessment Findings

The occupational safety and health assessment was informed by the assessment of enterprises that was conducted by the study team in addition to a number of meetings with relevant stakeholders. The research team grouped OSH findings under four key areas as indicated the following subsections.

2.2.1 Risks that may Cause Fatal Accidents

Electrical Wiring and Connections

Electrical wiring and connections in the stonecutting enterprises are generally far from being safe and could cause serious injuries or even death if accidents took place. Electrical connections in workers accommodation are also not safe. Observations during the assessment of enterprises captured a wide array of hazardous electrical wiring and connections in place. There are many non-insulated cables, other cables are extended in air or on the ground along paths used by workers and vehicles, and many electrical loads using one source. There are were two electrical shock accidents that resulted in death of two workers in the past two years, which further indicates the importance of this risk.

In addition to unsafe electrical wiring and connections in the stonecutting enterprises, the electrical supply to the area does not always meet the demand of the stonecutting activities, creating load issues, and halting the operation of the enterprises.

Cranes and Handling

The raw material is unloaded from trucks, and lifted to the stonecutting table using cranes. Continuous inspection and routine maintenance of cranes is needed coupled with excellent capacity among the workers to ensure their safety of the handling process. Inspection and maintenance of cranes should be done by specialists to ensure the safety of the slings, clamps, hocks and robs.

During the assessment of enterprise, the research team found that 30% of crane inspections and routine maintenance is carried out by the workers who do not have the required capacity. In 50% of the enterprises, maintenance of cranes only takes place if an issue or a default is noted. Consequently, routine maintenance practices are not well established.

Furthermore, there are no safety precautions that are used during the operation of cranes to alert other workers. The workers stated that accidents take place during the handling process and although usually lead to injury, a fatal accident took place few years ago.

Cooling pools

Since stonecutting machines use water for cooling, each stonecutting enterprise has at least three pools that are used to store the cooling water and the residual sludge. These pools are usually three to four meters deep. Since these pools are also used to store the residual sludge/slurry, they are extremely dangerous. During the enterprises assessment, the research team noticed that the pools are not covered in most of the cases (62%) and while 5% of the pools are slightly out the paths used by workers and vehicles, they vast majority of the pools create a serious accident hazard.

2.2.2 Risks that may Cause Injuries or Diseases

Existence of Hangers

With the exception of very few enterprises, only small parts of the stonecutting enterprises are covered with hangers. Many complementary activities takes place uncovered and storage or row material or final product could extend beyond the premises of the stonecutting enterprise. About 64% of the establishments have hangers under which the cutting process occur, but the stone formation is usually performed in areas that are not covered not protected which exposes workers to the risks of inhaling dust and working under the sun.

To reduce the associated hazards of the stonecutting activities, to the workers and other people in the vicinity, stonecutting and formation should be performed within a closed space such as a hanger. These hangers need to be equipped with dust lowering/elimination techniques such dust collectors, and effective ventilation. Continuous floor cleaning should also take place to reduce the piling of dust on the work floor.

Paths and Staircases

Less than a quarter (21%) of the enterprises that were assessed have safe passages. Raw materials and products are not stored in an organized manner and residue is piled or stored in special containers for disposal. Furthermore, many enterprises use staircases (mostly made of metal) that are not stable and lack railing.

Interviews with truck drivers indicated minor accidents to the trucks during the unloading process given that paths for vehicles are also many times obstructed by unorganized stacked of residue or finished products.

Personal Protective Equipment (PPE)

Safety of workers can be highly improved if PPE is used. These include fitting respirator or mask, safety glasses, earplugs, safety shoes and helmet. Although 51% of the establishments have PPE that is mainly the safety shoes, the workers refuse to use any PPE. Workers, during the enterprise assessment and through group interviews, complained that PPE are heavy and reduce their movement. And although they are aware of the accidents that take place, they are unaware of importance of PPE in protecting themselves from the adverse effects of accidents.

Noting that workers at the cutting station wear rubber boots and gloves, which is the best practice for this area given the risk of electrical shock.

Signage and Safety Instructions

No signs within the shops were found indicating safety measures or guiding action in the case of accidents. The enterprises neither had signs indicating the locations of pools, cranes or safe pathways

2.2.3 Risks that may Cause Diseases

Workers Accommodation

The assessment of enterprises indicated that the vast majority (69%) of the workers accommodation, which is usually within the stonecutting enterprise, are not suitable. The Ministry of Health (MOH) instructions no.1 for the year 2013 stipulates the requirements of workers accommodation, and clearly states that workers accommodation should be at least 500 meters away from production activities. All stonecutting enterprises provide accommodation to workers that is located within the enterprises itself. Further requirements in the instructions are not met but most important of these are cleanliness and hygiene. Employers need to work on this dimension especially that workers mentioned cases of insect and bug infestation.

2.2.4 General Safety Requirements

First Aid Kit

About 64% of the stonecutting enterprises have a first aid kit and mostly keep it at the workers accommodation. The enterprises do not check the kit on regular basis to ensure it includes all the needed content. This has to be done by a responsible worker or safety officer.

Capacity of Workers

The workers lack the capacity to assess and handle risks associated with the operations of stonecutting activities. A mere 4% of the assessed enterprises indicated that training, though a capable training institutes, was provided to workers on OSH. Most of the enterprises depend on other workers (23%) or the supervisor (42%) to train new employees. The Vocational Training Corporation (VTC) is most capable entity to provide training on OSH.

Safety Officers

Only 23% of the enterprises that were assessed have safety officers, which is usually the supervisor in the establishment. Safety officers are not properly trained as requested by the Ministry of Labor bylaw no.7 for the year 1998-Occupationsl Health and Safety Committees and Officers.

Emergency Evacuation

Emergency evacuation plans are not in place in case of any accident related to the hazards and risks stated previously.

2.3 Suggested Measures

The following is a list of measures that will be considered to improve the OSH at the stonecutting enterprises.

- Training of workers on OSH with the Vocational Training Corporation.
- Training of workers on handling and cranes safety (local expertise is not available).
- Provision of technical assistance to enterprises on workplace safety, workplace organization, electric wiring, signage and other topics.
- Measures to reduce relevant additional costs bared by enterprises (for example arrange procurement of PPE and signage in bulk.
- Expand licensing requirements by the municipality to include best practices such as operating in a hanger and covering water pools.
- Gradually improving access of relevant stakeholders such as Ministry of Labor, Civil Defense, and Ministry of Health to conduct inspections as per their relevant legislations.

The following table indicates the findings and define the gaps from best practices and suggests improvement measures.

These measures were grouped under a number of interventions that were discussed and prioritized in by the stakeholders in a workshop. The improvement plan, including all interventions, is included in Section 3 of this report.

Dimension	Assessment finding	Best practise	Gap	Proposed interventions
Risks that may cause death – Electrical wires and connections	Uninsulated wires and connections High electrical loads in one joint or extension Extensions are laid on the ground without protection	All electrical connections in the work place and workers accommodation should be well insulated and arranged according to safety rules[4]	Possibility of electrical shocks, short circuits and electrical fires due to bad practices and arrangements which may lead to fatal accidents	Providing technical assistance to enterprises to improve workplace safety including technical assistance around electrical wiring. Training of workers and service providers on safety of electrical wiring.
– Material handling	According to the assessment of enterprises, inspection of cranes is not sufficient (50% of the cranes are inspected and checked when there is clear damage or fault). Workers are not well trained to inspect nor maintain such equipment.	Before use, the crane and lifting equipment - including slings, clamps, hocks and robs are inspected Routine inspection is done by a specialist5 Machine maintenance instructions manual is followed. Inspection and maintenance records should be kept in reachable place for need person.	During the enterprise assessment, field team observed many hazardous practices including wrong usage of slings. The workers who inspect cranes and related components do not have the required technical knowledge nor experience.	Training of workers on material handling, and provision of crane inspection training to qualified staff within the enterprises and equipment providers to ensure: – Inspection is done by the supervisor before use, – Weekly or monthly inspection (depending on the machine age and status) is raking place – Inspection and maintenance records are kept and maintained.

[4] *Jordanian Ministry of labor bylaw no.43 for the year 1998-Protection and safety system from industrial machines*

[5] *Jordanian Ministry of labor bylaw no.43 for the year 1998-Protection and safety system from industrial machines*

– Process water ponds/pools	Uncovered ponds (3 to 4 meters deep) creates a serious hazard. Falling and drown possibility is high since there is no singes or guard fences. Less than one third of these ponds are covered and protected.	Ponds should be covered or isolated by walls/fence to prevent the possibility of accidents. Sings indicating pool location, depth and risk should be used as stated in article (6) of the relevant legislations[6]	Easily accessed by any person, possibility of drowning	Municipality to include measures of safety as part of licensing, renewal and inspection requirements. These should include covering or protecting the pools by wall/fence and proper signage.
Risks that may cause injuries or diseases – No appropriate shelters	Stone cutting process does not produce dust but the stone shaping and stone grinding are producing large quantities of fine dust within the work place About two thirds of existing establishments do have any kind of shelter for workers to protect them from exposure to sun.	Dust producing processes are conducted in hanger with acceptable control technology and allowing good ventilation and using proper air filters and goggles (article 5)7 Also the hanger provides protection from the sun.	Dust producing processes (shaping and grinding) mostly are not done in hanger and no dust lowering technique is used leaving the workers under the effect of dust and sun	Municipality to gradually expand the licensing, renewal and inspection requirements to include that enterprises conduct all stone cutting activities in hangers, use dust lowering technologies, and clean the work floors continuously. Training of workers on maintaining a clean and organized workspace.
– Access ways and stairs	No designated access and path ways within the establishment. Most of the currently pathways are not	Organized place and safe paths to minimize accidents/injuries in case of any one fall (article 7)8	In case of natural person fall injury most likely will occur due to hitting something in the non-organized place,	Municipality to gradually expand the licensing, renewal and inspection requirements to include organization of the

[6] *Jordanian Ministry of labor bylaw no.43 for the year 1998-Protection and safety system from industrial machines*

[7] *Jordanian Ministry of labor bylaw no.43 for the year 1998-Protection and safety system from industrial machines*

[8] *Jordanian Ministry of labor bylaw no.43 for the year 1998-Protection and safety system from industrial machines*

	safe and are usually blocked by materials. Only one fifth of establishments have clear and clean pathways. Unorganized storage and piling of raw materials, reside and product cover the grounds of stonecutting enterprises. Some establishments have temporary stairs or ladders made of steel which are not safe and without railing.	Stable stairs with railing to avoid falling accidents.	also the possibility of fall of the raw material exist , and some stairs found not stable and with no protective sides	workplace (pathways, storage, staircases), Capacity building for workers and enterprise owners on work place organization. Provision of large waste containers for stonecutting waste.
– Using personal protective equipment	Workers do not use PPE except some workers who wear rubber boots and gloves while standing in against the cutting machine to be protected from water Almost half of the visited establishments do have some of PPE such as safety shoes, but these are not used by workers	PPE are used depending on the operation type (properly fitting respirator or mask, safety glasses, earplugs, safety shoes and helmet) (article 5)[9] Workers undergo medical examination, and every 6 months medical check or the workers as stipulated in (articles 3&410)11 of the relevant local legislations.	The practice of wearing the PPE is not noticed except the correct practice of wearing the rubber boots and gloves while cutting	Providing technical assistance to enterprises to define PPE needed for each task within the stonecutting enterprises. Provision of PPE at discounted prices through arranging their procurement jointly among enterprises. Building the capacity of workers in this regard and conduct sessions that can

[9] *Jordanian Ministry of labor bylaw no.43 for the year 1998-Protection and safety system from industrial machines*

[10] *Jordanian Ministry of labor bylaw no.42 for the year 1998-Preventive and therapeutic medical care system for workers in establishments*

[11] *Ministry of labor decision for the records the employer must keep*

	MOL was unable to properly inspect the enterprises given that they lack proper signage indicating their legal status. Consequently, all OSH measures stipulated in relevant legislations are not inspected.			improve the attitude of the workers towards using PPE. Improving the access of the MOL inspectors to the enterprises by ensuring that enterprises have clear signs indicating the enterprise trade name. Then gradually expand the inspection process to ensure that all requirements in relevant legislations are met.
– Safety signs and work instructions	No signs nor safety instruction in all enterprises that were assessed. There is no work or safety instructions and warning notes for the dangerous processes and areas. For example no alarms or flashlight during movements of overhead cranes.	Signs alarming for the dangerous places and processes and guiding what needed to be done article(6)12	No warning / instruction signs were available in any establishment	Provide technical assistance to enterprises on safety signs and instructions and provide assistance in procuring and installing such signage.
Risks that may cause diseases	Majority of workers accommodation are located within premises of the enterprise and most of these located in the second floor	The Jordanian MoH instructions stipulates detailed requirements for the	All workers' accommodation are located in the enterprises.	Ministry of health to gradually, expand and improve compliance with workers accommodation instructions.

[12] *Jordanian Ministry of labor bylaw no.43 for the year 1998-Protection and safety system from industrial machines*

– Unsuitable workers accommodation (cleanliness and hygiene)	directly above the cutting equipment: this is true for most of small enterprises	workers accommodation, of these: [13] Article(2):The unit should not be located next to sources of pollution and noise, and the distance between the unit and the sources should not be less than 500 meters Article (6): Each residential unit must have a hall and a group of residential units on / dining room, equipped with a suitable number of tables and chairs.		Training of workers on hygiene to ensure the cleanliness of the accommodation.
General Safety requirements – Availability of first aid kit	About 64% of the establishments had first aid kit, however, none was near the work place and its content is limited to some gauze and detergents.	Having the first aid kit with complete contents in clear known place to all (articles a3 and 16)[14]	36% of the establishments need to have the first aid kit	Improve the inspection process by MOL (as indicated previously) and include relevant aspects in training of workers.
– Workers capacity	Capacity of workers in OSH is lacking and a small share ever received OSG training through a reputable training provider.	– The employer/supervisor must train the new worker for the job associated risks and work under supervision for at least one month(article 8)[15]	No prove of training provided to any worker and as no records are kept	Provide relevant training to safety officers (workers from the enterprises) who can then train the other workers. Provide training to managers and supervisors

[13] *Jordanian Ministry of Health instructions no.1 for the year 2013- Preventing the occurrence of health-related problems caused by residential units of labor communities*

[14] *Jordanian Ministry of Health instructions no.1 for the year 2013- Preventing the occurrence of health-related problems caused by residential units of labor communities*

[15] *Jordanian Ministry of labor bylaw no.43 for the year 1998-Protection and safety system from industrial machines*

		– Training records must be kept by the employer[16]		on record keeping requirements included in relevant instructions by MOL.
– Responsible safety officer	23% of the establishments have a nominated safety officer but they are not trained and is usually the supervisor or the owner	Specialized safety officer responsible for the occupational health and safety programs, inspection, safety instructions, accidents logs and others for enterprises with 20 or more workers. While enterprises with less workers a trained worker or group of workers on OSH is required.[17]	As only 7.7% of the establishments have more than 20 workers so according to the bylaw safety office is not required. For establishments whose workers are less than 20, trained group of safety officers can perform the required safety tasks	Provide relevant training to safety officers (workers from the enterprises) who can then train the other workers. Improve access of MOL inspectors to the enterprises and gradually expand and improve the inspection process covering the requirements within the relevant legislations.
– Emergency and evacuation plans and signage	No plans or signage for emergencies	– Existence of guidelines for emergency plan – existence of Fire extinguishers – Signs of emergency and civil defence phones(article 17)[18]	All requirements in relevant legislations are not in place.	Provision of technical assistance and advise to enterprises on emergency plans and signage. Improvement of inspection by civil defence and gradual expansion of relevant requirements.

[16] *Ministry of labor decision for the records the employer must keep*

[17] *Jordanian Ministry of labor bylaw no.7 for the year 1998-Occupationsl health and safety committees and officers formation*

[18] *Jordanian Ministry of Health instructions no.1 for the year 2013- Preventing the occurrence of health-related problems caused by residential units of labor communities*

2.4 Environmental Assessment Findings

The study area in Sahab is facing a long list of issues mainly, lack of organizing, poor infrastructure, lack of services and conditions of workers' health and safety, and low quality of inside and outside environment. The main environmental dimensions to be highlighted in the study in hand are described in the following subsections.

2.4.1 Air Quality

The air quality inside the stonecutting area is not as good as in near-by residential areas due to dust. Although the stonecutting activity itself is not considered as a source of dust since all establishments and workshops within the area are employing wet-cutting process by using water to cool down the cutting disc and controlling dust. However, many other related activities emit large quantities of dust. Among these are the manual cutting by grinders and stone and granite lathing and shaping in open areas. But the most important source for dust in this area are:

- Movement of heavy trucks and trailers inside the area where the roads conditions are very bad which results in huge amounts of dust. In addition to other small vehicles and trucks on poorly paved roads.
- Sweeping and cleaning trucks and trailers decks and disposal of residuals directly on the road. This leads to accumulation of fine solid material on roads, and when there is a movement at relatively high speeds then clouds of dust are generated behind the vehicle. This is 100% true for small and light vehicles, such as pickups and small trucks, moving within the area.
- Loading and unloading of solid residuals from stonecutting enterprises by loaders into trucks as well as loading of final products.

During visits and interviews by the study team with concerned stakeholders, it was found that there were no previous studies conducted in Sahab or the study area to measure air pollutants except the study "Monitoring of Air Quality in the Kingdom" conducted by the Royal Scientific Society during Jan. 2015-Jan. 2016 for the benefit of the Ministry of Environment. In this study, Hatmiah-Mouwaqar (between Sahab and Mouwaqar) was one of five areas were selected to perform measurements for air pollutants based on the National Technical Standard 1140/2006. The final results of this investigation clearly showed that no exceedance for annual limits for most pollutants, except two times where Sulfur Oxides (SOx) emissions in the Hatmiah exceeded the average hourly limits. The other available report is produced by the Monitoring Unit in the Ministry of Environment, under the continuous monitoring program for ambient air quality in Jordan. The monitoring station is located in King Aballah II City and the published data confirmed that all measured pollutants are below the specified limits.

In a recent report "Air Quality in Industrial Estates in the Kingdom" by the Monitoring Dept., Ministry of Environment, covering the period between 15 Dec. 2016 and 14 Dec. 2017, the situation in King Abdullah II is not bad. All measured pollutants were within the specified limits in the national standard. Except few exceedances in fine particulate matter (PM2.5).

2.4.2 Noise

Sahab is located between two highways, the old Green-belt and Amman-Azraq road, and other active traffic roads serving King Abdullah II industrial City, other industrial complexes and fruits and vegetables export activities in the vicinity. The latter is located directly on Amman-Azraq road and inside the boundaries of Sahab city. Traffic movement, especially heavy traffic, related to all these activities and stonecutting industry, are considered main sources of noise in the area. But inside the study area, there are few additional activities such as residuals crushing, and manual presses used for production of blocks and tiles and grinders producing high levels of noise.

2.4.3 Wastewater

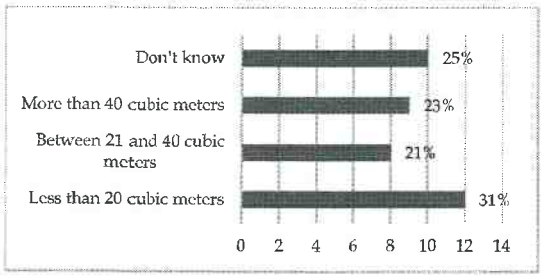
Water consumption is the study area is divided into two main streams:

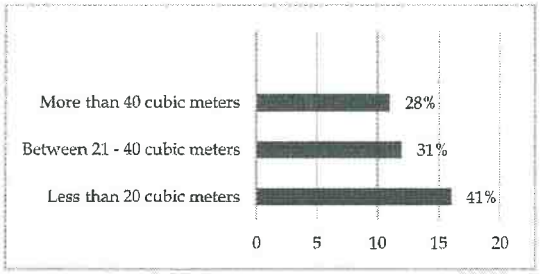
- Process water: used to cool down cutting machines and control generated dust. This is the major component (about 30,000-35,000 m3 per month) for the operating establishments in 2018.
- Residential water: used by workers. The consumed quantity for human uses is about 6,000 m3 per month.

Water is supplied to workshops by road tankers, each with a capacity of 20 m3 and an average cost of JD 40-45. However, some of the stonecutting workshops are connected to the water distribution network and supplied with drinkable water.

Using wet stone cutting method consumes large quantities of water. Consequently, large quantities of industrial wastewater (slurry which called KAMKHAH) are produced. The current practice of wastewater storage in open ponds is considered unsafe and may cause danger to workers and other people in the area, especially children. About 30 wastewater tankers are working in the area, each with a capacity of about 16 m3. The round trip, including loading and unloading, from this area to the designated dump-site, managed by Greater Amman Municipality, is around 2 hours. Dumping this wastewater in an illegal manner creates serious problems to land and consequently to the environment. It was noticed that some stonecutting enterprises use blue-water produced from garment washing facilities as cooling water. Blue water contents should be tested to determine if it is environmentally safe to use. However, a previous study by Royal Scientific Society (RSS) showed that this water contains high concentrations of chemicals such as hydrochlorides and hydroxides.

Domestic waste water is discharged into permeable septic-tanks that are occasionally pumped out by wastewater tanks to the designated station by the Water Authority in Eain-Ghazal. The impact of domestic wastewater on ground water and the events of illegal dumping should be figured out.





2.4.4 Solid Waste

Industrial solid waste consists of residues of stone and marble cuts and pieces, in addition to small portion of scrap items. The current monthly estimated quantity is about 25,000 m3, which is equal to 2500 trips of road trucks used to transport such waste to the stone-crushers within the vocational area. Domestic solid waste consists of normal household waste coming from offices and workers' residences with organic majority.

2.4.5 Vibration

Vibration is a localized problem resulting from high speed rotating machines and stone cutting equipment. It is believed that it has a minor affect workers residence since these are located inside the enterprises as most of workers living areas are constructed directly above the stone cutting units.

2.5 Suggested Measures

The following is a list of measures that will be considered to improve the environmental conditions at the stonecutting area.

- Construction of a surrounding wall around the entire area occupied by the stonecutting enterprises and designating exits and entrances into the area under direct control of Sahab Municipality. This would help to monitor and minimize negative practices in the area.
- Development of a truck park, this would decrease the random movement and parking in the area roads and provide security to the trucks.
- Improving existing infrastructure, such as paving all inner roads and control the traffic movement will minimize to good extent the dust emissions.
- Provide roads lighting and setting safeguarding measures will help in securing the enterprises properties.

The following table indicates the findings and define the gaps from best practices and suggests improvement measures.

These measures were grouped under a number of interventions that were discussed and prioritized in by the stakeholders in a workshop. The improvement plan, including all interventions, is included in Section 3 of this report.

Dimension	Assessment finding	Best practise	Gap	Proposed interventions
Air quality: • **Dust emission** The stonecutting activity itself is not a considerable source of dust emission as it is performed in wet conditions. However, many other related activities emit large quantities of dust.	Main dust emission sources are:			
	- Random movement of heavy trucks, trailers and other vehicles on unpaved or poorly paved roads within the area.	Organized movement of different types of vehicles on paved roads with speed control and allocating a special area as car park for trucks.	No specific entrance and exit for the Sahab vocational area (stonecutting establishments). No control points. The area is not surrounded by wall or even fenced. Internal roads are not named or numbered.	Paving the internal roads. Organize traffic movement with cooperation with concerned institutions.
	- Manual stone and marble lathing and shaping by using grinders and chisels in open air.	Working in organized, well ventilated closed chambers, using grinders equipped with dust control devices.	Most of stone lathing and shaping is carried out in open air or poorly sheltered against sun, rain or wind which carries dust away to different areas.	Encourage enterprises to allocate well ventilated closed chambers and to use grinders equipped with dust control devices.
	- Loading of crushers' products on tipping trucks (tippers), and,	Crushers work in hangers with recognized entrance and exit. Products to be in compartments separated by walls.	Products are piled in open air within crusher area, and loaded on tippers by loaders without considering dust emission	Construction of hangers equipped with ventilation system to contain the crushers and to control dust emissions and noise levels.
	- Movement of loaded tippers without sand cover.	Loaded tippers are well covered with suitable cover.	Tippers loaded with fine sand and moving on unpaved roads result in fine sand flaying and dust emission.	Obliging tippers to cover sand and depress loads as long as they move on roads.

	- Sweeping and cleaning the trailers decks	Sweeping and cleaning the trailers decks in a special station using vacuum or wet cleaning.	Considerable quantities of sand and stone fractions are swept off the randomly nearby the roads emitting dust from the locations wherever sweeping takes place.	Random sweeping and cleaning the trailers decks should be banned at streets. Sweeping and cleaning should be done in specific station using wet or vacuum methods of cleaning.
• **Gas emission:** No chemical or thermal process is applied in stonecutting activities.	Gas emissions are mainly exhaust gases (SO_x, NO_x and CO) emitted from different kinds of vehicles frequently pass through the area and inside the city of Sahab.	Trucks and other heavy vehicles are periodically maintained against exhaust emissions and follow routs not passing through inner roads of the city or of populated areas.	Populated areas are frequently exposed to exhaust gases emitted from heavy vehicles passing by.	Re plan traffic routes to avoid passing through internal roads of the city or of populated areas.
• **Wastewater:** Two types of wastewater of concern are:				
- **Industrial wastewater** as cooling water is used frequently in stonecutting process.	Large quantities of wastewater with high content of solids (slurry) are produced and discharged to successive ponds usually 3 ponds within the enterprise. Some ponds reach up to 3m depth. A portion of this wastewater is returned to the system and reused as cooling water, while the thickest portion is transferred to dumping sites via tankers.	Industrial wastewater is collected via suitable drainage system, stored in well protected ponds to avoid falls and floods. Slurry is being recycled or dumped in legal evaporated lagoons outside the area.	Unsafe slurry ponds are noticed in several stonecutting enterprises in the study area. Lack of applying tracking measures to ensure safe and legal dumping of slurry. In some cases slurry is dumped into sewer system manholes that can block the sewer manholes and pipelines.	Construct a slurry recycling plant in the area to utilize wastewater and dry solid content of slurry as a valued by-product.

-	Some stonecutting enterprises use loads of blue water coming from garment industries as cooling water.	Although the majority of water consumed by the stonecutting enterprises is used for cooling, the water quality is safe enough to be used as it is in contact with workers and the waste water is disposed to environment.	Blue water may contain chemicals and it colours the effluent of slurry and the ponds contents with blue.	Testing the blue water used in cooling to determine the suitability of using such water in terms of health and environmental impacts as cooling water .
- **Domestic wastewater** produced from offices and workers residences	Although the quantities of domestic wastewater are less than the slurry ones, but these quantities are discharged into permeable cess pools. They are occasionally pumped over long periods of time (i.e. when cess pool is about to be filled). The final destination of disposal might be illegal.	Domestic wastewater is connected and discharged to the public sewage system to be treated at the wastewater treatment plants. As the area is not served yet by the public sewer system, the domestic wastewater is drained to constructed impermeable tanks, and regularly pumped out.	No clear information about the design and the capacity of septic tanks receiving the domestic wastewater. As the waste water is pumped and transferred by wastewater tanks, the final destination of all loads is not strictly controlled.	All wastewater tanks should be connected by the tracking system controlled by the Ministry of Environment.
• **Solid waste:**				

- **Industrial solid waste:** Industrial solid waste consists of residues of stone and marble cuts and pieces, in addition to small portion of scrap items.	The ratio of stone waste fractions ranges between 10 – 30 % of raw material. These quantities of stone and marble wastes are collected in either steel container; in irregular big holes dug in the enterprise ground or left as piles nearby before transfer to stone crushers. However, not all of these quantities are sent to crushers depending on the capacity of the crushers which is less than dealing with whole stone waste.	Stone and marble waste free of domestic waste, are collected in steel containers in a location within the enterprise, where is easy and safe to unload and regularly send to stone crushers.	More and more quantities of stone and marble residues are accumulated as waste by time and left in random and unsafe piles blocking the passages and hindering the work. In addition to crusher wastes resulted from crushing process and left as useless waste piles.	Encourage enterprises to use suitable sizes of steel containers to collect stone and marble fractions. And avoid mixing and disposal of domestic solid waste with stone waste.
- **Domestic solid waste:** Domestic solid waste consists of normal household waste coming from offices and workers' residences with organic majority.	Most of the domestic solid waste is disposed with the industrial solid waste and to be crushed with stone residues.	Domestic solid waste is stored in proper bins, regularly collected and transferred to waste transfer station or to final disposal site.	No regular collection of domestic solid waste. Waste quantities accumulate, become rotten and create bad odour and health nuisance. In addition to negatively affecting the crushers products.	Providing sufficient number of waste bins, distribute the bins to serve the area in an efficient manner, and apply a regular and periodical trips of waste collection.

• **Noise:**	Noise in the study area is attributed to the use of stone grinders, stone lathes, and chisels stone turning, lathing, and graving. Stone crushers are also a source of noise, in addition to heavy duty trucks within the area.	Working in organized, well ventilated and isolated closed chambers, using ear protecting equipment. Trucks move with controlled speed on paved roads with road bumps where necessary.	Working in open air sites using stone grinders, lathes, and chisels contribute to high level of noise within the enterprises to the extent that makes it difficult to communicate. Noise level increases as heavy trucks pass over rough road surfaces.	Encourage enterprises to Work in organized, well ventilated and isolated closed chambers, and to force workers using ear protecting equipment. Instruct drivers to avoid driving in high speeds and use of unnecessary horns.
• **Vibration:**	The process of stone cutting creates vibration. Although its effect is limited to enterprise buildings, such as offices and workers residences, and slurry ponds, the continuous exposure to vibration could make cracks in these facilities and threaten their structure.	Offices, workers' residences and slurry ponds are located in locations that are not affected by vibration.	Most of inspected workers' residences are constructed above the stonecutters. Slurry ponds are constructed under or nearby heavy duty stonecutters which are the main source of vibration.	Continuous monitoring of buildings and slurry ponds against cracking. Taking the necessary measures to avoid damage of buildings and slurry ponds' walls.
• **Socio - economic:** This dimension includes several components:				

- **Lack of security:**	There is high rate of theft incidents within the area. These incidents are mainly targeting the electrical cables and transformers, and threatening the safety of workers.	Working takes place in safe guarded conditions, workers are aware of measures to be taken in case of theft, how and whom to communicate, and prompt response by security officers.	Almost all the interviewed enterprises owners and workers in the area have complaints against thefts. In addition to the loss of the enterprise properties stealing electrical equipment can stop and delay the work in the enterprise for long periods of time.	Allocation of security check points at the entrance and exit of the area. Lightening the area streets Name and number the internal streets Hire civil security guards Establish of security station in the area in cooperation with public security department.
- **Traffic jams and accidents:**	Movement and parking of large size trucks for long periods of time at the streets within the area create traffic jams and accidents.	Parking of heavy trucks takes place only during loading and unloading activities, while long interval parking takes place in a specific trucks and trailers park area. Speed of truck movement in the area is controlled.	Streets of the stonecutting area are crowded by long and heavy trucks. In many cases the loaded trucks are left in the internal street while the drivers staying at home which might be in another city. Interviewed truck drivers complain against theft incidents for some items from their trucks even fuel thefts.	Establish truck protected park area in a suitable location in the area.

- **Unhealthy social environment:**	Spreading of stonecutting enterprises and similar activities over a broad area (the occupational area) with many access roads, without surrounding wall or designated entrance and exit gates creates unsafe environment.	Stonecutting area is a wall surrounded, controlled real work place with designated entrance and exit points, for vehicles and persons. Abandoned enterprises are inspected and properly locked to prevent access of individuals, especially children.	For the absence of surrounding wall , designated entrance and exit points, and the existence of many access roads, stonecutting area is open to everyone and every vehicle to enter. This encourages the stay of homeless and even school dropout.	Establish suitable instructions to control allowable entering in the area. Inspect the abandoned enterprises. Insist on strictly applying the labour law for working ages and working hours.
- **Environmental burden on health :**	The continuity of the current situation in the area and the exposure of the citizens to the environmental impacts affects health and push the nearby citizens to leave the area, offering their houses and properties for fewer prices, particularly, if they are not involved in the stonecutting business.	The stonecutting business is an added value for the local community of Sahab. The work is done in clean and acceptable conditions with minimal negative impacts on the surrounding environment. Strong relationship with the community as the industry is contributing in community development.	Interviewed local community is not satisfied with the current practices of and the work conditions of stonecutting area. They are complaining against environmental attributes especially dust emissions. They claimed that the life and health level is decreased	Encourage stonecutting enterprises to form a kind of cooperative body to represent them in front of local community and other concerned agencies to show any progress they make in terms of environmental protection and effort they make to develop the local community.

3.0 Improvement Plan

The previous section of this report included the gap analysis that resulted from the assessment activities conducted. This section includes the proposed interventions to improve work conditions in the stonecutting enterprises in Sahab and reducing the environmental impact of the activities.

The next sub-section includes a high-level time line of the interventions. Given the importance of stakeholders' engagement during implementation, a full stakeholder engagement strategy is included in another sub-section.

Each intervention is described in a project sheet included in the Annex 1.

3.1 Improvement Plan Timeline

This section includes a timeline of proposed interventions based on the time needed for their implementation and in accordance with the priority defined for each intervention during the stakeholders's workshop.

Dimesion	Number	Intervention	Priority الأولوية	الكلفة المتوقعة بالدينار Estimated cost in JOD	كلف التشغيل الشهرية إن وجدت بالدينار Operational cost in JOD if applicable	فترة التنفيذ المتوقعة بالأشهر Expected duration	تاريخ البدء المخطط Planned start date	تاريخ الانتهاء المخطط Planned end date	الجهة المسؤولة Responsible entity	ملاحظات Notes
ENV	1.1	Road rehabilitation-pavement, maintenance, numbering and lighting internal roads.	1	742,000	0	12	Oct-18	Oct-19	Municipaltiy of Sahab	Given the large area of roads to be paved (check page 2 of the project sheet), the municipality will implement the project in phases, and will seek funding from partners.
ENV	1.2	Identifying a single entrance and exit for the stonecutting area and building a wall around the area.	1	180,000	2,500	15-Oct	Dec-18	Oct-18	Municipaltiy of Sahab	Considering the municipality current budget, its contribution may be minor. This intervention as it is an infrastructure project needs multiple sources (donors, government, and enterprises owners).
ENV	1.3	Improving the performance of stonecutting enterprises and improving their services through providing technical and financial assistance.	1	62,400	0	6	Dec-18	May-19	Municipaltiy of Sahab	Three to four phases are needed. Duration of each phase is 6 months. Most of the investments above are expected to be done by enterprises. Sahab Municipality's contribution will be to facilitate the required support to the enterprises and providing domestic waste bins, transport and disposal of waste. Donors can play a role as an additional financial resource. The project could be implemented as a support intervention for the enterprises by Jordan Enterprise Development Company (JEDCO), the Chamber of Industry and in cooperation with the Municipality. The Municipality need to champion this coordination.

OSH	1.4	Provision of specialized occupational safety and health training for workers and employers in the stonecutting area.	1	6,000	0	12	Dec-18	Nov-19	Municipaltiy of Sahab	The general cost for such short training is simple since these are limited to small hall and qualified trainers. For the space, it is possible to be held in the office of Sahab Municipality in the vocational area or the vocational training center in the industrial city or in the office of Amman Chamber of Industry. Training by Vocational training Corporation and workers would pay for certification fees if they decide to undego the requires test.
OSH	1.5	Supporting the enterprises in marketing their products and promoting the role of the stonecutting area in Jordan's construction sector	1	3,000	0	12	Dec-18	Nov-19		Technical assistance will be needed and estimated at 40 to 50 person-day of a marketing expert. The exhibition will require about JD3,000 in supplies and promotion. Costs of conducting meetings is negligible.
ENV	2.1	Allocating a secure parking area for trucks, along with a cleaning station to clean the trucks from the stone residues.	2	67,200	1,200	6	Feb-19	Jul-19	Municipaltiy of Sahab	The municipality will allocate the needed land. This intervention can be implemented in partnership with the private sector using a design, build and operate approach. So, limited financial support is needed by the municipality. Technical support is needed to assist the municipality in preparing a public-private partnership (PPP) tendering documents and supporting the relevant contractual arrangement.

ENV	2.2	Establishment of a recycling station for the sludge resulting from the stonecutting operations.	2	280,000	6,000	7	Feb-19	Aug-19	Municipaltiy of Sahab	This project is an ideal example of public-private partnership, as well as, win-win approach. The municipality will allocate the needed land; the private sector investment is highly expected using a design, build and operate approach. The government through Cities & Villages Development Bank is also a party that can provide financial support, while donors are expected to play a technical and financial role as well. Technical support is needed to assist the municipality in preparing a public-private partnership tendering documents and supporting the relevant contractual arrangement
ENV	2.3	Re-planning traffic routes to avoid passing through internal roads of the city or of populated areas.	2	280,000	0	6	Feb-19	Jul-19	Municipaltiy of Sahab	The funding sources could be co sharing through contribution of Sahab Municipality, King Abdulla Industrial City, Ministry of Public Works and Housing, Donors, and enterprises.

OSH	2.4	Gradual expansion of the licensing, inspection and renewal requirements by the municipality to include occupational safety and health requirements.	2	0	0	8	Feb-19	Sep-19	Municipaltiy of Sahab	This project does not need financial resources as it will be implemented by employees within their work hours, maybe just rewards that can be provided to participants from the official organizations according to the municipality rules and guidelines, or the Ministry of public sector development can support here if possible. Technical assistance from consultants will be useful (The technical assistance needed is 30-40 person-day over 6-8 weeks from an inspection consultant and 5-10 days from a legal consultant.)
OSH	2.5	Improving inspection processes by relevant government agencies.	2	0	0	10	Feb-19	Nov-19	Municipaltiy of Sahab	This project does not need financial resources as it will be implemented by employees within their work hours. Technical assistance from consultants will be useful (The technical assistance needed is 50-60 person-day over 10-12 weeks from an inspection consultant and10-15 days from a legal consultant.)
ENV	3.1	Afforestation project.	3	6,000	1,500	2	Feb-19	Apr-19	Municipaltiy of Sahab	Funding sources could be co sharing through contribution of Sahab Municipality, donors (i.e. GIZ), and in kind contribution of Department of Forestry, enterprises, and slurry recycling plant.
OSH	3.2	Providing technical assistance to the enterprises to improve workplace safety.	3	0	0	2	Feb-19	Apr-19	Municipaltiy of Sahab	Funding sources could be co sharing through contribution of Sahab Municipality, donors (i.e. GIZ), and in the

										enterprises. Implementaiton will require technical assisstance (experts to provide technical assisstance to enterprises in the defined areas). These experts could be provided donors. Required efforts about 20 days of an international ecpert in handling, 40 days of a local expert.

3.2 Stakeholders' Engagement Strategy

3.4.1 Purpose of the strategy

In any given project, stakeholder engagement is necessary to streamline the project's foundation, operation and sustainability. The inclusion of stakeholders in the early stages of a project decreases the number of iterations to reach the project's optimum performance. For instance, if a certain project was agreed upon in Sahab, and a restriction was raised due to the laws of certain ministries towards the end of the project, the initial design would have to be scrapped so that a new design can cater to the ministry's needs. Instead, having all stakeholders share their input in the initial pitches ensures that the municipality will tailor new interventions to meet the stakeholders' requirements and concerns.

Stakeholder engagement is a process, not an event. While the project's operation is managed by one manager, all stakeholders need to provide feedback, data and other supporting documents that explain how the interventions will improve the stonecutting area as a whole. The inputs collected from all stakeholders, therefore, can be amalgamated to improve the implementation of the interventions.

3.4.2 Vision

While the stakeholder theory allows all the aforementioned to take place, the process must be managed by an action plan. Therefore, the Stakeholder Engagement Strategy shall act as a pragmatic system that controls the quality of stakeholder input while providing them with an equal yet apt opportunity to participate in the project improvement. An ideal strategy, therefore, has to achieve the following pillars:

1) Include the maximum number of stakeholders.
2) Keep all stakeholders interested.
3) Create a follow up mechanism.
4) Create a feedback system.
5) Find a way to engage everyone that avoids conflict and bureaucracy (i.e. defining stakeholders' jurisdictions in every intervention in order to avoid bureaucracy or a disagreement over assignments.)

3.4.3 Listing of possible Stakeholders vs. Environmental Interventions

	1- Paving, Numbering, and Lighting the Internal Roads	2- Constructing a Surrounding Wall	3- Establishment of Trailers Park and Truck Cleaning Station	4- Construction of Slurry Recycling Plant	5- Rerouting and Reconstruction of Traffic Roads	6-Tree Planting Around Borders of Sahab Stonecutting Area	7- Development of Stonecutting Enterprises Performance
Private Sector	X	X	X	X	X	X	X
Donors	X	X	X	X	X	X	X
Traffic Department	X				X		
Enterprise Owners	X	X		X	X	X	X
Ministry of Energy and Natural Resources	X						X
Ministry of Industry and Trade and JEDCO							X
Truck/Tanker Drivers				X			
Ministry of Environment				X			
Ministry of Public Works & Housing	X	X			X		
Cities & Villages Development Bank				X			
KAIC					X		
Local Citizens						X	X
Greater Amman Municipality						X	
Department of Forestry/Ministry of Agriculture						X	
JREEEF							X

3.4.4 Listing of possible Stakeholders vs. OSH Interventions

	1- Training	2- Product Marketing	3- Expansion of Licensing Requirements	4- Improvement of Inspection Processes	5- Technical Assistance for OSH
Institute of Occupational Safety and Health (Vocational Training)	X			X	X
Ain Al-Basha (Vocational Training)	X				
Ministry of Labor	X		X	X	
Enterprise Owners	X	X	X		X
Labor Association	X				
JOSTONE	X				
Private Sector		X			
Ministry of Industry and Trade		X	X	X	
Ministry of Planning and International Cooperation		X			
JEDCO		X			
Jordan Investment Commission		X			
Ministry of Health			X	X	
Greater Amman Municipality			X		
Social Security Organization				X	
Ministry of Environment				X	
Civil Defense				X	X
Ministry of Municipal Affairs			X		
National Law Experts			X		
Universities and Educational Institutions					X

3.4.5 Governance of Improvement Project

The municipality will create a project steering committee composed of main government agencies and representatives of the stonecutting enterprises including, but not limited to, the following stakeholders:

- Ministry of Environment
- Ministry of Health
- Greater Amman Municipality
- Ministry of Industry and Trade
- Ministry of Public Works & Housing
- Traffic Department

The municipality will define a project manager and intervention coordinators for each intervention. Project manager and coordinators will meet on weekly basis among themselves, and monthly with the mayor and the municipal council. The structure of the governance has to be strictly defined prior to the interventions to ease the process of project assignments, decision making, and reporting.

3.4.6 Stakeholders' Involvement Techniques

In order to satisfy the 5 main pillars of the vision, multiple techniques have to be defined. Each engagement technique will have a degree of involvement depending on the nature of its methodology.

That being said, here are the possible degrees of involvement for each technique[19]:

- **Information:** At this level, the engagement strategy aims to inform the involved stakeholder about the general information of the project.
- **Consultation:** The project is presented to stakeholders who have the opportunity to provide suggestions. The implementing entity, however, is not contractually obliged to take all suggestions into consideration during the decision-making phases.
- **Collaboration:** Collection of necessary stakeholder input that directly contribute to the final outcome of the project.
- **Co-decision:** Stakeholders and the implementing entity go through the decision-making process collaboratively.
- **Empowerment:** Assigning all decision-making tasks involving project development and implementation to stakeholders.

The suggested techniques are listed below along with their significance to the project:

Focus Group Discussions (FGDs): A focus group discussion is an excellent way to gather feedback on a particular issue. In this technique, the study team prepares a guide/tool to be used to hold a number of FG meetings with stakeholders, the local community and beneficiaries. Diversity of the participants' backgrounds is necessary to ensure that all participants interact and provide feedback on the areas of inquiry. Hence, the FGD guide/tool will be designed in a manner where a pre-determined set of questions (areas of inquiry) are posed, in addition to follow up inquiries to trigger discussion amongst participants in order to gather as much information as possible. In addition to the FGD guide/tool, all proceedings of those meetings shall be transcribed so that the team could always refer to them to extract further information.

Round Table Discussions: Round table discussions is a technique that involves stakeholders, or representatives of stakeholder groups, to sit on a round table and discuss a certain topic. The purpose of a round table is to create an egalitarian ambiance in which there is no formal leader to be followed. Similar to FGDs, a facilitator is present to steer the conversation to achieve the expected results, while controlling any digression triggered by the participants. Round table discussions can also have a set of questions that to enhance the quality of the discussions. However, these questions are merely of "goals to be achieved", "questions to be answered", or "issues to be resolved" by the end of the discussion.

[19] *Grobbelaar, S.S. Handbook Series: Stakeholder engagement and participation. DRUSSA (2014).*

Surveys: Surveys/questionnaires is a straightforward method to answer questions required for the project. Given that the sample size of survey participants is usually significantly higher than the aforementioned discussions, the purpose of surveys is to gather a high number of responses for predefined questions from which statistical and/or analytical significance can be extracted.

Key Informant Interviews: Designed to gather information from the most knowledgeable stakeholders to certain interventions. Stakeholders may include technical experts, regulatory entities, workers, enterprise owners, citizens, truck drivers, vendors, retailers and others.

Town Hall Meetings: A town hall meeting is an open event in which the local citizens have the opportunity to have an open conversation with the municipality and the mayor. In this meeting, the municipality briefs citizens about its progress in certain projects, shares future plans, reflects back on previous projects, and discusses upcoming challenges in which citizens can help. In the second half of the meeting, citizens will have a questions and answers (Q&A) session. The meeting also allocates time for suggestions and inputs from citizens.

Workshops: Workshops can exist in a form of well-organized brainstorming sessions in which stakeholders' main task is to provide suggestions and raise possible challenges. Workshops can also include deliberations over decisions that should be taken in each interventions.

Reports: Reports provide stakeholders with qualitative and quantitative details the interventions. This may include methodology, challenges, technical specifications, workplans, progress, levels of effort, cost and many others.

Third Party Evaluators and a Citizen Jury: This technique provides the project with a 3rd person perspective, accompanied with the end users' observation. The role of the evaluator is to provide the municipality with an impact assessment for the interventions, showing where the project improved the overall operations, as well as environmental and OSH aspects. At the end of the assessment, the municipality presents the interventions' results to a jury comprised of local citizens and attempts to prove the benefits of project. The ruling of the jury (i.e. whether or not the interventions were beneficial) supports the municipality to pursue future funds: at this stage, the municipality has actual data from citizens who have expressed their satisfactions and concerns. The results, therefore, can steer the municipality to seek funds in the following manner:

- Jury Ruling- Beneficial: Seek funds for similar interventions.
- Jury Ruling- Unbeneficial: Avoid seeking funds for similar interventions. Start pursuing funds for alternatives suggested by the jury.

Project Website: Despite the fact that the purpose behind a stakeholder engagement strategy is to include the maximum possible number of stakeholders, some stakeholders are prone to be left out for various reasons. Therefore, the presence of webpage is necessary to provide all stakeholders to provide the municipality with feedback, suggestions and concerns. A prerequisite for this feedback page is to have a page in which all reports, minutes of meeting, and other data needed for stakeholders to extract results and conclusions.

The following table maps Techniques vs. Level of Involvement each technique offers to stakeholders. The table also shows which technique serves which of the 5 main pillars of the vision.

	Information	*Consultation*	*Collaboration*	*Co-decision*	*Empowerment*	*Pillars Served*
Focus Group Discussions			X	X		1,2,5
Round Table Discussions			X	X	X	2,4,5
Surveys		X				1,3,4
Key Informant Interviews			X	X		3,4,5
Town Hall Meetings	X	X				1,2,4
Workshops		X	X	X	X	1,2,4,5
Reports	X					3,4
Third Party Evaluators (could be citizen Jury)		X	X	X		1,2,3,4,5
Project Website	X	X				1,3,4

3.3 Funding and Public-Private Partnership

There are several interventions where the Municipality of Sahab is only required to coordinate relevant activities and facilitate the flow of funds or support to the relevant parties. In other instances, the Municipality of Sahab is required to obtain or mobilize financial resources for implementation. Since there is a number of sources that the Municipality of Sahab can utilizes to fund the interventions included in the improvement plan, each intervention sheet indicates proposed sources of funding. When the required funding could be provided in the form of technical assistance an estimation of cost and/or effort is stated in the relevant intervention sheet as well.

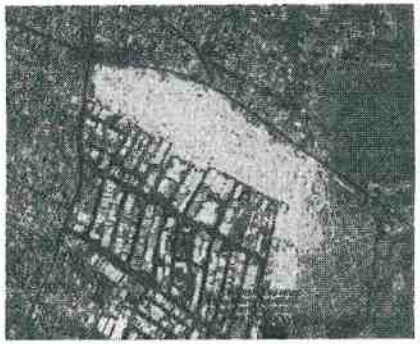
There is a number of interventions that could be implemented in partnership with the private sector, such as the slurry recycling plant and the truck park. The Municipality of Sahab will require technical assistance to manage the full cycle of these interventions given the lack of capacity and previous experience in designing, procuring and operating Public-Private Partnership (PPP) project.

The PPP law number 31 for the year 2014, and its relevant regulations (mainly regulation number 98 for the year 2015), provide an overall framework for PPP in Jordan[20]. The Municipality of Sahab could use these legislations to guide their PPP projects. The Cities and Villages Development Bank also encourages PPP and can provide related technical assistance under the World Bank funded municipal development project. The Municipality of Sahab will need to approach the project and start discussing the proposed interventions immediately after approving the improvement plan.

[20] *The law and relevant legislations is avaible on www. pppknowledgelab.org/countries/jordan*

Annex 1: Interventions of Improvement Plan

Project Sheet



Intervention

Support the stonecutting enterprises in marketing their final products

Dimension

Occupational Safety & Health (OSH)

Project Code: 1.2

Insert a clear picture that describe the current internal roads.

Insert a clear picture that describe the current internal roads.

Introduction

As other industries in the country, stone cutting establishments are currently facing very low demand due to slow growth in the construction sector and economic recession in the whole region.

In addition to high competition with imported similar products from and in the local and nearby markets (Gulf States) as strongly believed by the owners of the stonecutting enterprises. During the course of this study and visits to the area, it was noticed that relatively some of these enterprises was closed for more than two years. Such bad situation, if continues in the future, will result in closure of additional enterprises leaving more Jordanian and non-Jordanian workers without jobs.

One of the most important obstacles that may hinder any development or efforts aiming to improve work conditions and level of safety and occupational health in these enterprises is the low revenues. Thus, supporting stone and marble cutting industry in marketing their final products and opening new markets for exports is considered vital at present.

Objectives

The prime aim of this intervention is to help stone and marble establishments in the vocational area to increase its revenues through opening new markets. Exports for neighboring countries, especially Gulf States, will enhance revenues which will reduce financial barriers that are reducing the ability of the enterprises to implement safety and occupational health improvements. The needed support in this field is to develop programs that would promote exports and opening new markets for stone and marble products.

Project Description

This project can be implemented by the Jordanian Stone Society (JOSTONE), Exports Promotion Corporation, Amman Chamber of Industry, or any other institution in close cooperation with owners of stone and marble cutting establishments. All of these should work closely to develop a marketing plan for certain period and should include, but not limited to, the followings:

- Prepare a detailed study about the current situation of these establishments, products and real production costs.
- Conduct a study for nearby markets and their needs of stone and marble products and the available competent products in these markets.
- Identify most important barriers that have significant influence on exports and measures to overcome such barriers
- Prepare a marketing plan for next few years, which should include several activities such as participation in exhibitions and organizing specialized festivals to display products, organizing meetings with contractors, design and supervision companies, and conducting advertising campaigns to promote products inside and outside Jordan.

The contribution of Sahab Municipality will be in-kind, by making meeting rooms and database available and finding a space for future exhibitions to display stone and marble products. In addition to the needed support especially communications with concerned governmental institutions. To ensure future continuity of this project, it is necessary that a national institution should work and take the lead to make it sustainable.

This requires full cooperation and coordination with a special committee or society representing owners of stone cutting establishments in the area. It is proposed that such committee or society could work under auspices of Amman Chamber of Industry or JOSTONE.

Project Main Phases



Economics

It is deemed that the project in hand will have yield several advantages, including:

- Pricing of products according to certain procedures to compete with similar products in the new markets.
- Increase revenues and income of stone cutting enterprises, which in turn leads to possible investment in occupational health and safety improvement programs
- Open new markets would create more jobs and contribute positively to the national economy
- Enhance creativity of enterprises in developing new products according to needs of designated markets.

Items 1-3 above will not require financial resources and the municipality can implement them through the relevant partners.

Technical assistance will be needed and estimated at 40 to 50 person-day of a marketing expert. The exhibition will require about JD3,000 in supplies and promotion. Costs of conducting meetings is negligible.

Stakeholders

- Ministry of Industry and Trade
- Ministry of Public Works and Housing
- Ministry of Planning and International Cooperation
- Ministry of Transport
- Ministry of Foreign Affairs
- Amman Chamber of Industry
- Owners of stone cutting establishments
- Exports Promotion Commission
- Jordan Trade Union
- Jordan Contractors Association
- Jordan Engineers Association
- Jordan Stone Society (JOSTONE)
- Municipality of Sahab

Stakeholders' Engagement Strategy

To ensure that all concerned stakeholders are involved effectively, it is suggested to apply the following:

- Sahab Municipality will invite all concerned stakeholders to a preliminary meeting under the patronage of the Mayor, in presence of representatives (special committee or elected society) of owners of stone cutting establishments.
  This should be followed by several meetings leading to signing a memorandum of understanding (MOU) between the marketing institution and the committee representing owners, that includes goals and the marketing plan.
- Forming a steering committee to lead and supervise activities related to this project. It is recommended to work under the umbrella of Amman Chamber of Industry.

Project Duration 12 Months

The project may take one year or more for planning and securing the funds and about three years for execution.

Sources of Funding & Public-Private Partnership (PPP) Opportunities

The success of this project depends totally on the availability of required funds and cooperation of concerned authorities to develop and execute the desired marketing plan.

It is proposed to start by addressing Ministries of Planning, Industry and Trade, and Exports Promotion Commission to allocate the required funds in close cooperation with Sahab Municipality.

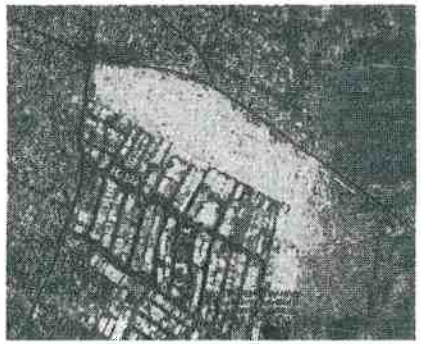
The latter will provide the logistic support (such as meeting rooms, communications, etc.). It is possible also to secure partial funding through services and programs conducted by Amman Chamber of Industry, JOSTONE and Jordan Contractors association. Such arrangement could be a model of public-private partnership.

Notes

- As well known, construction activities slow down during winter season but become active in spring and summer.
  Thus, it is better to organize trade fair and products show during winter when low rate of demand.

Insert a clear picture that describe the current internal roads.

Project Sheet



Intervention

Capacity Building of Workers in Stone Cutting Workshops

Dimension

Occupational Safety & Health (OSH)

Project Code: 1.1

Insert a clear picture that describe the current internal roads.

Insert a clear picture that describe the current internal roads.

Introduction

Stone and marble cutting and forming, as semi-automatic or manual occupation, is associated with various risks to workers. During the study in hand, it was noticed that some of current practices in handling (unloading and loading) of raw materials or products and cutting process are still far from best and safe practices of such industry. It is important to stress here that no records for past injuries or deaths are available and owners of workshops admitted of such hazards but did not provide any details related to casualties and injuries. Although enterprise owners and local informants stated a number of accidents, few of which led to death of workers in past few years. Such sad incidents are due to the fact that employees do not have sufficient knowledge in the field of work, especially when it comes to occupational health and safety.

Their current work practices clearly showed that the workers neglect the potential dangers and do not have the ability to deal with these dangers to protect themselves from serious injuries or death. Thus, special short training courses should be provided to workers about best practices in different processes and actions which takes into account all possible dangers and how to manage and avoid negative impacts that leads to injuries or even loss of life.

Objectives

The prime goal of this project is to enhance capacity and knowledge of employees in all processes of stonecutting and lathing starting from unloading of rocks to arrangement of final products and associated hazards and occupational safety. It is deemed that the proposed short training on best practices during cutting and shaping the stone would enable workers to deal with potential risks, thus reducing the occurrence of accidents and injuries.

Project Description

Workers capacity building and training in stone handling and cutting, especially in relation to safety precautions and occupational health is highly needed. It is recommended to stat this program in small groups of 7 to 10 persons in each short course (one or two workers from each facility). This introductory short course should not exceed 6 hours training and can be organized on two or three days (prat-time) according to the needs and preference of workers and owners. Bearing in mind that majority of the workers are Egyptians and only small percentage are educated or have minimum skills in reading and writing. According to current legislations, all workers in this field should obtain a permit (Occupation Practice Authorization) after passing a special test (theoretical and practical) in a Vocational Training Center following the issued instructions (Procedures of Tests and Occupation Practice Authorization) by the Ministry of Labor. However, at present such practice is not in place.

The proposed short training program would include:

- Introductory session about safety instructions and occupational health as well as protection from risks in work environment
- Special training on safety in stonecutting facilities
- The role and responsibilities of safety officers in a facility
- Best practices in material handling and operation of cranes and cutting and forming of stone and marble

The specialized technical institution that could provide such training is the Vocational Training Corporation and training centers working under its capacity such as the Safety and Occupational Health Institute and Vocational Training Center in Sahab - King Abdullah II Industrial City.

Project Main Phases



Economics

Upon completion of such short training program, it is deemed that several benefits could be achieved, including but not limited to the following:

- Reduced number of injuries and accidents among workers
- Providing a safe working environment
- Financial savings (direct and indirect) because of reduced cost of treating injuries, and improving reputation and image of enterprises in terms of occupational health, safety and environment
- Improving the quantity and quality of final products, which will enable increasing exports for external markets

The general requirement for such short training is simple since these are limited to small hall and qualified trainers. For the space, it is possible to be held in the office of Sahab Municipality in the vocational area or the vocational training center in the industrial city or in the office of Amman Chamber of Industry. Accordingly, the cost will be relatively low and does not exceed JD 250-300 for the program. Below is clarification for most important items:

- Fees for obtaining the vocational practice authorization (JD 30 for each participant in case he would like to go for the test according to current instructions)
- Financial rewards for trainers, estimated around JD 200 for each program
- Miscellaneous expenses (JD 50) including tea and coffee breaks and handouts, etc.

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- Miscellaneous expenses (JD 50) including tea and coffee breaks and handouts, etc.

Stakeholders

- Vocational Training Corporation (Health and Safety Institute and Vocational training Center)
- Ministry of labor
- Owners of Stone Cutting Enterprises
- Social Security Corporation
- General Federation of Jordanian Trade Union
- The private business associations (JOSTONE)
- Amman Chamber of Industry

Stakeholders' Engagement Strategy

To ensure success participation in the proposed training, incentives for both of owners and workers to should be provided through:

- Offer such program at reduced cost, in the early beginning
- Provide training in the municipality office within the area to reduce costs of transportation and avoid closing any establishment
- The Vocational Training Corporation will prepare awareness messages and brochures on the occupational safety and health best practices in such industry

Project Duration 12 Months

The first phase is announcement and selection of trainees. To start the training program, few workers should be selected from enterprises that are licensed in Sahab Municipality, and this preparation would require a period of time not exceeding two months. Including coordination with Vocational Training Corporation.

The second phase is implementation of training. Then the training program would be held according to organizer, and will not exceed two to three days as follows:

- Each worker should obtain profession practice license
- Each worker should attend a specialized and basic training course

Sources of Funding & Public-Private Partnership (PPP) Opportunities

Proposed sources of funding for this project:

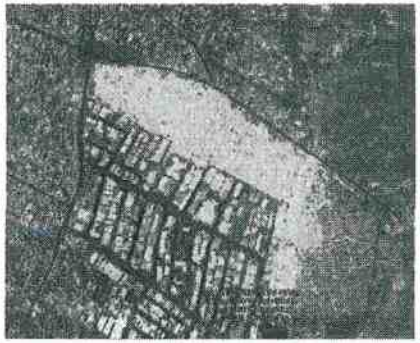
- The Municipality of Sahab (training hall)
- Jordanian Trade Union and private associations can contribute by providing financial support
- The Vocational Training Corporation will provide needed training and reduced cost
- International donors

Notes

- The success of such program needs full cooperation between all stakeholders and it is proposed that Vocational Training Corporation should be the focal point in close cooperation with Sahab Municipality

Insert a clear picture that describe the current internal roads.

Project Sheet



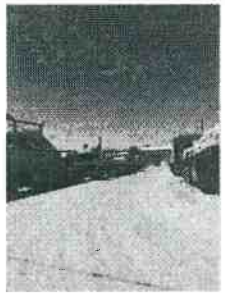
Intervention

Paving, Numbering, & Lighting the Internal Roads of the Stonecutting Area in Sahab

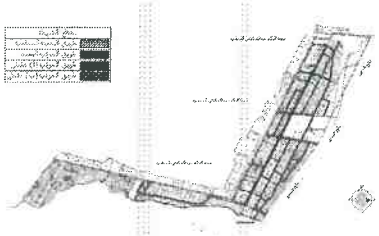
Dimension

Environment, Infrastructure & Planning

Project Code: 2.1



Current situation of roads in Sahab's stonecutting area (May, 2018)



Map of roads in the stonecutting area

Introduction

The main environmental impact resulting from the stonecutting enterprises in Sahab is dust emission. This problem which is attributed to a number of sources, causes continuous citizens' complaints and claims of health diseases. During the field study conducted by the study team at the area, it is found that one of the major sources of dust emission is the movement of traffic on the internal roads of the stonecutting area. Most of these roads are in bad condition as they are poorly paved, dusty, and with eroded and rough surface. This is an additional cause of workers' complaints in addition to drivers, and visitors.

The roads are neither numbered nor lightened. This makes it difficult to directly access the stonecutting enterprise for customers and for the transport of row material and finished products. Furthermore, lack of lighting decreases the level of the area's security and the enterprises reported incidents of theft.

Objectives

The main objective of the intervention is to decrease the level of dust emission, in addition to improve access to the enterprises through improved roads and road identification. Lighting will also improve security in the area and hopefully reduce incidents of theft.

Project Description

The project has 3 main components:

1) **Reconstructing and paving the existing internal roads:** A total of about 8 km length segments and width ranging from 10 to 15 m depending on segment. The entire area to be reconstructed and paved is included in the second page of this project sheet. The work includes preparation, de dusting when necessary, leveling, base course, compaction, MC, and asphalt paving of 7 cm after compaction to bear heavy duty trucks.
2) **Numbering the roads:** To facilitate the access to and identify the enterprises location addresses later on, roads to be given alphabet letters for long segment i.e. *(N –S)* direction and numerical digits for cross segments *(W- E)*. Signs identifying the roads are to be with suitable size and height from the ground and fixed at suitable places at the roads.
3) **Lighting the roads:** It is roughly estimated that about 400 lighting units installed along the road segments, with a 6 m high and a separating distance of 20 m between each two successive units are needed to cover the stonecutting area. It is highly recommended that energy saving lamps are to be used.

Project Main Phases



Economics

The intervention has a lot of economic benefits:

1) The citizens', workers', drivers', and visitors' exposure to dust will be minimized.
2) Well-constructed, paved, and numbered roads will make the area more attractive for customers due to smooth movement, direct access to the enterprises in shorter periods of time, facilitates marketing and organizing products exhibitions. This is a benefit for enterprises and customers as well.
3) Traffic movement on well-constructed and paved roads will decrease the vehicles damage and minimize the costs of repair and maintenance.
4) Lighting roads will raise the security level. Number of theft incidents faced by the enterprises will be minimized, losses of properties such as cables and other electrical equipment will be less and working suspension periods due to electric cuts will be avoided.
5) Many job opportunities will be opened for contractors, workers and material suppliers.

Given the large area of roads to be paved (check page 2 of the project sheet), the municipality will implement the project in phases, and will seek funding from partners.

Stakeholders

- **Sahab Municipality:** Works as a coordinator among other stakeholders. It will play a major role in identifying the ownership of land plots, road numbering, tendering process and follow up the whole work.
- **Ministry of Public Works and Housing:** It will work as consultant for performance quality, identify the interactions of the roads and provide the construction codes.
- **Ministry of Energy and Natural Resources:** It is a key player as it is responsible for electricity supply and control the performance of lighting works.
- **Enterprises Owners:** They have a role in facilitating the work (i.e. removing the obstacles away from roads sides), and they will bear a share of cost.
- **Traffic Department:** Their role is to control traffic movement during construction if needed.
- **Private Sector:** They are key player as they are contractors, sub-contractors or suppliers.
- **Donors:** Financial support.

Stakeholders' Engagement Strategy

It is suggested that a permanent committee represented by the Municipality, enterprises owners, and a consultant to follow up the work progress and later on the maintenance requirements as well as the issues that may be raised in future.

Costs of The Intervention

240,000 Jordanian Dinar	**Re-construction & paving** Of area A roads 10 JD/m2
120,000 Jordanian Dinar	**Re-construction & paving** Of area B roads 10 JD/m2
300,000 Jordanian Dinar	**Re-construction & paving** Of industrial city wall roads 10 JD/m2
2,000 Jordanian Dinar	**Road Numbering** Estimated No. of workers is 5
80,000 Jordanian Dinar	**Road Lighting Installations** Estimated No. of workers is 20

Needed Investment **742,000 JD**

Project Duration – Phase 1

Breakdown as follows:

- 3 Months for preparation (prepare bid documents)
- 2 Months for bidding.
- 1 Month for decision making
- 6 Months for implementation

12 Months

Sources of Funding & Public-Private Partnership (PPP) Opportunities

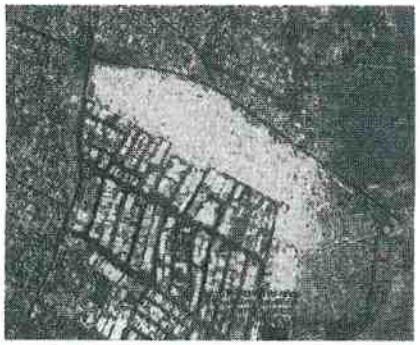
Considering the municipality current budget, its contribution may be minor. This intervention as it is an infrastructure project needs multiple sources:

- Donors, Government, and Enterprises owners.

Notes

- Tendering process should follow the national tendering rules.
- It is very important to clarify and settle land ownership issues prior to commence the work.
- During the implementation additional stakeholders may come up such as the party or parities who will fund the intervention. The Municipality need to engage these stakeholders as well.
- Selection of enterprises representatives shall take place in agreement with all stonecutting enterprises.

Project Sheet



Intervention

Paving, Numbering, & Lighting the Internal Roads of the Stonecutting Area in Sahab

Dimension

Environment, Infrastructure & Planning

Project Code: 2.1

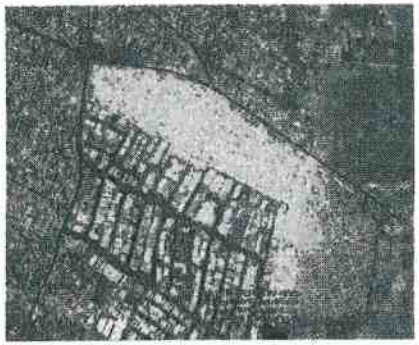
Map of Roads



Estimation of total area

Area	Length (m)	Width (m)	Avg. Cost (JD/m2)	Cost (JD)
Industrial City	3600	10	10	300,000
A	5000	8	6	240,000
B	2500	6	8	120,000

Project Sheet



Intervention

Constructing a Surrounding Wall Around Sahab Stonecutting Area, with Main Entrance & Exit Gates, Weighbridge

Dimension

Environment, Infrastructure & Planning

Project Code: 2.2

Insert a clear picture that describe the current internal roads.

Insert a clear picture that describe the current internal roads.

Introduction

Although Sahab stonecutting area boarders are well identified on papers, however, on the ground the story is slightly different. The area can be entered through more than 20 random entrances by vehicles and through unlimited entrance points by individuals from all directions.

This situation makes the area free for any vehicle and anybody to get in and out without control. Stone trucks entry is not controlled neither slurry tanks which results in negative practices affecting the traffic and the environment, e.g. unloading of garbed and residuals of all kinds within the area.

Objectives

The construction of a surrounding wall around the area with designated entrance(s) and exit(s) will convert the area into a protected, well controlled and real occupational and industrial site.

This also facilitates collecting data about various activities and weights of loads as well as trucks and other vehicles.

Project Description

- Construction of surrounding concrete wall with about 5 km long, 2 m high (with average thickness 0.2 m) around the stonecutting area.
- Construction of two main gates each of about 8 m wide, divided as entrance and exit gates, and controlled by check point office.
- Install a heavy-duty weighbridge at the entrance gate.

Insert a clear picture that describe the current internal roads.

Project Main Phases



Economics

The intervention has a lot of economic benefits:

- For enterprises, the intervention will decrease losses of properties such as cables and other electrical equipment as number of theft incidents will be minimized. In addition to avoidance of work suspension, due to power supply failure as a result of theft of electrical equipment, i.e. cables and wires.
- For municipality, the intervention can be a source of new income: fees on weighing and entering the area. The intervention will also help the municipality to develop a self-database and being a source of information on vehicles entering and exiting and the raw materials and products.
- For citizens and surrounding areas, the intervention will help in decreasing the level of dust and waste emitted due to direct low transfer of dirt. Separation of stonecutting area from the populated area will improve the general view and minimize the declining of houses prices.
- For private sector, the intervention will open many job opportunities for contractors, workers and material suppliers during construction and other opportunities during operation (i.e. employees at checking points and balance operation).
- At national level, the intervention will decrease the incidents of illegal dumping of wastes and slurry in open lands especially agricultural lands, and into sewage system manholes.

Stakeholders

- **Sahab Municipality:**
  Works as a coordinator among other stakeholders. It will play a major role in identifying the ownership of land plots and selecting gates locations, tendering process and employing the operation employees.
- **Ministry of Public Works and Housing:**
  It will work as consultant for performance quality, identify the interactions of the roads and provide the construction codes and specs.
- **Enterprises Owners:**
  They have a role in facilitating the work and cooperation with the construction contractors (i.e. removing the obstacles away from the wall route), and they will bear a share of cost as in-kind contribution (i.e. supplying some construction materials).
- **Private Sector:**
  They are key player as they are contractors, sub-contractors or suppliers.
- **Donors:**
  Financial support.

Stakeholders' Engagement Strategy

It is suggested that a permanent committee represented by the Municipality, Enterprises Owners', and a consultant to follow up the work progress and later on the maintenance requirements as well as the issues that may be raised in future.

Costs of The Intervention

125,000 Jordanian Dinar

Construction
Estimated No. of workers is 50 persons

4,000 Jordanian Dinar

Gates
With check point offices.
Estimated No. of workers is 8 persons.

40,000 Jordanian Dinar

Installing Heavy Duty Balance
Estimated No. of workers is 6 persons.

2,500 Jordanian Dinar Per Month

Running Cost
Estimated No. of workers is 4 to 6 permanent employes.

Needed Investment 182,500 JD

Project Duration

- Expected duration of preparing BoQ and bidding is 3-5 months.
- Expected duration is of the project components is 8-10 months.

10 Months

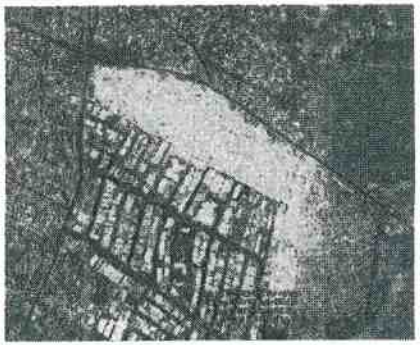
Sources of Funding & Public-Private Partnership (PPP) Opportunities

Considering the municipality current budget, its contribution may be minor.
This intervention as it is an infrastructure project needs multiple sources (donors, government, and enterprises owners).

Notes

- The construction of the wall can be implemented in parallel in term of time with the road reconstruction and paving, unless there are conflicts among these activities.
- It is very important to settle the land plots ownership issue prior to commence the work.
- Tendering process should follow the national tendering rules.
- During construction other stakeholders might appear. They should be accounted for.
- It would be necessary to consider rain drainage and flood occurrences in wall construction.

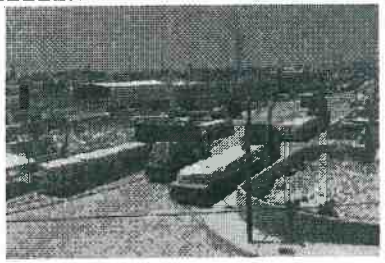
Project Sheet



Intervention
Establishment of truck/trailers park and truck cleaning and maintenance station.

Dimension
Environment, Infrastructure & Planning

Project Code: 2.3



Trucks parked in the stonecutting area's main road (April, 2018)



Proposed layout of trailer park, service station and slurry station

Introduction

Roads of the stonecutting area are crowded by long and heavy trucks. In many cases the loaded trucks are left in the internal roads for days, with the drivers staying at their homes which might be in other cities. Parking of large size trucks and long trailers for long periods of time at the roads sides within the stonecutting area creates traffic jams and accidents, and delays loading and unloading activities at enterprises entrances.

Considerable quantities of sand stone fractions are swept off the trailers' backs, and only on roads sides emitting dust and resulting in compiling dirt in the sides and surfaces the roads including the few paved roads within the stonecutting area in Sahab. Sweeping and cleaning should be carried out in a specific station using wet or vacuum methods of cleaning. During interviews with truck drivers, they complained from theft incidents of truck items and even fuel, when their trucks are parked in the internal roads of the stonecutting area. They also express their interest in and willingness to use, a dedicated truck park area that ensures the safety of their trucks and provides basic facilities to the drivers.

Objectives

The main objective of the intervention is to decrease the level of dust emission, in addition to improve access to the enterprises.
This intervention will also reduce traffic jams and accidents and incidents of theft faced by the truck drivers.

Project Description

- Allocate of suitable and safe guarded park within or close to the stonecutting area to be sufficient to accommodate at least 20 long truck/trailer combinations, in order to avoid long period parking in the internal roads of the stonecutting area.
- Selection of land piece with an approximate area of 4,000 m² to serve as a park and slurry compression station. Plot 109 is already owned by the municipality and can serve both projects
- Construction of:
  - i. A surrounding concrete wall, 2.0 m high and 0.2 m wide around the park.
  - ii. An entrance gate with office and waiting hall for drivers.
  - iii. Sweeping and cleaning station under a hanger with an approximate area of 100 m² and procurement of the sweeping and cleaning machine using wet or vacuum. The swept materials can be collected in a chamber within the station and transferred to stone crushes by tippers.
  - iv. Service area including cafeteria, toilets and other.
- Paving the park ground of an area 2,000 m2.
- Lighting the site.
- It is envisioned that the truck park will be a public-private partnership.

Project Main Phases



Economics

The intervention has a lot of economic benefits:

1) For truck drivers: the intervention will decrease loss of property stolen from their trucks and avoid being charged in case of parking in prohibited areas.

   The park can serve as a market place for their loads.

2) For stonecutting enterprises, the intervention will minimize the occurrences of blocking their entrances and delaying their work.

   The park, which also serves as a market place, will save the enterprises time and money.

3) For municipality, the intervention can be a source of income as it applies a charge for services including parking and cleaning

   (i.e. if 30 parking trucks are charged 1-2 JD/ day, then the monthly income is 900-1,800 JD, in addition to revenue of the sweeping and cleaning services and the cafeteria income)

4) For citizens and surrounding areas, the intervention will reduce dust emissions consequently reduce their health complaints and negative economic consequences on the value of their properties.

5) For private sector, the intervention will open many job opportunities for contractors, workers and material suppliers during construction and other opportunities during operation

   (i.e. employees at entrance gate, employees of sweeping and cleaning, and cafeteria workers).

Note: the same land plot will be used for the truck/trailer park and the slurry station. The Municipality of Sahab identified a suitable land plot that can fit both projects within the stonecutting area.

Stakeholders

- **Sahab Municipality:**
  Works as a coordinator among other stakeholders. It will play a major role in land procurement, tendering process and management of operation and maintenance.
- **Private Sector:**
  They are key player as they are contractors, sub-contractors or suppliers in construction phase, and operation.
- **Donors:**
  Mainly for technical support.

Stakeholders' Engagement Strategy

It is suggested that a contract to be signed between the municipality and the operator if it is not the municipality, truck drivers should be consulted.

Details avaible in the stakeholders' engagement strategy.

Costs of The Intervention

50,000 Jordanian Dinar
Total Construction
Estimated total No. of workers is 20 for *(concrete wall, entrance gate, waiting hall, cleaning station)*

20,000 Jordanian Dinar
Pavement Works
Estimated No. of workers is 10, assuming 10 JD per m2 for 2,000 m2

16,000 Jordanian Dinar
Cost of Lighting & Cleaning Machine
Estimated No. of workers for lighting is 5

1,200 Jordanian Dinar Per Month
Operational Cost
1200 JD/month *(salaries for 3 workers)*
200 JD/month *(hiring loader & tripper)*

Needed Investment 67,200 JD

Project Duration

Breakdown as follows:

- 2 Months for preparation (prepare bid documents)
- 2 Months for bidding and decision making
- 2 Months for implementation

6 Months

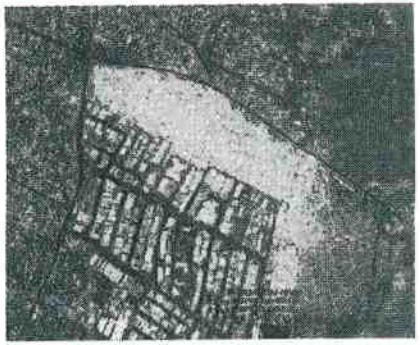
Sources of Funding & Public-Private Partnership (PPP) Opportunities

The municipality will allocate the needed land.
This intervention can be implemented in partnership with the private sector using a design, build and operate approach. So, limited financial support is needed by the municipality.
Technical support is needed to assist the municipality in preparing a public-private partnership (PPP) tendering documents and supporting the relevant contractual arrangement.

Notes

- Tendering process should follow the national tendering rules.
- The swept materials can be collected in to a chamber within the station and transferred to stone crushes by tippers once a month.
- An alternative to sweeping station could be contracting private sector cleaning service company to sweep and clean the trailer deck in situ directly after unloading, using vacuum cleaning.
- Depending on the park location, other activities would be necessary and accounted for *(i.e. access road construction and paving)*.

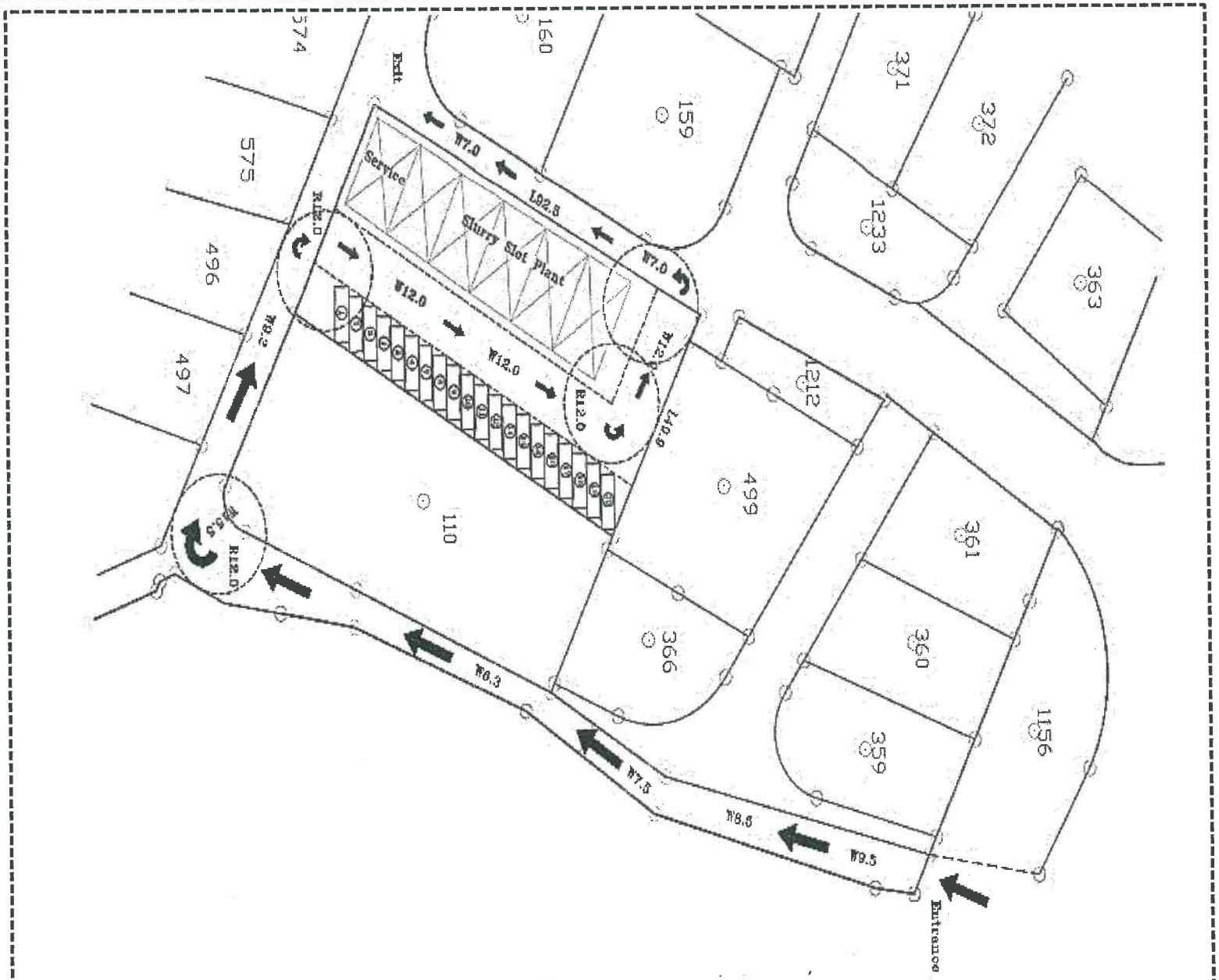
Project Sheet



Intervention
Establishment of truck/trailers park and truck cleaning and maintenance station.

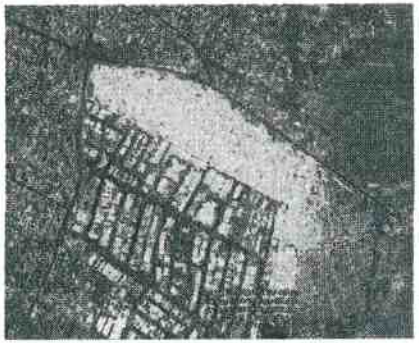
Dimension
Environment, Infrastructure & Planning

Project Code: 2.3



Proposed layout of trailer park, service station and slurry station

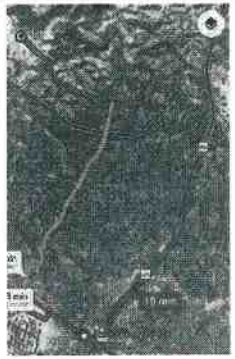
Project Sheet



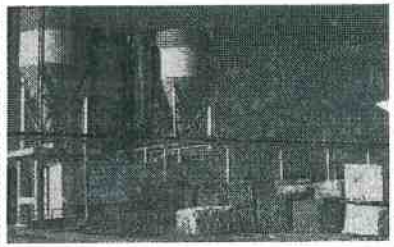
Intervention
Construction of Slurry Recycling Plant

Dimension
Environment, Infrastructure & Planning

Project Code: 2.4



From Sahab stonecutting area to the landfill in Ruseifeh.



Slurry recycling plant image

Introduction

Stonecutting industry is a water consuming process as large quantities of cooling water is used during stonecutting. Consequently, large quantities of slurry (water mixed with stone powder) is produced. Although water is recycled by the stonecutting enterprises through slurry precipitation in successive poles, some literature studies estimates the thicker portion of the slurry still contains about 80% of water. The solid content of slurry is mostly Calcium Carbonate ($CaCO_3$), which is a raw material for many industries (i.e. as filler material in paints, cement, etc.).

It estimated that the monthly consumption of cooling water at Sahab stonecutting area is 30,000-35,000 m^3. Currently, slurry is transported by tankers and is discharged to in designated dumping sites. Nevertheless, illegal and random dumping to open lands and into sewage system manholes also takes place.

Since dry residue of stone cutting is being crushed and used either as final product or as input to tile and block making, the construction and operation of this plant will ensure that all raw materials entering the stonecutting area are eventually transferred into final products sold in the market. Currently, slurry is the only side byproduct of the stonecutting activities that is dumped into landfills.

Objectives

Elimination of slurry dumping in in landfills, by constructing and operating a slurry recycling plant as a part of an environmental solution with economic benefits to many stakeholders.

Project Description

A plant that can recycle about 1,000 m^3 slurry per day is to be constructed and operated; at a location preferred to be within the stonecutting area, otherwise at a closest available site to the area. The estimated area needed to accommodate the plant is about 2,000 m^2.

The Municipality already defined a land plot for the slurry recycling plant and truck part. The main project components are:

- Site preparation.
- Construction of: surrounding wall, entrance gate and office construction, loaded tankers receiving station, slurry storage tanks, produced water storage tanks, produced water loading station,
- Paving access and internal roads, and products ground.
- Lighting the site.
- Procurement and assembling of pressing machine, and pumps and pipes
- Procurement and assembling packaging unit, in case the powder is to be sent to the outer market.

Project Main Phases



Economics

Economic benefits are:

1) For stonecutting enterprises, the intervention will minimize the cost of slurry transport and discharge, and cooling water would be in fewer prices as a new, close source of water will be available.
   Moreover, the point of win-win approaches could be reached. It might be an investment opportunity as well.
2) For municipality, the intervention can be a source of income as the plant would have some sort of support to the municipality. The municipality effort and cost of slurry tankers movement inspection will be less. The municipality can take share in investment and revenue.
3) For tank drivers: the intervention will decrease the round-trip time, decrease fuel consumption and maintenance cost, and help in avoidance of fines outside the area.
4) For private sector, the intervention will be an opportunity of investment. It will open many job opportunities for contractors, workers and material suppliers during construction and other opportunities during operation.
   It will be a source of raw material needed by market for several industries.
5) At national level, the intervention will decrease the costs of illegal dumping of slurry in open lands, especially agricultural lands, and into sewage system manholes, and decrease the cost of roads maintenance by decreasing the number of round trips of heavy loaded tanks.

Stakeholders

- **Enterprises:**
  Are key players as they are the source of slurry supply and recycled water consumers.
- **Municipality:**
  Is responsible for location selection and land procurement. The municipality plays role in licensing and inspection.
- **Tankers' drivers:**
  Whether they transport slurry to the plant or water to enterprises they play key role and are- to large extent - affected by the plant operation.
- **Private sector:**
  Plays key role in investment, construction, supply, and management. Industries are the main market of the products.
- **Ministry of Environment:**
  Plays a role in licensing and inspection.
- **Cities & Villages Development Bank:**
  Plays a role in financial support.
- **Donors:**
  Financial and technical support.

Stakeholders' Engagement Strategy

It is suggested that a permanent committee represented by members of the main investors, the enterprises, the municipality, and tank drivers to be formed.

Signing MoU(s) might be necessary between the key parties, regular meetings of the committee would be necessary to evaluate the project feasibility and performance.

Financial reports should be issued on periodical basis.

Costs of The Intervention

60,000 Jordanian Dinar

Total Construction
Estimated total No. of workers is 38 for *(site preparation, surrounding wall, gate, office, stations, storage tanks)*

20,000 Jordanian Dinar

Pavement Works
Estimated No. of workers is 10
Assuming 10 JD per m^2 for 2,000 m^2

200,000 Jordanian Dinar

Cost of Procurement & Assembling
Estimated No. of workers for lighting is 15 for *(machines, pumps, pipes, lines)*

6,000 Jordanian Dinar Per Month

Operational Cost
Assuming PPP and could be procured as a design, build and operate project.

Needed Investment 280,000 JD

Project Duration

Breakdown as follows:

- 2 Months for preparation (prepare bid documents)
- 2 Months for bidding and for decision making
- 3 Months for implementation

7 Months

Sources of Funding & Public-Private Partnership (PPP) Opportunities

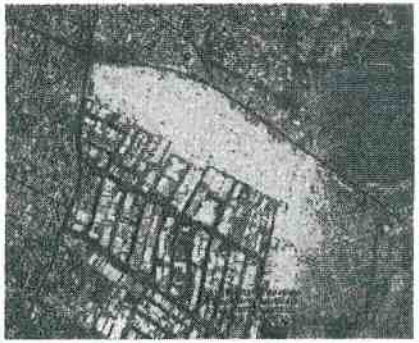
This project is an ideal example of public-private partnership, as well as, win-win approach. The municipality may allocate or procure the needed land; the private sector investment is highly expected using a design, build and operate approach. The government through Cities & Villages Development Bank is also a party that can provide financial support, while donors are expected to play a technical and financial role as well. Technical support is needed to assist the municipality in preparing a public-private partnership tendering documents and supporting the relevant contractual arrangement.

The project would require a detailed feasibility study which can be conducted by the private sector during the bid preparation phase. The bid documents could simply state what the municipality would offer *(e.g. land)* and request that the private sector propose a financial model and revenue sharing approach with the municipality *(e.g. JD per metric ton of input or output)*. The private partner may decide to produce compacted and packaged solid content of slurry that could be sold to other industries, produce a final product that could be sold in the market such as tiles, or a mix of both.

Notes

Tendering process should follow the applicable regulations.

Project Sheet



Intervention

Rerouting and reconstruction of traffic roads.

Dimension

Environment, Infrastructure & Planning

Project Code: 2.5

insert a clear picture that describe the current internal roads.

insert a clear picture that describe the current internal roads.

Introduction

Hundreds of heavy trucks, trailers and tankers enter the stonecutting area on daily basis. No specific routs are designated to these heavy vehicles.

Heavy, large and long trucks and trailers cause traffic jams damage the internal roads and negatively impact populated areas in terms of exhaust emissions, dust emission, and noise and more importantly parking such trucks in the residential areas.

Modifying the traffic routes of these heavy vehicles away from populated and residential areas will help in solving one of serious environmental problems and reduce potential hazards in residential areas.

Objectives

The main objective of the intervention is to decrease the level of dust and fuel emissions and reduce the risks of potential hazards when large vehicles pass in residential areas.

Project Description

A road route with specific direction for entrance and exit of heavy trucks should be designated and adopted in the vocational area. The road route starts at north western corner of the cemetery and ends at the north western corner of King Abdulla Industrial II City. The length of the main road is about 3 km. The road already exists but needs reconstruction and marking.

Then, the necessary measures, instructions, and signs installation to be carried out. In fact, the representative of the industrial city indicated that this issue is being communicated with the Ministry of Public Works and Housing but no clear idea yet

The Municipality should call for a meeting with Ministry of Public works and Housing and the Central Traffic Department to discuss the installation of a new traffic-light for trucks carrying stone directly after the Islamic Symmetry. This will allow truck drivers turning left to the vocational area without going up to the industrial city bridge and then turning to the stone cutting area.

insert a clear picture that describe the current internal roads.

Project Main Phases



Economics

- **Sahab Municipality:**
  The intervention will minimize the maintenance cost of the city internal roads and decrease the obstacles in the commercial areas.
- **For citizens and surrounding areas:**
  will help in decreasing the level of dust, exhaust emissions, noise level, and accidents. Consequently, the related negative health and economic consequences will be decreased.
- **For truck, trailer, and tanker drivers:**
  The number of accidents and fines due to traffic violations will be fewer.
- **Private Sector:**
  they are key player as they are contractors, sub-contractors or suppliers in construction activities.

Stakeholders

- **Sahab Municipality:**
  works as a coordinator among other stakeholders. It will play a major role in identifying the road route, in tendering process and follow up the whole work.
- **Ministry of Public Works and Housing:**
  It will work as consultant for performance quality, identify the interactions of the roads and provide the construction codes and it will be responsible for reconstruction of the part/s of the roads which are under its jurisdiction. (i.e. highway portion).
- **Enterprises Owners:**
  They have a role in facilitating the work (i.e. removing the obstacles away from roads sides)
- **King Abdulla Industrial City:**
  As the road passes along with its northern border, it can serve direct access by the truck coming to the Industrial City. It could share the cost of reconstruction
- **Traffic Department:**
  Their role is to control traffic movement during construction and operation.
- **Private Sector:**
  They are key player as they are contractors, sub-contractors or suppliers.
- **Donors:**
  Financial support.

Stakeholders' Engagement Strategy

Consultative meetings should take place with presence of Sahab Municipality, Ministry of Public Works, Central Traffic Department, King Abdulla Industrial City and nearby municipalities to finalize the decision on the main road route (entrance to the area).

Project Duration

Expected duration of preparing BoQ and bidding is 6 months, can be carried out by the municipality, or jointly with the Ministry of Public Works and Housing and /or the Industrial City.

6 Months

Costs of The Intervention

300,000 Jordanian Dinar	**Re-construction & Paving/ Road Next to Industrial City**
250,000 Jordanian Dinar	**Re-construction & Paving/ Area (A)**
125,000 Jordanian Dinar	**Re-construction & Paving/ Area (B)**
50,000 Jordanian Dinar	**Re-construction & Paving/ New Diversion**

Needed Investment 725,000 JD

Sources of Funding & Public-Private Partnership (PPP) Opportunities

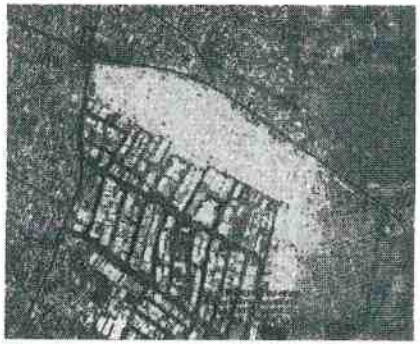
The funding sources could be co sharing through contribution of Sahab Municipality, King Abdulla Industrial City, Ministry of Public Works and Housing, Donors, and enterprises.

Notes

- Preparation works include the removal of the remnants and wastes prior to the reconstruction of roads, however, some of these piles could be used as sub-base material for new roads. The cooperation of the enterprises in this regard is highly needed.

Insert a clear picture that describe the current internal roads.

Project Sheet



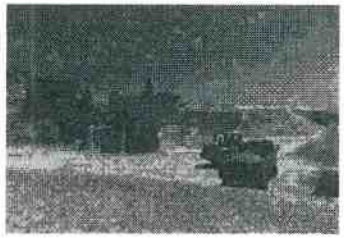
Intervention

Tree planting around borders of Sahab Stonecutting Area.

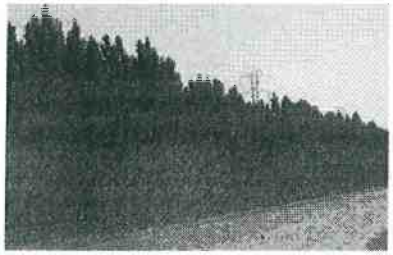
Dimension

Environment, Infrastructure & Planning

Project Code: 2.6



Dust emissions from the stonecutting area is the main reason of citizens' complaints



Trees planted as a dust barrier (example)

Introduction

The main environmental problem resulted from the stonecutting area in Sahab is dust emission. This problem which is attributed to a number of sources, causes continues citizens' complaints and claims of health diseases. It is a fact that one of mitigation measures to decrease dust impacts is tree planting. Implementing a project of planting around the borders, and along the internal road sides of the stonecutting area will be of many benefits for all stakeholders.

Objectives

The main objective of the intervention is to decrease the dust impacts on the stonecutting and surrounding areas. In addition to greening and beautifying the overall view in the area.

Project Description

It is estimated that the outer perimeter of the stonecutting area is about 6.5 km, and the total length of internal roads segment s is about 8 km. It is estimated that about 2000 trees in a single row are needed around the area with a distance 3.5 m between each two successive trees and about 2000 trees too, are needed along sides of the internal roads segment s with a distance of 7.5 m between each two successive trees, depending on the suitable location of the tree.

The estimated approximate irrigation water need is 80m³/day.

(The suitable types of trees, the exact irrigation water needs, and planting techniques will be identified by the Department of Forestry / Ministry of Agriculture). Water supply can be from recycled water of slurry recycling plant, trees can be provided by Department of Forestry and Greater Amman Municipality.

Needs and activities:

- Identification of planting locations and digging the pits according to forestry expert instructions.
- Importing agricultural soil and fertilizers if needed, and trees.
- Planting and irrigation.

Project Main Phases



Economics

The intervention has a lot of economic benefits:

1) For stonecutting enterprises, the intervention will make the area more attractive for customers to buy products.
2) For Sahab Municipality, the intervention will encourage greening campaigns that would be supported by national donors and encourage getting water from slurry recycling plant for lower prices for greening other places such as road sides in the city.
3) For private sector, the intervention will open many job opportunities for workers (i.e. during plantation and later on in irrigation and caring).
4) For citizens and surrounding areas, the intervention helps in decreasing the level of dust and noise emitted from the stonecutting area, decreases the related negative health and economic consequences, and minimizes the declining of houses prices.

Stakeholders

- **Sahab Municipality:**
  Works as a coordinator among other stakeholders. Can lead the planting campaigns.
- **Department of Forestry /Ministry of Agriculture:**
  It will work as consultant for having the experience. It has a role in providing trees and supervising the project activities.
- **Enterprises Owners:**
  They have a role in facilitating the work and cooperation with the workers during project. They are expected to take share in implementing and sustain the project and. (i.e. removing the obstacles away from the planting locations and taking care of trees).
- **Private Sector:**
  They are key player as workers in planting and irrigating trees.
- **Amman Greater Municipality:**
  Can contribute in supplying trees and providing experience.
- **The forthcoming slurry recycling plant:**
  As it will be the main source of irrigation water supply.
- **For citizens and surrounding areas:**
  As they are an important beneficiary part.
- **Donors:**
  Financial and technical support.

Stakeholders' Engagement Strategy

Periodic consultative meetings should take place with presence of the municipality, enterprises, slurry recycling plant, Department of Forestry, and nearby citizens representatives in order to discuss and evaluate the progress of the project.

Costs of The Intervention

1,500 Jordanian Dinar
Digging the Pits
80-100 person-day of unskilled worker
20 person-day of supervision

1,700 Jordanian Dinar
Planting
80-100 person-day of unskilled worker
30 person-day of supervision

2,500 Jordanian Dinar
Acquiring Trees and Fertilizers

1,500 Jordanian Dinar
Irrigation (per month)
Rent of irrigation tanker
25-30 person-day unskilled worker

Needed Investment **6,000 JD**

Project Duration

Breakdown as follows:

- The overall duration is expected to 2 months.

2 Months

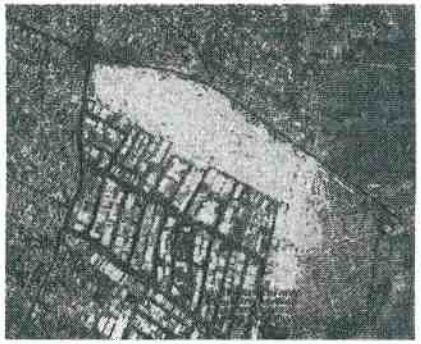
Sources of Funding & Public-Private Partnership (PPP) Opportunities

Sustainability of the project mainly depends on the cooperation among all stakeholders. Funding sources could be co sharing through contribution of Sahab Municipality, donors (i.e. CIZ), and in kind contribution of Department of Forestry, enterprises, and slurry recycling plant.

Notes

- Selection of trees location should not conflict the enterprises work activities.
- Daily irrigation might be needed in early stages of planting, and gradually decreases as the trees grow up.
- For road sides' plantation, a voluntary planting campaign can be implemented by enterprises, each within its vicinity.
- Prevention of discharging slurry to trees is a crucial issue.
- It is necessary to test water produced from slurry recycle plant to decide about its suitability for tree irrigation.
- Drip irrigation might be a cheaper and more efficient alternative by the time if it is applied with proper attention and care.

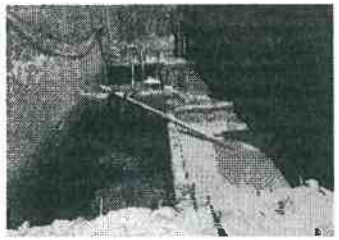
Project Sheet



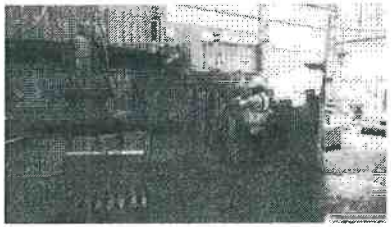
Intervention
Development of stonecutting enterprises performance & improvement of the provided services

Dimension
Environment, Infrastructure & Planning

Project Code: 2.7



Slurry pond without sealing or protection



Example of a stonecutting enterprise where all activities take place in a hanger

Introduction

Environmental and occupational safety and health consequences related to Sahab stonecutting area, among other general and common factors, depend on the performance of individual enterprises. Quality of performance differs from one enterprise to another. In addition to management quality, working behavior, housekeeping, willingness and readiness of development, the type of tools used, and the conditions of the enterprise facilities and structure play a crucial role in improving environmental quality and upgrading the occupational safety and health conditions. This intervention mainly consist of assisting the stonecutting enterprises in making the required investments to improve their facilities including:

- Allocation and construction of separate well-ventilated closed chambers for manual grinding works.
- Procurement and use of grinders equipped with dust control devices.
- Procurement and use of steel containers to collect stone waste fractions
- Development of stone crushers
- Provisions of domestic solid waste bins to enterprises.
- Maintenance of slurry ponds within the enterprise area.
- Study the possibility of energy generation through introducing solar

Objectives

According to the nature and activities of sub - intervention, three objectives associated with the intervention can be set:

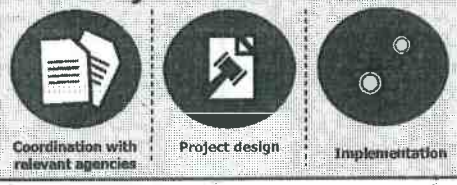
- Decrease the level of dust emission and noise and raise the occupational safety and health.
- Provide better services related to domestic solid waste management
- Assessing the possibility of minimizing the cost of electricity consumption by utilizing solar energy.

Project Description

Most of the intervention components depend on the willingness and readiness of the individual enterprise on self-basis. This includes:

- An allocation of an area within the enterprise to accommodate a chamber that will be constructed and provided with ventilation system (i.e. suction fans). The chamber required area depends on the size and the production rate of stone and marble grinding. The purpose of the chamber is to avoid working in open air. A minimum area of 40 m² for the chamber might be sufficient for most of the enterprises.
- Each of enterprises using grinders may need at least one grinder equipped with dust control device to replace the traditional already existing grinders. The type and size of the suggested grinders would be detailed at the procurement phase.
- Some enterprises already have steel containers with dimensions of 2 m long*1m wide *1m high, to collect and store stone waste fractions prior to transport to stone crushers. Using such type of containers will be a substitute of the current stone residues collection practice in random deep pits that need loaders to unload the stone residues. This practice has several negative environmental and safety consequences.
- The two stone crushers existing in Stonecutting area are working in open air, causing dust emission and high noise levels, it suggested that the crusher work inside a hanger of proper size *(i.e. 500 m2 area and 6 m high)* and equipped with ventilation system. Closed system crushers are common.

Project Main Phases



Economics

For Enterprises owners:
Implementing the intervention will decrease the cost of health diseases and occupational incidents and decrease the energy cost if the solar energy is utilized. The intervention would increase the attraction to the enterprises.

For citizens and surrounding areas:
the intervention helps in decreasing the level of dust and noise emitted from the stonecutting area, decreases the related negative health and economic consequences, and minimizes the declining of houses prices.

For Private Sector:
they are key player as contractors, sub-contractors or suppliers in construction, maintenance and services activities.

At the national level: the use of solar energy will reduce the consumption of fossil fuels; thus, it reduces the cost of energy consumption and reduce emissions of gases, including greenhouse gases that have negative impacts on climate change.

Stakeholders

- **Enterprises Owners:**
  they are the key players as they are the major beneficiaries. In fact, the success of partially or totally implementing the intervention depends on their willingness, readiness, and reaction
- **Sahab Municipality:**
  can have a role in domestic waste management and work as a coordinator among other stakeholders.
- **Private Sector:**
  they play a role as contractors, sub-contractors or suppliers in construction, maintenance and services activities
- **For citizens and surrounding areas:**
  as they are positively affected by any improvement taken place within the intervention.
- **Ministry of Energy and Natural Resources,**
- as it is the official authority responsible for Energy sector in the country.
- **Donors:**
  financial, technical and consultation support.
- **GREEF:**
  financial, technical and consultation support
- **Ministry of Industry and Trade and JEDCO:**
  financial, technical and consultation support.

Stakeholders' Engagement Strategy

The most important stakeholder engagement is the enterprises'. A committee of representing the enterprises will be necessary to negotiate with other stakeholders. Sahab municipality can play a facilitator role in meetings and workshops necessary to work progress.

Project Duration 6 Months

The overall duration is expected to 6 months for each round of implementation.

Costs of The Intervention

53,000 Jordanian Dinar Per Unit	**Construction** of Separate Chamber with Ventilation and hanger for stone crusher
1,200 Jordanian Dinar Per Unit	**Grinder Equipped** with Dust Control Devices
6,700 Jordanian Dinar Per Unit	**Procurement** of Steel Container for Stone Waste fractions and domestic solid waste bins and solar energy generation system
1,500 Jordanian Dinar Per Unit	**Maintenance** of slurry ponds within the enterprise area

Needed Investment 62,400 JD

Sources of Funding & Public-Private Partnership (PPP) Opportunities

Most of the investments above are expected to be done by enterprises. Sahab Municipality's contribution will be to facilitate the required support to the enterprises and providing domestic waste bins, transport and disposal of waste. Donors can play a role as an additional financial resource. The project could be implemented as a support intervention for the enterprises by Jordan Enterprise Development Company (JEDCO), the Chamber of Industry and in cooperation with the Municipality. The Municipality need to champion this coordination.

JEDCO could design a grant scheme to partially support the costs of improvements at the enterprise level and/or provide technical assistance to the enterprises in obtaining the required funding from the relevant financial institutions. An initial phase of supporting 40-50 enterprises could be tested as a pilot prior to roll out with the exception of the solar energy intervention that requires the participation of a large number of enterprises.

Notes

- It is important to consider the difference in enterprises sizes and their willingness to pay.
- Issue legal regulations might be necessary for overall improvement measures. Setting the licensing requirements considering the alignment with other requirements within the responsible authorities and the legal national laws and instructions and build the legal documents within Sahab municipality that stipulates the licensing requirements to include the occupational safety and health requirements (OSH).
- Presenting successful stories of improvement would be helpful to encourage the enterprises to adopt and undertake the improvement actions.

Annex 2: Documents and References

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Air Pollution Report 2017- Annual Report to monitor the quality of ambient air in (Amman, Irbid, Zarqa), Ministry of Environment	تقرير تلوث الهواء2017 - التقرير السنوي لمراقبه نوعيه الهواء المحيط في (عمان, اربد, الزرقاء) , وزاره البيئه
Air Quality in Industrial Estates in the Kingdom, Air Studies Dept., Royal Scientific Society, submitted to the Ministry of Environment (15 Dec. 2016 - 14 Dec. 2017)	دراسة نوعية الهواء في المدن الصناعيه في المملكه
The Jordan Business Alliance on Water (JBWA): Industrial water reuse project for stone and marble in Amman/Sahab industrial area (2010)	تحالف المياه الاردني: مشروع اعادة استخدام المياه الصناعيه في قطع الحجاره والرخام في عمان - منطقة سحاب الصناعيه
Canadian Standard-Health and Safety in the Stone Business	المعيار الكندي للصحة والسلامة في الأعمال الحجرية
Jordanian Ministry of labour bylaw no.42 for the year 1998-Preventive and therapeutic medical care system for workers in establishments	لائحة وزارة العمل الاردنية رقم 42 لسنة 1998 - نظام الرعاية الطبية الوقائي والعلاجي للعاملين في المنشآت
Ministry of labour decision for the records the employer must keep	قرار وزارة العمل بشأن السجلات التي يجب على صاحب العمل الاحتفاظ بها
Jordanian Ministry of Health instructions no.1 for the year 2013- Preventing the occurrence of health-related problems caused by residential units of labour communities	تعليمات وزارة الصحة الأردنية رقم 1 لسنة 2013 - منع حدوث المشاكل المتعلقة بالصحة الناتجة عن الوحدات السكنية لمجتمعات العمال
Instructions for the electronic tracking of vehicles carrying wastewater, mineral waste and hazardous waste for the year 2017	تعليمات التتبع الالكتروني للمركبات الناقلة للمياه العادمة والزيوت المعدنية العادمة والنفايات الخطرة لسنة 2017
Instructions for selecting sites for developmental activities for 2018	تعليمات اختيار مواقع النشاطات التنموية لسنة 2018

Annex 3: List of Meetings

Entity	Name and Title
Chamber of Industry, King Abdullah II Industrial Estate Office	Mr. Ahmad Abu-Jamma, Head of the Office
General Directorate of Civil Defense-East of Amman / Department of Prevention and Self-Protection	Ms. Ekhlas Yousef, Head of the section
Ministry of Environment (MoE), Amman Environment Protection Department	Mr. Mustafa Azzyoud, Head of Department
General Directorate of Civil Defense-East of Amman/ Department of Operations	Mr. Mohammad Abd Al Fattah Al Jarrah, Operations Officer. Mr. Saleh Yaser Al Hajjaj, Head of Operations Section
Directorate of Inspection of Amman II / East of Amman, Ministry of Labor	Doctor Ibrahim Al Qahwi, Director. Abu Musab, Head of Inspection Section
Sahab Health Center – Comprehensive Center, Ministry of Health	Dr. Reem Abu Hammad, Head of nursing. Dr. Omar Sugair, Director of Health Center
Totanji Hospital, Ministry of Health	Dr. Mohamad Abu Mahfouth, Director. Dr. Muhammad Abdel-Wahid, Deputy Director. Dr. Mohammad Ma'aitah, Community Health
USAID Health Finance and Governance Activity Palladium	Dr. Jamal, Director
Occupational Health Directorate / Ministry of Health	Dr.Muwaffaq Al Qusairi, Director. Dr.Munther Bani, Section Head. MR. Omar Asha
Chamber of Industry, Amman	Eng. Fadel Lubadi, Director of Industrial Development. Eng. Roz Smadi, OSH Specialist
Industrial Development Directorate, Ministry of Industry and Trade and Supply	Eng. Yasmeen Khraisat, Director

Annex 4: Analysis of Professional Licensing Database

This annex includes an analysis of all enterprises licensed by the Municipality of Sahab using the vocational licensing IT system that was obtained as a spreadsheet in August 2018. When the data presented refer to stonecutting enterprises only, the title of the table or figure clearly states that.

There are 4,056 enterprises that renewed their vocational license at least once between 2015 and 2018.

Enterprises by license renewal year		
Year	Number	Share
2015	290	7%
2016	401	10%
2017	853	21%
2018	2,394	59%
Not defined	118	3%
Total	**4,056**	**100%**

More than half of the enterprises that renewed their vocational license at least once between 2015 and 2018, paid 100JD or less in fees to the municipality.

Number and share of enterprises by total fees paid and year							
Fee (JD)	Not defined	2015	2016	2017	2018	Total	Share
0-99	51	193	256	439	1,260	2,199	54.2%
100-199	24	54	83	201	612	974	24.0%
200-299	8	20	31	117	295	471	11.6%
300-399	10	9	13	45	125	202	5.0%
400-499	8	5	8	23	44	88	2.2%
500-599	3	4	2	7	19	35	0.9%
600-699	4	1	1	5	13	24	0.6%
700-799	1	2	1	3	7	14	0.3%
800-899	3	1	2	4	5	15	0.4%
900-1000		1	1	1	1	4	0.1%
>1000	6		3	8	13	30	0.7%
Total	**118**	**290**	**401**	**853**	**2,394**	**4,056**	**100.0%**

A similar breakdown is observed when considering the enterprises that renewed their licenses in 2018 as indicated in the table below.

Number of enterprises by fee brackets in 2018		
Fee (JD)	Number	Share
0-99	1,260	53.0%
100-199	612	26.0%
200-299	295	12.0%
300-399	125	5.0%
400-499	44	2.0%
>500	58	2.0%
Grand Total	**2,394**	**100.0%**

If all enterprises are still operational in 2018 and they renewed their licenses, then the municipality would have made a total of JD601,780. As indicated in the table below, the Municipality's total revenue in 2018 was 58% of that amount reaching JD347,258.

Vocational licensing fees paid in JD by fee bracket and year							
Fee (JD)	Not defined	2015	2016	2017	2018	Total (JD)	Share
0-99	2,980	11,581	16,334	29,134	85,844	145,873	24.2%
100-199	3,281	7,124	11,314	26,846	78,807	127,372	21.2%
200-299	1,974	4,756	7,334	28,441	71,079	113,584	18.9%
300-399	3,450	3,134	4,391	15,513	43,611	70,099	11.6%
400-499	3,409	2,152	3,432	10,128	19,437	38,594	6.4%
500-599	1,631	2,130	1,063	3,789	10,510	19,123	3.2%
600-699	2,463	649	617	3,227	8,369	15,325	2.5%
700-799	751	1,453	775	2,229	5,064	10,272	1.7%
800-899	2,498	898	1,644	3,319	4,253	12,612	2.1%
900-1000	0	905	959	958	957	3,779	0.6%
>1000	10,281	0	4,716	10,859	19,291	45,147	7.5%
Total (JD)	**32,718**	**34,782**	**52,579**	**134,443**	**347,258**	**601,780**	**100.0%**
Share	**5.4%**	**5.8%**	**8.7%**	**22.3%**	**57.7%**	**100.0%**	

Although the profession of each enterprise is not classified in the database, the vocational licensing unit inserts the purposes of the enterprise manually as defined by the enterprise owner. The research team arranged the enterprises in groups as indicated in the table below. The stonecutting enterprises comprise 9.3% of the total number of enterprises in Sahab but they account for 17% of the total vocational licensing fees.

All enterprises by profession and total revenue				
Profession	Number	Share	Revenue (JD)	Share
Import and Export	47	1.2%	21,199	2.0%
Construction	35	0.9%	9,775	1.6%
Bank / Insurance	3	0.1%	3,153	0.5%
Trading of Equipment	85	2.1%	10,715	1.8%
Kindergarten/school	30	0.7%	13,378	2.2%
Cars related professions	220	5.4%	33,660	5.6%
Industries	246	6.1%	56,242	9.3%
Pharmacy	32	0.8%	4,086	0.7%
Clinic	38	0.9%	3,069	0.5%
Other / Trading	**696**	**17.2%**	**102,568**	**17.0%**
Other / Services	292	7.2%	389,74	6.5%
Lathe / Carpentry	178	4.4%	239,24	4.0%
Gas station	5	0.1%	1,267	0.2%
Selling of Groceries, vegetables or poultry	330	8.1%	50,578	8.4%
Bakery	21	0.5%	2,740	0.5%
Medical Laboratory and/or optician	7	0.2%	604	0.1%
Centre (cultural, sports, driving, training)	17	0.4%	1,825	0.3%
Restaurant / coffee shop / cafeteria	191	4.7%	21,378	3.6%
Bucher	48	1.2%	4,871	0.8%
Stonecutting, marble cutting, brick and/or tiles making, crushers	**377**	**9.3%**	**108,014**	**17.9%**
Engineer	4	0.1%	365	0.1%
Transportation (all vehicles)	1,040	25.6%	85,014	14.1%
Clothes retail	114	2.8%	13,381	2.2%
Grand Total	4,056	100.0%	601,780	100.0%