

Case Study Documentation from the Techiman Industrial Zone on the Implementation of Measures in Profitable Environmental Management

**TITLE OF THE CASE STUDY
(DI-SILTING OF DRAINS ALONG THE MAIN ENTRANCE TO THE)**

Sector of Activity: Industrial Zone

Location: Techiman, Ghana

INDUSTRIAL ZONE IN BRIEF

The Techiman Industrial Zone is located along the main Techiman – Kintampo road corridor. The zone hosts about 20 artisans ranging from mechanics, sprayers, straighter, vulganizers and auto electricians. These artisans provide varied range of services to clients mainly in the automobile industry.

The leadership and some representatives of the artisans operating in the industrial zone participated in a PREMA / GHK training programme, carried out in Techiman from the 16th June, 2008 to 20th June, 2008 with ... participants. These members are responsible for the day – to – day management of the industrial site and do represent the artisan at any given forum.

During their participation in the PREMA / GHK training programme, they identified and committed themselves to implement a total of five measures from the five checklists which focussed on their operations at the Industrial zone. These measures were identified after a technical assistance visit to the industrial site and the analysis of the causes and effects of the non product outputs (NPOs) of the company's operating at the industrial zone. The immediate measure to be implemented was the de-silting of the drains at the entrance to the industrial site.

PROBLEM AND ITS CAUSES

A visit to the industrial site revealed that, the entrance of the site easily got flooded whenever it rained. This implies that, most clients could not access the site whenever it rained and resulted in loss of revenue. The problem was caused by the chocking of the drain by sand deposits and was compounded by the low level of the land around the entrance. The effects of the flooding at the entrance resulted in the inability of clients and artisans alike to visit the site to transact business resulting in the following:

Economic: The inability of the artisans and their prospective clients to have access to the site during the rainy season often leads to the loss of revenue due to absenteeism of artisans who suffer injuries as well as the high cost of remedying the effect of the accident.

Occupational health and safety: Another effect of the problem is injuries and accidents of artisans from the gullies created by the eroded surface.

Organisational: the inability to have access to their shops made it difficult for companies to properly organise their activities.

MEASURE(S) IMPLEMENTED BY THE ASSOCIATION

The artisans through their focal person made contacts with the Department of Urban Roads who subsequently brought somebody to de-silt the drain. These they say, has improved the situation and help overcome the problem.

Situation before

The entrance to the site always got flooded during heavy rains

Situation after



ECONOMIC BENEFITS

Criteria	Formula	Data	Information required
Losses per year due to inability to access site due flooded entrance		Number of floods per year Number of artisans not going to the shop Number of clients not visiting the artisans	
Actual loss per year at the Industrial level	$\text{GH}\text{¢}5 \times 3 \text{ Days of flooding per month} \times 5 \text{ Months} \times 20 \text{ Shops}$	GH¢ 1,500	Number of days lost due to flooded entrance. Daily revenue from operation. Number of artisans at the industrial site.
Gross Savings per year by implementing the measure		GH¢ 1,500	
Additional cost per year by implementing the measure		GH¢ 20	Cost of labour for de-silting drain
Net Savings per year	Gross savings (GH¢ 1,500) – Additional cost (GH¢ 20)	GH¢ 1,480	
Investment		GH¢ 0	Cost of de-silting drain
Payback period		$\frac{\text{GH}\text{¢} 20}{\text{GH}\text{¢} 1480} \times 12 \text{ Months}$	0.16 months (4.8 days)

OCCUPATIONAL HEALTH AND SAFETY BENEFITS

The implementation of the de-silting programme has some occupational health and safety benefits. These benefits include the ability of artisans to avoid injuries as a result of the gullies developed at the entrance of the site.

ORGANISATIONAL BENEFITS

The organisational benefit derived by the companies at the industrial site after the implementation of the measure was the access they have to their shop during the rainy days. This has resulted in clients being satisfied with the level of service received from the companies even during days of heavy rains.

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TITLE OF THE CASE STUDY METER ACQUISITION FROM VRA

Sector of activity: Small Scale Industries

Location: Techiman Industrial Zone, B/A - Ghana

BRIEF DESCRIPTION OF THE INDUSTRIAL SITE

Eureka Garages Association was formed in 2003. It comprises of small scale Auto Engineers, Auto Sprayers, welders etc. The Association has 700 registered members with 22 Executive members who steer the affairs of the Association. It undertakes activities such as Vehicle engine repairs, metal works, and vehicle spraying for Departments, Institutions such as the Metropolitan Assembly, schools, government and private agencies. Main raw materials used by individual members are fuel, oil, filters, sheet metals, iron plates paints among others.

The Association Executive members together with the trainee consultants were able to identify the problem of difficulties in acquiring metres for their shops or transferring their metres from the old shops to the new shops during the PREMA training programme held in Techiman in the Brong Ahafo Region In June 2008.

The training participants visited the industrial site and as part of the evaluation of the visit some measures were developed for implementation by the Association.

PROBLEM AND ITS CAUSES

The problem of the Association was Difficulties in acquiring/or transferring meters for individual registered members workshop. The cause analysis showed that this was due the following:

- Lack of personnel to attend to customers.
- Non –availability of metres.
- Cumbersome procedure of filling of application form.
- Demand for unapproved fees
- Financial constraints.

EFFECTS OF THE PROBLEM

ECONOMIC:

As a result of the difficulty in acquiring or transferring metres, it is difficult for individual members of the association to do certain jobs which require the use of electricity. Most of them have to commute to the old industrial site to carry out such jobs which affected job delivery time. Sometimes this also affected cost of

production. Impatient customers send their jobs away, thereby making companies losing the revenue that will be accrued.

ORGANIZATIONAL:

The difficulty in acquiring metres has seriously affected individual members operation. Most of them spend so much time at the office of the VRA causing a waste of valuable resources.

OCCUPATIONAL HEALTH AND SAFETY:

The frustrations of the members who most of the time commutes to and from the VRA offices affect their health in divers' ways.

MEASURE(S) IMPLEMENTED IN THE COMPANY

After the PREMA training programme, the executive members of the association committed themselves to implementing the measures they developed in order to overcome the problem and improve the situation. The action plan of the association was to use the media to solicit for support and attention from VRA. The secretary of the association was also tasked to fill application forms for individual illiterate members who find it difficult to fill them.

As part of the measures the association executive invited the media to a BUSAC Advocacy programme and presented their grievances who intend made the necessary advocacy using their medium. This is yielding positive result. At the time of the follow up some members had their metres fixed for them.



Situation before



Situation after

ECONOMIC BENEFITS

Those who depend on electricity for their operations and have had their meters fixed have benefit immensely from the implemented measure. While some were hitherto not working at all, those who wished to maintain their customers commute long distance to have the work done which resulted in a high cost of production.

After the measure jobs are now delivered on time to customers. Some customers lost as a result of electricity problems have been won back. Income levels of the members have increased relatively. Few sprayers, electricians and welder s interviewed showed the following:

ECONOMIC ANALYSIS

CRITERIA	DATA	FORMULA	RESULTS
Revenue made.	Averagely Ghc8.00 is made per member in a day when they got connected. About 11 members depend on electricity for their operations.	$Ghc8.00 * 11 \text{ members}$	Ghc88.00
Total revenue for a month	26 working days in the month	$Ghc88.00 * 26 \text{ days}$	Ghc2,288.00
Gross Savings per year		$Ghc2,288.00 * 12 \text{ months}$	Ghc27,456.00
Additional Operational cost			-
Net Savings per year	Gross savings less Additional operational cost		Ghc27,456.00
Investment	The cost of acquiring a meter.	$Ghc120.00 * 11 \text{ members}$	Ghc1,320.00
Payback period (in months)	Investment per year /Net savings per year * 12 months.	$Ghc1,320.00 / Ghc27,456.00 * 12$	6 weeks

ORGANISATIONAL BENEFITS

Now members are able to offer quick services to their customers. The risk involved in travelling long distances to complete a job and the time spent at the offices of the VRA is reduced.

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TITLE OF THE CASE STUDY ENSURING CLEAN ENVIRONMENT

Sector of activity: Small Scale Industries

Location: Techiman Industrial Zone, B/A - Ghana

BRIEF DESCRIPTION OF THE INDUSTRIAL SITE

Eureka Garages Association is the name of Garages association located at the Techiman Industrial site. It was founded in 2003 with 15 members. It now has a membership of seven hundred (700), including spare parts dealers who want to establish at the site.

By participating in the PREMA / GHK training programme, held at Techiman in June 2008, the Executive of the Association together with the trainee consultants were able to identify the problem of improper handling of solid waste at the industrial site.

As part of the evaluation of the industrial site visit measures were developed for implementation and these measures were carried out by the Executive of the Association.

PROBLEM AND ITS CAUSES

The major problem/optimization potential at the industrial site was improper handling of waste with its associated environmental, economic and organizational effects. The cause analysis showed that this was due the following:

- No dust bins at vintage points.
- Lack of time to clear demarcated dump site.
- Undeveloped route to the dump site.
- Ignorance of the effect of burning of waste.

EFFECTS OF THE PROBLEM

ECONOMIC:

The unclear nature of the sites hinders potential customers from easily locating members at the site, thereby making them losing so much revenue that will be accrued.

ENVIRONMENTAL:

The weedy nature of the site has made the place unattractive; prevent both human and vehicular movement at the site, and serves as breeding places for dangerous reptiles.

ORGANIZATIONAL:

This present situation is attributable to some inefficiency in the work of the Executive of the Association.

OCCUPATIONAL HEALTH AND SAFETY:

Burning of the waste emit chemicals into the atmosphere which are dangerous to human health.

MEASURE(S) IMPLEMENTED IN THE COMPANY

To be able to improve upon the situation, it was noted that there was the need to **sensitize members on proper handling of solid waste**. After the training programme, members of the executive committed themselves to implementing the measures in order to overcome the problem and improve the situation.

By implementing the action plan the following moves were made:

- a) The sanitary Inspection Division of the Ministry of Health was contacted as planned and the education has been carried out.
- b) The executive has again contacted Zoom lion (an organization concerned with the sanitation in the country), through the Municipal Assembly, and they have agreed to take up and improve the sanitation of the area by providing them with dust bins and workers to clean up the place.
- c) They are also seriously enforcing the law on re-allocation of undeveloped plots to those who are ready. This is to help clear the weedy locations around them.
- d) The executive has however sprayed the front view of the industrial site with weed-killers to open up the place to potential customers and the main road users. This is also intended to motivate members to follow this example, and it is yielding positive results.

At the time of the visit, the entire workforce at the site have become concerned of waste management and appreciates a more hygienic environment as a result of the dialogue held with the Sanitary Inspection unit of the Ministry of Health. Burning of refuse is however ongoing as there are no dustbins to collect them.

Situation before



Situation after



Other members who have sprayed their allotted plots with weed-killers



The front view of the Industrial site sprayed with weed-killers

ECONOMIC BENEFITS

Spraying the front view has opened up the place to both existing and potential customers, and has promoted both human and vehicular movement in the area. By opening up the place, the income levels of the artisans have relatively improved. A survey shows the following:

ECONOMIC ANALYSIS

CRITERIA	DATA	FORMULA	RESULTS
Additional revenue made at the industrial site a day as a result of the implemented measure.	On the average additional Ghc5.00 is made per member a day. There are 16 members at the industrial site	$Ghc5.00 * 16 \text{ members}$	Ghc80.00
Total revenue for a month	26 working days in the month	$Ghc80.00 * 26 \text{ days}$	Ghc2,080.00
Gross Savings per year		$Ghc2,080.00 * 12 \text{ months}$	Ghc24,960.00
Additional Operational cost			-
Net Savings per year	Gross savings less Additional operational cost		Ghc24,960.00
Investment	The cost of weed-killers and workmanship for spraying is Ghc2,640. Each spraying last for 3 months	$Ghc2,640 * 4 \text{ quarters}$	Ghc10,560.00
Payback period (in months)	Investment per year / Net savings per year * 12 months.	$Ghc10,560.00 / Ghc24,960.00 * 12$	5 months

ENVIRONMENTAL BENEFITS

The implemented measure has improved both human and vehicular movement. Again members have become conscious of waste management at the site.

ORGANISATIONAL BENEFITS

Activities of the executive have seen much improvement and the training have enhanced efficiency in their operations.

OCCUPATIONAL HEALTH AND SAFETY

It is no longer a breeding place for reptiles.

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ACCELERATE MOVEMENT OF ENTERPRISES TO NEW LIGHT INDUSTRIAL AREA

Sector of activity: Small Scale Industries / Garages

Location: Techiman Light Industrial Area, Ghana

BRIEF DESCRIPTION OF THE INDUSTRIAL SITE

The Eureka Garages Association is managing the Techiman New Light Industrial Area. The association was founded in 2003 with only 15 members. To date, the membership has rise up to seven hundred (700) registered members.

The executives of the Eureka Garages Association participated in a PREMA training programme in Techiman, held in June 2008. During the training, the association together with local and international PREMA consultants identified a lack of willingness of members that are still located and operating their businesses at the old magazine in town, to move to the New Industrial Area as one of the major problems for the functioning of the site.

In a group work, Consultants and association executives jointly developed measures to improve the current situation and created an action plan.

PROBLEM AND ITS CAUSES

The main problem in terms of infrastructure at the New Light Industrial Area in Techiman is the slow, almost stalled movement of artisans to the new site. The artisans who are already operating on the new site do not appreciate the situation and the behaviour of their co-members. Due to the fact that the businesses remaining in town are much closer to the customers in terms of distance, not many customers chose to drive out to the new site for services. The following causes are behind the causes for the current unsatisfying situation was identified:

- Unwillingness to move
- No feeling of being forced to move
- No provision of connection to electricity
- Lack of finance to erect new structures

EFFECTS OF THE PROBLEM

ECONOMIC:

Customers prefer getting services from enterprises still located in town. Because of the stalled movement, a wider range of enterprises and services is available in the centre. The lost business results in reduced income of the artisans located on the new site. Further, they have increased spending transport, as they themselves have to get some auxiliary services in the town centre because they are not yet available on the site.

ENVIRONMENTAL:

The unused plots are increasingly overgrown by weeds, resulting in an untidy appearance of the site as a whole. The growing bush is a breeding ground for potentially harmful reptiles.

ORGANISATIONAL:

The scattered location of the association members (in town and some on the new site) makes bringing people together for meetings difficult. Information sharing and collective learning among artisans is affected by long distances between the workshops. Only a small range of services is currently provided on the site. Clustering of the different services would as well have a positive effect on the organisation of the garages. Spare parts would no longer have to be bought in town, resulting in smoother and quicker customer services and less time spent on travelling.

OCCUPATIONAL HEALTH AND SAFETY:

The low density of enterprises on the site has deterred a service provider from opening a facility on the site who originally planned to establish a health post.

MEASURES IMPLEMENTED BY THE ASSOCIATION

To improve the situation it was necessary to convince the businesses remaining in town to come to the new industrial area and make use of their already acquired plots. Following the action plan agreed upon during PREMA training, the association implemented the following measures:

- a) The Eureka garages association executives held a meeting with three local FM-stations and other press representatives. A recorded speech of the chairman was played on all three local FM stations. A radio discussion was held, explaining the advantages of the new site and urging artisans to move quickly. *Total cost of this measure: 150GH¢ for radio announcements*
- b) The executive members contacted the Municipal Chief Executive to discuss the lack of movement and the lack of interest in enforcing movement from the side of the Municipal Assembly. *Total cost of this measure: 5 GH¢ for transport*

- c) The Association decided to carry out a survey in the old magazine area to find out the reasons why the artisans choose to remain in town and do not move to the new site. *Total cost of this measure: 90 GH¢ for transport, materials, support.*

The total cost of all implemented measures summed up to an investment by the Eureka Garages Association of GH¢245.

PHOTO DOCUMENTATION

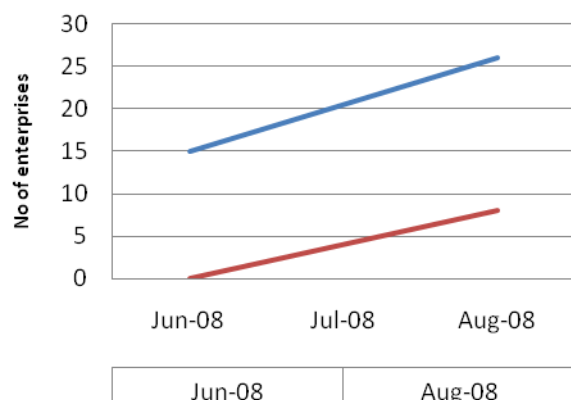
Situation before: Many plots in the industrial zone are unoccupied.



Situation after: New enterprises have started operating in the new industrial zone.



Outcome of PREMA measures



ECONOMIC BENEFITS

After the implementation of the measures the number of artisans working on the new industrial site has increased significantly and new members have signed up for the association and acquired land on the site. This has resulted in immediate income through the land sale and increased monthly income through the membership fees for the association:

One time economic benefits	Regular economic benefits
8 new members paid a land registration fee of 425 GH¢ each	8 new members pay a monthly fee of 1.20 GH¢ each
3400 GH¢	10 GH¢ per month

Given that the initial investment by the association was lower than the one time income achieved through the implementation of the measures, immediate payback of the investment was realised.

Apart from the benefits for the association as such, the enterprises on the site have noticed a significant increase of patronage by customers thanks to the advertisement on the radio. Further, transport cost has reduced as a wider range of products and services is now available on the site. This has resulted in further economic benefits for the individual enterprises.

ENVIRONMENTAL BENEFITS

As now more enterprises are on located on the site, the growth of weeds on the unused plots is now under control. There is a slight reduction in emissions as the need for transport into town and back as decreased.

ORGANISATIONAL BENEFITS

The strength of the Eureka Garages Association has increased through the eight new members who signed up after the radio campaign. Further, after implementing the described measures the number of artisans working on the new industrial site increased by about 70%. The increased number of enterprises will make it easier for customers and artisans to find all needed services on the new site. The amount of time that the artisans need to fulfil their tasks has decreased. They can use the gained time for other productive activities.

OCCUPATIONAL HEALTH AND SAFETY BENEFITS

No effects on occupational health and safety have been observed so far. There is however hopes that the increased number of firms will finally lead to the establishment of a health facility in the industrial area.

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