

Japan International Cooperation Agency (JICA)
Ministry of Environment of the Government of Morocco

The Study on the National Guidelines for
Solid Waste Management for
the Kingdom of Morocco

Final Report

Book 7

Data Book:
Appendices to Solid Waste Management Plan for Safi

August 1997

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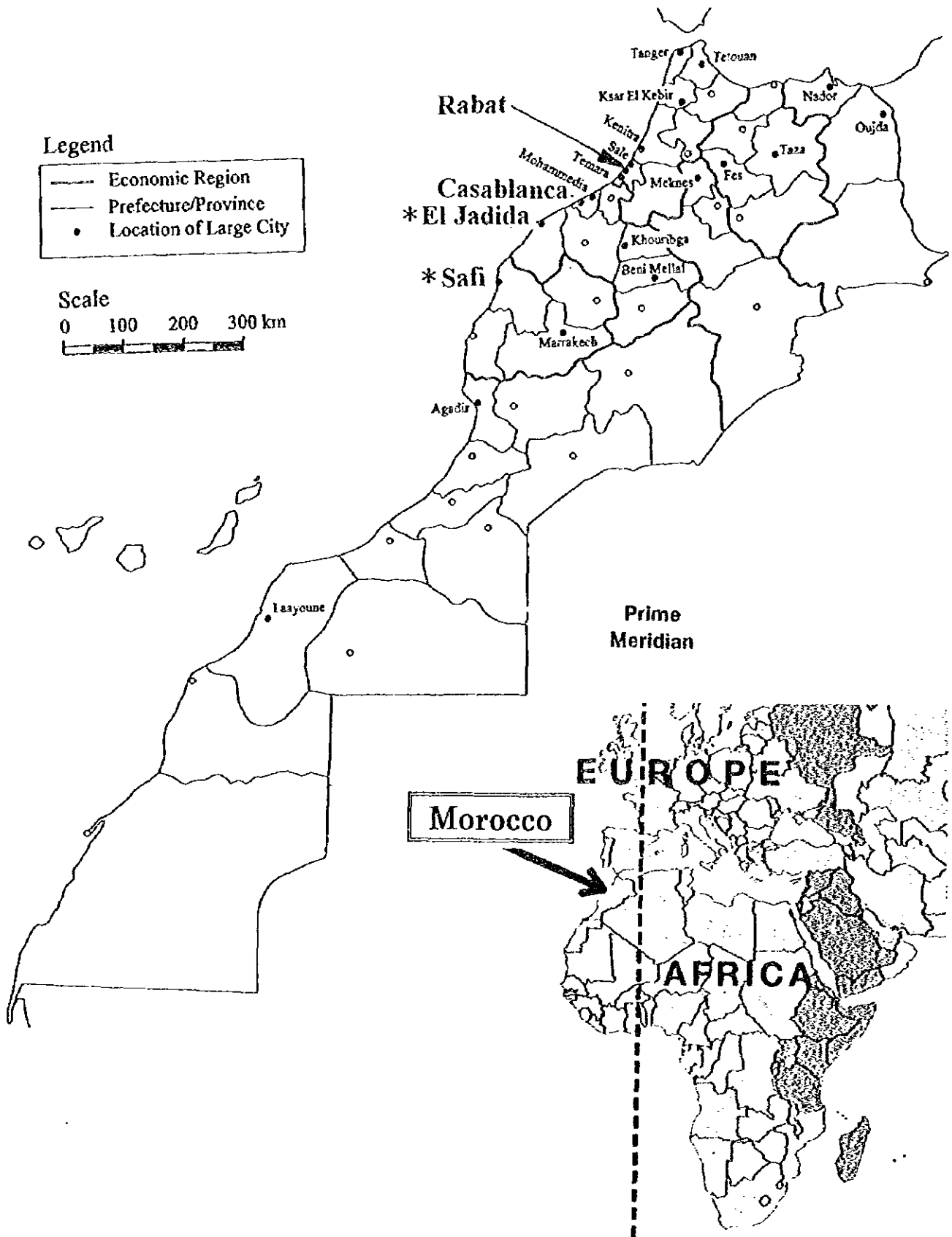
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Location Map of Morocco



* Safi and El Jadida were selected for the second year study of this project.



Exchange Rate (as of July 1997)

1 Dirham = 0.115 US dollars = 13 yen

Abbreviation List

BMH	Municipal Health Service
CNE	National Council for Environment (Conseil National de l'Environnement)
CRE	Regional Council for Environment (Conseil Régional de l'Environnement)
DAHIR	Law, Decree, or other legal document signed by the King
DH	Dirham
EU	European Union, E.E.C
FEC	Fond D'Equipement Communal Communal Fund for Equipment
GDLC	General Department of the Local Government, MoI
HCS	Haul Container System
MoA	Ministry of Agriculture
MoC&I	Ministry of Commerce and Industry
MoE	Ministry of Environment
MoEM	Ministry of Energy and Mines
MoH	Ministry of Health
MoI	Ministry of Interior
MoPW	Ministry of Public Works
NP	National Promotion
ONEP	National Office for Drinking Water
SWM	Solid Waste Management
USE	Under Secretariat for Environment, MoI
Veh.	Vehicle

Final Report

Contents

Current Book and Part are marked with “*”.

- Book 1** **Guidelines for National Level Policies and Actions for Solid Waste Management**
- Part 1 National Strategy
Part 2 Laws, Institutions, and Finance
Part 3 Industrial and Hazardous Waste
Part 4 Infectious Waste
- Book 2** **Guidelines for Improvement of Solid Waste Management for Urban Communes and Communities**
- Part 1 Management and Institutions
Part 2 Technical Guidelines
- Book 3** **National Action Programs for Solid Waste Management**
- Book 4** **Solid Waste Management Plans for Safi and El Jadida**
- Part 1 Solid Waste Management Plan for Safi
Part 2 Waste Disposal Plan for El Jadida
- Book 5** **Summary**
- Book 6** **Supporting Report**
Current Conditions of Solid Waste Management in Morocco
- *Book 7** **Data Book**
Appendices to Solid Waste Management Plan for Safi
- Book 8** **Japanese Summary**

Table of Contents

Book 7: Data Book

	PAGE
INTRODUCTION	i
CHAPTER 1 Results of Household Waste Generation Survey	1
CHAPTER 2 Results of Household Waste Physical Composition Survey	5
CHAPTER 3 Results of Waste Collection Quantity Survey with Truck Scale	15
CHAPTER 4 Results of Industrial Waste Inventory Survey	27
CHAPTER 5 Results of Household Survey	53
CHAPTER 6 Finance	335
CHAPTER 7 Institution	381
CHAPTER 8 Collection and Transport	405
CHAPTER 9 Public Education	425
CHAPTER 10 Formats and TORs	493



The Study on the National Guidelines for Solid Waste Management for the Kingdom of Morocco

INTRODUCTION

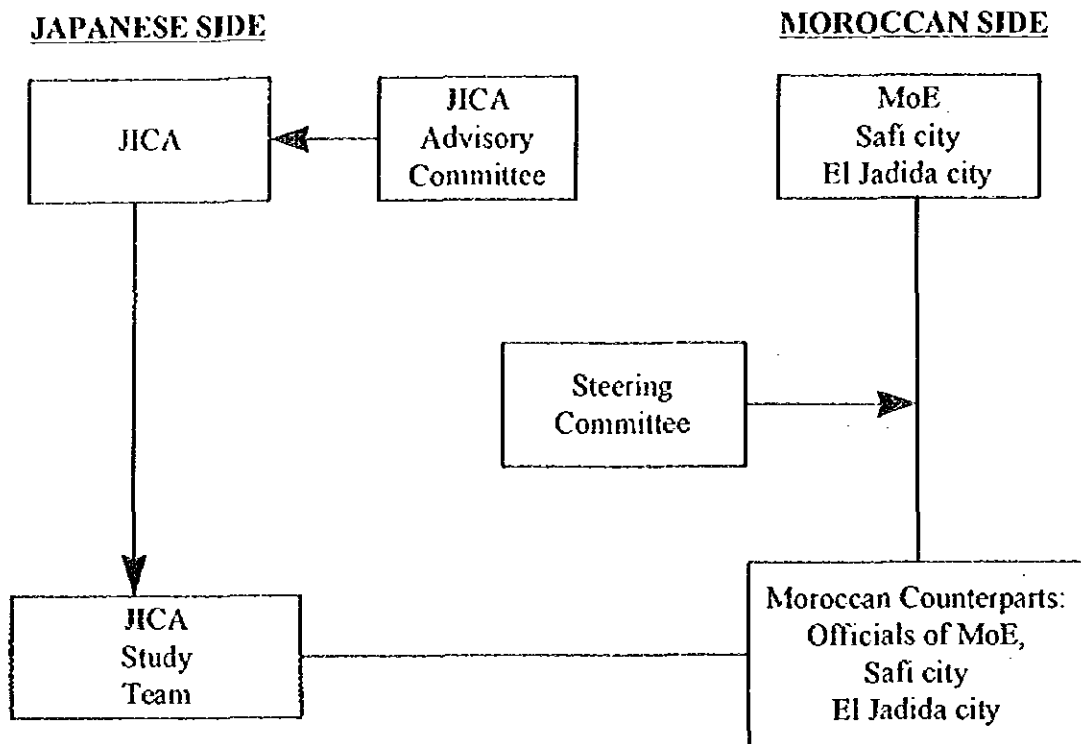
1. Objectives of the Study

The objective of the Study is to strengthen the capacity of solid waste management at both national and local levels. This study has been executed by Japan International Cooperation Agency (JICA) based on the request from the Government of Morocco. JICA commissioned the study to a joint venture comprising EX Corporation and Yachiyo Engineering Co., Ltd. The joint venture has organized a study team comprising of 11 specialists. The Study has been conducted jointly by Japanese consultants and their Moroccan counterparts.

The study period was about 18 months from January 1996 to July 1997. The Study is divided into two phases, the first phase being from the beginning up to September 1996, and the second phase being from October 1996 till the end. The objective of the first phase study is to formulate the guidelines and action plan for solid waste management at both national and local levels. The objective of the second phase is to apply the guidelines formulated and check their applicability. Two cities, i.e. Safi and El Jadida were selected for the second phase. The Study team in collaboration with the counterparts in Safi city have formulated a plan for improvement of solid waste management. In addition, we have implemented a public education campaign (demonstration project) aiming at strengthening citizens' understanding and cooperation concerning city cleansing. We have also formulated a plan for improvement of disposal of solid waste for El Jadida. It is expected that the plans will serve as a model for other local authorities in Morocco.

2. Study Organization

The study organization is shown in the figure below. This study has been conducted jointly by the Study Team led by Mr. Ohno and the Moroccan counterparts, i.e. officials of Ministry of Environment, Safi city and El Jadida city. A key counterpart agency on the Moroccan side is the Ministry of Environment. For the smooth execution of the study, the Moroccan side formed a steering committee comprising of representatives of the Ministry of Environment, Ministry of Interior, Ministry of Health, Ministry of Public Works, and Ministry of Commerce and Industry. Mrs. Layachi, Director, Department of Observation, Study and Coordination, Ministry of Environment served as chairman of the steering committee. On the Japanese side, an advisory committee was formed for the study. Dr. Masaru Tanaka, Director, Department of Waste Management Engineering, the National Institute of Health, served as chairman of the Advisory Committee.



MoE: Ministry of Environment

3. Reports

This study has produced the following reports:

1. Inception report
2. Progress report (1)
3. Interim report
4. Progress report (2)
5. Draft final report
6. Final report

The final report consists of the following volumes:

- Book 1** Guidelines for National Level Policies and Actions for Solid Waste Management
Part 1 National Strategy
Part 2 Laws, Institutions, and Finance
Part 3 Industrial and Hazardous Waste
Part 4 Infectious Waste
- Book 2** Guidelines for Improvement of Solid Waste Management for Urban Communes and Communities
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- Book 7** Data Book:
Appendices to Solid Waste Management Plan for Safi
- Book 8** Japanese Summary

All the Book except for Book 8 has been prepared in English and French.



Chapter 1 Results of Household Waste
Generation Survey



Appendix 1 Results of Household Waste Generation Survey

Table 1.1-1 Household Waste Generation Survey Summary: Boudheb

Income Category	Estimated Waste Generation (ton/day) $\{(c) \times (b)\}/1000$ = (a)	Population in Commune by Income Category (b)	Estimated Household Waste Generation Rate (kg/capita/day) (c)
1. Low Income	8.910	23,264	0.383
2. Middle Income	36.416	71,264	0.511
3. High Income	5.228	10,053	0.520
4. Avarege/Total (1+2+3)	50.554	104,581	0.483

Table 1.1-2 Household Waste Generation Survey Summary: Zaouia

Income Category	Estimated Waste Generation (ton/day) $\{(c) \times (b)\}/1000$ = (a)	Population in Commune by Income Category (b)	Estimated Household Waste Generation Rate (kg/capita/day) (c)
1. Low Income	4.424	19,840	0.223
2. Middle Income	27.219	80,055	0.340
3. High Income	0.841	2,042	0.412
4. Avarege/Total (1+2+3)	32.484	101,937	0.319

Table 1.1-3 Household Waste Generation Survey Summary: Biada

Income Category	Estimated Waste Generation (ton/day) $\{(c) \times (b)\}/1000$ = (a)	Population in Commune by Income Category (b)	Estimated Household Waste Generation Rate (kg/capita/day) (c)
1. Low Income	1.986	5,912	0.336
2. Middle Income	31.080	61,182	0.508
3. High Income	0.562	829	0.677
4. Avarege/Total (1+2+3)	33.628	67,923	0.495

Table 1.2-1 Household Waste Generation Survey Summary: Low Income

Commune	Estimated Waste Generation (ton/day) $\{(c) \times (b)\}/1000$ = (a)	Population in Commune by Income Category (b)	Estimated Household Waste Generation Rate (kg/capita/day) (c)
1. Boudheb	8.910	23,264	0.383
2. Zaouia	4.424	19,840	0.223
3. Biada	1.986	5,912	0.336
4. Average/Total (1+2+3)	15.320	49,016	0.313

Table 1.2-2 Household Waste Generation Survey Summary: Middle Income

Commune	Estimated Waste Generation (ton/day) $\{(c) \times (b)\}/1000$ = (a)	Population in Commune by Income Category (b)	Estimated Household Waste Generation Rate (kg/capita/day) (c)
1. Boudheb	36.416	71,264	0.511
2. Zaouia	27.219	80,055	0.340
3. Biada	31.080	61,182	0.508
4. Average/Total (1+2+3)	94.715	212,501	0.446

Table 1.2-3 Household Waste Generation Survey Summary: High Income

Commune	Estimated Waste Generation (ton/day) $\{(c) \times (b)\}/1000$ = (a)	Population in Commune by Income Category (b)	Estimated Household Waste Generation Rate (kg/capita/day) (c)
1. Boudheb	5.228	10,053	0.520
2. Zaouia	0.841	2,042	0.412
3. Biada	0.562	829	0.677
4. Average/Total (1+2+3)	6.631	12,924	0.513

**Table 1.3-1 Household Waste Generation Survey Summary:
Safi Total by Communes**

Commune	Estimated Waste Generation (ton/day) $\{(c) \times (b)\}/1000$ = (a)	Population in Commune by Income Category (b)	Estimated Household Waste Generation Rate (kg/capita/day) (c)
1. Boudheb	50.554	104,581	0.483
2. Zaouia	32.484	101,937	0.319
3. Biada	33.628	67,923	0.495
4. Average/Total (1+2+3)	116.666	274,441	0.425

**Table 1.3-2 Household Waste Generation Survey Summary:
Safi Total by Income Category**

Income Category	Estimated Waste Generation (ton/day) $\{(c) \times (b)\}/1000$ = (a)	Population in Commune by Income Category (b)	Estimated Household Waste Generation Rate (kg/capita/day) (c)
1. Low Income	15.320	49,016	0.313
2. Middle Income	94.715	212,501	0.446
3. High Income	6.631	12,924	0.513
4. Average/Total (1+2+3)	116.666	274,441	0.425

Table 1.4-1 Household Waste Generation Survey Data: Low Income

Commune	Number of People in Surveyed Households (a)	Amount of Waste generated in Surveyed Households (b)	Estimated Household Waste Generation Rate (kg/capita/day) (c) = (b) / (a) / 7 dyas
1. Boudheb	78	209.00	0.383
2. Zaouia	132	206.40	0.223
3. Biada	125	293.60	0.336

Table 1.4-2 Household Waste Generation Survey Data: Middle Income

Commune	Number of People in Surveyed Households (a)	Amount of Waste generated in Surveyed Households (b)	Estimated Household Waste Generation Rate (kg/capita/day) (c) = (b) / (a) / 7 dyas
1. Boudheb	101	361.00	0.511
2. Zaouia	134	319.38	0.340
3. Biada	109	387.40	0.508

Table 1.4-3 Household Waste Generation Survey Data: High Income

Commune	Number of People in Surveyed Households (a)	Amount of Waste generated in Surveyed Households (b)	Estimated Household Waste Generation Rate (kg/capita/day) (c) = (b) / (a) / 7 dyas
1. Boudheb	134	488.00	0.520
2. Zaouia	111	319.75	0.412
3. Biada	125	592.70	0.677

Chapter 2 Results of Household Waste Physical
Composition Survey



Appendix 2 Results of Household Waste Physical Composition Survey

Table 2.1 Household Waste Bulk Density

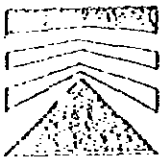
Unit: kg/l

Commune / Income	Boudheb	Zaouia	Biada	Safi Average
Low	0.400	0.432	0.300	0.401
Middle	0.374	0.321	0.353	0.348
High	0.405	0.386	0.333	0.397
Communal Average	0.383	0.344	0.348	Grand Total 0.360

Note: Population used for calculating weighted average are as follows

Table 2.2 Population used for Calculating Weighted Average (marked with *)

Commune / Income	Boudheb	Zaouia	Biada	Total
Low	23,701	20,487	6,001	*50,189
Middle	72,604	82,665	62,105	*217,374
High	10,242	2,108	842	*13,192
Total	*106,547	*105,260	*68,948	Safi Population *280,755



LABORATOIRE REGIONAL DE SAFI
Résidence NIASS, Rue Taïeb Benhima, Plateau
SAFI
Tél. : 62.00.12 - Fax : 62.65.23 - Téléx : 71007

Safi, le 09/12/96

JICA

Dossier n : 96-242 -00-168ER

ETUDE D'ORDURES MENAGERES
VILLE DE SAFI

PRELIMINAIRE :

Dans le cadre des études menées sur les ordures ménagères dans la ville de SAFI, l'Agence Internationale de la Coopération Japonaise (JICA) a confié au LPEE-LR-SAFI, la mission de la classification des ordures ménagères des Communes Urbaines d'Asfi Biada, d'Asfi Boudheb et d'Asfi-Zaouia.

Cette mission a consisté en :

- La détermination de la densité globale des déchets pour les différentes communes et pour les différents revenus (faible, moyen et haut).
- La détermination de la composition humide des déchets des différentes communes et pour les différents revenus.
- La détermination de la composition sèche et de la teneur en eau des déchets pour les différents revenus de la Commune Urbaine d'Asfi-Boudheb.

II/ DETERMINATION DE LA DENSITE GLOBALE DES DECHETS :

La densité globale des déchets a été déterminée conformément à la directive de JICA et qui consiste à :

- Placer doucement l'échantillon de déchets dans le conteneur en plastique. Quand le conteneur est rempli, le lever à une hauteur d'environ 30cm et puis le laisser tomber librement pour faire de l'espace par tassement. Remplir cette espace avec un autre échantillon de déchets Répéter la même procédure deux autres fois.

- Peser le poids des déchets et mesurer le volume correspondant.
- Déduire la densité globale des déchets émis par les 20 familles de chaque catégorie de revenu pour les différentes communes.

Les densités (en kg/l) obtenus sont présentées dans le tableau suivant :

Commune	Biada	Boudheb	Zaouia
Revenu faible	0,300	0,400	0,432
Revenu moyen	0,353	0,374	0,321
Revenu haut	0,333	0,405	0,386

III/ DETERMINATION DE LA COMPOSITION HUMIDE :

Cette opération consiste en la détermination de chacune des catégories de déchets suivantes :

- A : Ordures de cuisine
- B : Papier
- C : Bois et paille
- D : Plastique
- E : Métal
- F : Verre
- G : Cuir et fibre
- H : Autres déchets combustibles
- I : Autres déchets non combustibles

La classification (le tri) des ordures a été effectuée sur l'échantillon global ayant servi à la détermination de la densité globale de déchets.

Notons que pour les échantillons globaux constituants, nous avons procédé au début de l'opération du tri à l'extraction des gros éléments pour mettre un échantillon simplifié après un premier échantillonnage par quartage. C'est le cas des échantillons de bas revenus des communes Boudheb et Biada.

i-après : Les résultats obtenus sont présentés dans les tableaux

Commune de Biada :

1.1- Revenu Bas :

Type de déchet	Poids humide (kg)	Poids gros éléments (kg)	%
A	11,506	0	74,9
B	2,024	0	13,2
C	0,292	0	1,9
D	0,920	0,328 x 0,5	7,1
E	0,138	0,398 x 0,5	2,2
F	0	0	0
G	0,128	0	0,8
H	0	-	0
I	0	-	0
Total		15,371	100,1

1.2- Revenu Moyen

Type de déchet	Poids humide (kg)	%
A	34,838	77,5
B	2,978	6,6
C	0	0
D	3,440	7,7
E	0,848	1,9
F	1,564	3,5
G	0,788	1,8
H	0	0
I	0,468	1,0
Total	44,924	100

1.3- Revenu Haut

Type de déchet	Poids humide (kg)	%
A	55,088	71,2
B	4,376	5,7
C	0	0
D	4,452	5,8
E	0,496	0,6
F	1,596	2,1
G	2,000	2,6
H	5,608	7,2
I	3,752	4,8
Total	77,368	100

2- Commune Boudheh2.1- Revenu-Bas

Type de déchet	Poids humide (kg)	%
A	9,376	83,8
B	0,934	8,3
C	$0,134 + 0,5 \times 0,120 = 0,194$	1,7
D	$0,372 + 0,5 \times 0,274 = 0,509$	4,5
E	$0,5 \times 0,022 = 0,011$	0,1
F	0	0
G	0,162	1,4
H	0	0
I	0,003	0,0
Total	11,189	100

2.2- Revenu Moyen

Type de déchet	Poids humide (kg)	%
A	26,150	73,4
B	2,474	6,9
C	0,026	0,1
D	1,526	4,3
E	0,322	0,9
F	1,166	3,3
G	0,142	0,4
H	0,014	0,0
I	3,786	10,6
Total	35,606	100

2.3- Revenu Haut

Type de déchet	Poids humide (kg)	%
A	45,154	77,8
B	4,686	8,1
C	0	0
D	2,910	5,0
E	0,304	0,1
F	0,210	0,0
G	2,328	4,0
H	2,310	4,0
I	0,140	0,0
Total	58,042	100

3- Commune Asfi-Zaouia

3.1/ Revenu-Bas

Type de déchet	Poids humide (kg)	%
A	13,426	73,9
B	2,160	11,9
C	0	0
D	1,082	6
E	0,124	1
F	0,144	1,0
G	0,664	3,7
H	0,558	3,1
I	0	0
Total	18,158	100

3.2/ Revenu Moyen

Type de déchet	Poids humide (kg)	%
A	22,080	78,8
B	3,020	10,8
C	0,112	0,4
D	1,588	5,7
E	0,612	2,2
F	0,102	0,4
G	0,294	1,1
H	0,218	0,8
I	0	0
Total	28,026	100

3.3/ Revenu Haut

Type de déchet	Poids humide (kg)	%
A	17,824	64,3
B	1,994	7,2
C	3,224	11,6
D	2,476	8,9
E	0,128	0,5
F	0,240	0,9
G	0	0
H	1,832	6,6
I	0	0
Total	27,718	100

III/ DETERMINATION DE LA TENEUR EN EAU ET DE LA COMPOSITION SECHE POUR LA COMMUNE BOUDIBB.

La teneur en eau (W) a été déterminée par séchage l'étuve des échantillons de chaque type de déchets des différentes catégories de revenu.

$$W (\%) = \frac{\text{Poids humide} - \text{Poids sec}}{\text{Poids humide}} \quad (\text{définie par JICA})$$

Les proportions sèches sont alors déduites par calcul. Les résultats obtenus sont présentés dans les tableaux ci-après :

III.1/ Revenu-Bas

Type de déchet	Poids humide (kg)	Poids sec (kg)	W (%)	% sec
A	9,376	2,136	77	68,1
B	0,934	0,437	53	13,9
C	0,194	0,169	13	5,4
D	0,509	0,312	39	9,9
E	0,011	0,010	10	0,3
F	0	0	-	0
G	0,162	0,074	54	2,4
H	0	0	-	0
I	0,003	-	-	-
Total	11,189	3,138	72	100

III.2/ Revenu-Moyen

Type de déchet	Poids Humide (kg)	Poids sec (kg)	W (%)	% sec
A	26,150	5,505	79	45,1
B	2,474	1,089	56	8,9
C	0,026	0,020	23	0,2
D	1,526	0,855	44	7
E	0,322	0,298	7,4	2,4
F	1,166	1,154	1	9,5
G	0,142	0,097	32	0,8
H	0,014	0,012	14	0,1
I	3,386	3,183	6	26,1
Total	35,606	12,213	63	100

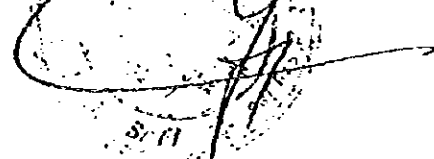
III.3/ Revenu-Haut

Type de déchet	Poids Humide (kg)	Poids sec (kg)	W (%)	% sec
A	17,824	4,099	77	34,1
B	1,994	1,637	18	13,6
C	3,224	2,934	9	24,4
D	2,476	1,461	41	12,2
E	0,128	0,122	5	1,0
F	0,240	0,223	7	1,9
G	0	0	-	0
H	1,832	1,539	16	12,8
I	0	0	-	0
Total	27,718	12,015	43	100

INGENIEUR RESPONSABLE DE L'ETUDE
B. LAFRINDI



LE CHEF DU L.R. SAFI
Y. ABBAD EL ANDALOUSSI



Chapter 3 Results of Waste Collection Quantity
Survey with Truck Scale



Appendix 3
Table 3.1 Waste Collection Quantity Survey - Summary
 Safi Total (excluding waste collected during the campaign)

Unit: Kg

	Items	Boudheb 1	Zaouia 2	Biada 3	Community Urban 4	Sub-Total 5 = (1+2+3+4)	Private Trucks 6	Grand Total 7 = (5+6)
A	Waste Collection Quantity (kg)							
A1	Surveyed 7 Days Total (26 Nov. - 2 Dec.) ^{note1}	384,930.00	203,840.00	110,890.00	5,255.00	704,915.00	28,650.86	733,565.86
A2	Daily Average (A1/7days)	54,990.00	29,120.00	15,841.42	750.71	100,702.13	4092.86	104,794.99
A3	Annual Quantity (A2*365)	20,071,350.00	10,628,800	5,782,118.30	274,009.15	36,756,277.45	1,493,893.90	38250171.35
B	Trips (Number)							
B1	Surveyed 7 Days Total (26 Nov. - 2 Dec.)	164	70	49	4	287	13	300
B2	Daily Average (B1/7days)	23.40	10.00	7.00	0.57	40.97	1.86	42.83
B3	Annual Trip Number (B2*365)	8,541.00	3,650.00	2,555.00	208.05	14954.05	678.90	15,632.95

Note 1: Use figures of Regular Collection of three commune.

Table 3.2 Boudheb Truck Scale Survey Data

no.	Truck	Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Monday	
		Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul
1	63955	2	1520 1150	2	1680 1250	2	1570 1150	2	1765 1235	2	1525 1335	1	1470	1	3835
2	63957	2	3710 3160	1	3540	2	3660 2310	2	3950 4400	2	3460 3340	1	3220	3	2900 1760 760
3	63958	1	1810	2	2740 2810	2	1950 2125	2	2465 2000	2	2210 2090	1	2035	2	3190 3100
4	63959	2	2390 1565	1	3455	1	3630	1	3120	1	4295	1	2240	2	2730 2290
5	73912	2	2890 1280	2	3775 1250	2	2590 1190	2	3630 1330	2	2370 955	1	2860	2	3395 4520
6	90384	1	1250	1	1065	1	2190	2	1595 435	1	575	1	1380	2	1810 1110
7	97814	3	1010 750 1010	3	1030 935 870	3	1030 1010 895	3	1220 995 805	3	1175 900 830	2	1020 1380	3	1375 955 1415
8	117202	1	7780	2	6380 2180	2	5615 3110	2	5920 2340	2	7130 2385	1	8070	2	6935 3225
9	117203	1	5305	1	5120	1	4595	1	5450	1	5020	1	4730	1	6045
10	117204	6	2310 1930 1160 1895 650 1640	8	2030 1630 2880 2465 1520 1875 1475 1200	9	815 1790 1575 1850 2315 1670 2250 1510 1250	10	740 1640 2015 2040 1470 2510 2940 580 1180 1635	9	855 1170 1360 1645 830 1360 2820 2520 1735	8	900 1200 965 2245 1210 1390 2320 2290	7	1615 870 1910 1205 2280 2295 1860
	Total	21	46165	23	53155	25	53645	27	59405	25	53890	18	40925	25	63385

Table 3.3 Zaouia Truck Scale Survey Data

no. Truck	Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Monday					
	Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul				
1	54048	0	0	(1) (1900)	0	0	0	0	0	0	0	0	0	0				
2	73911	1	3000	1	1740	1	2140	1	1800	1	1800	1	1800	1	3540			
				1	1520	(1) (2120)	1	2220	1	2220	1	2220	1	2220	1	2600		
3	73914	1	1320	1	1300	1	1320	2	1240	2	1240	2	1240	1	2600			
				(1) (4800)	1	4360	1	4360	2	2820	2	2820	1	5260	1	5260		
4	90381	1	3600	1	2680	1	3580	2	2820	2	2820	2	2820	1	5260			
				(1) (3080)	1	3960	1	3960	1	2780	1	2780	2	1320	2	2860		
5	110233	0	0	1	3100	1	2580	1	3140	1	2780	1	2780	2	1320			
				(1) (6280)	0	0	0	0	(2) (6800)	0	0	(2) (6800)	(2) (4580)	(2) (4580)	(2) (4580)	(5440)		
6	116160	0	0	0	0	(1) (4820)	(1) (4020)	0	0	0	0	0	0	0	0	0		
7	116622	0	0	0	0	1	2160	1	3460	1	3460	1	3460	2	5800	2	5800	
8	117050	0	0	1	2380	1	3620	(1) (5920)	(1) (6440)	(1) (6440)	(1) (6440)	(1) (6440)	(1) (6440)	2	2820	2	2820	
				1	4000	1	3080	1	3600	1	3720	1	3720	2	4960	2	4960	
9	117051	1	3240	1	4000	1	4460	(1) (3020)	(1) (5000)	(1) (5000)	(1) (5000)	(1) (5000)	(1) (5000)	1	5200	1	5200	
				1	2340	1	2380	1	2880	1	2600	1	2600	1	5200	1	5200	
10	117052	0	0	1	2340	1	3360	(1) (4280)	(1) (5020)	(1) (5020)	(1) (5020)	(1) (5020)	(1) (5020)	1	5200	1	5200	
				(1) (5160)	1	2580	1	2580	1	2580	1	2580	1	2580	1	2580	1	2580
11	117053	1	3580	1	1560	1	1680	1	2060	1	1720	1	1720	1	4400	1	4400	
				(1) (5640)	1	3740	1	3740	1	3740	1	3740	1	3740	1	3740	1	3740
				(1) (4740)	1	3080	1	3080	1	3080	1	3080	1	3080	1	3080	1	3080
12	117054	1	3820	1	3080	1	4800	(1) (4020)	(1) (3280)	(1) (3280)	(1) (3280)	(1) (3280)	(1) (3280)	1	4980	1	4980	
				(1) (4800)	1	2760	1	2760	1	2760	1	2760	1	2760	1	2760	1	2760
13	117055	1	500	1	2560	1	1740	1	2400	1	2400	1	2400	1	4440	1	4440	
				(1) (5900)	1	3200	1	3200	1	3200	1	3200	1	3200	1	3200	1	3200
				(1) (2140)	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	117602	0	0	(2) (4020)	0	0	0	0	0	0	0	0	0	0	0	0	0	
				(3400)	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	7	19060	10	24820	14	35320	11	31920	15	42620	15	42620	0	0	15	50100	15	50100

Note: () Trips between brackets indicate campaign trips

Table 3.4 Biada Truck Scale Survey Data

no.	Truck	Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Monday	
		Trip Haul	2060	Trip Haul	2340	Trip Haul	2240	Trip Haul	2380	Trip Haul	2680	Trip Haul	3680	Trip Haul	4300
1	49735	1	2060	1	2340	1	2240	1	2380	1	2680			1	4300
2	51655	1	3120	1	3380	1	3140	1	3700	1	3680			2	3960
3	63956	0	0	1	2460	1	2860	1	3240	1	3020			2	4540
4	90380	1	2260	1	2260	1	3140	1	2500	1	2640			1	4600
5	97815	1	860	2	1060	4	860	1	1000	1	960			3	1000
					900		840								1080
							400								660
							1300								
6	107430	2	2030	2	2300	2	2460	2	2820	2	2800			2	2540
			1120		1140		1660		900		1360				3300
	Total	6	11450	8	15840	10	18900	7	16540	7	17140	0	0	11	31020

Table 3.5 OCP and ODEP Truck Scale Survey

no.	Truck	Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Monday	
		Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul	Trip	Haul
A.	ODEP														
1	75357	3	2060 1680 1340	2	1780 1560	2	2100 2160	2	2240 2180	0	0	0	0	2	1600 3380
sub-tot.		3	5080	2	3340	2	4260	2	4420	0	0	0	0	2	4980
B.	OCP														
2	446	0	0	0	0	1	8780	3	7540 8180 6060	2	9720 6920	5	8270 8010 7510 8955 7345	0	0
3	476	0	0	5	2580 3080 3140 3300 3060	2	1540 3100	0	0	0	0	0	0	0	0
4	572	0	0	0	0	0	0	4	2940 3320 3180 4160	0	0	0	0	0	0
5	2771	0	0	0	0	0	0	3	7120 5860 5200	6	6620 4940 4060 4780 5000 4640	6	4975 3645 6105 3510 2970 4775	0	0
6	6263	0	0	0	0	0	0	0	0	0	0	5	2980 4900 2630 2955 2915	0	0
7	7478	0	0	0	0	0	0	6	7920 7560 8100 5820 5660 7420	6	8000 5660 6340 6200 5880 5600	6	7045 5170 5360 4520 5395 3880	0	0
8	8771	0	0	0	0	0	0	1	6920	0	0	0	0	0	0
sub-tot.		0	0	5	15160	3	13420	17	102960	14	84360	22	113820	0	0
Total		3	5080	7	18500	5	17680	19	107380	14	84360	22	113820	2	4980

Bizka

ETUDE SUR LA QUANTITE DES DECHETS COLLECTES - BILAN 13

Bizka Bilan du poids des déchets collectés par jour basé sur le pesage des camions

Unité: kg (nombre de v)

Plaque No.	Type de camion	Mardi 26 novembre	Mercredi 27 novembre	jeudi 28 novembre	Vendredi 29 novembre	Samedi 30 novembre	Dimanche 1 décembre	Lund. 2 décembre
1. 975153	2	760 (1) 1960 (2)	3200 (4)	1000 (1) 960 (1)				2740 (3) 1002
2. 1074307	-	3050 (2) 3400 (2)	4950 (2)	3720 (2)	4960 (2)			5900 (2) 9112
3. 107357	0	5060 (1) 5340 (1)	5510 (1)	5280 (1)	5680 (1)			4300 (1) 1400
4. 903905	0	5960 (1) 5560 (1)	3010 (1)	5500 (1)	5640 (1)			4100 (1) 1240
5. 596555	0	3490 (1) 2280 (1)	3110 (1)	2200 (1)	2690 (1)			2160 (2) 9055
6. 630562	2		5110 (1)	5860 (1)	3040 (1)	3080 (1)		6590 (2) 1796
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
18.								
19.								
20.								
Sous-total (a)		14450 (6)	15840 (8)	17900 (10)	16540 (7)	17140 (7)		31020 (11) 110790
Déchets collectés durant la campagne (b)								
Collecte régulière (c)=(a-b)		14450 (6)	15840 (8)	18900 (10)	16540 (7)	17140 (7)		37020 (11) 110890

N.B: Mettez le nombre de voitures entre parenthèse ().

ETUDE SUR LA QUANTITE DES DECHETS COLLECTES - BILAN 1.4

Communauté Urbaine Bilan du poids des déchets collectés par jour basé sur le pesage des camions Unité: kg (nombre de voyages)

Plaque No.	Type de camion	Mardi 26 novembre	Mercredi 27 novembre	Jeudi 28 novembre	Vendredi 29 novembre	Samedi 30 novembre	Dimanche 1 ^{er} décembre	Lundi 2 décembre	Total de 7 jours
1. 117 2041		1640 (A)	()	()	580 (A)	()	1390 (A)	()	3610 (3)
2. H 200 (CASH)		()	()	()	()	()	()	1645 (A)	1645 (A)
3.		()	()	()	()	()	()	()	()
4.		()	()	()	()	()	()	()	()
5.		()	()	()	()	()	()	()	()
6.		()	()	()	()	()	()	()	()
7.		()	()	()	()	()	()	()	()
8.		()	()	()	()	()	()	()	()
9.		()	()	()	()	()	()	()	()
10.		()	()	()	()	()	()	()	()
11.		()	()	()	()	()	()	()	()
12.		()	()	()	()	()	()	()	()
13.		()	()	()	()	()	()	()	()
14.		()	()	()	()	()	()	()	()
15.		()	()	()	()	()	()	()	()
16.		()	()	()	()	()	()	()	()
17.		()	()	()	()	()	()	()	()
18.		()	()	()	()	()	()	()	()
19.		()	()	()	()	()	()	()	()
20.		()	()	()	()	()	()	()	()
Sous-total (a)		1640 (A)	()	()	580 (A)	()	1390 (A)	1645 (A)	5255 (4)
Déchets collectés durant la campagne (b)		()	()	()	()	()	()	()	()
Collecte régulière (c)=(a-b)		1640 (A)	()	()	580 (A)	()	1390 (A)	1645 (A)	5255 (4)

ETUDE SUR LA QUANTITE DES DECHETS COLLECTES - JUAN I.S

Camions privés Bilan du poids des déchets collectés par jour basé sur le pesage des camions

Unité: kg (nombre de voyages)

Nom de compagnie produisant les déchets	Plaque N°	Bilan du poids des déchets collectés par jour							Lundi 2 décembre	Total de 7 jours
		Mardi 26 novembre	Mercredi 27 novembre	Jeudi 28 novembre	Vendredi 29 novembre	Samedi 30 novembre	Dimanche 1 décembre			
1. OCEP	75357M	5080 (3)	3340 (2)	4260 (2)	4420 (2)	()	()	3380 (1)	20480 (10)	
2. OCT	H195/2E	1770 (1)	()	()	()	()	()	3730 (2)	5500 (3)	
3. OCP	H76/2/H	()	16760 (5)	13420 (3)	()	()	()	9525 (4)	39105 (12)	
4. OCP	H478/2/H	()	()	()	42480 (6)	37620 (6)	32370 (6)	44225 (8)	155695 (26)	
5. OCP	2771/99	()	()	()	25100 (4)	30060 (6)	25950 (6)	36105 (8)	117215 (24)	
6. OCP	H46/2/H	()	()	()	21780 (3)	16640 (2)	40090 (5)	()	72510 (10)	
7. OCP	572/2/H	()	()	()	13600 (4)	()	()	()	13600 (4)	
8. ODEP	98780M	()	()	()	()	()	()	1600 (1)	1600 (2)	
9. Ch. KROM	3339 / 30	()	()	()	()	()	()	1070 (1)	1070 (2)	
10. OCP	6021/2/2	()	()	()	()	()	16380 (5)	()	16380 (5)	
11.		()	()	()	()	()	()	()	()	
12.		()	()	()	()	()	()	()	()	
13.		()	()	()	()	()	()	()	()	
14.		()	()	()	()	()	()	()	()	
15.		()	()	()	()	()	()	()	()	
16.		()	()	()	()	()	()	()	()	
17.		()	()	()	()	()	()	()	()	
18.		()	()	()	()	()	()	()	()	
19.		()	()	()	()	()	()	()	()	
20.		()	()	()	()	()	()	()	()	
Total		6830 (4)	19500 (7)	17680 (5)	10730 (19)	84320 (14)	22390 (22)	99635 (25)	443155 (96)	

Mettre le nombre de voyages entre parenthèses

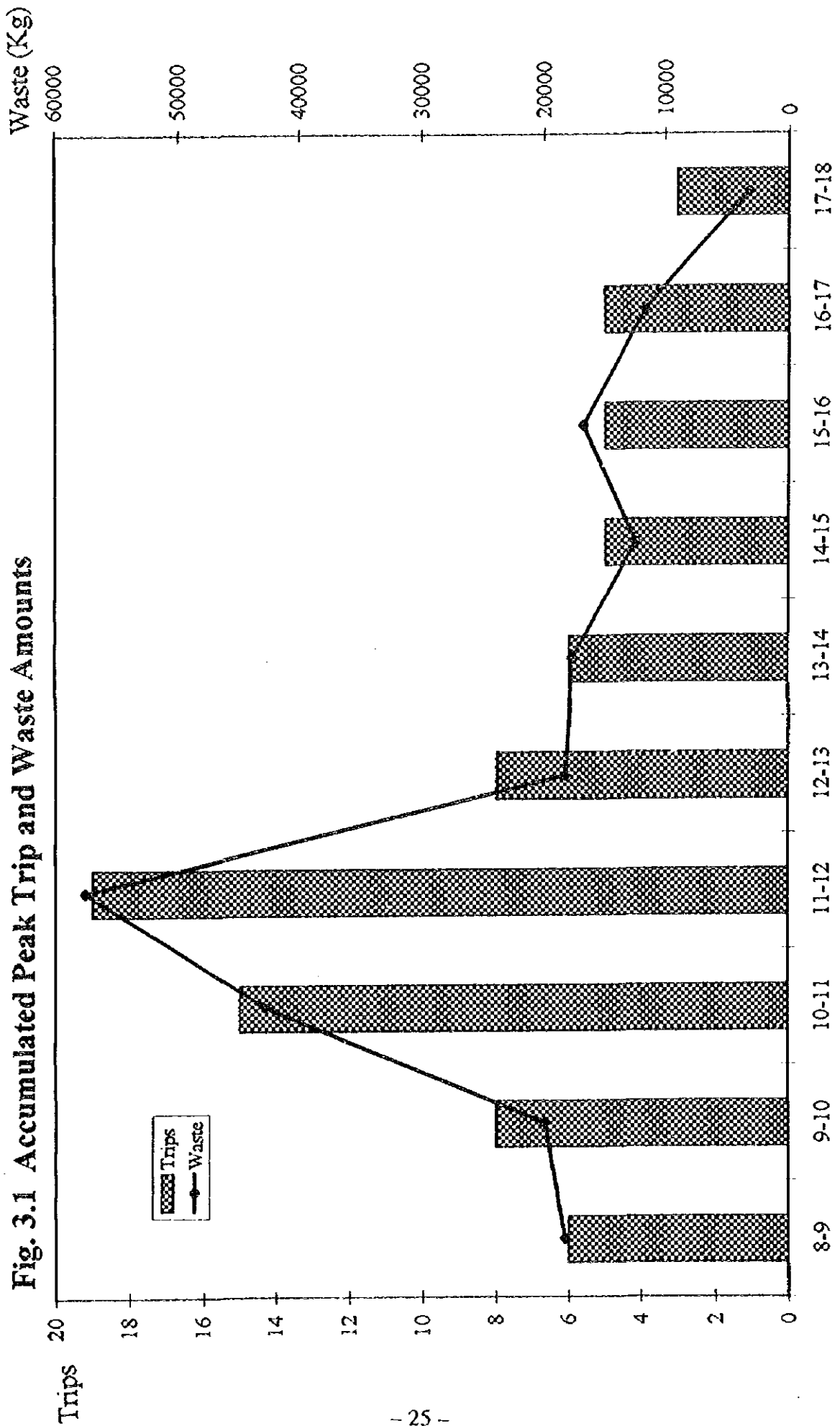


Fig. 3.1 Accumulated Peak Trip and Waste Amounts



Chapter 4 Results of Industrial Waste
Inventory Survey

Industrial Waste Inventory Survey

Urban Community of Safi

Urban Community of Safi

Industrial Waste Inventory Survey Surveyed Company List

No.	Companies	Commune	Major Products
1.	C.M.C	Boudheb	Canning
2.	Haj ABID	Boudheb	Canning
3.	O.C.P	Zaouia	Chemical and Parachemical
4.	C.C.T (Campanie Cherifiénne de Textile)	Boudheb	Chemical/Plastic Production
5.	Campanie Marocaine	Boudheb	Construction Materials
6.	Socarba	Biada	Construction Materials
7.	ABDA Tanning Industry	Boudheb	Leather/Tanning
8.	PIC - MAILLF	Boudheb	Clothing
9.	SAFI PULL.MODE	Boudheb	Clothing
10.	Mohamed V Hospital	Boudheb	Hospital
11.	"Somos" Mill	Boudheb	Mill
12.	Les Grands Moulins	Boudheb	Mill
13.	C.E SHELL	Boudheb	Petro Retail
14.	SHELL Station	Boudheb	Petro Retail
15.	Printing Company M.B.H	Boudheb	Printing
16.	Comunivers	Boudheb	Retail (Detergent)
17.	Pharmacy - la Liberté	Boudheb	Retail (Pharmaceutics and Medical Products)
18.	Pharmacy ALFARABI	Boudheb	Retail (Pharmaceutics Products)
19.	Photo Taibi	Boudheb	Retail (Photo D.P.E.)
20.	"La Bouée" Enterprise	Boudheb	Retail (Paint, etc.)
21.	Maitre Ceramiste Serghini	Biada	Pottery
22.	Ziouani Jilali	Biada	Pottery
23.	BRIMAK	Biada	Pottery

Appendice 4

**Table 4.1 Summary of Results of the Safi Industrial Waste Inventory Survey
(Selected 23 Enterprises)**

Unit: ton/year

Type of Waste	Disposed at Municipal Disposal Site	Sold, Recycled, or Disposed at Non-Municipal Disposal Sites	Company Name	Remarks
1. Cardboard, paper, plastic	594		ABDA (Leather/Tannig)	cardboard, plastic
	180		CMC (Canning Industry)	cardboard, plastic, partly to the sea
	84		Les Grands Moulins (Mills)	plastic
	18.0		Photo-Taibi	paper
	9.6		Comunivers (Retail:Detergent)	cardboard, plastic
	8		La Bouée company (Paint, Maritime, Electric)	paper, cardboard, plastic
	0	7.2	PIC Maillf (Clothing)	cardboard, wool, sold
	6.5		Safi Pullmode (Clothing)	partly sold
	6		MBH Printing Company	paper, cardboard
	4		Pharmacy ALFARABI	cardboard
	3.6		Pharmacy la liberte	cardboard, plastic
	3		SHELL station	
	2.4		Moroccan company (Construction Materials)	transported by enterprise
	0	0.5	Socarba (Mineral and Quarry)	sold
- Sub total	919.1	7.7		
2. Household waste & hospital waste	720		Mohamed V Hospital	
3. Reformed bins		300	CE Shell	recycled
4. Expired Cans		144	CMC (Canning Industry)	burnt at quarry, supervised by the Health Office (BMH)
		18	Haj Abid (Canning Industry)	180,000 cans/year (Average weight of one can is 0.1 kg.)
- Sub total		162		

5. Food waste	2.5		La Bouée company (Paint, Maritime, Electric)	
	2		CE Shell	
	2		Shell station	
	30		SOMOS Mill	wheat
	28.6		Haj Abid (Canning Industry)	partly to the sea
- Sub total	65.1			
6. Polyethylene waste		20	CCT (Plastic products)	sold
7. Oil waste		1	Shell Station	recycled
		1.3	CCT (Plastic products))	burnt inside factory
		1	Socarba (Mineral and Quarry)	sold
- Sub total		3.3		
8. Tire waste		3	Socarba (Mineral and Quarry)	sold
9. Felt	3		CCT (Chemical/Plastic)	transported by enterprise
10. Broken pottery		32.4	Maitre Ceramiste Serghini (pottery)	transported by private trucks to disposal (not municipal disposal) Remark 5
		3	Ziouani Jilali (Pottery)	transported by private trucks to disposal (not municipal disposal) Remark 5
		500	BRIMAK (Pottery)	100% recycled
- Sub total		535.4		
11. Wood and ash	2		Ziouani Jilali (Pottery)	transported to disposal site by truck
Grand Total	1709.20	1025.10		
Daily Average	4.7 t/day	2.8 t/day		

Remark 1: OCP (National phosphate company) generates 7.5 million tons of phosphated gypsum (waste) annually (20,548 ton/day). OCP discharges it to the sea after washing and filtering process.

Remark 2: All above-listed companies except except for SOCARBA and OCP are located in Boudheb; SOCARBA in Biada and OCP in Zaouia.

Remark 3: Broken pottery waste is transported by privately-hired trucks to disposals (other than municipal disposal) where demolition (construction) waste is disposed of.

Company No. 1

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaïb
Date of study 12/07/96
Interviewee Mr. MAHOUBI Med
Occupation Factory manager
Telephone 46-31-61

1. Name of Enterprises C.M.C (Canning industry)
2.1 Address of the head office Street of factories
2.2 Address of the factory Street of factories
3. Number of employees 730 persons
4. Principal products Canning

Type of product	Quantity (ton/year) or (unit/year)
1. Canned sardine	Variable tonnage according to fishing season
2.	
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Can waste	144,000 ton/year	Burnt in presence of the B.M.H (in a quarry outside the city)
2. Cardboard and plastic	180 ton/year	One part is disposed in the sea. Another is collected by the communal means.
3.		
4.		

Company No. 2

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaïb
Date of study 12/07/96
Interviewee Mr. AARAF A
 Occupation Employee
 Telephone 46-22-33

1. Name of Enterprises HAJ ABID (Canning Industry)
2.1 Address of the head office Street of factories
2.2 Address of the factory Street of factories
3. Number of employees 300
4. Principal products Sardine cans.

Type of product	Quantity (ton/year) or (unit/year)
1. Sardine can	Variable according to seasons
2.	
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Sardine waste	28,800 ton/year	Public disposal by the means of the commune or evacuated directly to the sea
2. Expired cans	180,000 cans/year	Burnt in the presence of the B.M.H in a quarry (outside the city)
3. Plastic and cardboard		
4.		

Company No. 3

Questionnaire for Industrial Waste Inventory Survey

Person responsible

Date of study

Interviewee

Occupation

Telephone

1. Name of Enterprises O.C.P. (Derection des industries chimiques de safi)
- 2.1 Address of the head office
- 2.2 Address of the factory
3. Number of employees 4,000
4. Principal products Phosphoric acid 54% P2O5,
Azoted and phosphorated fertilizers

Type of product	Quantity (ton/year) or (unit/year)
1. Phosphoric acid	
2. Phosphoric fertilizers	
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Phosphorated gypsum	7,500,000 ton/year	Washing and filtering before discharging sea water
2. Sulfur ashes		Intensified liquid extraction, and then stocked inside the factory site
3. Lubricating oil		stocked and sold to private individuals
4.		

Source: Questionnaire Survey on Industrial Enterprise concerning Industrial Solid Waste Management; June, 1996.

Company No. 4

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaib
Date of study 12/07/96
Interviewee BENABDELWAHAB
Occupation Technical Division and Manufacturing
Telephone 46-27-70

1. Name of Enterprises C.C.T. (Companie Chérifienne de Textiles)
- 2.1 Address of the head office Sidi Ouassel Road, Safi
- 2.2 Address of the factory Sidi Ouassel Road, Safi
3. Number of employees 700
4. Principal products Textile products

Type of product	Quantity (ton/year) or (unit/year)
1. Polyethylene bag	8,500 ton/year
2. Polypropylene rope and bag	2,800 ton/year
3. Felt and coating felt	500 ton/year
4. Juicy and mixed thread and bag	1,500 ton/year

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. PE waste	20 ton/year	Regranulated and sold
2. Felt waste	0.3 ton/yeqr	Public disposal by the means of the enterprise.
3. Juicy waste	1.3 ton/year	Burnt in our waste furnace
4.		

Company No. 5

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaïb
Date of study 12/06/96
Interviewee KAMAL
Occupation Accountant
Telephone 46-30-39

1. Name of Enterprises Moroccan Company
2.1 Address of the head office Idriss Ben Nacer Avenue, Safi
2.2 Address of the factory Km 6,5 Sebt Gzoula street, Safi
3. Number of employees 170
4. Principal products Plaster, gypsum.

Type of product	Quantity (ton/year) or (unit/year)
1. Plaster	80,000 ton/year
2. Gypsum	180,000 ton/year
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Cardboard	1.2 ton/year	Public disposal by the means of the enterprise
2. Paper bag	1.2 ton/year	
3.		
4.		

Company No. 6

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaib
Date of study 12/06/96
Interviewee SAANANE Daou
Occupation Director
Telephone 62-70-70

1. Name of Enterprises SOCARBA
2.1 Address of the head office Aviation Road N° 228, Safi
2.2 Address of the factory M'zoughen Road, Safi
3. Number of employees 110
4. Principal products Construction material, gypsum.

Type of product	Quantity (ton/year) or (unit/year)
1. Stonework	16,000 ton/year
2. Crushed materials	15,000 ton/year
3. Sewage pipes	9,000 ml/year
4. Agglos ? and bricks	45,000 U/year

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Tire waste	3 ton/year	Resold
2. Rag, wrapping cardboard	0.5 ton/year	Public disposal by the means of the enterprise
3. Oil, gasoline, and empty cans	1 ton/year	Resold
4.		

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaïb
 Date of study 12/07/96
 Interviewee Mr. SABATAI Med
 Occupation Factory manager
 Telephone 46-30-55

1. Name of Enterprises ABDA tanning industry
 2.1 Address of the head office Street of factories
 2.2 Address of the factory Street of factories
 3. Number of employees 20
 4. Principal products (Manufacturing and preparation of leather)

Type of product	Quantity (ton/year) or (unit/year)
1. Leather manufacturing (Raw state)	
2.	
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Leather waste		Public disposal site.
2. Cardboard and plastic waste	594 ton/year	
3. A tannery substance (very dense)		
4.		

A trip of 6 T_____ every 3 days. (Except for Sundays and national holidays (16 days/year). [365]
 - (52+16) = 297/3 = 594 T/year.

Company No. 8

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaï
Date of study 12/10/96
Interviewee Mr. RECHACMI Jaouad
Occupation Manufacturing Chief
Telephone (04) 46-21-26

1. Name of Enterprises PIC - MAILLF
2.1 Address of the head office 102 Bournazel, Industrial District
2.2 Address of the factory 102 Bournazel, Industrial District
3. Number of employees 20
4. Principal products Threads, wool.

Type of product	Quantity (ton/year) or (unit/year)
1. Pullover	12 ton/year
2.	
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Wool scrap		resold
2. Cardboard, wool rolls	7.2 ton/year	resold
3. Plastic		
4.		

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaïb
 Date of study 12/06/96
 Interviewee Mr. CHAINI JAAFAR
 Occupation Provincial leader of the hygiene of Environment
 Telephone 46-39-61 / 46-36-26

- 1. Name of Enterprises Mohamed V Hospital
- 2.1 Address of the head office Mohamed V Hospital, Safi
- 2.2 Address of the factory Mohamed V Hospital, Safi
- 3. Number of employees 560
- 4. Principal products medical products

Type of product	Quantity (ton/year) or (unit/year)
1.	80.8 ton/year
2. Chemical pharmaceutic products	124 ton/year
3. Pesticidal products	2 ton/storage
4. Consumable products	80 ton/year

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Household waste & medical waste	720 ton/year	Means of the commune
2.		
3.		
4.		

Company No. 11

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaïb
Date of study 12/06/96
Interviewee Aouhana Haim
Occupation Director
Telephone 42-31-13

1. Name of Enterprises SOMOS Mill
2.1 Address of the head office Djorf Road
2.2 Address of the factory Djorf road
3. Number of employees 30
4. Principal products Semolina and flour.

Type of product	Quantity (ton/year) or (unit/year)
1. Raw semolina	4,000 ton/year
2. Fine semolina	1,000 ton/year
3. Different types of flour	5,000 ton/year
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Wheat and diverse waste coming from sieving.	30 T/year	Collected by the commune
2.		
3.		
4.		

Company No. 12

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaib
Date of study 12/06/96
Interviewee Mr. EL MADDARSI Abdessamad
Occupation Director
Telephone 62-34-12 / 62-31-66

1. Name of Enterprises Les Grands Moulins (mills)
2.1 Address of the head office Avenue la marche verte, Safi
2.2 Address of the factory Avenue la marche verte, Safi
3. Number of employees 120
4. Principal products

Type of product	Quantity (ton/year) or (unit/year)
1. Different types of wheat flour	440 ton * 365 days = 160,600 ton/year
2.	
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Wheat, cardboard waste		Public disposal by the means of the commune
2. Plastic waste	84 ton/year	
3. Consumable products (food waste)		
4.		

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaïb
 Date of study 12/11/96
 Interviewee Mr. LOUIHI
 Occupation Chief of center
 Telephone 46-30-20

- 1. Name of Enterprises CE SHELL
- 2.1 Address of the head office 36, Rue Azilal, Casablanca
- 2.2 Address of the factory Djorf road, Safi
- 3. Number of employees 60
- 4. Principal products filling

Type of product	Quantity (ton/year) or (unit/year)
1. Butane	20,000 ton/year
2.	
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Scrap / reformed bins	300 ton/year	Recovered by the mother company
2. Food waste	2 ton/year	Collected and transported to the public disposal site by the means of the enterprise.
3.		
4.		

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaïb
 Date of study 12/11/96
 Interviewee Mr. Najib EL KAKOULI
 Occupation SHELL station manager
 Telephone 63-09-98

1. Name of Enterprises SHELL station
 2.1 Address of the head office Road to Marrakech
 2.2 Address of the factory Road to Marrakech (the city entrance)
 3. Number of employees 9
 4. Principal products Fuel, lubricant, grease.

Type of product	Quantity (ton/year) or (unit/year)
1. Gasoline and S.P.	180 ton/year
2. Diesel oil	1200 ton/year
3. Oil - grease	5 ton/year
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Sewage oil	1 ton/year	Recovered by the mother company
2. Food waste	2 ton/year	Collected and transported to the public disposal site by the commune
3. Rag paper and cardboard	3 ton/year	Collected and transported to the public disposal site by the commune
4.		

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaib
 Date of study 12/07/96
 Interviewee Mr. HAMMADI
 Occupation Administrator
 Telephone 62-68-21

- 1. Name of Enterprises MBH printing company
- 2.1 Address of the head office Plateau Safi
- 2.2 Address of the factory Plateau Safi
- 3. Number of employees 25
- 4. Principal products Printing

Type of product	Quantity (ton/year) or (unit/year)
1. Printing/paper	50 T/year
2. /paper	30 T/year
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Paper and cardboard	6 ton/year	Public disposal site.
2.		Collected by proper means of the enterprise and disposed at the disposal site
3.		
4.		

Company No. 16

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaib
Date of study 12/10/96
Interviewee Mr. WALIM
Occupation Safi Agency Chief
Telephone 62-06-33

1. Name of Enterprises COMUNIVERS
2.1 Address of the head office Casablanca
2.2 Address of the factory N°2 Mustapha Kamal street, Ville Nouvelle
3. Number of employees 13
4. Principal products TIDE (Detergent)

Type of product	Quantity (ton/year) or (unit/year)
1. Selling TIDE	2,880 ton/year
2.	
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Empty cardboard	9.6 ton/year	Public disposal by the means of the company.
2. Food waste	Not calculated	The commune collection toward the disposal site.
3.		
4.		

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaib
 Date of study 12/06/96
 Interviewee Ms. Meriem BELYAZID
 Occupation Pharmacist
 Telephone 62-84-40

1. Name of Enterprises Pharmacy la liberté
 2.1 Address of the head office Avenue Liberty, N° 22, Ville Nouvelle
 2.2 Address of the factory Avenue Liberty, N° 22, Ville Nouvelle
 3. Number of employees 3
 4. Principal products Pharmaceutical products

Type of product	Quantity (ton/year) or (unit/year)
1. Medicine	Variable
2. Para-pharmacy	Storage according to the needs
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Cardboard and plastic	3.6 ton/year	Transported to the public disposal site by collectors of the commune.
2. Empty medicine boxes		
3.		
4.		

Company No. 18

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaib
Date of study 12/06/96
Interviewee
Occupation Pharmacist
Telephone 62-38-10

1. Name of Enterprises Pharmacy ALFARABI
2.1 Address of the head office Avenue Kennedy, Safi
2.2 Address of the factory Avenue Kennedy, Safi
3. Number of employees 4
4. Principal products Pharmaceuticals and medical products

Type of product	Quantity (ton/year) or (unit/year)
1. Medicine	Variable
2. Para-pharmacy	
3.	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Syringe and plastic tubes	Variable	Burnt by the laboratory staff.
2. Cardboard and boxes of medicine	4 ton/year	Public disposal site.
3.		
4.		

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaïb
 Date of study 12/06/96
 Interviewee Mr. ERZOUL TAIBI
 Occupation Chief director
 Telephone 46-40-15

1. Name of Enterprises Photo-Taïbi
 2.1 Address of the head office 3 rue Fkih Kanouni, Safi
 2.2 Address of the factory 3 rue Fkih Kanouni, Safi
 3. Number of employees 2
 4. Principal products

Type of product	Quantity (ton/year) or (unit/year)
1. Photos - Recording of	
2. Video cassettes	Variable
3. Photo-developing laboratory	
4.	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Photo paper	18 ton/year	Means of the commune
2. Cardboard used in the photo film		
3.		
4.		

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. AMGHAR Bouchaïb
 Date of study 12/05/96
 Interviewee Mr. Riad TANTAOUI
 Occupation Director
 Telephone 46-38-79

- 1. Name of Enterprises "La Bouée" company
- 2.1 Address of the head office Independence Square, N° 13, Safi
- 2.2 Address of the factory Independence Square, N° 13, Safi
- 3. Number of employees 18
- 4. Principal products Maritime, hardware, paint and diverse materials.

Type of product	Quantity (ton/year) or (unit/year)
1. Different types of paint	
2. Maritime material	
3. Electric material	
4. Diverse material and products	

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Food waste	2.5 ton/year	Collected by the means of the commune
2. Paper, cardboard and plastic coming from wrapping	8 ton/year	Collected by the means of the commune
3.		
4.		

Questionnaire for Industrial Waste Inventory Survey

Person responsible Serghini Ahmed
 Date of study 12/10/1996
 Interviewee Serghini Ahmed
 Occupation Route Dar Sy Aïssa
 Telephone 62-69-10

1. Name of Enterprises Maitre Ceramiste Serghini
 2.1 Address of the head office Route Dar Sy Aïssa
 2.2 Address of the factory Same address
 3. Number of employees 35
 4. Principal products

Type of product	Quantity (ton/year) or (unit/year)
1. Clay	30 T
2. Enamel work	1 T
3. Colors	300 kg
4. Gas - Electricity	---

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Broken pottery articles	32.4 ton/year	Transported by privately-hired trucks to disposal other than municipal disposal

Questionnaire for Industrial Waste Inventory Survey

Person responsible Mr. Ziouani Jilali
 Date of study 12/16/96
 Interviewee Mr. Ziouani Jilali
 Occupation Colline des potiers
 Telephone 46-43-44

1. Name of Enterprises
- 2.1 Address of the head office Colline des potiers
- 2.2 Address of the factory Same address
3. Number of employees 7
4. Principal products

Type of product	Quantity (ton/year) or (unit/year)
1. Clay	25 T
2. Enamel work	700 kg
3. Colors	150 kg
4. Wood	20 T

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Broken pottery articles	3 T	Transported by privately-hired trucks to disposal other than municipal disposal
2. Wood and ash waste	2 T	Transported by privately-hired trucks to disposal other than municipal disposal
3.		
4.		

Questionnaire for Industrial Waste Inventory Survey

Person responsible Maatef Khalifa
Date of study 12/10/96
Interviewee DAHMANI Abdessalam
 Occupation Route Dar Sy Aïssa
 Telephone 62-37-75

1. Name of Enterprises BRIMAK
2.1 Address of the head office Route Dar Sy Aïssa
2.2 Address of the factory Same address
3. Number of employees 113
4. Principal products

Type of product	Quantity (ton/year) or (unit/year)
1. Clay	15000 T/year

5. Quantity and method of disposal of generated industrial waste

Type of industrial waste	Quantity (ton/year)	Method of disposal
1. Broken pottery articles	500 T	Recycled 100 %

M. [Signature]

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 保建才及の資料

LE CHEF DU B.H COMMUNAUTAIRE

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Industrial Waste

MR LE PRESIDENT DE LA COMMUNAUTE URBAINE DE SAFI

Handwritten: 2/10/96 2/10/96

Objet: Projet d'installation d'un four d'incinération

Suite à la lettre n° 3837/DES/SCP du 25 Avril 1996 émanée de l'autorité provinciale, j'ai l'honneur de vous informer que le projet en question s'avère indispensable sur les 2 plans en l'occurrence le plan sanitaire et hygiénique le four d'incinération sera un édifice de dénaturation de tout produit portant préjudice à la santé du consommateur ci-dessus un tableau afférent aux différents saisis sujets de destruction 2ème lieu le plan environnemental cet édifice jouera un rôle protecteur de notre environnement tout en incinérant les substances et produits dont leur composition naturelle s'avère dangereuse.

NATURE DES produits DENATURES	QUANTITE
BOITES DE CONSERVES DE POISSON	1.711.263 P x 0,125 kg
	2.584.684 V x 0,1025 kg
VIANDES Meats	753 Kg
ABATS Somaak & skoop	1.567 Kg
POISSON Fish	27864 Kg

butiel

Stamp: SAFI
 00094
 DAK

Stamp: Chef du Bureau d'Hygiene de la Communauté Urbaine SAFI

Dr CHAM Mohamed