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THE MANAGEMENT OF THE URBAN REMAINS PROBLEM IN ELBASAN CITY

РЕШАВАНЕТО НА ПРОБЛЕМА С РУИНИТЕ В ЕЛБАСАН

Елбасан е един от най-важните градове в Албания. Известен е като „люлка" на знание и като средище на културно развитие. Неговото хетерогенно население нараства бързо поради индустриалното развитие при управлението на Партията на труда. От това време датират проблемите на околната среда. В настоящия момент замърсяването на въздуха застрашава историческите руини в града. Статията цели да представи сегашното състояние на културно-историческите паметници и да набележи плановете за бъдещето.

**Ключови думи**: градски руини, мениджмънт, Елбасан, рециклиране, замърсяване, околна среда.

1. Urban remains in Elbasan

Urban inert remains are an environment disturbing problem, especially depositing fields of the urban inert remains. Because of the urban remains in the governments circles are not treated and manufactured they pollute the ground with chemical and organic remains, and also other dangerous remains. Piled beside roads, near banks of rivers they mar the panoramic view of the area, and also they became the causers for the infective illnesses, professional and cancer influencing in the community health directly.

It is understandable that the evolvement of the population is increasing year after year; also the evolvement for the period 1997–2007 can be charted below:

The population evolvement in 10 last years:

| Years	Population											Changes 97-07	Changes On %
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007		
Municipality of Elbasan	112362	114666	116560	118749	121115	121694	122809	123209	123210	124435	125218	12856	11,4
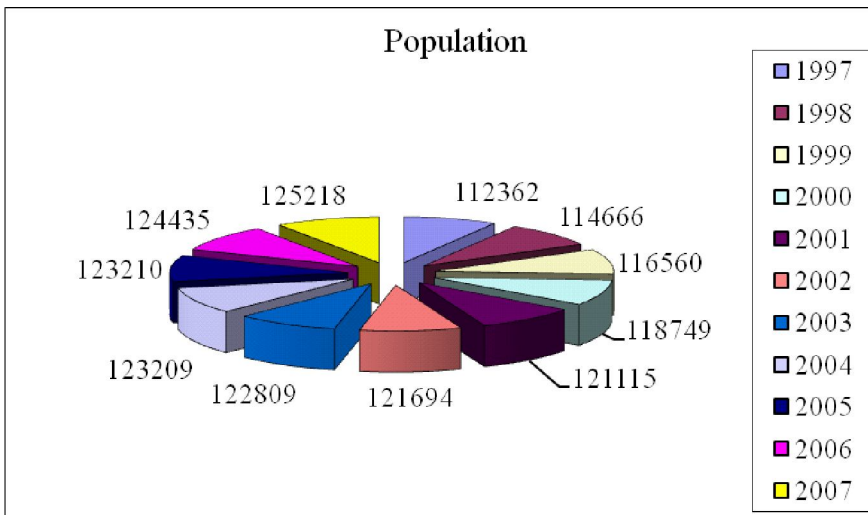
As it is shown in the chart the population number in our city there is a relative increase about 11.4 per cent in 10 future years or about 12850 people more than 1997. This growth reflects surely over the level of urban remains where every day there are deposited 75 ton urban remains. Doing a closer account from the dates that we have from the environment office of Elbasan, it result that the norm per person is approximately 0,22 ton-year/person. Looking that the number of population has an annual medium increasing of 1286 people in the year, the accounts put us in the conclusion that the amount of the urban trash tents to increase with 283 ton in the year or in ten years is augmented with approximately 2830 ton.

This is one side of increasing problem. On the other hand, in the last years our consumer is becoming more demander and pretender from the trade. This means that he has began to consume more from year to year, is become more sensible from the products and marks, has began to recognize better the trades, to come out from the shell of the neighbors and to become the demander of the trade.

In this point of view we confirm that the number of the marks (brands) for the same article or product is increasing making the shelf always a problem for the traders with small quantity. This means that the competition between the producers is increasing according to the previous years to occupy more spaces and the best places in the shelf. This kind of analyze make us to think a higher quantity of consume that in our viewpoint means more urban trash. On the other side little and medium businesses that operate in our city of Elbasan are augmented and concretely there are 318 big and over 2319 small. Knowing that their tendency is increasing, this predicts more urban trash. Doing a structure of analyze of the urban trash or vice-versa we can understand that which will be the tendency for the increasing or the decreasing of the level of the urban trash.

The table below gives us an idea about this problem:

Type of remains	Quantity on %
Paper	10
Textile	4.4
Plastic	9.8
Organically acorn	23.7
Glass	10
Iron	2
Others	0.3
Passive acorn	8
Remains less than 20 mm	31.8

the urban remanins structure
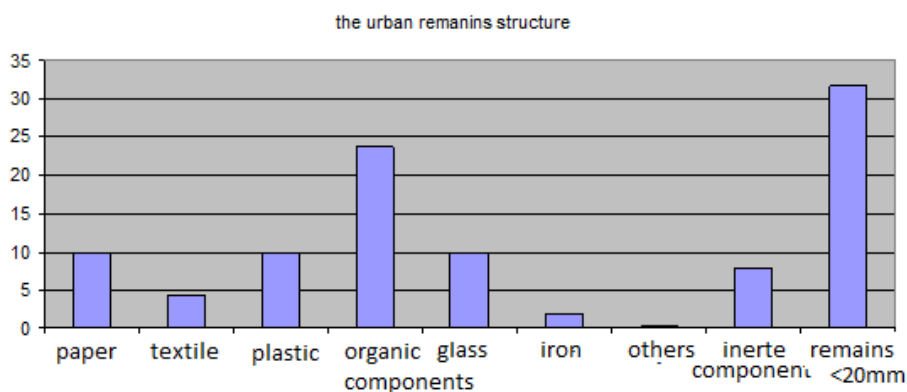
According to this dates from over 27 375 ton in the year that are the deposits in the field of the urban trash in Elbasan over 6488 ton are trash with organic component, so that come directly from the individual consume or from different businesses. Knowing that a part of these can and should be recycled in this way we can sensibly lower the level of the urban trash.

But which is the possibility for this? I, personally make a closer account of the absolute level that dispose the trash during the year in the Elbasan city: (the specialist think that about 60% can be recycle including also the remains less than 20 mm).

paper	10%	2738 ton
textile	4.4%	1205 ton
plastic	9.8%	2683ton
glass	10%	2738 ton
iron	2%	548 ton
Passive acorn	8%	2190 ton
totally	**48.2%**	**13192ton**

I will consider all these like recycled trash or an environment less polluted, a surface twice undamaged from the pollution, a river over twice less threatened in a year from the trash, a flora and a fauna less damaged and vital etc, etc. This relation is like a chemistry reaction. From the economic side it is just a duty and application of the analyze cost/benefit, so from one side there are the cost that we like a community pay and the costs that will be consumed for their recycling, from the other side there are our health insurance and environmental for today and the uses of the first materials with lower cost.

How can we achieve a wider and effective recycle? The problem is at our individual consumer. This should be careful in depositing the trash. It is asked from the municipality to make a replacement of the older bins with new ones. Maybe 3 workers and 3 cars in the field of the trash are not enough to achieve this. Educational Consumer Programs plays an important role in this direction. These programs must be implemented in school books, as a start then by different medias, but it is understandable that family has its important role. More advanced experiences show us something about a good and efficient recycle, but never the less we can't say that even them have had problems in the past with the urban remains.

Thanks to the exploitation of the remains, green environments are increased, the water is clean, fauna and flora is in the right environment indicators. Some of the most developed European countries like (German ,Denmark etc) have made some other inside communities "jealous", while explicating the garbage and urban remains. The example that I've taken for illustration which follows down, is real and sometimes I recommend it to my students in the consumer behavior lectures. More exactly when I speak about consumer rights consummation.

One of these rights is to live in a clean environment. More exactly in these places the garbage are selected in some sections (this is something that we must do with patience and conscience). Then when good conditions are created for this, the garbage travels in different direction for recycle. One of these destinations is that of organic garbage and peers and some other combustible garbage which are sent in a fabric to be burn and from this is procreated electricity, and the remains of burnings are used helping materials for road asphalting.

From the interviews done to the people around the fabric, there were no complaints related to the pollution. This is one of the cases that exist about recycle, in developed countries and even thus in development. Anyway let's come back to our concrete country situation. While watching that the amount of urban remains are growing more and more since 1999, an effort for the best management of urban remains is done, and are even compiled programs for the study of the best gathering garbage country's. The study was made for every possible point of the region. But only two fulfilled the points:

a-Ligata Gorge, in the west of cement fabric, near Elbasan city 3.5 km, which reduced the transport expenses. A complete survey was done but it could not be realized because of lack funds. Now houses are built there.

b-Paperit Damps (fig.1), was a second good variant. This variant was in the second plan, because transport costs are higher because the road there is over 16 km far. This damp has been transferred to the District Board nr 191 date 07.07.05 to the Ministry of Industry and Energetic.

Fig. 1. The Paper's Damp

The field of urban remains in Elbasan city (fig. 2) has caused problems in the pollution of the city. It is a situated in the watering zone near Shkumbin River, which supplies the city with water. This has damaged the flora and fauna of the zone which is near to the public cemetery and dwelling zone. From the non correct manipulation of urban remains, the garbage level have raised almost 10m which consists to be an ecologic bomb for the zone which is in utilization since 1985. For this reason, funds must be foreseen to close this depositing place.

Fig. 2. The field of urban remains in Elbasan city

As a result at the summery of this information we can say that the shape of the urban waste in Elbasan looks (heavily) badly. For this is important the intervention of the municipality and to increase more the citizens commitment. If we will refer to the last data of 2007 results that the level of the payment for the clean tax assign by the municipality results on 80% and the other part is covered by the small business with the participation of the municipality.

If the engagement and the management of the work by the municipality will be higher than we would arrive in higher level of the summery and the business or the intervention of the municipality was for the later improvement of the urban waste. As I said before the citizen conscientious is a very important factor for the best management of the urban waste because the accumulation of the found will improve noticeable the level of the garbage in the town and will arrange better the area of the urban waste. In the other hand a better management of the incomings from the taxes of the cleaning will give more chance even other investments that can undertake the municipality and the Victoria invest. co for the improvement of the cleaner infrastructure, in the tools and in the object in the gathering of the remains.

It understood and we should bee conscious that even the level of the incomes today is low and the city of Elbasan has low number of families in assistance and with the economic help. It should be said that even the level of unemployment takes a considerable number. This is one part of the problem, in the other side is even the high number of the emigrants that supports their family. Comes the question how much is the monthly own that a family has for the cleaning tax? Only 700 leke a year or divided with 365 days is 1,9 leke/day is a figure that almost any family wouldn't calculate nor as an income and nor as spend.

This is the reason that we firstly should be conscientious and to understand that if we don't be careful with the urban waste in such a low cost, we will pay higher costs, at short notice, middle and long notice. For what costs different noticed are we talking or better understudied? Are those that aggravate our healthy which everyday damaged us with the smell of the warehouse garbage, often of their burning, in causing damaged smog and an harmful environment .If we will continue with the reasoning all this garbage deposit near the river and torrents, from the ambush of the drinking water will harm indirect our fauna and floras.

After that the cost of the pills that we will pay in the future will be higher that the monthly daily tax of clean. Supposing that one family has as minimum 2 active persons for work than daily and monthly cleaning cost were more ironic 0.8 leke/day or 24 leke/month, lower than the costs of a human life. From the reports collected with the specialist of hygiene and environment and those of the healthy result that the damages of the urban waste in the human health are a lot and can cause even serious problems. This is what they it is said in their report:

"Throw away near the streets, in the side of torrents, they became the reason of the propagate of the infective diseases, professional and cancerous in influences direct in the health of the community".

2. The evolution of the urban waste in the last eleven years

The urban waste is an important factor for the maintenance of the environment and the health of the population. Their study is a problem even for the specialists of this area but even for all the persons that have the possibility to contribute in this direction. By this point of view of the problem I have putted together some data to arrive in some conclusions. After studied the data of the last 11 years from 1997 since 2007 as belongs to the urban waste, the number of the population and the number of the business I was able to get the existing connection between the urban waste (Y) number of the population (X1) and the number of the businesses (X2).

The below study was made *firstly* for a variable the population(x1) in the garbage (Y) and *secondly* the number of businesses (X) in the urban waste (Y).After I get into conclusion for both of them I was able to get the *connection even for the two variable* x1 and x2. The results below shows the way and the conclusion arrived.

nr	Years	Urban remains	population	Bisnes numbers
1	1997	24.643 ton/year	112.363	1755
2	1998	25.426 ton/year	114.666	1878
3	1999	25.832 ton/vit	116.560	1989
4	2000	25.467 ton/year	118.749	2008
5	2001	25.988 ton/year	121.115	2040
6	2002	25.913 ton/year	121.684	2160
7	2003	26.167 ton/year	122.809	2298
8	2004	26.255 ton/year	123.209	2402
9	2005	26.899 ton/year	123.210	2514
10	2006	27.182 ton/year	124.435	2507
11	2007	27.375 ton/year	125.218	2637

The relationship popullation-urban remains
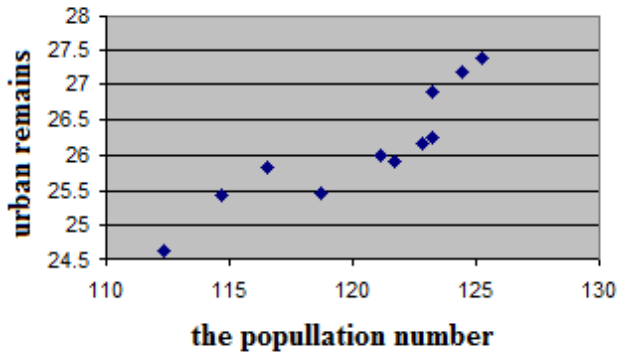
In the count that we have made results that the connection between the garbage and the number of the population has linear forms and belongs to this form of equation:

$$y = b_0 + b_1 \cdot x \quad \textbf{(1)}$$

The raport with population

Nr	Years	y	x1	(x1)²	(x1)*y	y^
1	**1997**	24643	112,4	12633,76	2769873,2	24390
2	**1998**	25426	114,7	13156,09	2916362,2	24889
3	**1999**	25832	116,6	13595,56	3012011,2	25301
4	**2000**	25467	118	13924	3005106	25606
5	**2001**	25988	121,1	14665,21	3147146,8	26279
6	**2002**	25913	121,7	14810,89	3153612,1	26408
7	**2003**	26167	122,8	15079,84	3213307,6	26647
8	**2004**	26255	123,2	15178,24	3234616	26733
9	**2005**	26899	123,2	15178,24	3313956,8	26733
10	**2006**	27182	124,4	15475,36	3381440,8	26994
11	**2007**	27375	125,2	15675,04	3427350	27167
	total	**287147**	**1323,3**	**159372,23**	**34574782,7**	**287147**

| Ymes	(Y^-Ymes)	(Y^-Ymes)2	(Y-Ymes)	(Y-Ymes)2
26104	-1714	2937796	-1461	2134521
26104	-1215	1476225	-678	459684
26104	-803	644809	-272	73984
26104	-498	248004	-637	405769
26104	175	30625	-116	13456
26104	304	92416	-191	36481
26104	543	294849	63	3969
26104	629	395641	151	22801
26104	629	395641	795	632025
26104	890	792100	1078	1162084
26104	1063	1129969	1271	1615441
	The sum	**6560215**		**6560215**

From the count that we have made with the statistics formulas results that:

$$b_0 = \bar{y} - b_1 \square \bar{x} \text{ dhe} \quad (2) \qquad b_1 = \frac{\sum_{i=1}^{n} X_i Y_i - \frac{\sum_{i=1}^{n} X_i \square \sum_{i=1}^{n} Y_i}{n}}{\sum_{i=1}^{n} X_i^2 - \frac{\left(\sum_{i=1}^{n} X_i\right)^2}{n}} \quad (3)$$

bo=-1,1 and b1=217 the equation form belong to Y^=-1,1+217'''X

This means that according to the counts for 1000 inhabitants gather approximately 216 ton urban waste per year or 0,216 ton/year for 1 inhabitant. In the other way the other index that we sum is the connection that exist between them and the results are rI=**6560215/6560215=0.777 or 0.78 (78%) that shows again that the number of the population influences on approximately 78% of the garbage.** In the other way we can count even the connection that exist between them that is **strong** and positive in a measure 0,88=r ose r=√r²=√ 0,78=0,88

But we can see even more in our study to see the connection that exists even between the urban waste and the number of business during this time.

the correlation urban
remains-busines
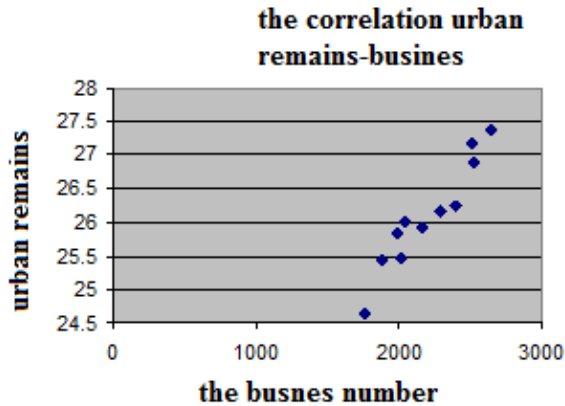
From the calculation result the follow table as below:

The raport with the business number

x2 - biz	(X2)*Y	(X2)²	Y^	(Y-Y^)	(Y-Y^)2
1755	43248465	3080025	24923	-280	78400
1878	47750028	3526884	25250	176	30976
1989	51379848	3956121	25546	286	81796
2008	51137736	4032064	25596	-129	16641
2040	53015520	4161600	25681	307	94249
2160	55972080	4665600	26001	-88	7744
2298	60131766	5280804	26368	-201	40401
2402	63064510	5769604	26644	-389	151321
2514	67624086	6320196	26942	-43	1849
2507	68145274	6285049	26924	258	66564
2637	72187875	6953769	27269	106	11236
24188	633657188	54031716	287144		581177

Y mes	Y^-Ymes	(Y^-Ymes)2	Y-Ymes	(Y-Ymes)2	Changes in the years
26104	-1181	1394761	-1461	2134521	
26104	-854	729316	-678	459684	123
26104	-558	311364	-272	73984	111
26104	-508	258064	-637	405769	19
26104	-423	178929	-116	13456	32
26104	-103	10609	-191	36481	120

26104	264	69696	63	3969	138
26104	540	291600	151	22801	104
26104	838	702244	795	632025	112
26104	820	672400	1078	1162084	-7
26104	1165	1357225	1271	1615441	130
		5976208		**6560215**	**882**

From the information that we have been taken and from ahead formula (1, 2, 3)

We can conclude that the b0=20.255, b1=2.66 and the formula is: **Y^=20.255+2,66'''X**

Now we can create an idea, that when the number of business is around 1000 the measure of urban waste is 20.255+2.66(1000)=22021 ton in a year. Also this factor (the number of business) effect around 91% in the urban waste or r^2 =0.91 and r=0.96^3

At last regarding to this study:

What about the two factors: how do they effect on the quantity of urban waste and which is the formula that is created?
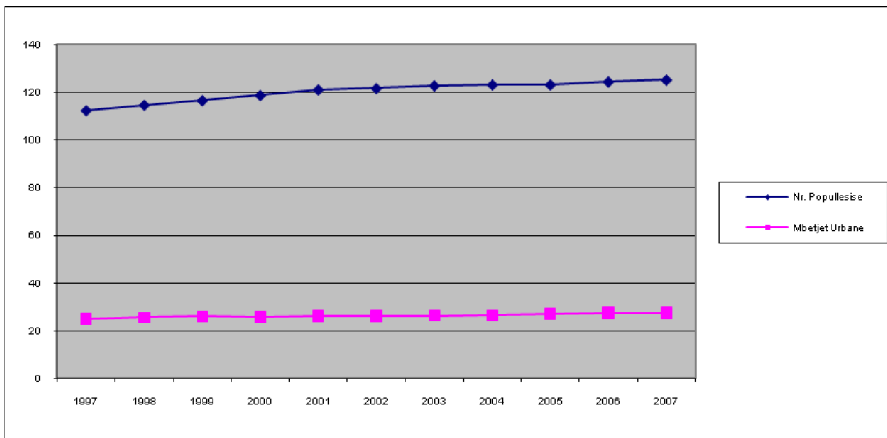
The relation that exists between is linear and direct structure:

Or **Y=bo+b1'''x1+b2'''x2**

The calculation that we made are illustrated in the table below:

The table with two factors-A

bo	b1*X1	b2*X2	Y2fakt^-vleres	Yi-Yi^	(Yi-Yi^)2	(Y^i-Ymes)	(Y^i-Ymes)2
363	22472,6	3159	25994,6	-1.352	1826822,56	-109,4	11968,36
363	22933,2	3380,4	26676,6	-1.251	1564000,36	572,6	327870,76
363	23312	3580,2	27255,2	-1.423	2025498,24	1151,2	1325261,44
363	23749,8	3614,4	27727,2	-2.260	5108504,04	1623,2	2634778,24
363	24223	3672	28258	-2.270	5152900	2154	4639716
363	24336,8	3888	28587,8	-2.675	7154555,04	2483,8	6169262,44
363	24561,8	4136,4	29061,2	-2.894	8376393,64	2957,2	8745031,84
363	24641,8	4323,6	29328,4	-3.073	9445787,56	3224,4	10396755,36
363	24642	4525,2	29530,2	-2.631	6923213,44	3426,2	11738846,44
363	24887	4512,6	29762,6	-2.581	6659496,36	3658,6	13385353,96
363	25043,6	4746,6	30153,2	-2.778	7718395,24	4049,2	16396020,64
					61955566,48		75770865,48

The table with two factors – B

(Y-Y^)	(Y-Y^)2	x1	x2	x1*x2	(x1*x2)2
253	64009	112,4	1755	197262	38912296644
537	288369	114,7	1878	215406,6	46400003324
531	281961	116,6	1989	231917,4	53785680423
-139	19321	118	2008	236944	56142459136
-291	84681	121,1	2040	247044	61030737936
-495	245025	121,7	2160	262872	69101688384
-480	230400	122,8	2298	282194,4	79633679391
-478	228484	123,2	2402	295926,4	87572434217
166	27556	123,2	2514	309724,8	95929451735
188	35344	124,4	2507	311870,8	97263395893
208	43264	125,2	2637	330152,4	109000343104
	1548414			2921314,8	8.534.081.329.225

$$b_0 = \bar{y} - b_1 \cdot \bar{x}_1 - b_2 \cdot \bar{x}_2 \quad (4)$$

$$b_1 = \frac{(\sum_{i=1}^{n} X_1 \cdot y)(\sum_{i=1}^{n} X_2^2) - (\sum_{i=1}^{n} X_2 \cdot y)(\sum_{i=1}^{n} X_1 \cdot X_2)}{(\sum_{i=1}^{n} X_1^2)(\sum_{i=1}^{n} X_2^2) - (\sum_{i=1}^{n} X_1 \cdot X_2)^2} \quad (5)$$

$$b_2 = \frac{(\sum_{i=1}^{n} X_2 \cdot y)(\sum_{i=1}^{n} X_1^2) - (\sum_{i=1}^{n} X_1 \cdot y)(\sum_{i=1}^{n} X_1 \cdot X_2)}{(\sum_{i=1}^{n} X_1^2)(\sum_{i=1}^{n} X_2^2) - (\sum_{i=1}^{n} X_1 \cdot X_2)^2} \quad \textbf{(6)}$$

As a result of the information from the table with two factors A and B and formulas (4, 5, 6) we conclude that:

bo=363 b1=0,2 and **b2=1,8**   then $\hat{Y} = bo + 0,2x_1 + 1,8x_2$ **(7)**

As a result of this calculation and formula (7) that we provide, now we can make further suggestions for the future and say that: if the number of the population is around 125000 and the number of business is around 2700 then the quantity of urban waste will be:

$$\hat{Y} = 363 + 0,2(125000) + 1,8(2700) = 30223 \text{ ton per years}$$

Meanwhile R^2 =0.82 or 82% effect the both of this factors in the urban waste and 18% are other factors. We know that the relation between this two factors and wastes is direct, positive and strong, in level of 0,91. A side from this we have to say: if we receive further and specify information and see the problem by different point of view we can obtain other supplementary conclusions.

3. Conclusions and recommendations
Conclusions:
▪ Urban remains are the most important pollution of environment.
▪ Knowing that their relation between development of population and the business number is linear then their management need to be more studied.
▪ It is necessary instantly and short-term intervention to think about long-term periods.
▪ A part or almost nothing of urban remains is being recycled.
▪ The recycle process is delayed by the fund privation and local unit engagement.
▪ The intellectual level of citizens is lower because only 80% of them pay.
▪ The cleaning tax doesn't cover all the needs.
▪ The other part face difficulties from the municipal funds.
▪ Only 60% of the population is involved in cleaning.
▪ Inert and industrial remains and so their recycled is a problem for the environment in some aspects.
▪ Projects and grants for the environment protection in Elbasan town are almost zero.
▪ Exist disagreement between municipal and commune for the construction of the urban remain field.

▪ The most profitable economically urban remains field was not financed since 1999 and *now is turned in an inhabitant area.

▪ The environment problems in Elbasan are important for the citizen life.

Recommendation:

✓ First ought to worked hard for the consumer and citizen education about the cleaning tax and its importance;

✓ A better education of citizen and children in the schools and families by different programs that deals with the school and family;

✓ And need to find the possibilities to contact the urban zones with these;

✓ To low the disagreements between locative units leaving apart some interests of other peoples;

✓ Think about public health;

✓ Collecting tax ought to be conscious and motivated by municipal;

✓ Ought to be found efficient way to achieve this.

✓ Consignment of cleaning tax counterfoil in the place where they take their incomes will be an efficient way to increscent the level of accumulating tax;

✓ Need to have conscious and incorruptible employee towards tax accumulating;

✓ Inserting immediately the recycle system that will increase the environment cleaning;

✓ Industrial and inert remains ought to increase the utilization coefficient;

✓ To be worked more with UPO and UGO to profit their contribution in the environment;

✓ Need to augment the pressure of municipal and local unit to the government to improve more engagement;

✓ The medicine and the hygiene too, need more engagement regarding to different remains;

✓ Directing the negative consequences that will find out them and will actuate the actors to improve the situation;

✓ The government engagement to the recycle;

✓ The profits that will be achieved by the recycle.

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