

Different experience from Middle East countries of how writing a good policy can stimulate many Green Roofs be constructed and grown.

Aslan Jonoubi, WGIN, Shiraz, Iran



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Green Roof Policy in Shiraz, Iran



Shiraz- Iran



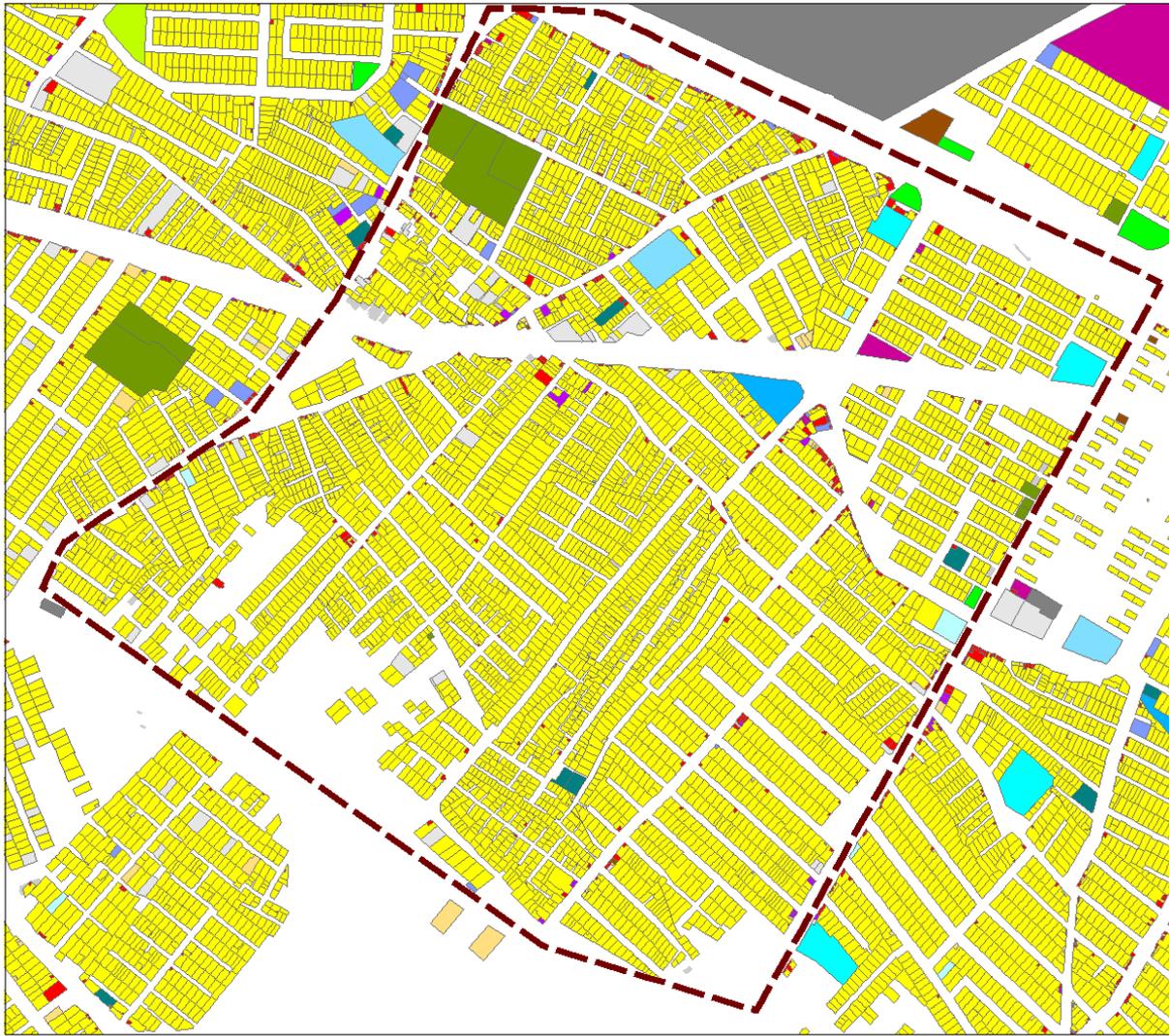
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- The city wanted to have Green Roofs at the top of the buildings, but:
 - Where is the starting point?
 - Which Building Uses could have green roof at the top and which can not?
 - Many applicants want to have a green roof but the city doesn't know how to get them permission.





All of the land uses of a part of the city



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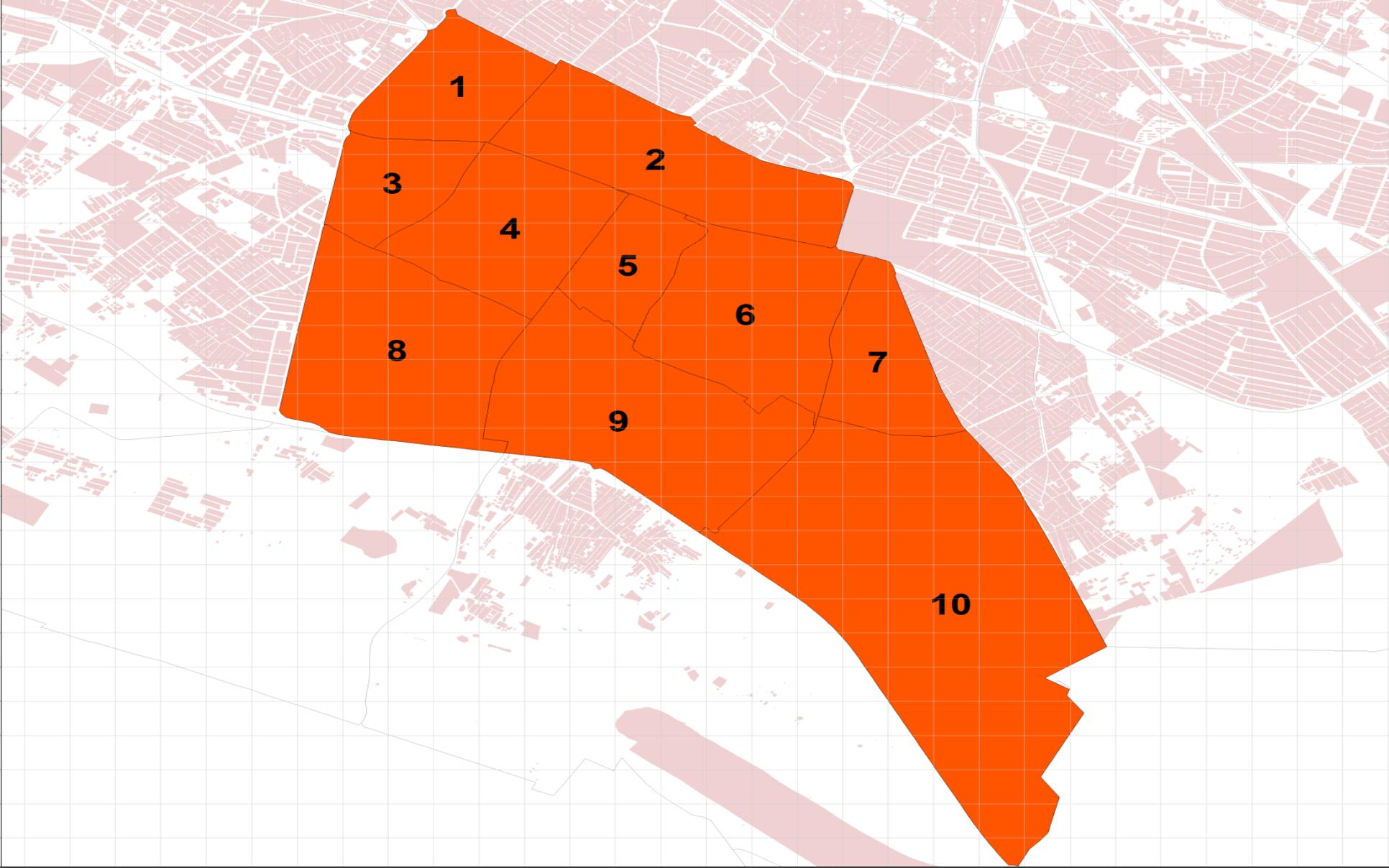
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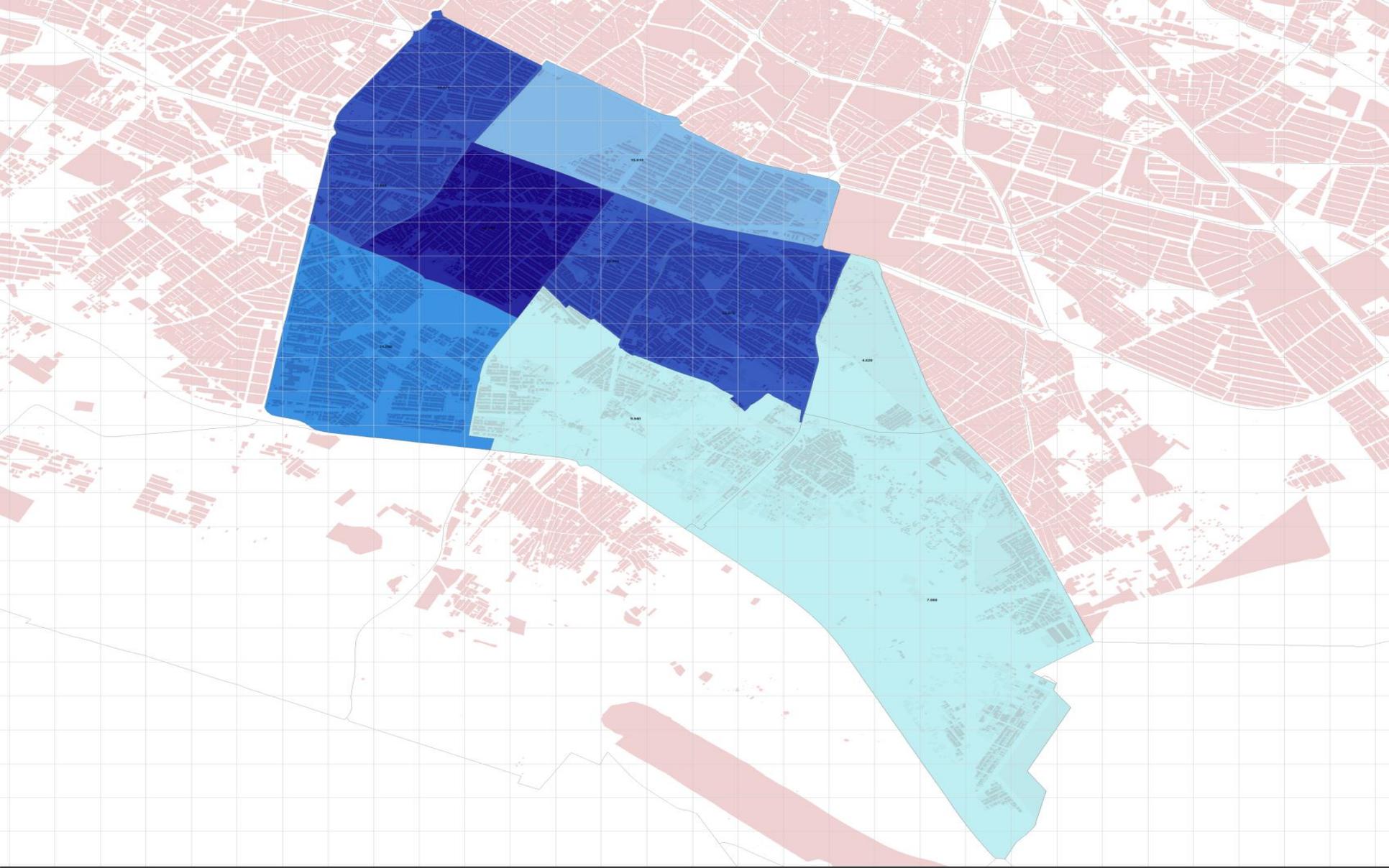


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| no | Land area | Number of units | Area of building mass | Percentage of bld. density | Bld. density | population |
|-----|-----------|-----------------|-----------------------|----------------------------|--------------|------------|
| 1 | 93 | 2890 | 33.9 | 10.2 | 36.5 | 12196 |
| 2 | 168 | 2627 | 34.0 | 10.3 | 20.2 | 11086 |
| 3 | 66 | 2188 | 22.8 | 6.9 | 34.5 | 9233 |
| 4 | 131 | 6089 | 48.7 | 14.7 | 37.2 | 25696 |
| 5 | 64 | 1889 | 22.1 | 6.7 | 34.5 | 7972 |
| 6 | 162 | 5316 | 53.6 | 16.2 | 33.1 | 22434 |
| 7 | 89 | 410 | 3.8 | 1.1 | 4.3 | 1730 |
| 8 | 210 | 4560 | 52.9 | 16.0 | 25.2 | 19243 |
| 9 | 234 | 2232 | 23.7 | 7.2 | 10.1 | 9419 |
| 10 | 504 | 4027 | 35.8 | 10.8 | 7.1 | 16994 |
| sum | 1721 | 32228 | 331.3 | 100.0 | 19.3 | 136002 |

How superimposing of different layers of the city and density could derive us to quantify the Grant and other incentives.

Based on the distribution of density in different areas, and superimposing the urban layers on each other, found which parts of the city are most needed to have greenery and green roof. So applying this matter in the specifically designed incentive program has been considered.



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Incentive Program for implementing Green Roof In Shiraz

Grants:

- The percentages beyond 40% of the roof area for vegetated area, will be decrease from the applicants city density costs.

| 80-90 (%) | 70-80 (%) | 60-70 (%) | 50-60-(%) | 40-50 (%) | Percentages of vegetated area beyond 40% |
|-----------|-----------|-----------|-----------|-----------|---|
| 40-50 (%) | 30-40 (%) | 20-30 (%) | 10-20 (%) | 0-10 (%) | Amount decreased from applicants city density costs |

- Decreasing sewer cost and other storm water management from water bills

Incentive implementation program

- By-law said Each apartment unit should have 25 sqm open space within the mentioned lot, green roof could exempt that.
- The city should assist to the people in terms of free consultation regarding design and build green roof and help them in irrigation of Green roof in draught season
- The city should have free classes and/or educated program for applicant who want to build Green Roof
- If more than 40% of roof area allocated to vegetation, the applicant can build 15% of the roof area for non residential functions such as party room, pool, and gym.



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Incentive program in terms of Density

For those green roofs on which more than %40 of its roof area, allocated to vegetation, for each square meter beyond that percentages, depends on in which of the city area located, times density will be given to mentioned project.



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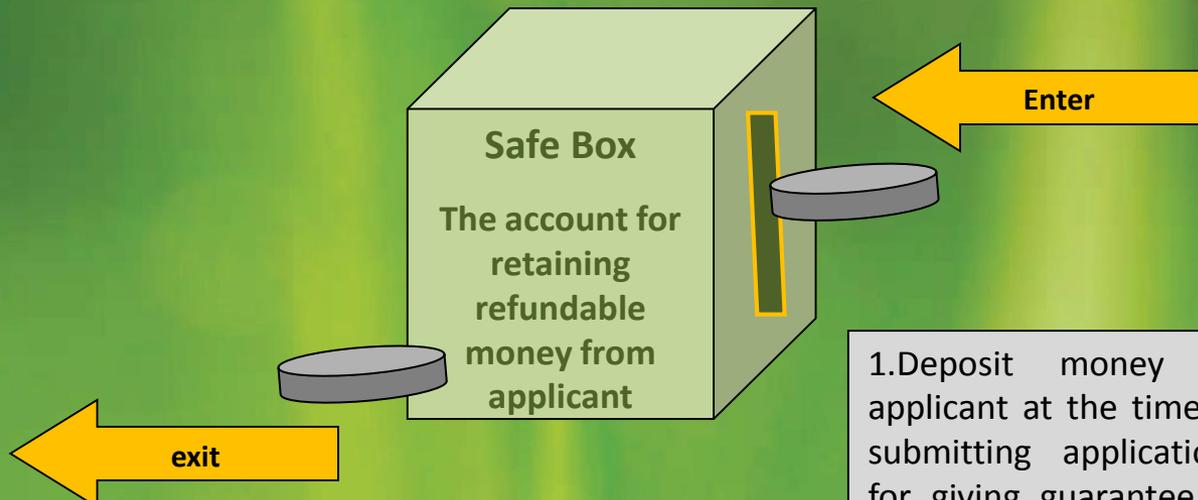


Maintenance and programs to have healthier Green Roof after finishing the Job

1. Upon establishing green roof, an account will be opened and all moneys goes to this account such as:

- The applicant must deposit almost \$5.00/ Sqm of vegetated area in the account for guarantees to maintain green roof for 5 years
- All fines due to breach of by-law will be collected and deposited to this account
- All costs and fees related from due to not maintaining green roofs will be paid from this account.
- After each year of supervision by the city, if the applicant keep and maintain the green roof healthy, part of the deposited money will be refunded to the applicant and this will continue till 5 years when all money return to the applicant

2. At the time of transferring the title and ownership, this money will transferred to new ownership.



1. Deposit money by applicant at the time of submitting applications for giving guarantee to maintain healthy green roof.
2. Collected money from different sources of Green Roof

1. The costs of maintain unhealthy Green Roof across city .
2. The cost of introducing green roof to the people and third parties
3. Free consultations.
4. Cost of Educational program
5. R & D



What majors and specialists should review the Green Roof drawings before issuing permit?

- Structural Eng.
- Urban Planer
- architect
- Mechanical Eng.
- Plant Specialist



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