

Section Sciences et Ingénierie de l'environnement Design Project 2017 (semestre de printemps)

Proposition n°29

Use of GIS to improve client database for waste services in Albania

Encadrant externe

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Condition

Avoir suivi le cours SIG (Systèmes d'information géographique)

Descriptif du projet

Albania has recently succeed territorial reform, reducing the number of municipalities from more than 350 to 62. This reorganization required from the new, bigger, municipalities to reorganize all the waste management services. This new organization is also an opportunity to extend and improve the service in all the areas of the countries, where no or very bad service was provided before.

Planning and financing waste management requires basic data on clients (families, business, waste production typology), geography (roads, transport time) and waste management facilities (landfills, dumpsites, transfer stations, etc.).

On another hand, new GIS data are now available for Albania too, in particular property register (buildings), business register and road network which are not used for the moment for waste management.

In low income countries, financing public services is a challenge. Paying for waste collection is often a cultural issue when a sustainable public service must involve the users, the citizens, including through fees payments. In many cases, implementing a billing system is very challenging for the municipalities, when there is no updated register of population. Developing the client database is often a condition as well for the technical waste collection planning as for the financing and sustainability of the system.

Developing a tool that would help the municipalities coping with these issues would facilitate a lot the improvement of waste collection services in the country. We propose to work on these solution through this design project, applied on a municipality where a register of users of waste collection services exists, but is very partial.

In the new, dynamic, municipality of Shkodra (north Albania) started in September 2016 a global census, in order to collect detailed data on the population through systematic questionnaires and survey. This action appears to be too much complicated and had not enough success: after 4 months, the Municipality could only cover 4 administrative units, among 11. But the idea is to use these results on these 4 areas to test other approaches and extrapolations.

Municipality has a good (frenchspeaking) GIS expert, who knows very well the existing situation and available data.

Objectives

The Objectives of the project are the following:

1. Estimate the potential of improvement of the waste collection billing system. By comparison of the different existing databases of population (property register, civil register, municipal register,...) and a simple Google map image of the city, it should be possible to evaluate how many users are probably not in the present waste client register, to establish priorities for register improvements and propose a methodology.
2. Test the possibility of merging the different data bases in order to establish a common and comprehensive GIS database of the population (family and businesses, roads , address, etc.).
3. Test the possibility, gaps and difficulty to use the billing system of the water company to establish and distribute the bills for waste management.
4. Propose and test a methodology to improve the client database based on GIS data and to fill the gaps.

Descriptif tâches

The Municipality has access to the property register, which is not accurate. It seems that the Municipality has access to a list of citizens, distributed per area. It is not known how accurate this list is. The GIS layers on existing buildings and roads exist, based on recent satellite images, and seems to be much more complete and accurate.

First phase is to

- Identify, collect and analyze the different existing databases and other information, in collaboration with local and CSD experts
- Define 2-3 pilot zones for testing the tools
- Specify, in collaboration with CSD GIS and waste experts, the objectives and low cost tools to be elaborated to establish the most complete and accurate database possible, for the purpose of implementing a billing system and better planning the service, which will help implementing a sustainable public service

Second phase :

- Elaborate different tools
- Test it in order to estimate the gap between the reality and the present Databases, which means the improvement potential.

The project will be based on a real present data and situation of a city in Albania. Data will be provided by the municipality, with the support of the dldp Project, an SDC Project managed by Helvetas- Swiss Intercooperation developed with the technical support of CSD.

If the results are interesting, we will try to organize a mission and workshop in Albania, with the students, in order to share the results and define next steps to be developed.

Divers

Students should develop they knowledge and experience in the fields of

- Waste management, collection and logistic
- Client database and billing system for public services
- Using GIS for public services in low income countries.
- Collaborate with nice partners of different culture

French and **English** are needed. Report will be delivered in **English**.

F. Schmidt / 17.01.2017