

Towards Reliable Spatial Database of Informal Areas in Greater Cairo Region

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KEYWORDS

informal areas, unreliable spatial data, spatial data collecting, capacity building

SUMMARY

The uncontrolled and rapid increase of Egypt's cities is a major problem of the country. More than the half of Cairo's population live in informal areas, which needs to be upgraded. The decisions of stakeholders concerning the upgrading process has to be based on accurate and reliable data. Unfortunately, no coherent body of information has been established so far. Data is not systematically compiled nor processed and access to the existing data is extremely difficult. The Participatory Development Programme in Urban Areas (PDP), a development programme of the GTZ (German Technical Corporation) that focuses on upgrading of informal areas, has been working on creating a spatial data infrastructure (SDI) by using GIS. In cooperation with local stakeholders and the authorities of Greater Cairo Governorates, the PDP intended to determine and verify the real number, area and names of all informal areas in Greater Cairo Region using GIS. The results of the analysis of different departments show a discrepancy to the informal areas identified by PDP. There is a large number of areas recognized by PDP that are officially not classified as informal areas but have the same problems and require the same attention as the official informal areas. An official agreement on informal areas needs to be achieved in order to show the scope of the problem, determine required cost for upgrading informal areas, determine areas that should be upgraded first and define the type of upgrading that should have priority. Thus, the PDP is currently working on capacity building procedures in order to implement GIS in the governorates as a spatial data infrastructure (SDI) tool.

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1 THE CONTEXT OF THE PARTICIPATORY DEVELOPMENT PROGRAMM (PDP)

1.1 The extend of informal areas in Egypt

Egypt's cities are growing fast and will continue to grow. About half of the population of Greater Cairo lives in informal, undersupplied, and densely populated settlements with too little space and too few social services. The large amount of the unplanned settlements are built on valuable farmland without building permits, some are built illegally on government-owned land. Until now, former centrally steered attempts to solve Egypt's urban problems have not proven successful.

1.2 The importance of reliable spatial data

Access to data and information by different levels of stakeholders is a precondition for participatory policy formulation, participatory planning, the implementation of these plans and their impact assessment in the field of informal settlements. A great deal of data about informal settlements has been compiled by many organisations. However, no coherent body of information has been established so far. Data is not systematically compiled nor processed and access to the existing data is extremely difficult. Existing information and knowledge on the subject is not shared or exchanged.

1.3 The Participatory Development Programm (PDP)

The Participatory Development Programme in Urban Areas (PDP) is a cooperative project between German Technical Cooperation, GTZ and German financial cooperation, the KfW Development Bank and the Egyptian Ministry of Economic Development (MoED). It is financed by the German Federal Ministry for Economic Cooperation and Development BMZ.

In the interest of all national and local parties involved, the PDP's information management activities intends to improve the access, production and use of existing information on urban informal settlements. It supports the creation of a coherent body of information on informal areas in cooperation with the concerned or-rganisations.

1.4 GIS as a tool to create Spatial Data Infrastructure (SDI)

The Geographic Information System (GIS) is a suitable tool to support the provision of accurate information on any community. It benefits to sharing available information among all stakeholders, visualizing and documenting the existing situation and recognizing, determining and presenting problems. Through sharing this accurate information, GIS enhances

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communication, coordination, and integration among stakeholders in order to support the decision making process in urban planning und upgrade informal areas.

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2 IDENTIFYING INFORMAL AREAS IN GREATER CAIRO REGION

2.1 Definition

There are different attempts to define informal areas. The following three examples show the variety of their content:

“Informality is the citizen’s holding of land and building on it privately whereby violating the regulations for sound planning such as the building code.”
(El-Diwany, Sherif and Mohamed Kamel)

“Informal areas are unplanned spontaneous high density expansions around existing cities or villages.” (Housing Committee of the Peoples’ Assembly)

“Informal Settlements are “traps of poverty and deprivation” or “misery belts”.
(National Council for Social Services and Development)

Drawing a conclusion, there is no all-inclusive definition of informality in the literature. Each definition focuses on a particular aspect of the issue.

The conclusion of the different definitions is, that informal areas

- are not planned,
- have a high buidling and population density,
- have deficits in public services and
- have legal problems (occupy squatted land and/or are built without proper building permits).

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2.2 Identifying criteria

Unplanned urban areas in Greater Cairo have an urban structure that is characterised by poor access (narrow streets of around 3 m), a lack of public space and high building density.

A number of criteria have been set to be used to identify informal areas:

- seeing an informal pattern when studying the satellite images
- the deterioration of the road and communication networks and the insufficient internal accessibility
- limited spaces and open areas
- high density of unplanned areas
- lack in the basic services (schools, hospitals, ...etc)
- field visits to review those areas in reality

This kind of characteristics can be observed through high resolution satellite images which gives you a primary overview for the areas that need upgrading.

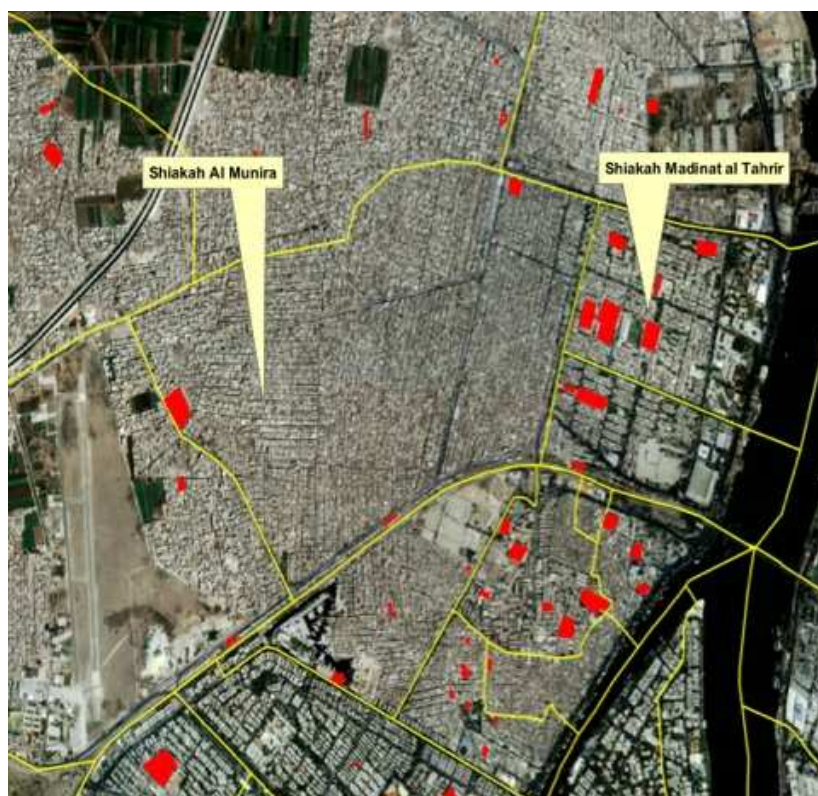


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2.3 Assessing the current school situation in informal and formal areas

This is an example showing the possibility of using the GIS databases in identifying the distribution of services (primary schools) and its lack in the Mounira area compared to Tahrir.



	Al Mounira	Madinat al Tahrir
Population 2003	404,000	29,000
Children in School Age	approx. 55,000	approx. 4,300
Preparatory Schools	1	2
Children in Preparatory School	470 (girls)	4,970
Primary Schools	2	4
Children in Primary School	approx. 5,000	approx. 5,600

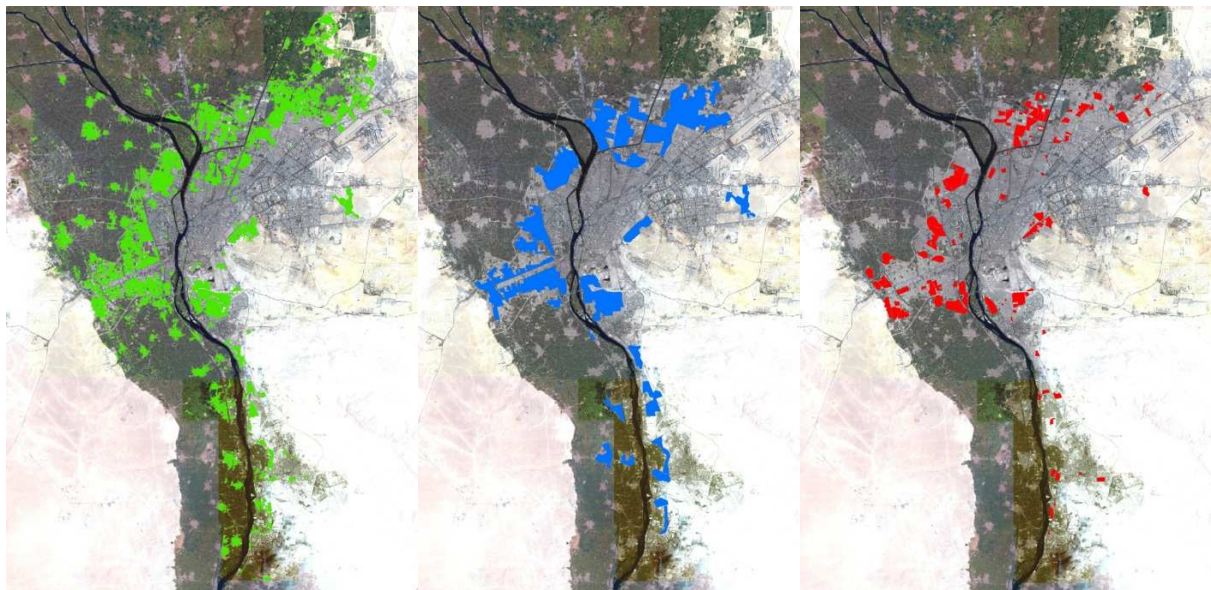
The impact of social disparities can be identified easily and precisely with GIS. Although Al Mounira has barely 14 times more inhabitants than Madinat and 13 times more children in school age there are located half of the schools.

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2.4 The result of the GTZ analysis in comparison to other sources

The result of the analysis with the help of satellite imagery is visualized on the left map. The identified informal areas are coloured green.



GTZ analysis
(2002): 133 km² of
informal area
(green) ► 8.3
million people

GOPP study
(1993):
94 km² of informal
area (blue) ►
5.9 million people

Governorates
Official (2004): 34
km² of informal area
(red) ► 2.1 million
people

If you compare the result of the GTZ-analysis to the GOPP study and the Governorated Official, there is a huge discrepancy in declaring the informal areas of Greater Cairo and their population. Although it is from two years later, the Governorates Official counts only 34 km² of RDA's with a population of 2.1 million people. Compared to the GTZ analysis of 2002, it only declares barely 4 times less RDA's and inhabitants.

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3 IMPLIMENTING GIS AS A SPATIAL DATA INFRASTRUCTURE (SDI) TOOL INTO URBAN DEVELOPMENT POLICY AND GOVERNANCE

PDP’s GIS Unit produces GIS-based maps of informal areas and helps develop innovative ways of integrating participatory-based GIS practices into urban development policy and governance. With workshops and trainings PDP builds capacity in order to establish sustainable information structures.

3.1 Distributing hard copy maps

Hard copy maps distributed by the PDP include the informal areas that have been identified in the previous step. Then these maps are given to the districts that exist within the Governorates of Greater Cairo Area. Also applications should be distributed so that detailed data about the areas would be written. The following picture is a sample of the maps given to the districts.



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3.2 Conducting workshops

PDP has been conducting workshops with the local administration in the districts (the engineering department, the urban planning department, technical office, property department, information center, some of the district chiefs). These workshops aim at identifying the informal areas on the maps and putting the different data on the maps (population, size, availability of services such as sewage and water, situation of internal roads and axis, most important problems and needs).



3.3 Conducting training on GIS

The aim of the training workshops given to the information centers and the other departments is raising the capacity of the staff with regards to GIS and enabling them to deal with databases on informal areas.



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3.4 Training on-the-job

The aim of training on-the-job is to establish a filing system and complete databases in information centers (satellite images, urban and social data in the district) which helps enter the data collected from the previous workshops. This enables the continuity of updating the data and data review.



3.5 Collecting the data on informal areas

After that, the collected data has been revised and compared to the hard copy maps for establishing a database on informal areas. This gives you a general view on the informal areas. As you can see in the next chapter, the spatial data collected by the local authorities has a much higher quality than the data that existed before.

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3.6 Result

Until now, one of four Governorates of Greater Cairo Area has been completely analyzed by the PDP. The following map shows an example of the dataset of north giza district within the Governorate Giza before and after the workshops and trainings of the local staff members.



RDA defined by
GTZ in 2002:
3,13 km²



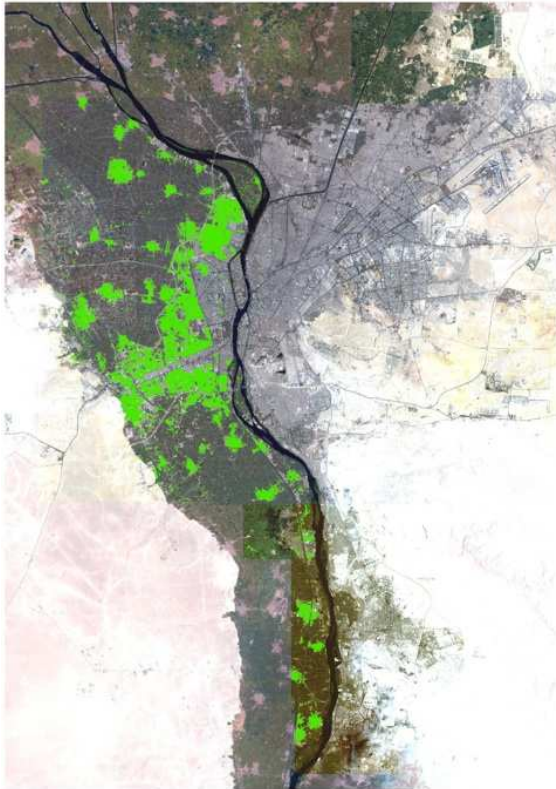
RDA defined by local
authority in 2006:
4,35 km²

The data produced by local authority is more detailed, thus it has a higher quality und reliability.

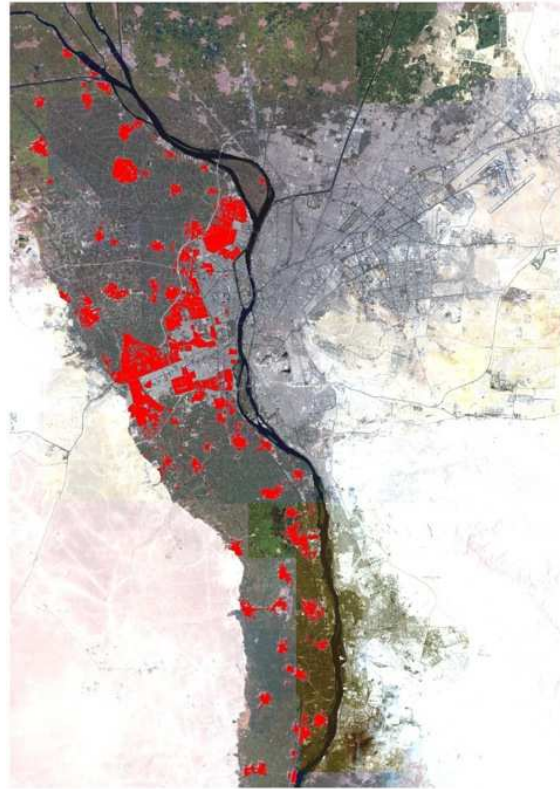
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The following maps show the difference between the datasets before and after the workshops concerning the whole area of the GIZA Governorate.



RDA defined by **GTZ**
in 2002: 62,3 km²



RDA defined by **local authority**
in 2006: 73,3 km²

The RDA in Giza Governorate defined by the local authority not only have more precise borders, but are greater in area, in fact 17,7 %.

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4 CONCLUSION

As a result of conducting workshops, training and training on-the-job to the staff members of the Governorates in Giza and their districts, they acknowledged the informal areas identified by PDP and the local authority in 2006 and recognized GIS as an important tool for sustainable urban planning. Thus they adopted a GIS Unit within the governmental structures.

The current focus of the GIS Unit of the PDP in Giza is to conduct Training of Trainers (TOT). The best participants of former workshops and training were chosen to conduct GIS training to their own staff members for the future. This makes the governorate more and more independent from the GIS competence of PDP members.

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BIOGRAPHICAL NOTES

GTZ, Participatory Development Programme in Urban Areas Cairo, PDP (since 2002)

ifo, Institut für Wirtschaftsforschung, Small Enterprise Promotion Project (SEPP), Yemen (2003)

Hans Seidel Foundation, Cairo (2003)

GTZ, Regional Planning North Sinai Project (1997 - 2002)

IBM Egypt, Information Technology Solutions, Cairo (1996)

B. Sc. „Regional and Urban Planning“, Faculty of Regional & Urban Planning, University of Cairo (1995)

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