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Equitable availability of social facilities

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o **Can you measure the level of facility backlog?**
o **Are your schools well located?**
o **Can you prioritise investment between areas A and B?**
o **Have you ever been pressurised, by community requests, for services not warranted?**

INTRODUCTION

The South African constitution affects every citizen's access to basic services and accordingly it has become a legislative requirement for local authorities to prepare integrated development plans (IDPs), develop performance management systems and promote development. Part of the prerequisite of basic services is the provision of social facilities, e.g. primary health care, parks, sports fields and community halls. These facilities must be **sufficient** and **equitably available** to the public[1].

DEFINING EQUITABLE PROVISION OF SOCIAL FACILITIES

Achieving equitability is possible only if the areas that are under or over-provided are identified and corrective action is applied through appropriate planning and implementation. Determining the spatial mismatch between supply and demand is established by:

• Deciding on suitable standards pertinent to a specific facility, which will be related to:

1. the demand (the population who will use the facility)
2. acceptable travel costs (time or distance) to the facility and
3. the capacity of existing facilities (based on size and functionality).

Basically, it boils down to what the maximum distance is that people are willing to travel to a facility, and whether that facility will have enough capacity to accommodate them once they get there. If these criteria are met, the provision of the facility by a local authority can be deemed equitable.

ANALYSING EQUITABILITY

Standards

The standards to which a facility must adhere are of cardinal importance in order to provide an equitable service. Everybody must have access to the same type and quality of facility within a reasonable distance from where they live. Quality of the facility infers the variety of functions available at the facility - for instance a kitchen and toilet facilities at a community hall - and the fact that the facility has enough capacity to accommodate the potential population it can serve. It must be noted, especially from a South African perspective, that acceptable travel distance will differ, based on the socio-economic status of communities. Socio-economic status has an influence on the kind of transport (if any) available, which influences the ease in which people can access a given facility within a given time. If one looks at a city, there will be certain variation in standards to neutralise the effect of socio-economic status in order to ensure equality in access to services.

In general there is a shortage of good standards provided by local authorities. Some examples of good standards are by PG KwaZulu-Natal[2] and the City of Cape Town[3].

Accessibility analysis

Data

Who has access to what, where and how? Geographical information systems (GIS) are used to answer these questions. To do a proper analysis in GIS certain datasets are cardinal:

• **Population data** - a detailed grid (in this case a hexagons grid) is created and used to assign the population data to. The population data include the total population as well as other socio-economic variables that are cardinal to establishing the people's access to transport
• **Road network** – the road network is used to simulate the way in which people traverse across space. The advantage of using a road network is that it takes into consideration the topography of the area in question, i.e. a road can cross a river only where there is bridge, it doesn't go through buildings, it can not cross cliffs or other impassable spaces. Different types of roads also have different speeds/impedances at which traffic or a person can move on it. Using the road network is a major advantage to other GIS-based analysis, which uses straight line distance, for example a buffer zone around an area, to determine the amount of people within a given distance from a facility
• **Facility data** – data regarding the facility, indicating precisely where it is located using its geographical coordinates. Attached to the facility must be attribute data indicating its capacity and any other relevant information that has an impact on its usability.
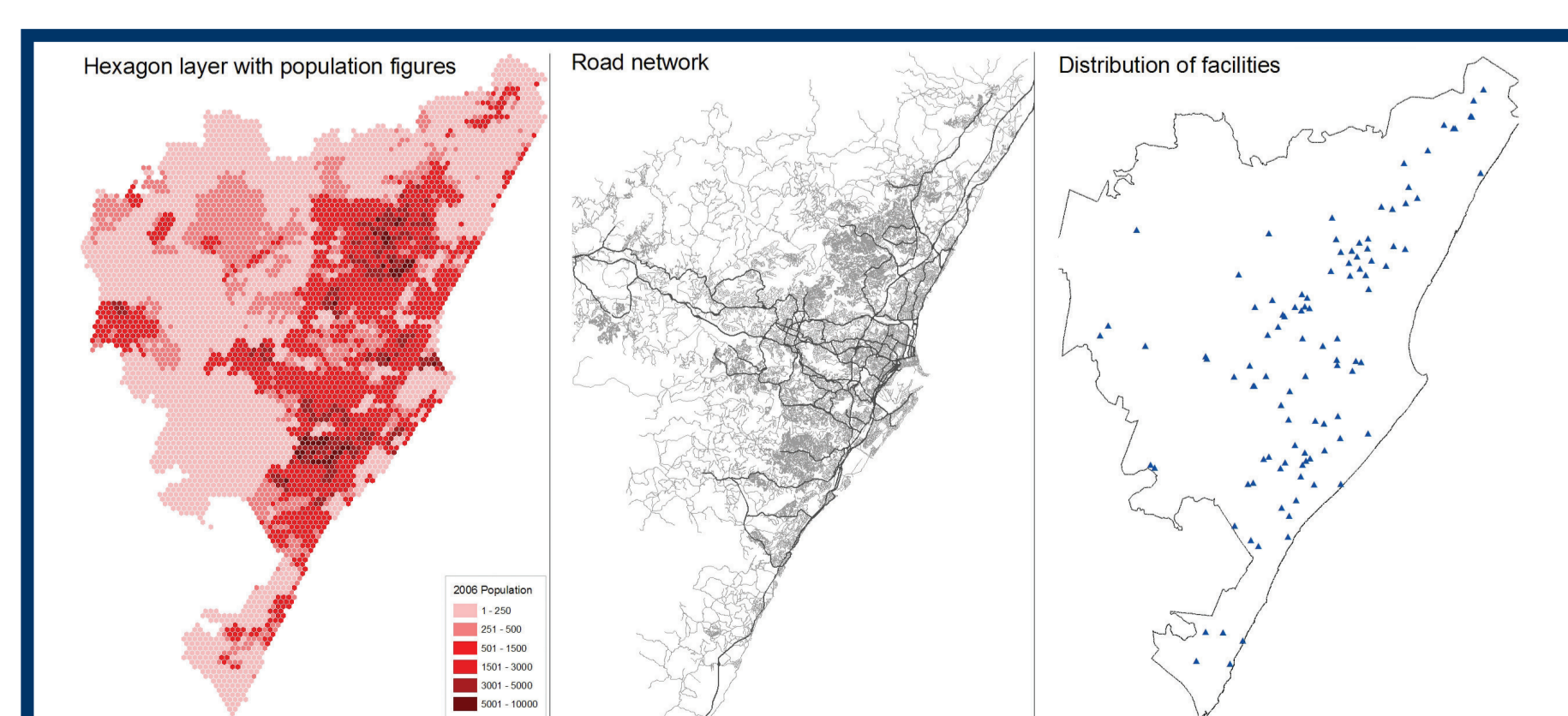

Figure 1: Input datasets (layers) needed for the analysis

Analysis procedures

The first step is to establish the *status quo* within the region, i.e. how equitable are the current services being provided. **Figure 2** shows the results from this analysis.
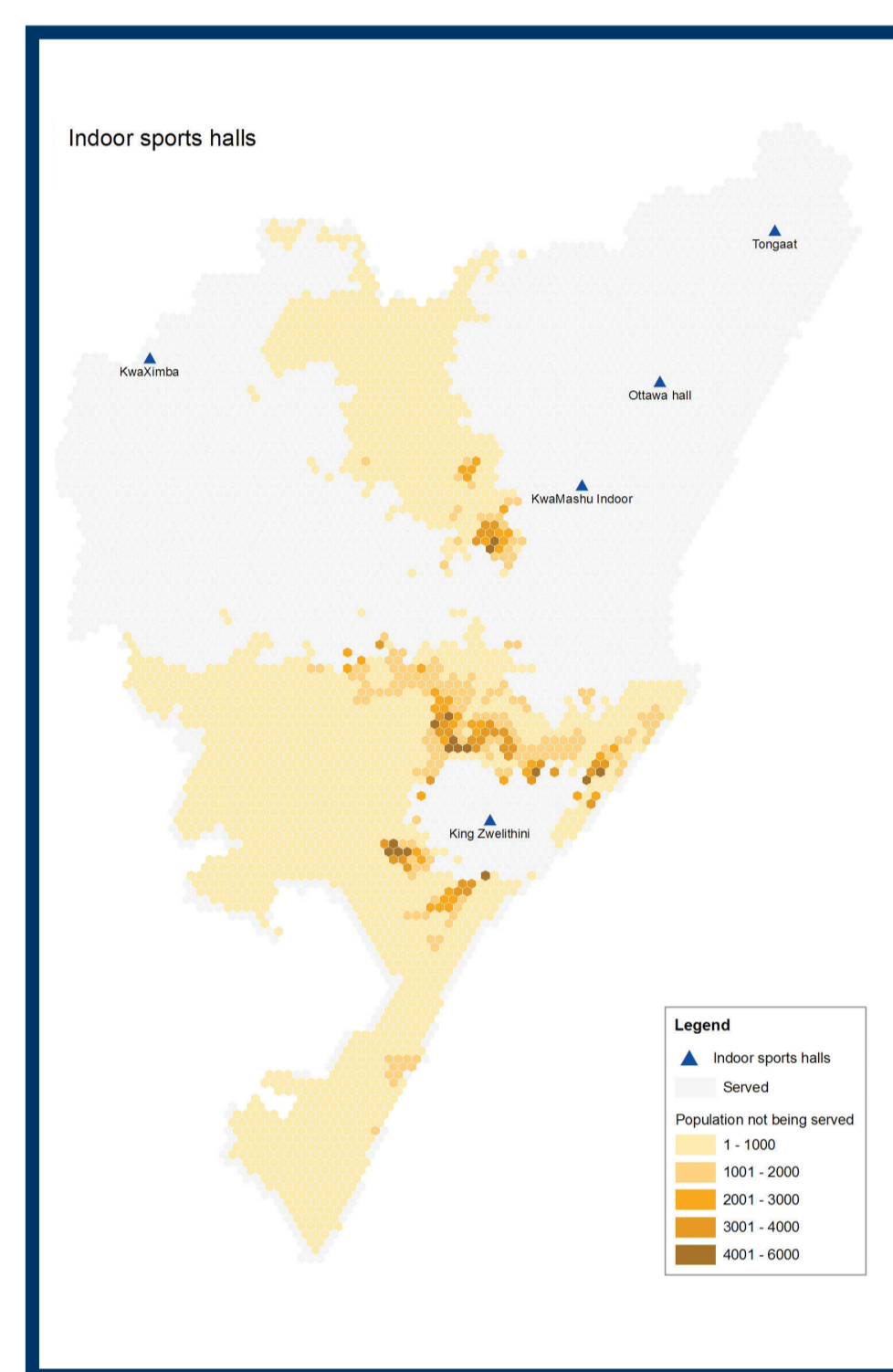

Figure 2: Population not being served by the facilities based on the standards applied

After this has been established it is easy to identify which areas/ populations are not being served. It is also important to remember that even though there may be people who are not being served, there may also be some facilities that may have spare capacity. This is due to the fact that only a few people (and not filling the capacity) can reach the facility in the acceptable travel time, i.e. a spatial mismatch of supply and demand.

After the first round of analysis is done, one of three possibilities (or a combination thereof) can be explored:

• Re-adjusting current standards, especially the acceptable travel time
  - it may be that a majority of the facilities have spare capacity and practical knowledge tells one that this is not true due to actual usage of facilities. This is then a clear example that travel time allowed to get to facility is too little
• Considering certain facilities for upgrading/expansion
  - this is possible if the analysis shows that there are people within the acceptable travel distance from the facility, but due to capacity constraints the people can not be accommodated (see **Figure 3**)
• Establish optimal locations for new facilities
  - if a majority of the facilities are utilised to capacity and the expansion of current facilities is not an option.
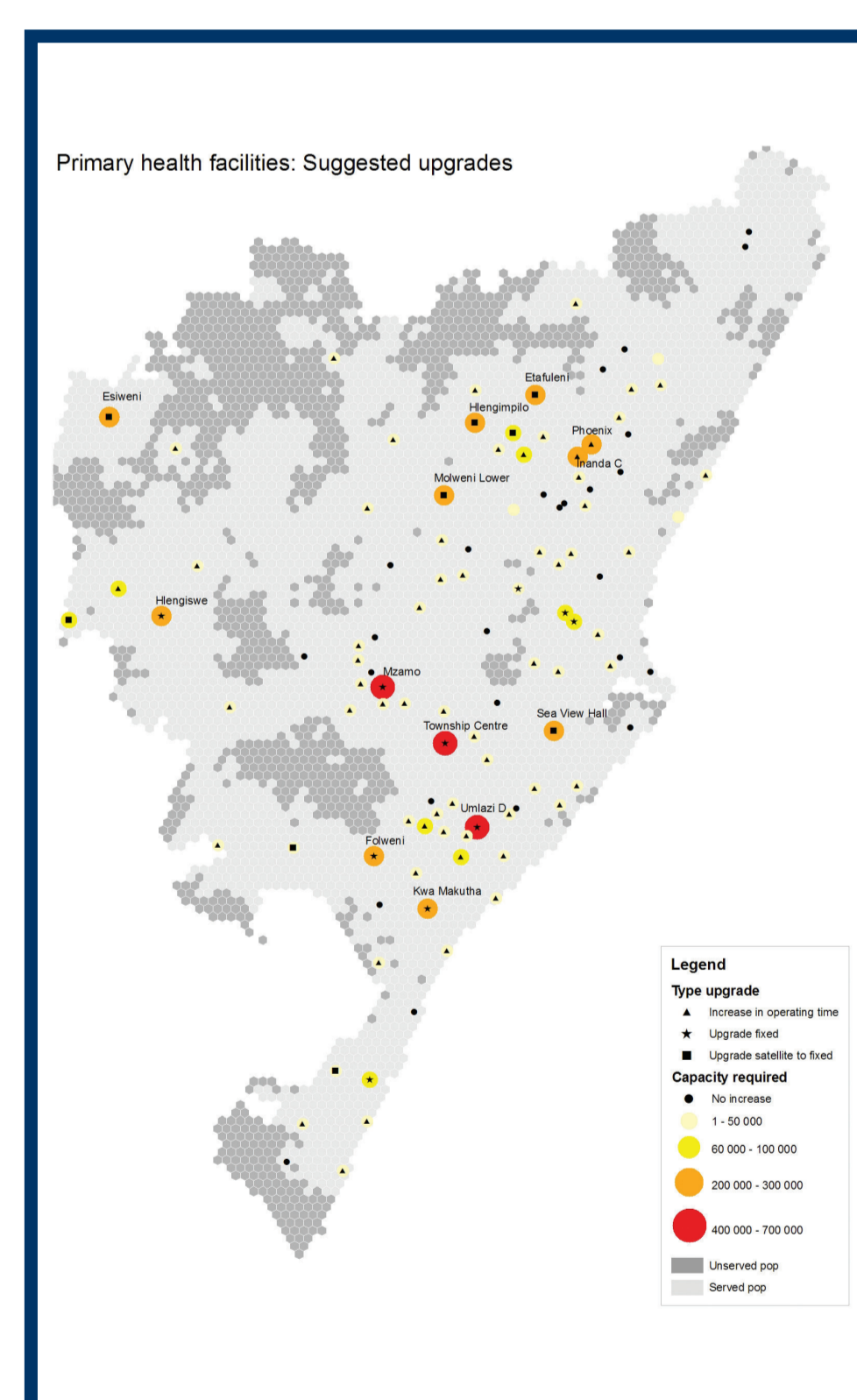

Figure 3: Recommended upgrades for primary health facilities to address backlogs

ERADICATING INEQUITABILITY: DECISION MAKING PROCESS AND IMPLEMENTATION

The analysis discussed thus far is a quantitative process of which the results show the potential backlog for the provision of a facility. Providing new facilities solely based on the results of this analysis may not be desirable, due to the fact that community input has not been included. Implementation without consultation may lead to the following hypothetical situations:

A. It may be that the analysis shows the warrant for a community hall, but the community in question shows need for a different facility
B. There may be a perception in a community that they need a facility, but in actual fact they have good access to one just outside their daily activity space
C. Two communities may indicate their need for a facility but due to budgetary constraints the local authorities can provide only one.

To ensure efficient implementation supported by the community the local authorities can go into a consultative process with communities and other stake holders supported by the results from the analysis. This may then alter the outcome of the above mentioned hypothetical situations in the following manner:

A. A different facility can be prioritised for implementation
B. It can be indicated to the community that they have reasonable access to an existing facility
C. The two communities can be brought together and the predicament of both parties can be shown and discussed and could result in a decision that will benefit either the worst off group or result in a shared facility.

NOTE: These hypothetical situations will not always be as straight forward, this is just a basic illustration of the usage of the results.

The provision of social facilities, e.g. primary health care, sports fields and community halls, is a prerequisite of basic services. CSIR research investigates the sufficient and equitable availability of such services to the public.

SYNTHESIS

By having good standards and the necessary data it is possible to do a fairly good analysis of the equitable distribution of facilities. One can determine where backlogs are, determine spatial mismatch between supply and demand as well as determine the optimal location for new facilities.

This analysis does not, however, take the needs of the community into consideration. We rather propose a process by which the power of accessibility analysis in GIS is coupled with a community consultative process to ensure better decision making by local authorities and thus the development of better policies. This will again lead to better and more sustainable development.

There are pros and cons to each of these processes but together they complement each other to arrive at the best possible solution within a developing-country perspective where limited funding and massive backlogs are a reality.

REFERENCES

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