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BY INVITATION

Parks vs people: barriers to greening efforts in Tshwane

Urban green spaces have recently been getting more research attention because of the various benefits they offer, say researchers **Titilope Funmbi Onaolapo** and **Christina Breed** from the University of Pretoria, and **Kristine Engemann Jensen** and **Maya Pasgaard** from Aarhus University in Denmark.

“Gardens, parks, reserves and trees have been linked to cultural, spiritual and alternative medical solutions. Natural or seminatural land areas can also deliver ecosystem services such as food supply, storm-water management and climate control. Cities can plan and manage these for maximum benefit.

Our research team works on the Integrative Green Infrastructure Planning project, a collaboration between the University of Pretoria in South Africa and Aarhus University in Denmark. We reviewed policy documents relating to green infrastructure in the City of Tshwane Metropolitan Municipality (Pretoria and surrounds) to look for ways to plan, manage and maintain these green-space resources. We also interviewed city officials and held workshops with officials and consultants.

We discovered that Tshwane needs guidelines based on green infrastructure principles. An increase in the awareness of green infrastructure among city officials and residents will increase the many benefits that green spaces can deliver.

RAPID DEVELOPMENT

Tshwane is an area rich in biodiversity. It is also one of the world's largest metropolitan municipalities by area, and is growing at 3,1% a year. Despite the change of government to democratic rule in 1994, the impact of the apartheid era still shows in the city's neighbourhoods and land development. People are still separated spatially, and some areas have more services, facilities and access to planned green infrastructure than others.

Green infrastructure in Tshwane takes the form of public and private gardens, street trees, community parks, unmanaged vegetated land and reserves. In 2016, the Bioregional Plan for the City of Tshwane revealed that its biodiverse, ecological and protected areas covered 456 340ha or 26% of the entire city's land.

In any city, expansion often comes at the expense of green spaces. Through our research, we found that in Tshwane, challenges to green infrastructure include rapid development, budget constraints, departmental silos, negative perceptions, and limited capacity within departments.

Collaboration is also insufficient among different disciplines in the city's departments to manage and sustain green infrastructure.

One official told us: “The biggest challenge for green infrastructure sustainability has to do with rapid developments linked to aspects such as higher rates of formalising the informal settlements, which is difficult for planning to meet up with.”

CITIES NEED TO BALANCE RESIDENTS' DAILY NEEDS WITH THE CONSERVATION OF GREEN SPACES FOR BIODIVERSITY AND ENVIRONMENTAL HEALTH

Another challenge is that of resources.

A city official explained that projects such as electricity provision and road construction were prioritised above the environment. In her words: “If we look at the capital budget, the portion of the budget going into the environment is probably less than 1%.”

We found that the flow of information among departments was limited. One informant said the situation could complicate necessary or urgent decisions and actions. For example, solutions to flooding might need to go beyond the Department of Public Works and Infrastructure and include the departments of Social Development and Human Settlements with welfare and relocation.

“We don't optimise the benefits of understanding the connections between different departments,” the informant added.

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Another city official argued that residents' perceptions could make or break green infrastructure planning: "People just don't comply with related green-infrastructure by-laws, because there's not much ecological awareness."

From our analysis of policy documents, we discovered that housing, roads, electricity and water were at the top of government's list of priorities, and most of the annual budget was directed towards these services. Plans for green infrastructure were mostly embedded in climate action plans.

We believe there are opportunities for balancing the preservation of green spaces and the socio-economic needs of the people by creating multifunctional and beneficial green spaces. Aarhus in Denmark is an example of a city where recently developed urban green spaces provide multifunctional benefits. A new urban park, for instance, also retains storm water during flooding events.

Transdisciplinarity has lately been highlighted as a way to tackle complex global challenges.

City officials in Aarhus spoke of the way that the planning of green infrastructure should cut across divisions such as engineering and housing departments, and across disciplines.

One such official said: "I see a need for trans- and interdisciplinarity within departments; the issue of managing storm water shouldn't only be from the engineering perspective, but also from planning and social angles."

One way to break down departmental silos could be to work together on joint projects.

BALANCING NEEDS

Cities need to balance residents' daily needs with the conservation of green spaces for biodiversity, climate-change adaptation, and environmental health.

Based on the interviews we conducted, a way forward is for the City of Tshwane to engage in collaborative processes to create an enabling environment and develop actionable guidelines for people and green spaces to co-exist.

In our research, we mapped out three priority green areas to support Tshwane's biodiversity.



We recommend that the high-priority green areas that produce most of the benefits of green infrastructure be judiciously conserved. The medium-priority areas should serve as buffer zones to the critical biodiverse areas that are at risk of climate hazards, fires and the like.

The low-priority areas are those with low green infrastructure benefits, characterised by high population densities and informal development. These areas are flexible for development.

The planning and management of green infrastructure benefits includes increasing awareness of the benefits of green spaces for government, developers and residents, thereby creating a joint vision and making it clear what is expected from everyone.

