Integrated Planning and Development Modelling (IPDM) Project

In South Africa, the basic and aspirational needs of the population far outstrip available resources. A rigorous and shared understanding of development patterns and trends and the driving forces that shape them, are crucial for planners and decision-makers to make robust and sustainable plans and to better inform investment decisions for specific spaces and places.

Redressing spatial development distortions and the fragmentation of human settlements lies at the heart of many of South Africa's major development challenges. These include stimulating vibrant economies and creating jobs; providing adequate shelter, infrastructure and services to improve the health and safety profile of our communities, promoting sustainable livelihoods and creating more sustainable, energy-efficient settlements.

As part of its drive to support South Arica's developmental state, in which spheres and sectors cooperate and coordinate to realise its development path, the Department of Science and Technology (DST) has identified the need for rigorous spatial and temporal evidence to promote a shared understanding of past, current and possible future development patterns and trends. The DST thus commissioned the Council for Scientific and Industrial Research (CSIR) and the Human Sciences Research Council (HSRC) to develop an integrated information and modelling platform to support integrated planning, development and service delivery for South Africa.

This multiyear, multiphased project focuses on developing three evidence-based technology platforms to support planning at various scales and a range of planning horizons namely:

The Regional Spatial Profiler

The Regional Profiler contains a collection of maps and tables that users can view and download freely from a web-based portal. It is aimed at strengthening regional-scale spatial planning by providing accessible and comparable spatial information (current and past trend) to planning practitioners in government.

The Urban Simulation Platform

The focus of this project component is to develop and implement an open source urban simulation platform for the modelling of a series of possible spatial urban growth patterns over a 30-year period in the context of a range of economic, demographic and spatial planning policy scenarios. The implications of these will be assessed for long-term planning, policy-making and infrastructure investment decisions in the major metropolitan regions of South Africa.

The Delivery Demand Guide Charts

The focus of this project component is to produce delivery demand guide charts (posters) to support the preparation of the housing and transport chapters of integrated development plans (IDPs). It uses household survey-based estimates of local housing and transport demand and analyses patterns of national population flow within and between regions within the major migration corridors of South Africa.

The evidence generated by the three platforms will be distributed via a web-based portal to ensure that users can easily find and download relevant information to better inform their planning processes.

The project involves end users in the process of developing, testing and applying the various components of the IPDM platform by establishing 'living laboratory processes' (comprising a series of interactive work sessions with end users in real life contexts).

A series of dissemination, technology-transfer and capacity-building initiatives is designed for the uptake, use and application of the evidence in planning processes. These include general awareness-raising and horizontal learning sessions, as well as short courses targeted at building the capacity of public sector planners.

A project-linked internship programme creates opportunities for recent graduates to obtain hands-on working experience to equip them for service in relevant public planning offices. In addition, the studentship programme provides opportunities for Master's course-work students to develop their skills and align their research topics with the IPDM Project.
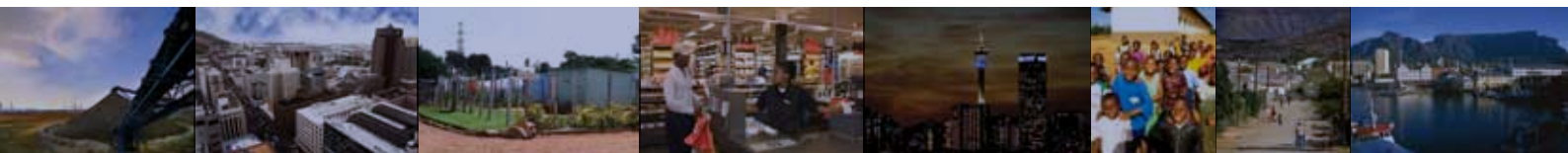
Regional Spatial Profiler (CSIR)
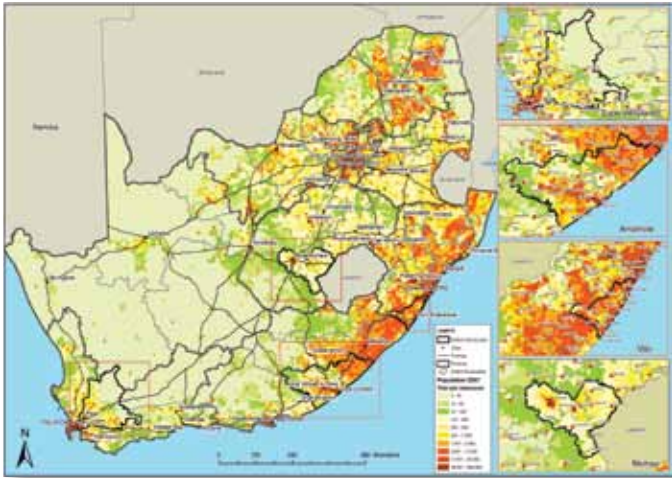
A group of end-users from four case study areas (Amathole District Municipality, Cape Winelands District Municipality, Mangaung Local Municipality and Ugu District Municipality) was involved in a collaborative living laboratory process comprising a series of interactive work sessions to expand and customise the Profiler.
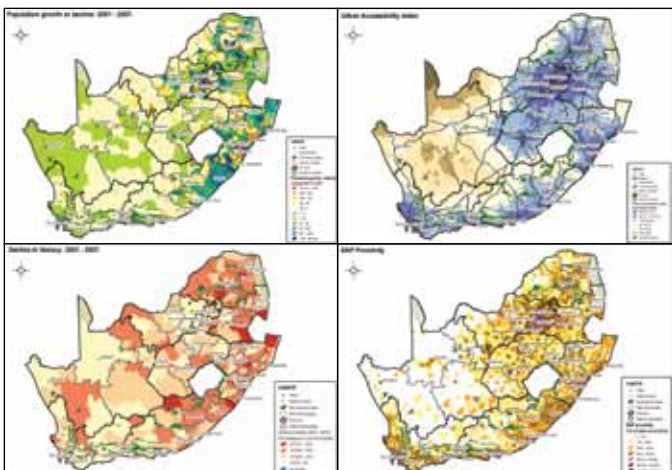
The Regional Spatial Profiler contains a collection of regional-scale spatial information, aimed at strengthening regional-scale development planning by providing accessible and comparable spatial information to planning practitioners in government. The information is provided in the form of maps and tables that users can view and download freely from a web-based portal.

The Regional Spatial Profiler aims to enhance an analysis of where popu-lation and economic activities are located, where environmental vulnera-bilities exist, and where people are living in areas with low physical accessibility to services and employment. Enhanced insight into such issues may lead to more informed investment decisions during regional planning process, which in turn would have a positive effect on the impact of such investment.

A collaborative process involved the end-users in specifying the content of the profiler, the format and lay-out of the portal for easy navigation and use, and to test the usefulness of the information in actual planning processes. It resulted in a set of recommendations for the improvement of planning documents of the participating districts, such as their respective district integrated development plans and spatial development frameworks.

During this phase of the project the Regional Spatial Profiler emphasis the following aspects .

An improved contextual understanding of:
- the role of district area in a broader functional region, e.g. whether the district is part of an agricultural region, and whether the district provides resources to nearby economic activity;
- the relative size, importance and distribution of economic activity, as well as the population size and level of poverty of the district in relation to surrounding areas or the country as a whole. For example, the main town in the district may be an important service centre in the district, but contribute only very marginally to the provincial economy, with implications for provincial investment prioritisation.
- opportunities and threats in nearby and further away localities (e.g. well-developed service centres or large poverty concentrations in neighbouring districts), as well as links with other localities.

An improved understanding of developmental dualities within districts, by:
- spatially quantifying dualities, e.g. the extent of the poverty or economic activity where concentrations of these are located.
- combining the quantification of dualities with the calculation of relative accessibility to existing services and opportunities, thereby identifying and quantifying the extent of spatial exclusion from current economic activity, employment opportunities and services.
- prioritising where to focus appropriate investment.

An improved spatially-differentiated understanding of settlements by:
- combining various sets of information about specific localities to differentiate between typical characteristics, different potentials and contexts of localities.
- developing a range of spatial development typologies.

Urban Simulation Platform (CSIR)
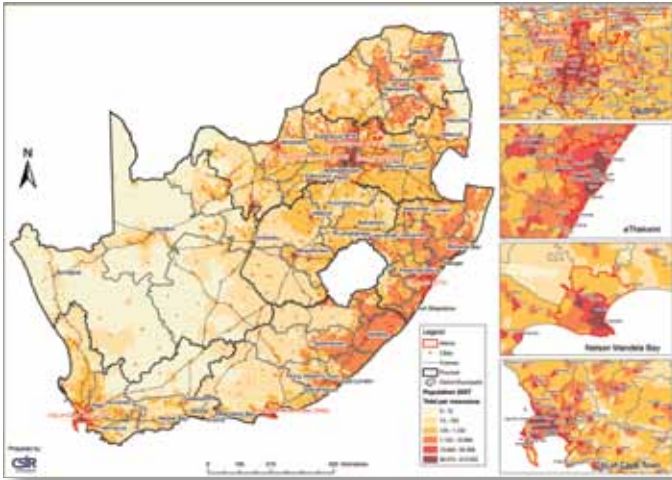
During this phase of the project living laboratory processes will be established for the Gauteng Global City Region, eThekwini Metropolitan Municipality, Nelson Mandela Bay Metropolitan Municipality and the City of Cape Town.

Whilst the existing populations of especially our cities are growing rapidly, many South Africans are moving from rural areas to cities in search of a better life. In line with global urbanisation trends, this population transition is likely to continue for some time. During 2005, 59,3% of the South African population lived in urban areas compared to the global average of 48,7%. South Africa's four largest metropolitan areas and their functional hinterlands are home to more than 38% of the national population. Their growing and diverse economies generate more than 66% of the national economy and form the backbone of South Africa's economy. It is expected that 71,3%.of the South African population will be urbanised by 2030.

To assist South Africa's major metropolitan regions to anticipate and effectively accommodate this growth, this component of the IPDM project aims to develop and implement an open source urban simulation platform to simulate the spatial distribution of urban growth at various time-intervals. This will be done over a 30-year period in the context of a range of economic, demographic and spatial planning policy scenarios and to assess the implications for long-term planning, policy-making and infrastructure investment decisions in the major metropolitan regions of South Africa.

The results of the simulation process will enable metros and city regions to pro-actively consider their planning and investment responses to:

- Spatially explicit future demand and consumption patterns and the implications of these for the provision of municipal infra-structure and services, such as water, electricity, sanitation, solid waste management, as well as for social facilities and services such as health en education.
- The need for various kinds of capital investment in terms of economic infrastructure, such as public transport to sustain economic growth and job creation.
- Indicators of urban performance, efficiency and sustainability, including indicators of labour market absorption, travel time and cost, access to social and economic opportunities and energy efficiency.

This phase of the project will demonstrate the value of the platform by simulating a number of scenarios -specific to each metropolitan region - and comparing the performance of different scenarios with respect to a range of indicators used to characterise the supply and demand of land, housing and infrastructure as well as travel times, modes, cost, etc.

The Urban Simulation project will employ a living laboratory process approach (comprising a series of interactive work sessions with end users in real life contexts) to ensure the participation and collaboration of these users in the process of developing, testing and applying the urban simulation platform in their respective jurisdictions.

The results of the simulation processes in the respective metropolitan regions will be published on the web-based portal in collaboration with the relevant authorities to make relevant information and results available to a broader spectrum of users across the three spheres of government.
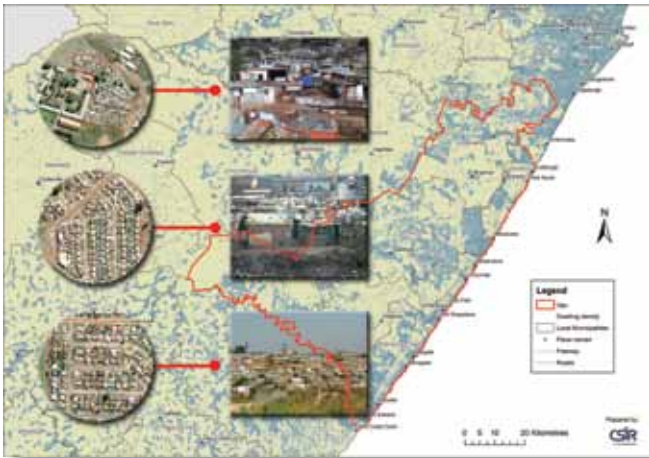
The Ugu District Municipality with it's local municipalities, participate in a community of practice to help define the content and format of the Delivery Demand Guide Charts.

South Africa's excluded rural poor are migrating to cities to find wage work and livelihoods, but access to the metro employment market is unavailable or too expensive for many in poverty settlements.

The IPDM project provides new social technologies that enable a fresh look at differentiated local housing and transport demand, based on household surveys. It also analyses patterns of national population flow within and between regions within the four major migration corridors of South Africa. Results are based on 2 965 cases in the 2008 survey sample for Gauteng, Sekhukhune and northern Mpumalanga. Another 3 140 cases are being analysed in this phase of the project for the other national migration corridors.

The information contained in the delivery demand guide charts starts to address the following questions:
- Does urbanisation work?
- Who does it work for?
- Where does it work, and who is excluded?
- How can IDP delivery help urban migration to reduce poverty?
- Can government intervene to resolve the problem of urban access for the in-migrant unemployed poor?

This phase of the project concentrates on transport and shelter needs for the in-migrating poor who are trying to find work, across 15 different types of poverty settlements identified in Phase 1a. Previously, no community-level needs profiles have been available for South Africa.

As in market research studies, poor communities converge according their specific demographic attributes - community demographics then determine delivery demand. By fitting the right demographic profile to each type of poor community, the HSRC's settlement-types social technology can estimate transport and housing demand profiles per community, and then predict access to wage jobs and economic outcomes for each settlement locality.

Needs profiles are being produced as a user-friendly product to help local governments where planning capacity is limited. A Delivery Demand Guide Chart is in the form of a poster that allows local planners to obtain estimates for size and type of transport and housing demand at community level. Results will also be scaled up to make housing and transport need estimates available for the whole country.

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