

Focus on CSIR research in planning support systems (PSS): Creating critical platforms for strategic planning and investment

CSIR
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The core research agenda of CSIR Built Environment's planning support systems (PSS) competence area includes the development of decision-making support tools, frameworks and models that can be employed by the public and private sector in supporting sustainable development and governance of settlements, cities and regions. PSS comprises the following research groups:

- **urban and regional planning**
- **geo-modelling**
- **development informatics**
- **sustainable human settlements.**

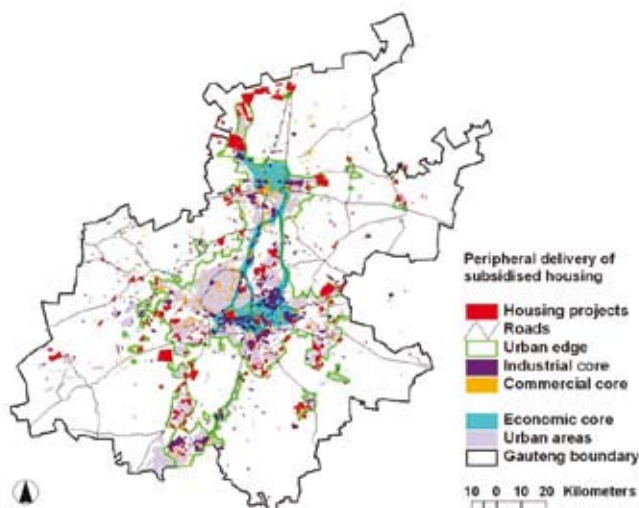
Through innovation in these fields, and the fields of spatial economic analysis and multi-agency strategic planning, PSS also plays a leading role in strengthening targeted and coordinated infrastructure investment and service delivery



between different spheres of government. The innovative research and technology development of PSS in this field is aimed at contributing towards knowledge production, as well as policy and practice improvement in the areas of relational spatial analysis, intergovernmental and

multi-agency resource planning, sustainable settlement and regional development.

The core developmental values of PSS are premised on the understanding of regional and urban spaces as complex socio-ecological systems. With the advent of sustainability science and regional science in the regional, urban and rural planning agenda, PSS and its affiliated research groups find themselves at the coal-face of new knowledge-production as well as the creation of new analytical tools and models that can enable effective, integrated development planning and informed decision-making.

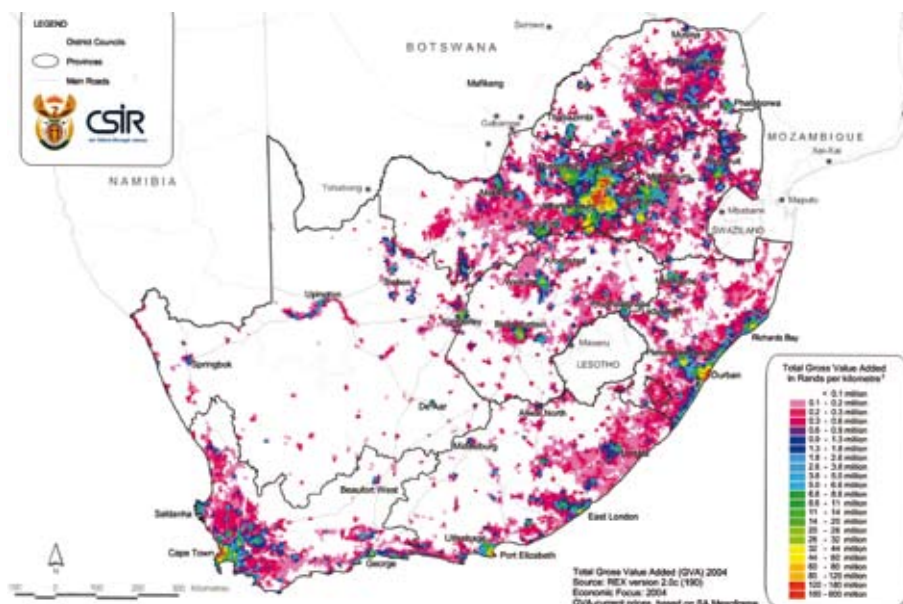


Key research outputs and innovative contributions

Geo-spatial Analysis Platform (GAP)

GAP was designed to enable researchers and decision-makers to understand the spatial distribution of economic activity in South Africa in greater detail. GAP is the result of collaboration between the CSIR, the Presidency and the Department of Trade and Industry (**the dti**). The updated **GAP(2)** has already been applied in support of practical analysis and collaborative governance in the NSDP District and Metro Application Project and recently as modelling platform for the E-Space project for the Department of Science and Technology.

As a tool for enhancing decision-making processes in planning, and in addition to the meso-zones and spatially disaggregated social and economic data sets, **GAP(2)** includes a digital road network and a new geo-referenced dataset of South Africa's towns. A selection of GAP generated maps, data and accompanying descriptions has been compiled on a CD-based map viewer, structured in such a way that users can systematically explore the spatial pattern and contribution of primary, secondary and tertiary economic activities on different scales (ranging from meso-zone, settlement to municipal, regional and national). Further information on the **GAP(2)** viewer is available at www.gapweb.co.za.



National Spatial Development Perspective (NSDP)

The NSDP is an indicative tool for guiding infrastructure investment and development spending by all spheres of government and is championed by the Policy Unit in the Presidency. The CSIR contributed to the 2003 and the 2006 update of the NSDP through extensive research into the space economy and spatial analysis technologies, as well as through playing a key role in the development of this innovative planning instrument. The NSDP emphasises the importance of a coherent understanding of regional economic development and territorial patterns of economic development, social exclusion and resource-use. Such an understanding is of paramount importance, particularly in shaping the plans and actions of government and other stakeholders operating within the development terrain.

Housing Atlas: Supporting decision-making on national housing investment

The CSIR Built Environment unit has assisted the Department of Housing in compiling the 2002 and 2005 Housing Atlas for South Africa. The basic aim of these Atlases is to guide housing investment and the development of sustainable human settlements in the country. Housing Atlas 2005 provides organised spatial information concerning factors, criteria and indices which impact on decisions regarding the most suitable locations and priorities for housing investment in the country under the prevailing delivery and policy context. The recent analysis also takes into account the concepts of economic development potential and sustainable livelihoods potential.



National Progress Report on the state of PGDSs/PSDFs in South Africa

An ongoing process of assessing provincial growth and development strategies (PGDSs) and provincial spatial development frameworks (PSDFs) over the past two years as part of a CSIR Memorandum of Understanding with the Presidency has culminated in a *National Progress Report on the State of PGDSs/PSDFs in South Africa*. The findings and recommendations of this report are particularly relevant in the light of the current Provincial and Local Government White Paper Review and Development Process being undertaken by the Department of Provincial and Local Government (DPLG). Through knowledge sharing and learning, the outcome of this process can contribute to the understanding and practices of regional development, thus adding value to deliberations about the role of provincial planning in South Africa.



IDP Nerve Centre

The IDP Nerve Centre is a government-wide information and coordination initiative led by the DPLG and designed to facilitate the flow of planning and implementation information into and out of the integrated

development planning (IDP) process. Much of the current information emanating from the IDP process is available as paper-based media, or, if digital, in various formats, making it difficult for other institutions to extract critical information when needed. To carry out this IDP function more efficiently and to enhance the availability and usefulness of key IDP information for decision-makers, the DPLG appointed the CSIR to develop the IDP Information & Coordination Service (IDP Nerve Centre) as a tool to support inter-governmental planning and investment alignment.



Low-rise, medium-density mixed housing: Appropriateness and applicability

CSIR Built Environment is currently engaged with a housing research project which aims to provide a better understanding of the appropriateness and applicability of low-rise, medium-density mixed housing typologies in South Africa. Several dimensions are investigated, including the ability of this type of housing to supply more affordable and secure housing in South Africa, enhance social cohesion, and

enable greater socio-spatial mix and medium density through appropriate design. The key envisaged outcomes include:

- Identification of critical factors to ensure the likely success of medium density mixed housing developments in South Africa, as related to design, affordability, security, neighbourliness and perceptions
- Development of key mechanisms to ensure the creation of an enabling environment to support the implementation of these projects in South Africa
- Generation of specific design guidelines for medium density mixed developments in the South African context to incorporate the critical success factors and contribute to more sustainable human settlements.



Integrated research infrastructure platform: Technologies for sustainable human settlement

The purpose of this collaborative CSIR research & infrastructure platform is to provide a common research problem space and an interlinked system of hardware, software and physical space for the development, testing and demonstration of new systems and technologies which would support an integrated and sustainable approach to the design and delivery of energy, water & sanitation infrastructure. The project focus is on solutions that optimise natural resource flows, while using municipal service delivery as a catalyst for local economic development, so that maximum social and economic benefit is achieved for minimum environmental impact.



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Urban Dynamics Laboratory (UDL): Planning better city regions

The UDL is a CSIR research initiative set to provide the equipment, tools and science environment required to support the development of South Africa's city regions. The UDL facility acts both as a vehicle for developing, refining and validating numerical models and software, as well as a practical workbench for a range of research applications - from testing theories developed in urban sustainability science, to providing science-based decision support in urban and regional planning and design to all spheres of government. It also includes a range of data sets, tools for modelling and simulation of systems interactions and spatial changes, and the necessary hardware to support these tools. Key envisaged outcomes include:

- Advanced strategic spatial planning systems, methodologies and frameworks, with a specific focus on decision support for infrastructure investment
- The generation of information and data on spatial forms and arrangements that is more conducive to the achievement of national objectives such as democratic nation-building, and social and economic inclusion.

