



# City growth, population movement and climate change – Implications for the Integrated Urban Development Framework

Inputs to the Parliamentary Committee  
for Co-operative Governance:  
Elsona van Huyssteen (CSIR)  
26 May 2015

With inputs from Emma Archer, Johan Maritz, Gerbrand Mans, Amy Pieterse (CSIR),  
Prof's Mark Oranje & Chrisna du Plessis (UP)

# Acknowledgements

## **Spatial temporal evidence for planning in SA (stepSA)**

Collaborative R&D Initiative between CSIR, HSRC, DST to

- **Support spatial transformation and effective public investment in cities and towns;**
- **Profile spatial dynamics of growth, population movement and development trends;**
- **Simulate the spatial implications of growth and major investments (housing and transport).**

Collaboration with DCOG & SACN

CSIR

SA Risk & Vulnerability Atlas (CSIR, DST & collaborators)

Long Term Adaptation Strategy (LTAS) Phase 2 (SANBI, DEA)

SADC Climate Change Adaptation Strategy

University of Pretoria: School of the Built Environment

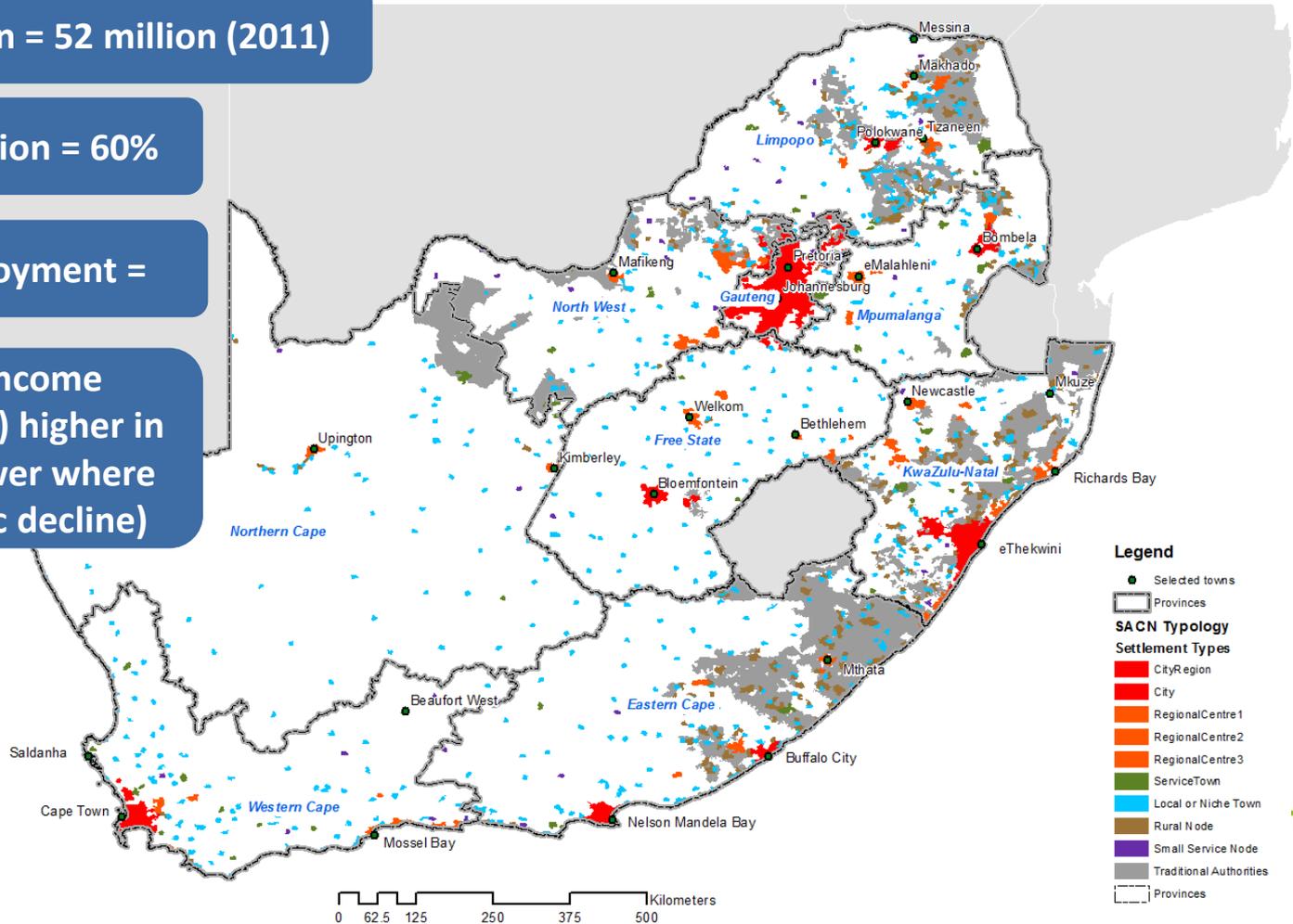
# Context – South Africa

Population = 52 million (2011)

Urbanisation = 60%

Unemployment =

Gini (income inequality) higher in cities (lower where economic decline)



# Purpose & Presentation Overview

The NDP envisages a SA that by 2030 should experience meaningful and measurable progress in reviving rural areas and in creating more functionally integrated, balanced and vibrant urban settlements.

**South Africa's future will be closely intertwined with the future of those cities and towns.**



# Purpose & Presentation Overview

Major regional dynamics, and pressures + highly mobile new types of households

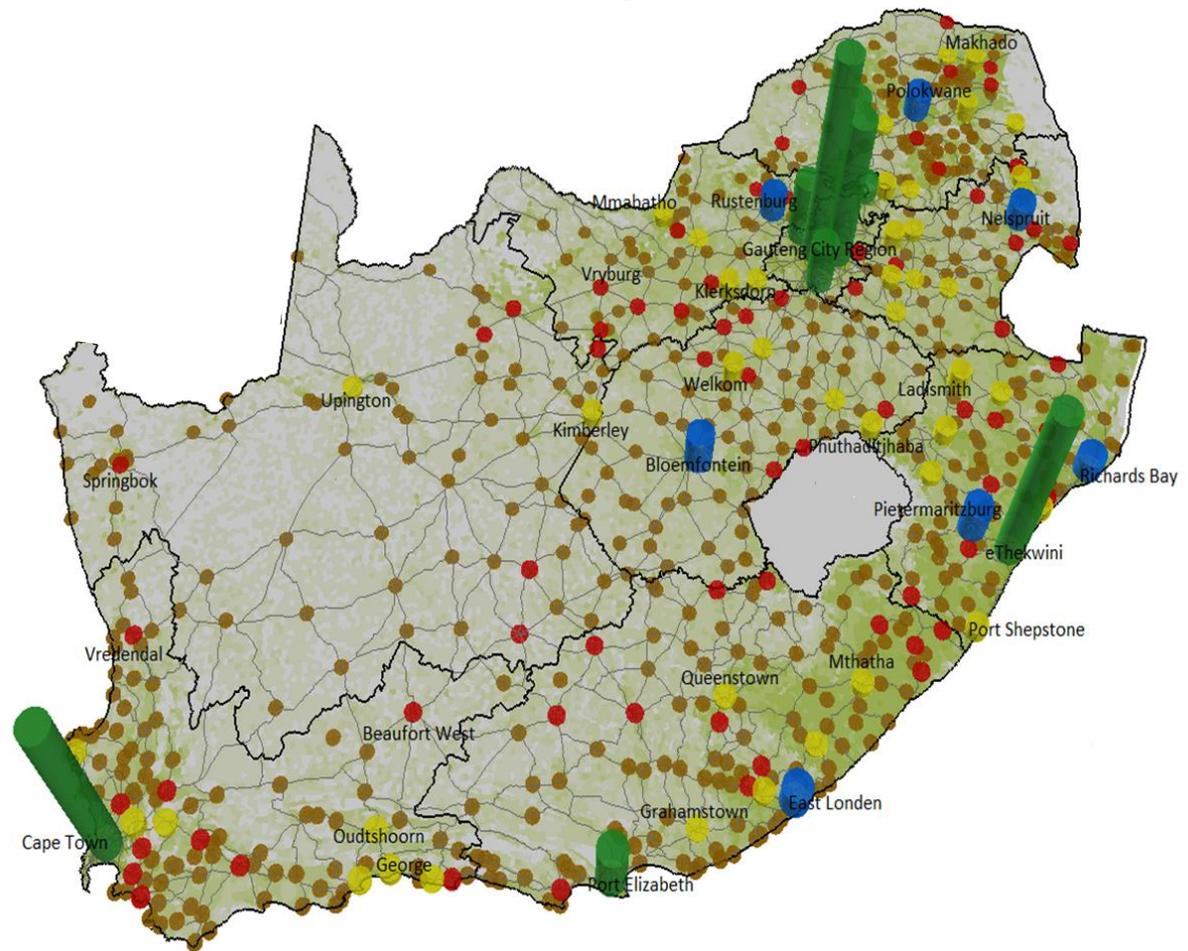
Changing shapes, faces, pressures and capabilities of the cities & towns

Place specific, BUT beyond scope and impact of local government

Have to be addressed as a collective concern - requires substantial leadership and direction from the IUDF



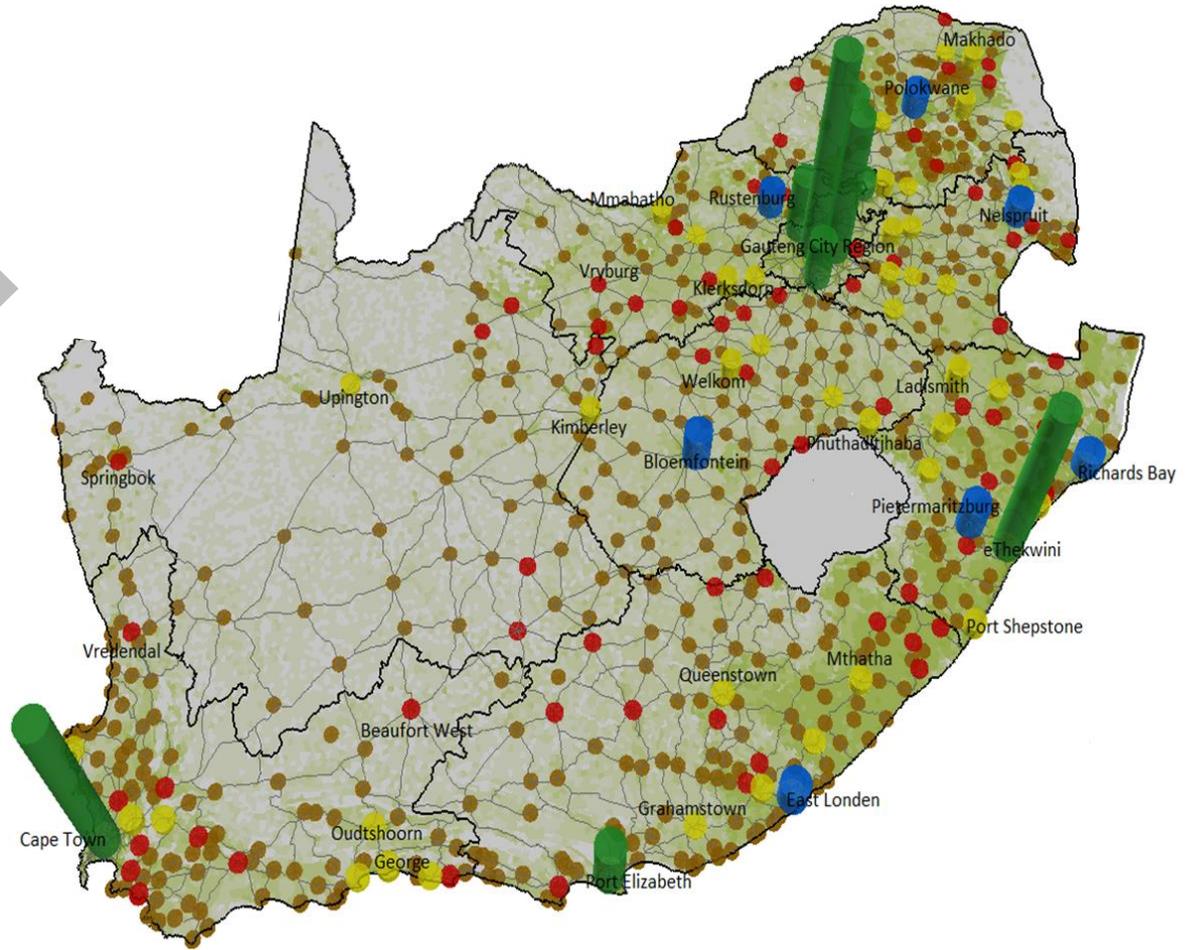
# Future of SA's 'urban' is critical for the Future of SA's Population



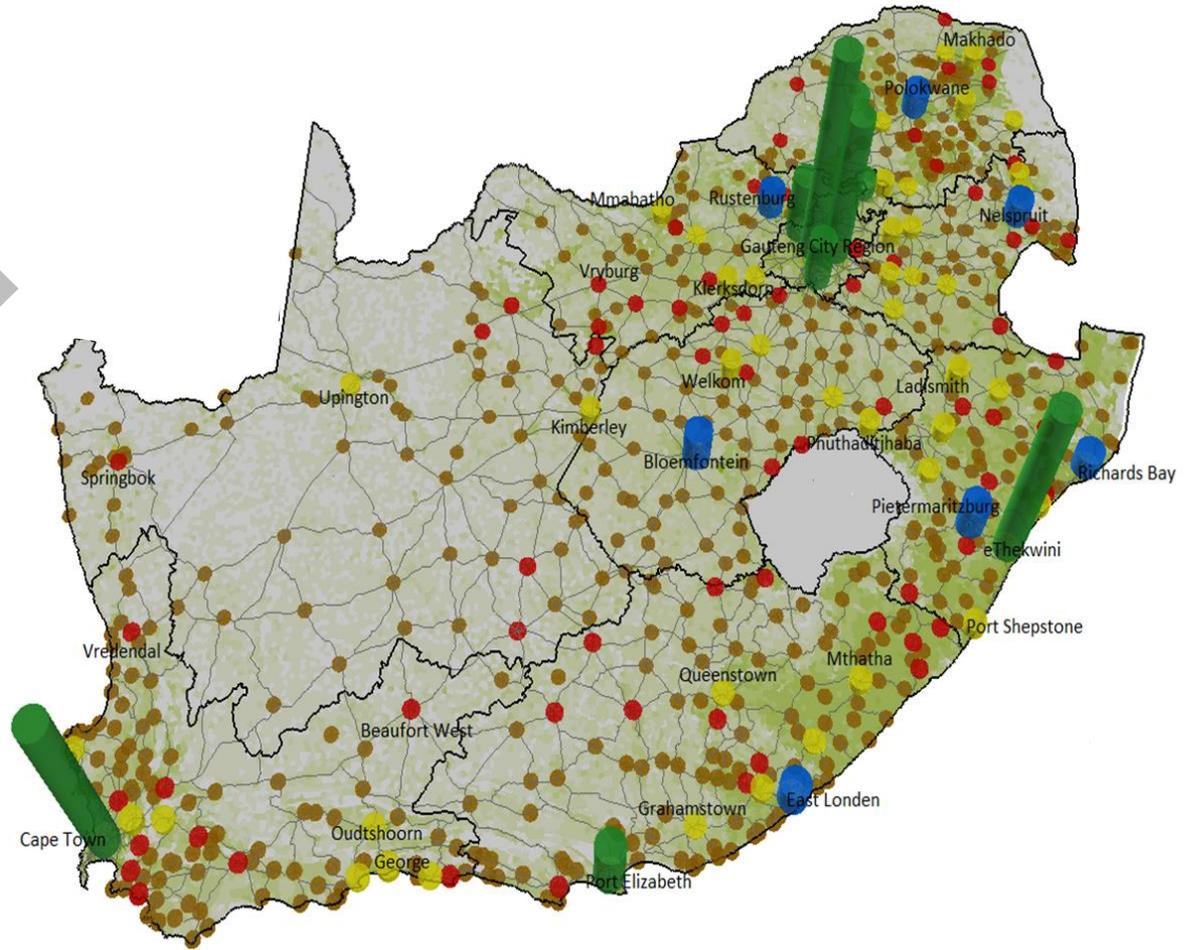
42%  
City Regions



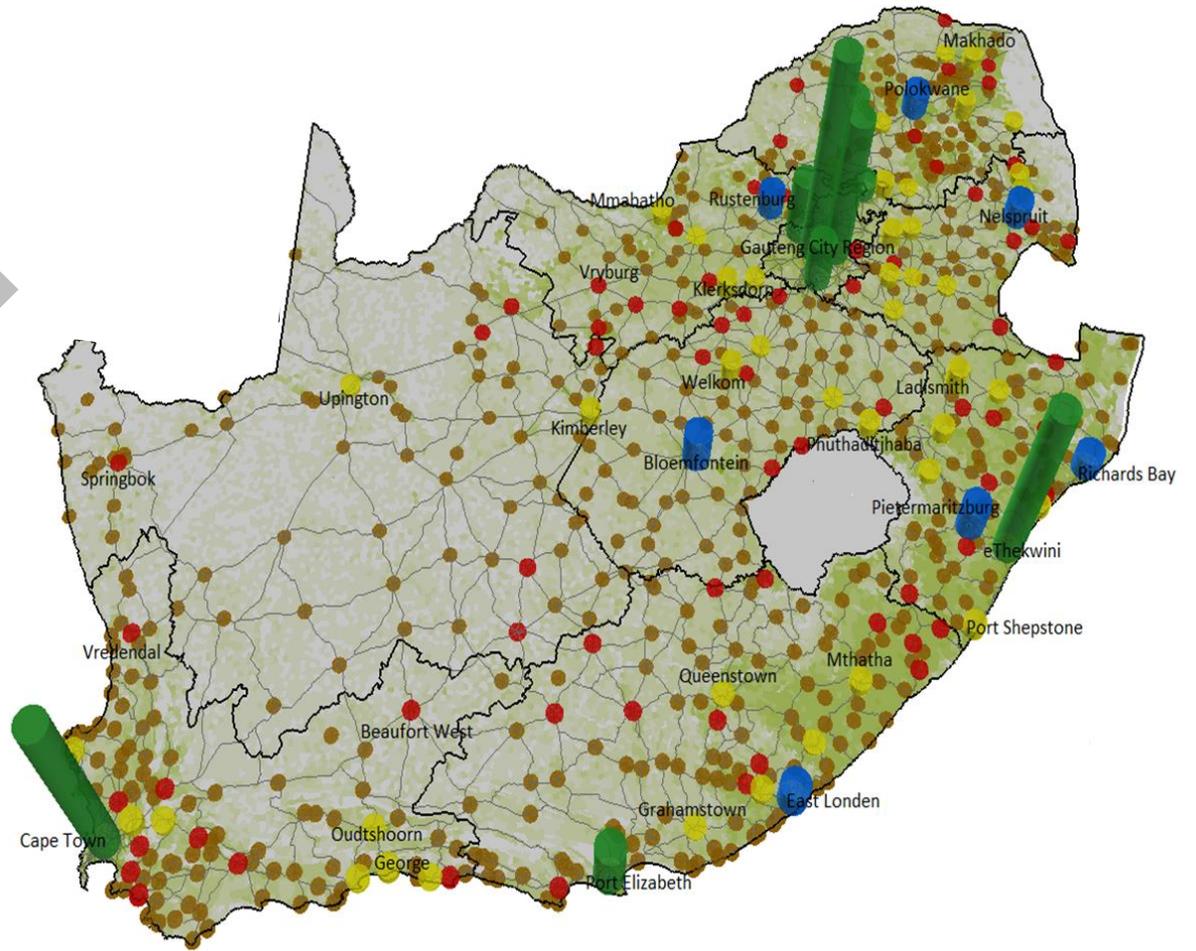
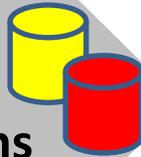
3% p/a growth  
1996-2011



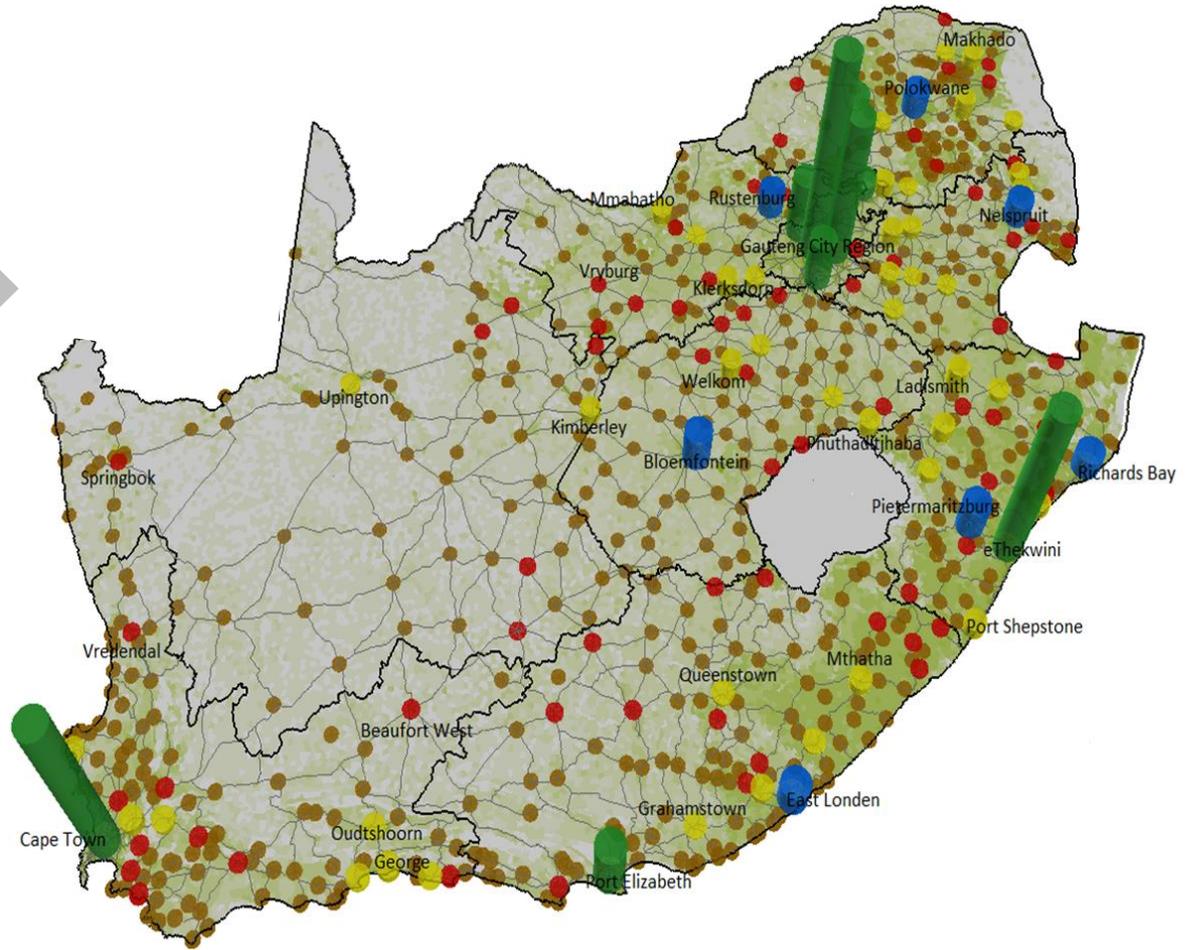
7.5%  
Big Cities



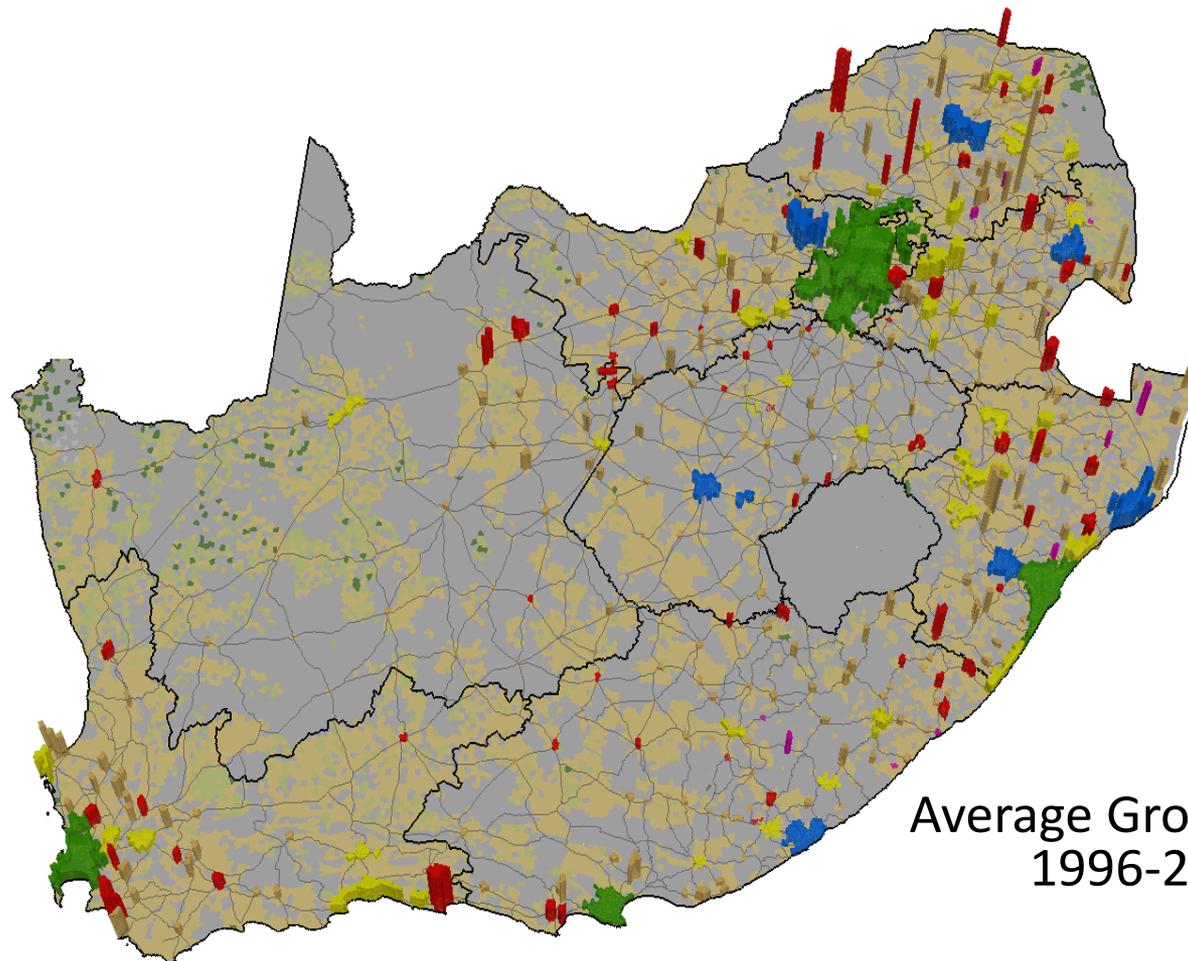
20%  
Large Towns



7%  
Small Towns

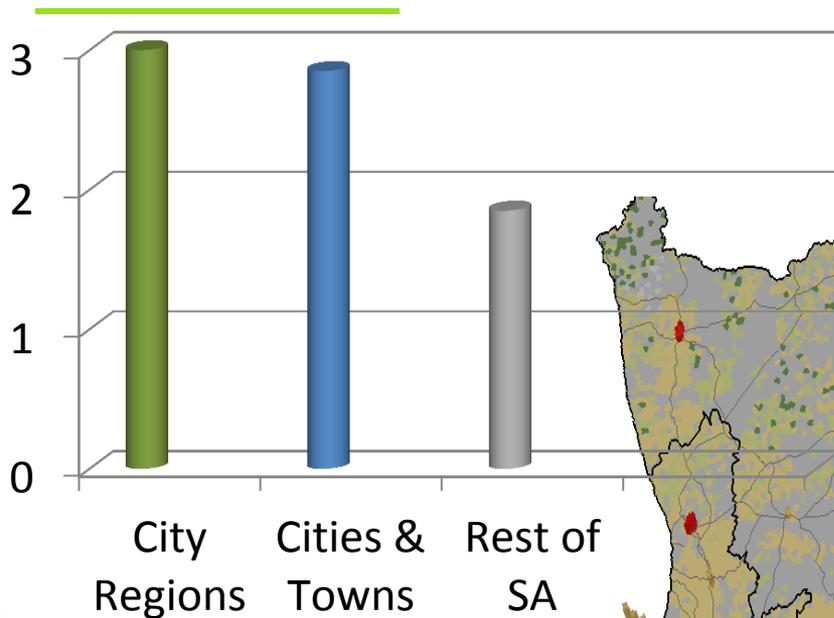


# Urban development implications of city and town concentration

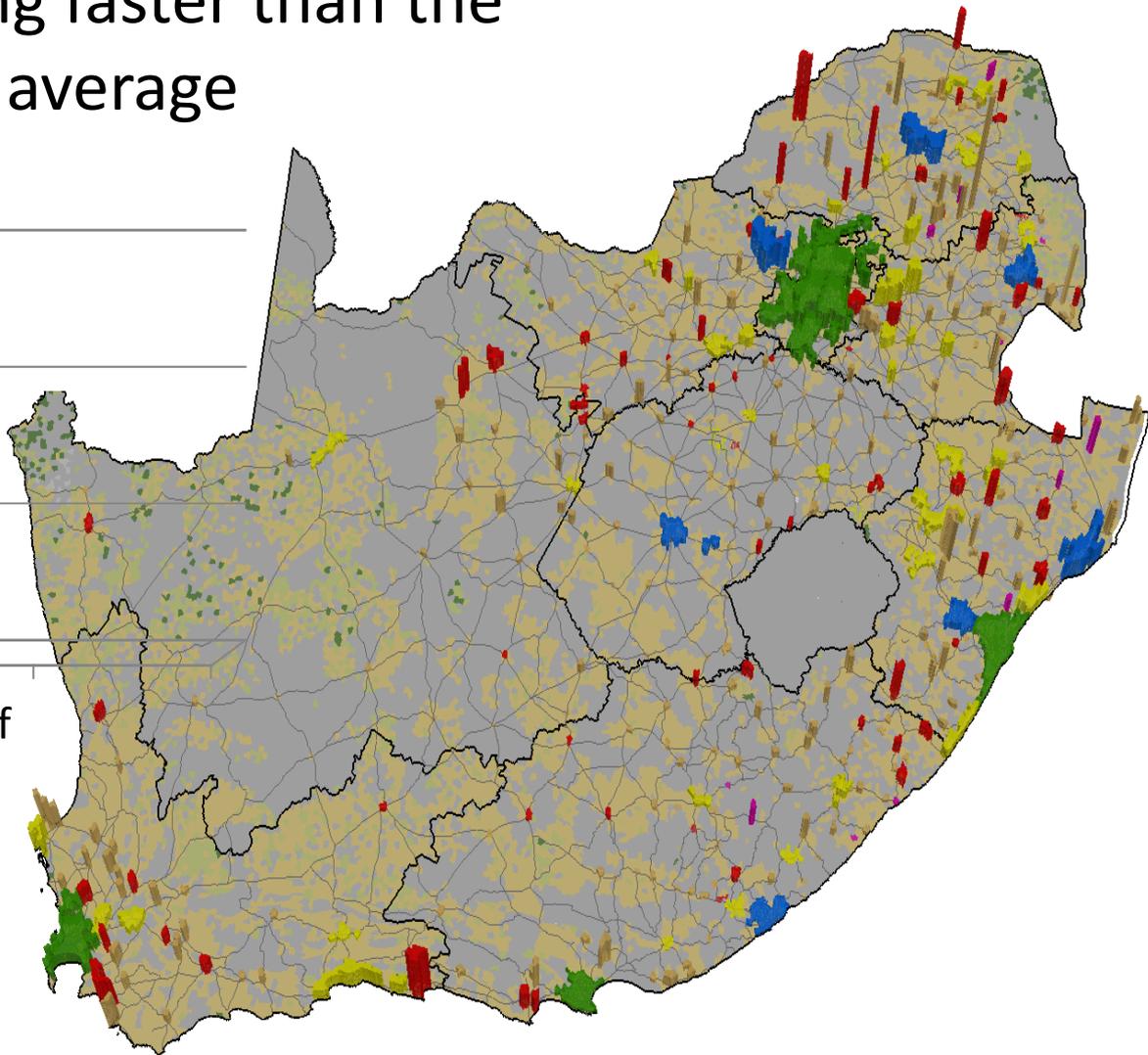


Average Growth Rate  
1996-2011

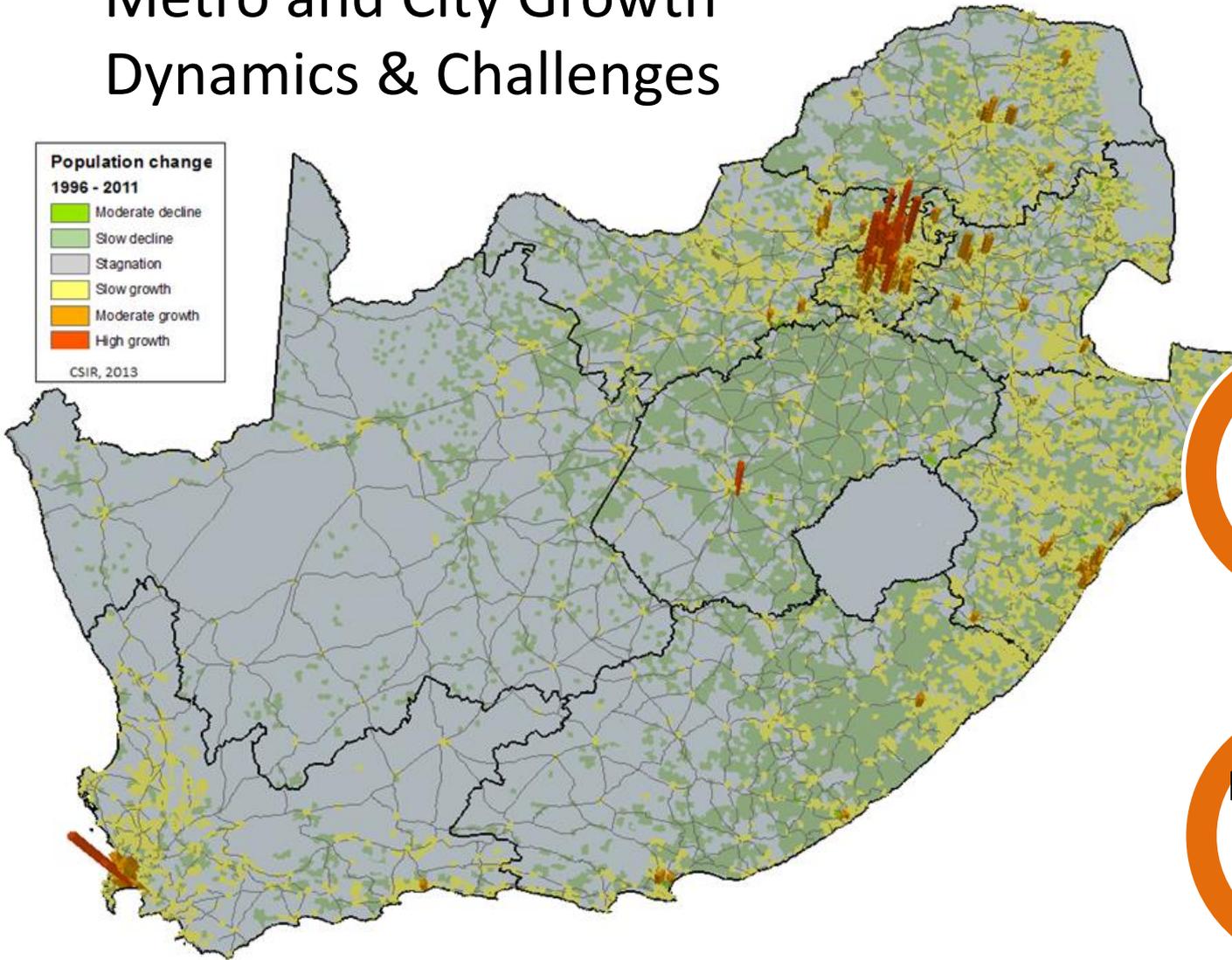
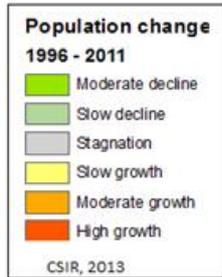
# Cities growing faster than the rest of SA on average



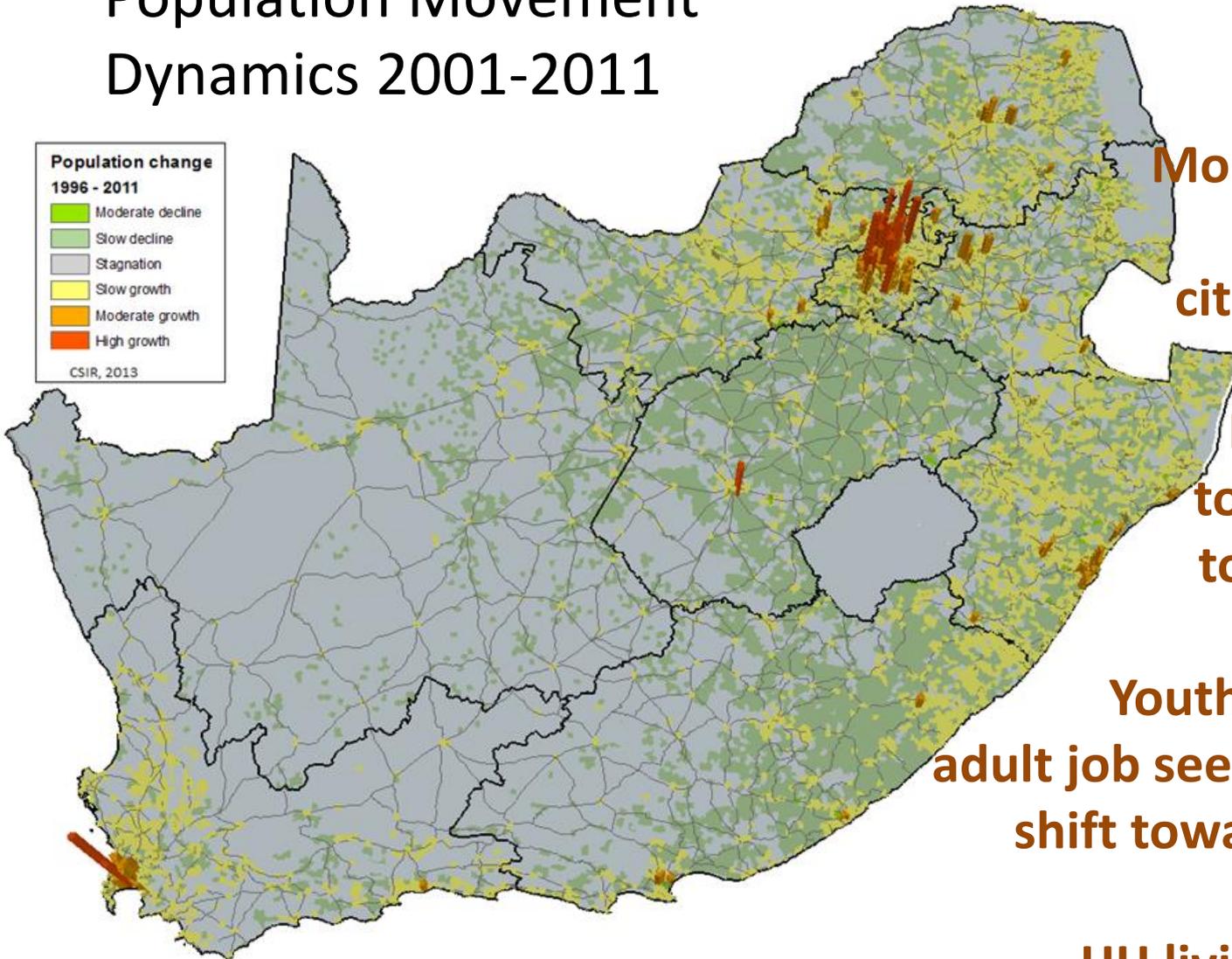
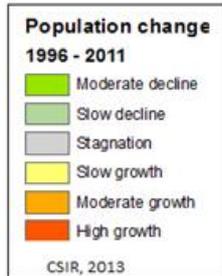
Average Growth Rate  
1996-2011



# Metro and City Growth Dynamics & Challenges



# Population Movement Dynamics 2001-2011



**Most movement between cities & metro's**

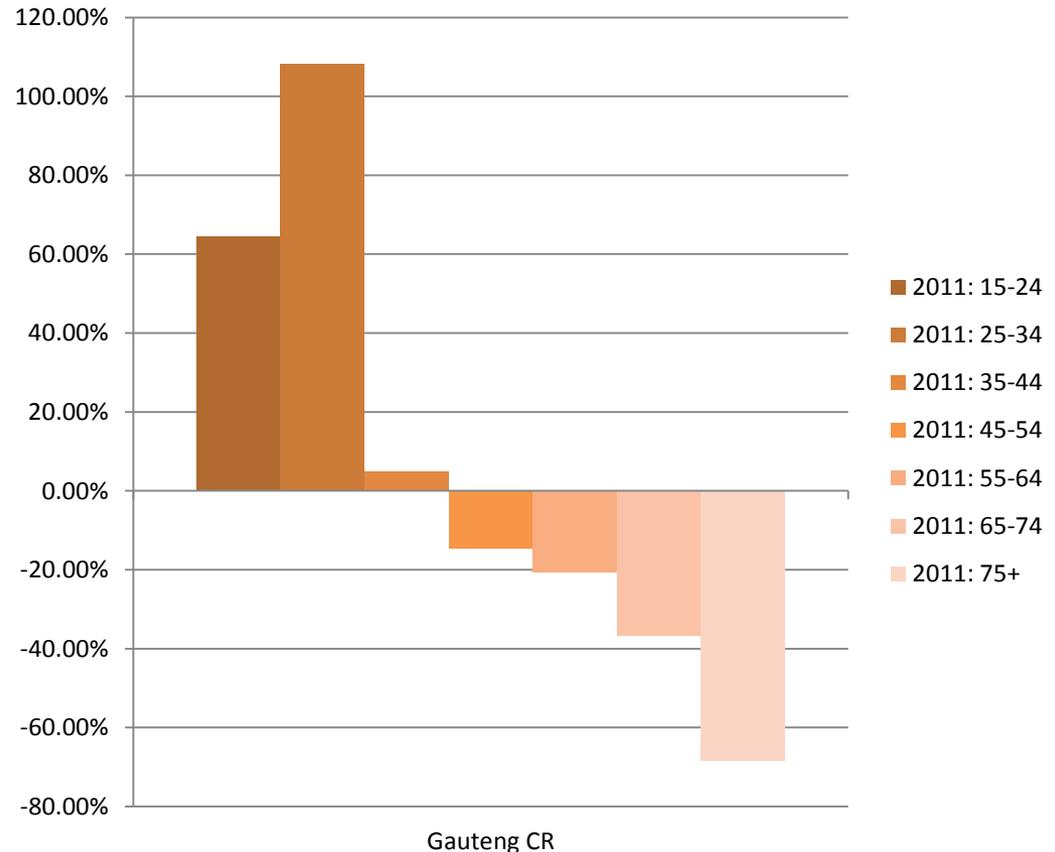
**Hinterland to towns & cities, towns to cities**

**Youth (students to adult job seeker category) shift towards big cities**

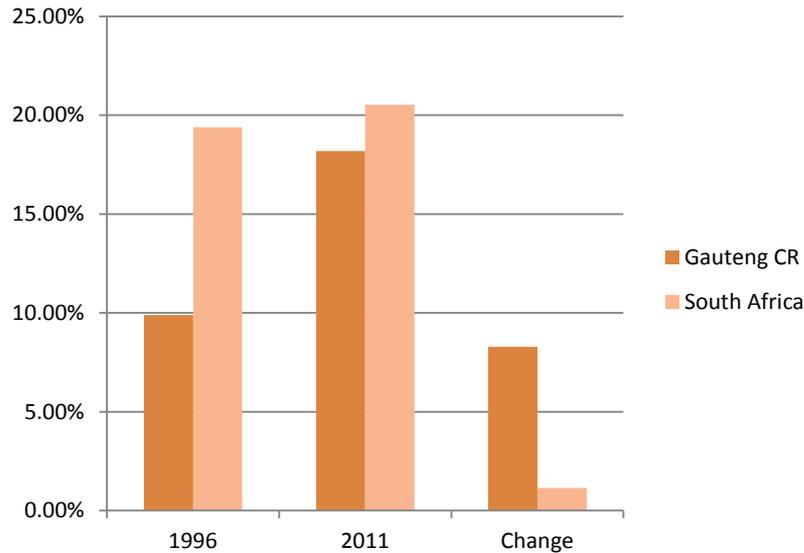
**HH living in poverty substantial increase in cities**

## Example: Impact on Gauteng (2001-2011)

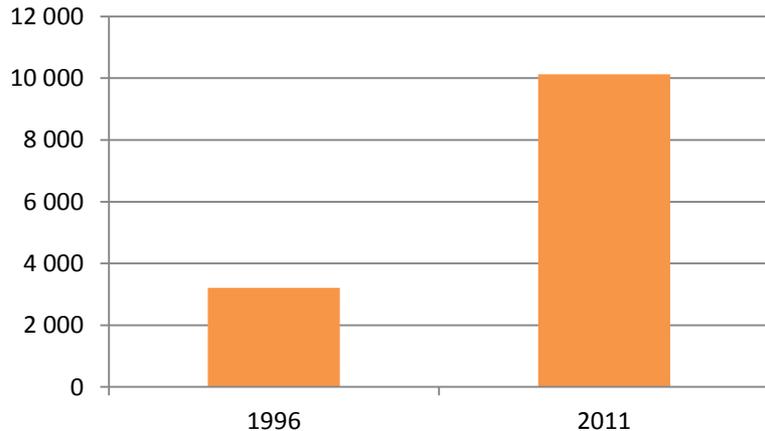
- **Young adult seekers in Gauteng increased by over 100% in 15 years**
- Gauteng city region attracts the youth
- Gauteng has the lowest proportion of persons over 65
- Persons over 50 years declined significantly



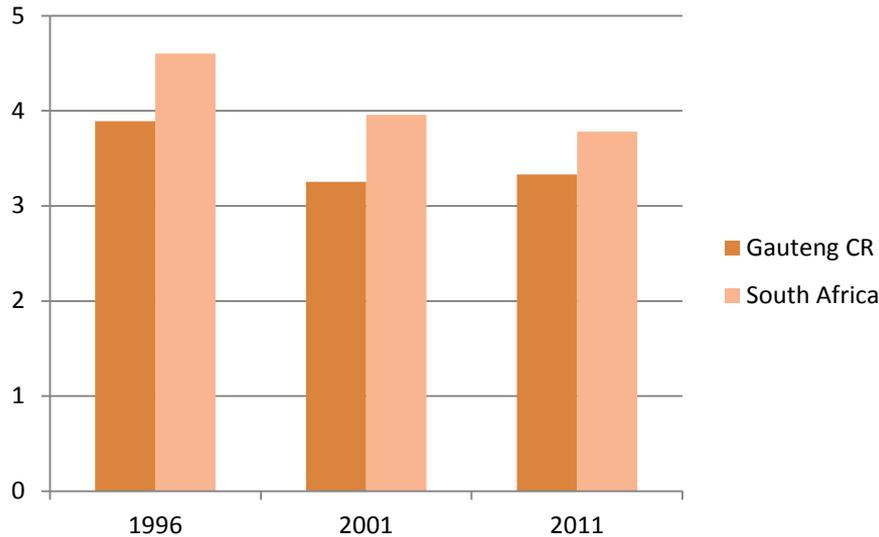
## Example: Impact on Gauteng (2001-2011)



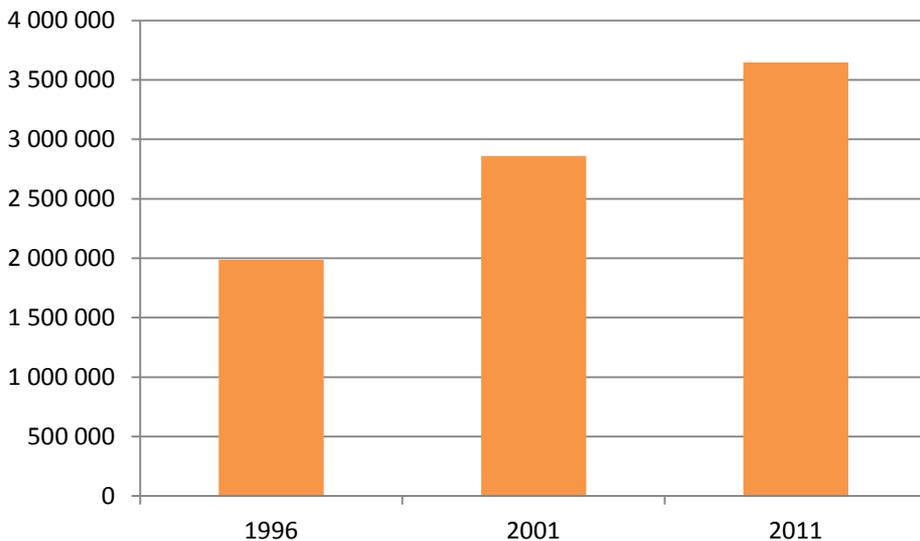
- National 1% increase in nr HH living in poverty
- Gauteng city region 8% increase of households living in poverty within the city region (8%).
- **The number of households living in poverty tripled within the city region between 1996 and 2011.**



## Example: Changes in household size Gauteng & SA

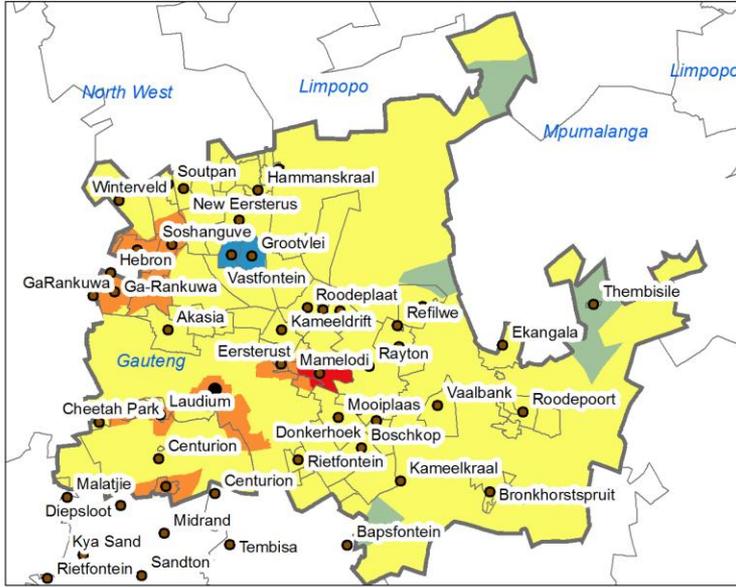


- Average household size has decreased slightly for the city region as well as SA, but it is smaller within the city region.
- Average household size seem to have stabilised in the city region.
- Households are increasing at a rate of almost double that of population growth.
- Implications for housing and housing typology, form of ownership and infrastructure.

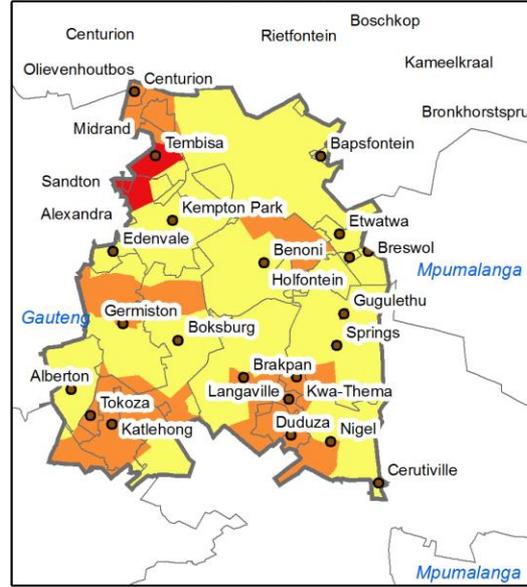


Pieterse, A., Van Huyssteen, E., Maritz, J. Mans, G. & Van Niekerk, W. 2014. 'The bright lights of city regions – Assumptions, realities and implications of changing population dynamics: Zooming in on the Gauteng city region'. In: Patel, Y., Minyuku, N., Van Der Bank, C., Mohan, K. & Ogra, A. (eds). *Conference Proceedings: Planning Africa 2014 - Making Great Places*, 19th-22nd October, 2014, International Convention Centre (ICC), Durban, South Africa, South African Planning Institute (SAPI), Johannesburg, pp.187-216. [ISBN: 978-0-86970-781-4.]

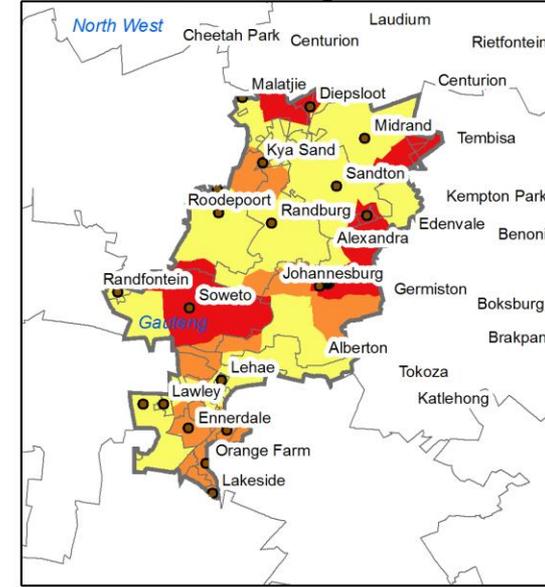
### Tshwane metro



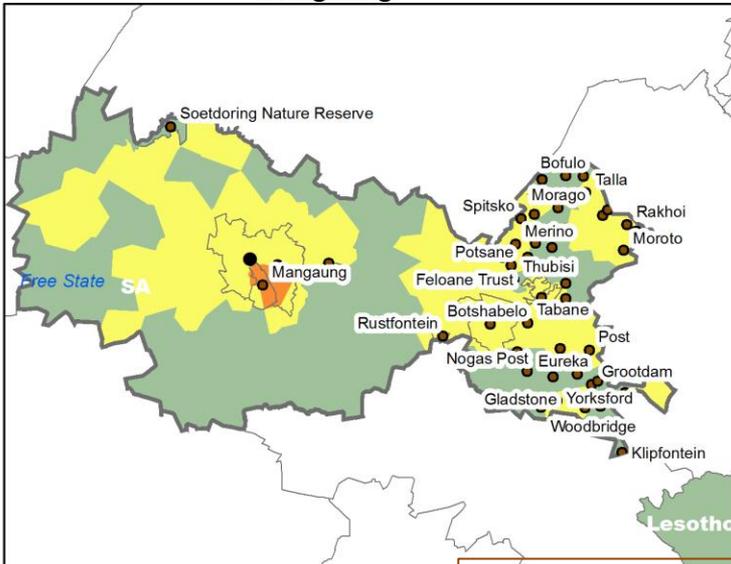
### Ekurhuleni



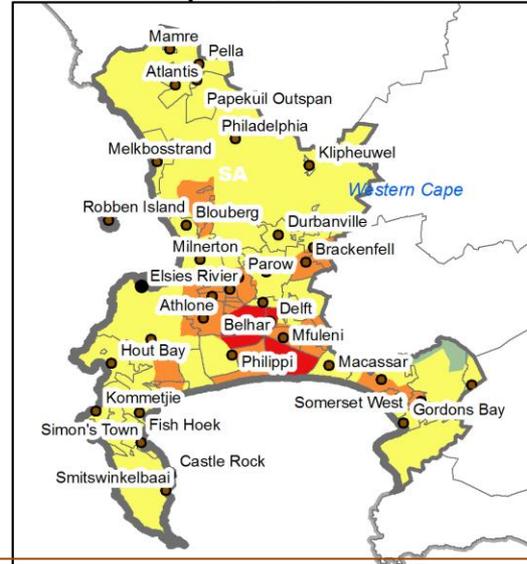
### Johannesburg metro



### Mangaung



### Cape Town metro



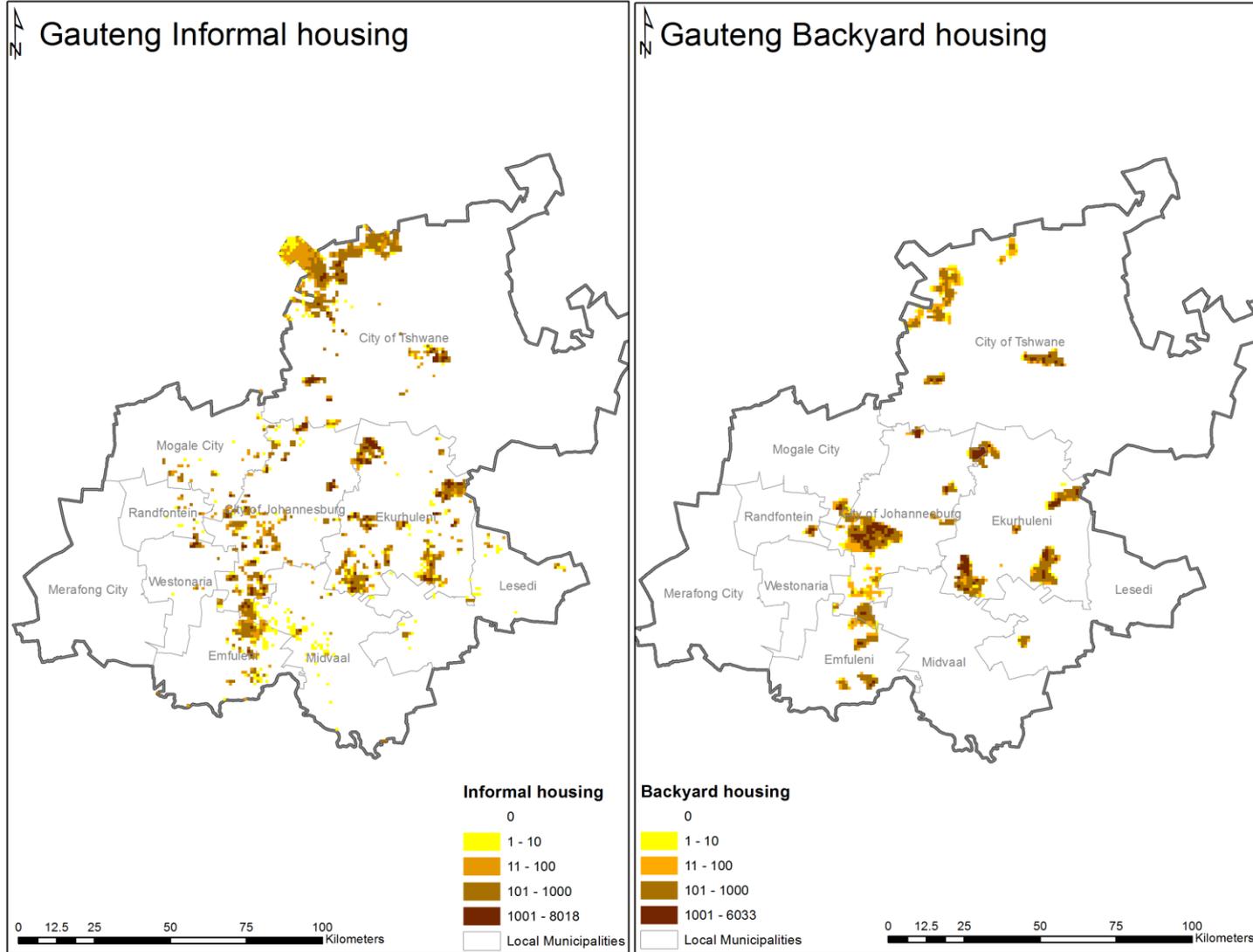
#### Legend

- SA\_SPlacelabel\_20150522
  - Main Cities
  - sa\_lmexcl\_tshwane
  - SA\_9SACN\_cities\_20150522
  - Cities9\_MP2011\_subset\_20150523
- Change in poor households 1996 to 2011**
- 3 319 - -100
  - 99 - 0
  - 1 - 4 153
  - 4 154 - 12 341
  - 12 342 - 27 465
- Province
  - National Park
  - SADC

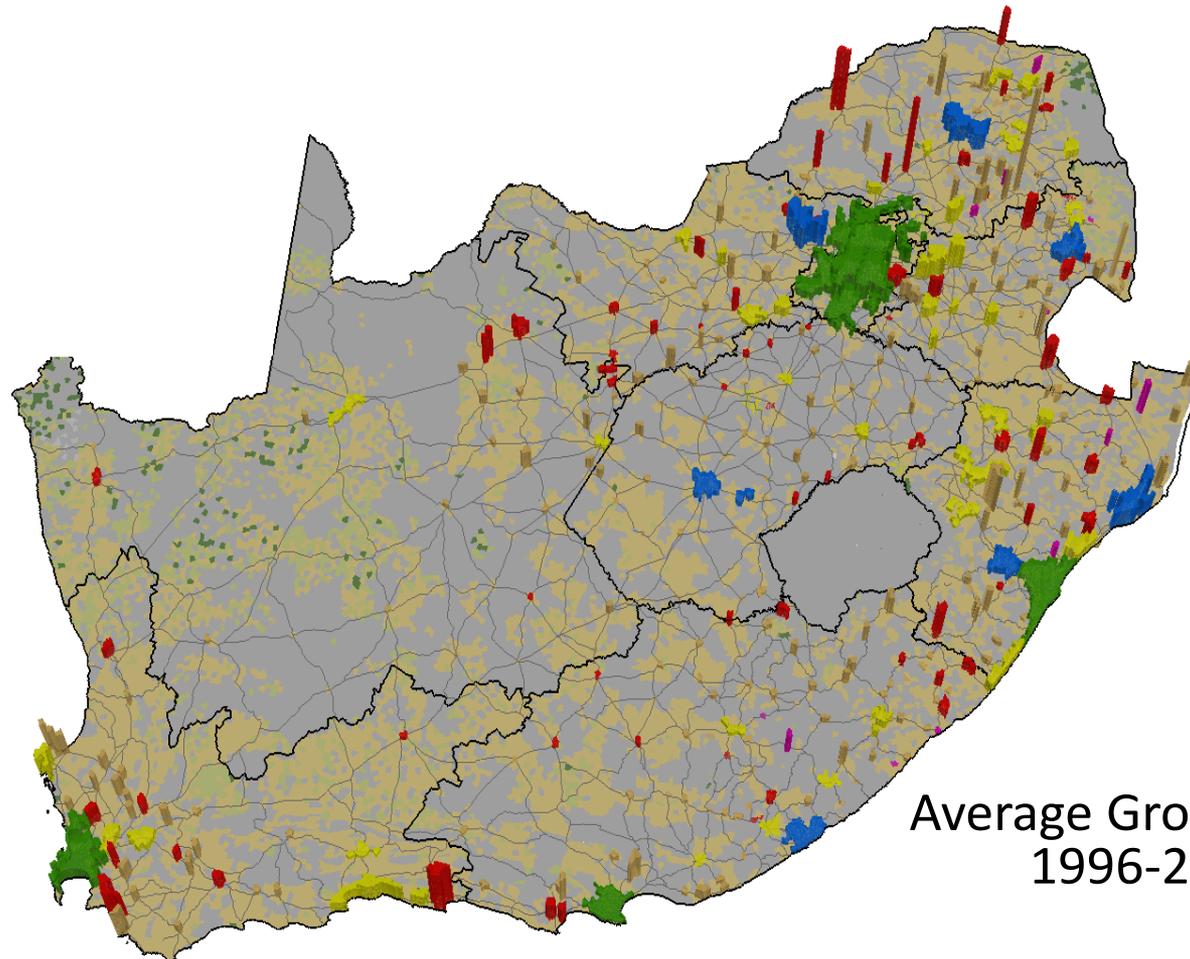


**Sub-city implications and changes: access, opportunities, living arrangements, costs, social networks etc.**

# Example: Increase in Backyard Shack

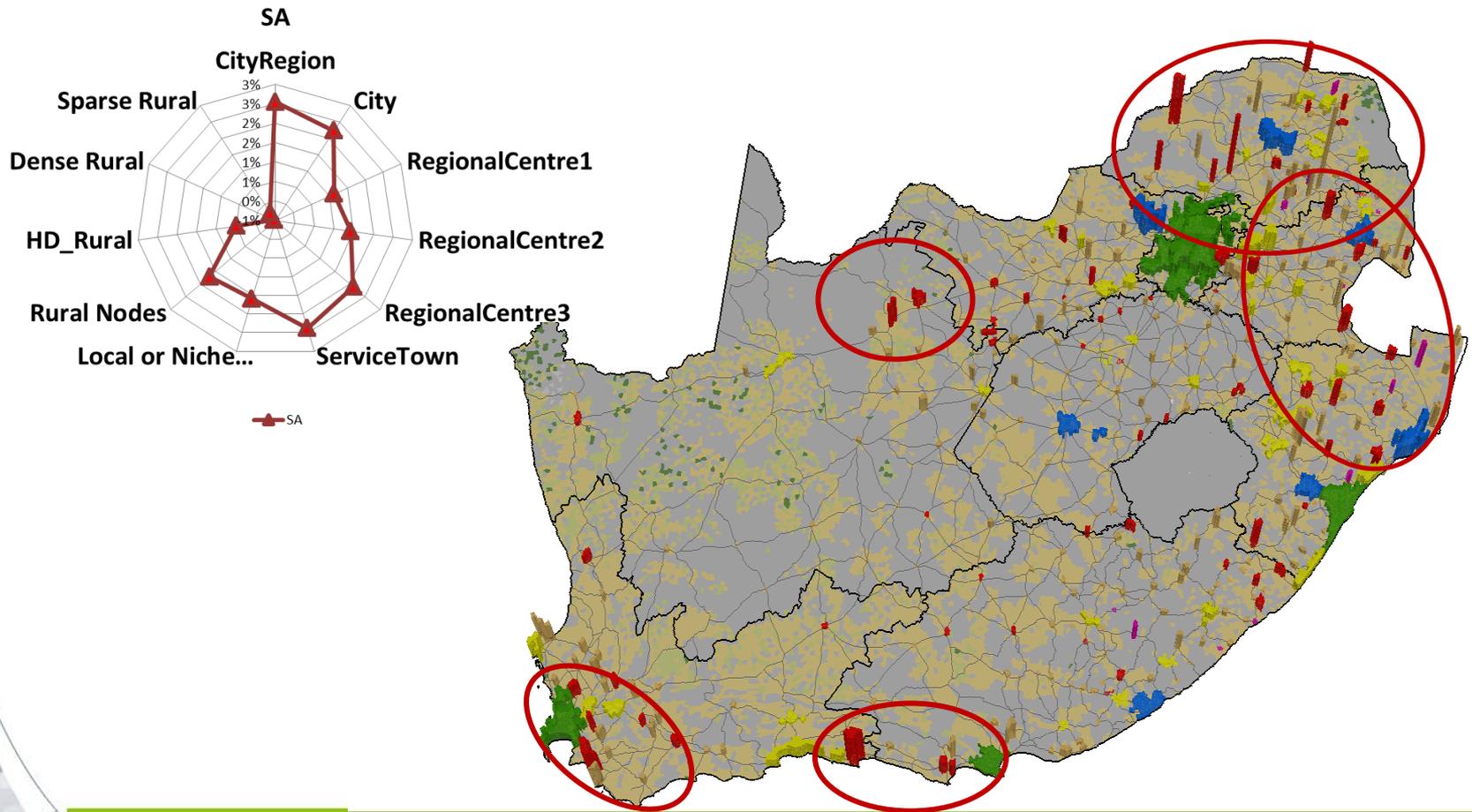


# Urban development implications of city and town concentration



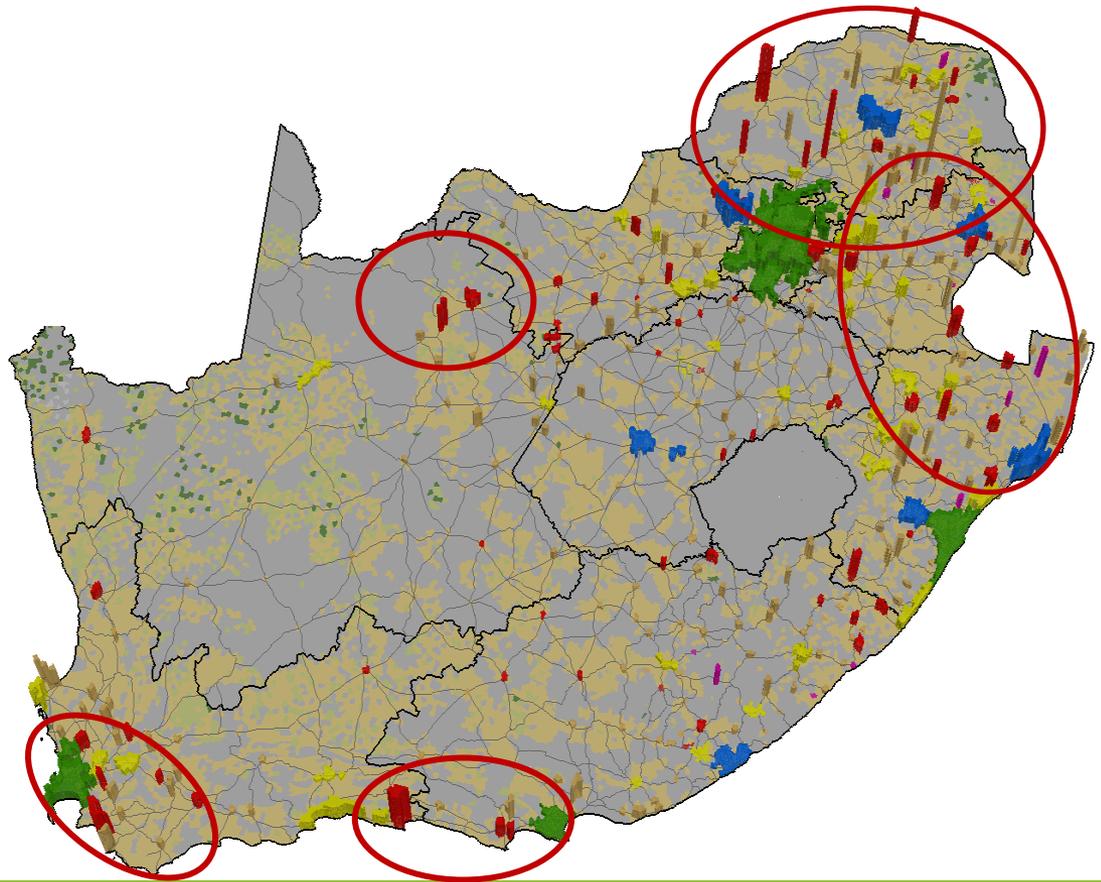
Average Growth Rate  
1996-2011

# Most significant 'urban' growth in resource and coastal towns



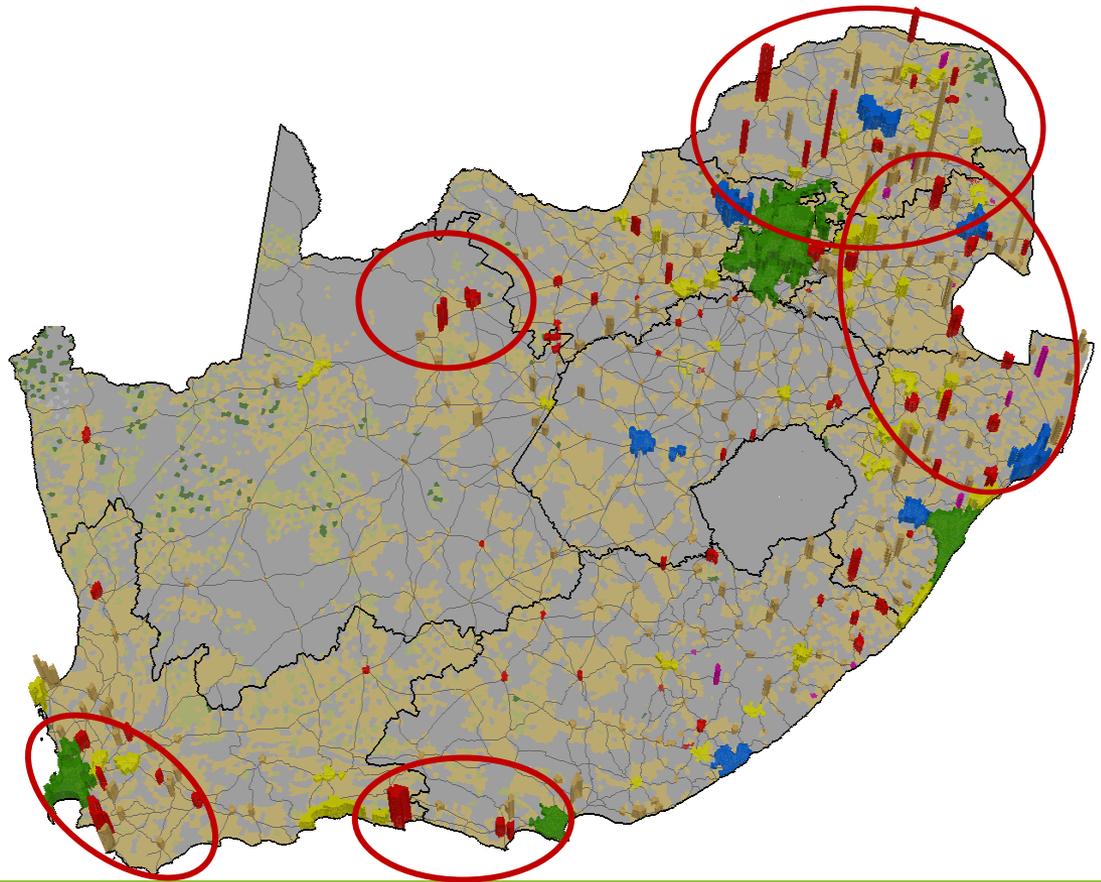
# Service Concentrations

In the context of increased unemployment, people are **attracted to places with diverse economies and that can offer them a variety of livelihood opportunities, and quality services.**



# Impact service demand & municipal financial viability

Especially towns either doubling in size eg. new power stations/mining growth, or losing more than 75% of economically active population where mines close down/economy decline

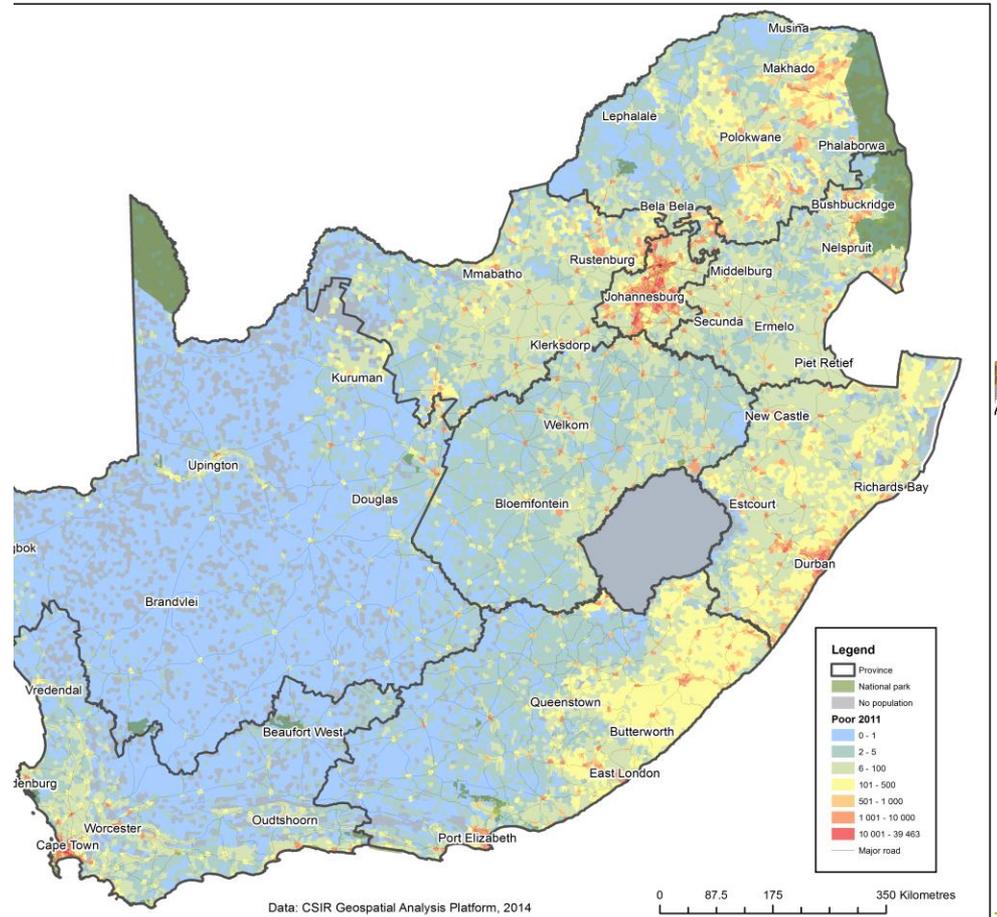


# Increased vulnerability in towns

Major increase not only in metropolitan areas, but also in cities and big towns across SA

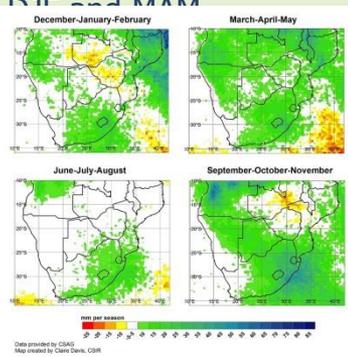
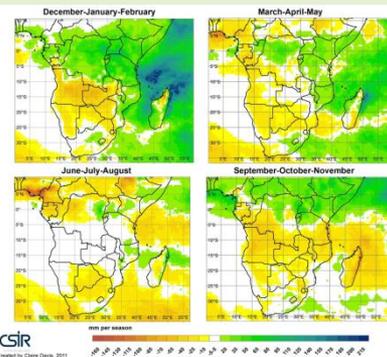
Gini co-efficient show that inequality is increasing in urban SA. (Thus areas with an increased mix of income groups)

Note: gini-co-efficient is decreasing (thus more equality) in places where the economy is in decline



# Climate Change Projections: SADC

Summary and comparison of climate change projections from the GCMs and the two downscaling techniques

	<u>Global Change Model</u>	<u>Statistical Downscalings</u>	<u>Dynamical Downscalings</u>
<b>Time-scale</b>	1960-2000 2030-2060	1961-2000 2046-2065 (A2 emissions scenario)	1961-2000 2036-2065 (A2 emission scenario)
<b>Rainfall</b>	<p><b>Decreases</b> over central and western southern Africa during DJF and MAM</p> <p>Increases further north over east Africa.</p> <p>Decreases over most of southern Africa during SON and southwest Africa during JJA</p>	<p>Increases over Angola, northern Mozambique and southeast South Africa during DJF and MAM</p> <p><b>Decreases</b> over southern and western Africa and SON.</p> 	<p>Increases over East Africa and southeast South Africa, particularly during DJF and MAM</p> <p><b>Decrease</b> in rainfall over southern Africa and Mozambique</p> 
<b>Temp.</b>	<b>Increase in mean, minimum and maximum temperature</b>		
	1 - 3°C	0.8 - 3.6°C	0.4 - 3.2 °C
<b>Extreme weather events</b>	Increases in very hot days and heat waves	Increases in very hot days and heat waves	More extreme rainfall events over eastern southern Africa Increase in very hot days – above 35°C

# Increased vulnerabilities - significant implications

---

- Energy crunch
  - Significant in mitigation and adaptation
- Water crunch
- Urban and land use transformation crunch
- Service delivery & spatial differentiation
- Complex disease burden

# “Urban-Town-Rural-Resource-Future”

Climate change related migration may enhance existing pattern of increased urbanisation (not necessarily to large urban centres), with increased pressure on of urban functions and re-migration to rural areas.

People may also move from places most affected by climate change to areas less affected



# Increased vulnerabilities - significant implications

The confluence of climate change (both mitigation and adaptation) and environmental degradation, will increase current resource constraints (water, energy and food production) on urban development, informal settlement upgrading and service delivery.

Adaptation in response to identified cross sectoral key impacts

Mainstreaming within existing strategic planning and policy at multiple scales

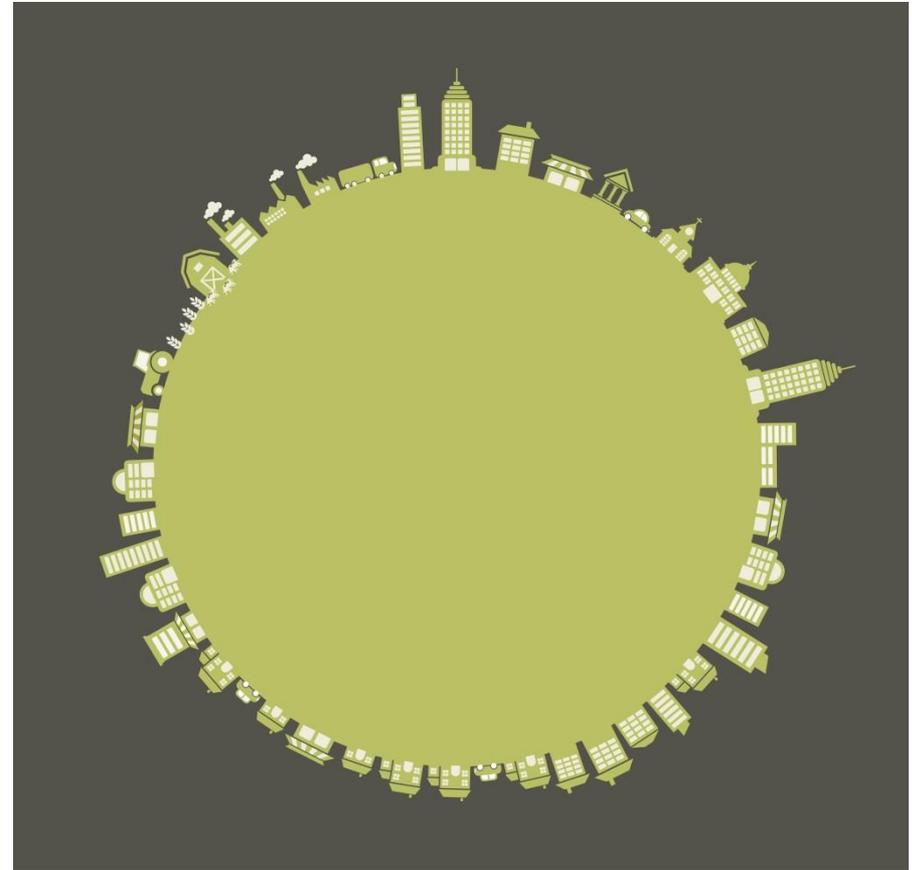
Climate change is not just about disaster preparedness,- it will change the world as we know it. Needs flexible building regulations and land-use planning principles to adjust to climatic conditions that will be outside of historical parameters and continue to change for the foreseeable future in unpredictable ways.

# Implications for the IUDF

Guidelines for urban development?

**Urban governance focus?**

Inward?



# Implications for the IUDF

Even though municipalities (the local sphere) are experiencing the manifestations/results of these drivers, it would be irresponsible and **cannot be expected of municipalities to ably, effectively and sustainably respond to the spatial and economic manifestations of these national drivers.**

This is what national should be doing, not merely putting out an IUDF (a local guidebook) that provides completely overwhelmed municipalities (even the real metros) with a comprehensive range of guidelines to respond to challenges they cannot deal with in an effective and sustainable way.

What can the IUDF really contribute?

# Implications for the IUDF

Guidelines for urban development?

Urban governance focus?

Concerted intergovernmental intervention & focus?

National agenda?



# Implications for the IUDF

Urban and land use transformation crunch - **Mainstreaming within existing strategic planning and policy at multiple scales.**

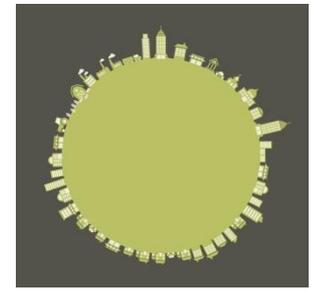
There are **strong existing instruments. IDPs & SDFs at local level. DCOG stronger role.**

New regional level SDFs could assist in addressing these regional considerations.

Given SA context & **plethora of policy/institutional/planning/budgeting instruments & reporting requirements** all focussed - yet another policy (even though with valuable and complex set of implications & principles etc.) to support & guide & assess urban governance at local level might have limited impact.

Between the projects/investment of infrastructure & catalytic projects, **the need is for strategic spatial direction**

# Implications for the IUDF



The urban agenda is also national agenda - however it does not need national departments to merely catapult infrastructure and catalytic projects into areas - it needs strategic national and regional direction, that can support identifying critical regional interdependencies, put in place strategic interventions (many of which are not in cities)

The need is for national government to adapt its funding mechanisms and strategic national guidance/'direction' to respond to these drivers - where is the country most able to effectively and sustainably respond to the drivers and their spatial manifestations?

WHAT is the CULMINATIVE impact of government investments – not only once off aligned as projects, but over time, with a future orientation?

# Why is urban SA and the IUDF important?

Settlements, towns and cities are playing, and will continue to play, a critical role in the day to day living conditions and future of the South African population.

IUDF is not just an 'urban agenda'

It is time to strengthen the hand of local government, and provide direction for government investment and service delivery in the growing urban areas, across the so-called "urban and rural SA".



# Acknowledgements

## **Spatial temporal evidence for planning in SA (stepSA)**

Collaborative R&D Initiative between CSIR, HSRC, DST to

- **Support spatial transformation and effective public investment in cities and towns;**
- **Profile spatial dynamics of growth, population movement and development trends;**
- **Simulate the spatial implications of growth and major investments (housing and transport).**

Collaboration with DCOG & SACN

CSIR

SA Risk & Vulnerability Atlas (CSIR, DST & collaborators)

Long Term Adaptation Strategy (LTAS) Phase 2 (SANBI, DEA)

SADC Climate Change Adaptation Strategy

University of Pretoria: School of the Built Environment

## SOURCES

- Mans, G., Maritz, J., van Niekerk, W., van Huyssteen, E., Beukes, A., Green, C. and Kok, P. 2014. Background Research Paper for the Integrated Urban Development Framework: Demographic Change. Unpublished Research report Prepared by the CSIR for SACN and DCOG.
- Maritz, J. & Kok, P. 2014. 'Using election registration data to measure migration trends in South Africa'. *Town and Regional Planning*, 64: 31-42.
- Amy Pieterse, A. Maritz, A. Kok, P. Maditse, K. and McKelly, D. 2015. Urban Migration Analyses: An analysis of intra-regional migration within the functional Gauteng City Region. Unpublished Technical Report prepared by the CSIR as part of a Parliamentary Grant Project.
- Pieterse, A., Van Huyssteen, E., Maritz, J. Mans, G. & Van Niekerk, W. 2014. 'The bright lights of city regions – Assumptions, realities and implications of changing population dynamics: Zooming in on the Gauteng city region'. In: Patel, Y., Minyuku, N., Van Der Bank, C., Mohan, K. & Ogra, A. (eds). *Conference Proceedings: Planning Africa 2014 - Making Great Places*, 19th-22nd October, 2014, International Convention Centre (ICC), Durban, South Africa, South African Planning Institute (SAPI), Johannesburg, pp.187-216. [ISBN: 978-0-86970-781-4.]
- Van Huyssteen, E., Mans, G. & Ngidi, M. 2013. Reaching development outcomes through a dedicated focus on cities, towns and settlements. Unpublished StepSA Policy Brief Series: Policy Brief 3. (Accessed at <http://www.stepsa.org.za> on 2 March 2014.)
- Van Huyssteen, E., Manfred, G., Maritz, J., Le Roux, A. & Ngidi, M. 2014. *Update of the CSIR/SACN South African Settlement Typology*. Unpublished Report, CSIR.
- Todes, A., Kok, P., Wentzel, M., Van Zyl, J. & Cross, C. 2010. 'Contemporary South African Urbanisation Dynamics'. *Urban Forum*, 21: 331-348.