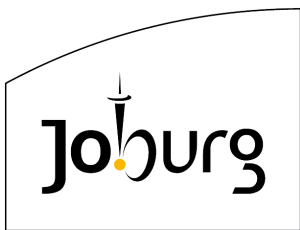


GROWTH AND DEVELOPMENT STRATEGY

2 August 2011

Draft – for consultation



a world class African city

Letter from the Executive Mayor	ii
Chapter 1: Introduction and overview	1
1.1 GDS 2040 in context	1
1.2 The rationale for a long term growth and development strategy	2
1.3 The role of city strategies	3
1.4 The GDS review process: key steps and planned outcomes	4
1.5 Conclusion	5
Chapter 2: A framework for the GDS: Paradigms, principles and vision	6
2.1 Introduction	6
2.2 Elements contributing to a revised GDS paradigm.....	6
2.3 Reframing the GDS paradigm	12
2.4 Refining the GDS principles	13
2.5 The GDS Vision defined	15
2.6 Conclusion	15
Chapter 3: Confronting our reality: Challenges and opportunities	17
3.1 Introduction	17
3.2 Population dynamics	18
3.3 Health and poverty	20
3.4 Economic growth.....	25
3.5 Resource sustainability.....	30
3.6 Climate Change.....	37
3.7 Transport	39
3.8 Liveable Communities	43
3.9 Community Safety	44
3.10 Smart City	46
3.11 Governance.....	47
3.12 Conclusion	47
Chapter 4: Building our vision: Focus areas for the path ahead	49
4.1 Introduction	49
4.2 Health and Poverty	49
4.3 Economic Growth	50
4.4 Natural Resources.....	51
4.5 Transport	53
4.6 Liveable Communities	53
4.7 Community Safety	55
4.8 Smart City	56
4.9 Governance.....	57
4.10 Conclusion	58

Letter from the Executive Mayor

2 August 2011

Dear Citizen/Stakeholder of the City of Johannesburg,

On 29 June 2011, during my inaugural Budget Speech, I announced that the City of Johannesburg intended to initiate an inclusive and participatory process in formulating our revised Growth and Development Strategy (GDS). The GDS sets out the overarching plan for the long-term development of our city.

Our very first GDS, approved in 2006, has been the cornerstone of the developmental trajectory followed to date. The GDS carefully analysed our major challenges, and articulated a vision and a set of principles that ensured our work was underpinned by commonly-held values and a unified sense of direction.

Over the course of the last five years, we have experienced a wide-range of changes at the global, continental, national and local levels. These have included the recognition of the impact of climate change, the global economic downturn of 2008, the increasing incidence of disasters such as the tsunami in Japan, the current famine in East Africa and the rapidly-changing socio-political landscape in South Africa. It is the emergence of these issues that have motivated the revision of the 2006 GDS. Updating the document is critical, if it is to respond to the imperatives of our city in the 21st century.

The draft GDS document presented here is our first attempt at re-formulation. It sets out the challenges confronting our city, defines a paradigm (our underlying values) and elucidates the proposed goals and objectives for the path forward. It is this draft GDS document that we are opening up, for your input and engagement.

The GDS Outreach process that is being launched on 2 August 2011 must surely rank as one of the most inclusive, intensive and wide-ranging stakeholder and community engagement processes for the formulation of local government strategy. We want to inspire our citizens and capture the imagination of all who call Johannesburg their home. Through this process, we will be bold and open about the challenges we face – and work collectively to produce a strategy that is not only visionary and path-breaking, but realistic and implementable. The GDS Outreach declares: “We are all players.”

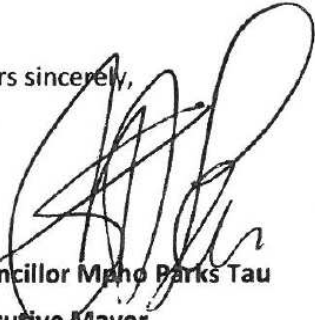
Over the next three months, the GDS Outreach process will involve:

- Nine consecutive weeks dedicated to stakeholder and community engagement, on nine key themes: liveable communities, resource sustainability, health and poverty, governance, transportation, community safety, the environment, economic growth, and the ‘smart city’;
- Ward-level participation, to ensure that the voices of local communities are clearly heard in this process;
- An international conference, with leading international, African and South African scholars and practitioners discussing the critical issues and mechanisms through which they can be addressed; and
- A GDS Stakeholders’ Summit that will be attended by the city’s key stakeholders.

The input received through each of these steps will be rigorously processed, synthesised and evaluated for inclusion in the final version of the GDS. The updated GDS will then be taken to the Stakeholders' Summit, for final discussion and approval. It will be YOUR document, against which you will hold us to account.

Joburg. MY CITY – OUR FUTURE!

Yours sincerely,

A handwritten signature in black ink, appearing to be 'Mpho Parks Tau', written over the printed name.

Councillor Mpho Parks Tau
Executive Mayor
City of Johannesburg

Chapter 1:

Introduction and overview

1.1 GDS 2040 in context

The City of Johannesburg's (hereafter referred to as 'the City') first Growth and Development Strategy (GDS) was passed in 2006. It was developed as a long-term strategy – a coherent story of Johannesburg's future development path. At the time, numerous strategies existed, such as 'Joburg 2030', the Human Development Strategy (HDS), the Integrated Transport Plan and the City Safety Strategy, with each addressing a different angle of the city's development. The GDS allowed for consolidation of these into a single City strategy. The 2006 GDS also served as a foundation for the City's five-year Integrated Development Plan (IDP), with the 2006-2011 term of office being the first time these two documents were developed in conjunction with each other, through a single process.

South African municipalities are legally obligated to develop medium-term IDPs and annual Business Plans and budgets. The requirement for IDP development is stipulated in the Municipal Systems Act (MSA), while the Municipal Finance Management Act (MFMA) defines the need for Business Plans. Where IDPs allow for incremental five-year planning, thereby facilitating achievement of long-term goals through medium-term delivery, Business Plans allow for detailed operational planning and the articulation of deliverables per department, for the financial year ahead. Basing both the IDP and Business Plans on a long-term City strategy is essential, for far reaching developmental outcomes to be achieved.

The GDS is therefore positioned to frame the IDP, charting long-term ambitions, strategies and overarching decisions relating to areas requiring focus, if the City is to accelerate economic growth and human development. In 2006, the City noted the need for a five-year cycle for the review of the GDS, allowing for evaluation of progress towards achievement of the long-term strategy, and reframing of certain elements, as required, in the context of changes, new challenges and opportunities. This review process has been initiated with the new term of office, with 'GDS 2040' allowing for an assessment of progress, identification of trends, and confirmation or where necessary, adjustment, of future direction.

With large-scale changes and new dynamics in both South Africa and the global arena, the 2006 GDS needs a fresh review. Key shifts in the South African development landscape include, for example, South Africa's incorporation into the BRICS bloc of developing economies, the introduction of the New Growth Path, and the establishment of the National Planning Commission and a new Department of Human Settlements. This review therefore responds to this changing paradigm, integrating some of the latest inputs in respect of aspects such as the economy, technology and its potential, society and the environment. We are called on to consider different perspectives of what is needed to advance towards a future city all can aspire to live in.

A core part of this process involves engagement with a variety of stakeholders, including, importantly, the citizens who live and work here, if we are to establish a viable and inspiring future strategy in which all can believe, and play a part.

1.2 The rationale for a long term growth and development strategy

City strategies serve to define a chosen development path, providing a foundation for:

- Pragmatically confronting complex challenges and defining long-term strategic choices;
- Framing medium-term operational plans;
- Allowing for the timeous conceptualisation and initiation of projects requiring long-term development;
- Linking long-term city-wide outcomes with operational outputs; and
- Stimulating public interest in and action towards agreed future outcomes.

Successful global cities such as Beijing have been carrying out long-term planning activities for centuries. World-wide, cities today are confronted with an ever-increasing complexity of challenges, necessitating the development of holistic city strategies. Some of these challenges include:

- *Increasing migration – a shifting population.* While a global phenomenon, South Africa – and Johannesburg in particular – continue to attract migrants seeking economic opportunity, access to services, political asylum and refuge. The pace and scale of migration between and within provinces, rural areas, towns and cities is complex, with significant movement between secondary towns and primary cities, between homes in rural areas and places of work in the city, and between the urban core and its peripheries. Migration brings cultural, political and social plurality, creating opportunities and challenges as migrants articulate diverse ways of being in the city, and attempt to access an already-stretched resource pool. As Johannesburg becomes even more multicultural, building social cohesion in the face of increasing xenophobia – and creating spaces that allow for multiple expressions of the richness of this diversity – becomes an ongoing focus for urban governance role players.
- *An interconnected world – with attendant benefits and risk.* Cities serve as engine rooms of regional and national economies, while also operating as connective nodes through which global capital circulates. This interconnectedness simultaneously promotes growth and opportunity – and makes cities vulnerable to global financial downturns and contagions. Building an environment for sustainable growth and a prosperous, healthy citizenry requires foresight, sound governance practices, risk mitigation mechanisms and the development of a resilience, to weather unexpected storms in global and regional markets.
- *An era of uncertainty, and growing unpredictability.* Climate change, financial contagions and the viral spread of information mark a period of volatility, with change being both hard to predict and hard to plan for. Paradoxically, cities must plan for uncertainty. ‘Black Swan’ events¹ – large, unexpected events that are difficult to predict and hold significant impact (e.g. September 11; the rise of the Internet) – are increasingly recognised as affecting cities. These events create a policy dilemma, as long-term strategies define predictable steps for development, omitting that which is outside the realm of normative strategy. As reflected on above, the capacity for resilience and the ability to adapt rapidly to the unexpected are essential ingredients for survival, if cities are to exploit opportunities and maintain momentum on an envisaged growth-path.

Migration, global competitiveness and climate change represent a snapshot of the complex changes affecting cities on a global scale. Improving the health and well-being of citizens, managing scarce natural resources and ensuring economic growth must continue amidst uncertainty and rapid change. To do this, a finer understanding of the tensions between economic growth, human development and the management of natural resources is needed. Aspects of uncertainty, change, predictability and continuity exist side by side – with the establishment of an understanding of the trade-offs, the consequences of decisions, and necessary balancing required, being critical to any robust strategy process.

¹ As defined by N.N. Taleb, 2007.

1.3 The role of city strategies

City strategies support continuity amidst uncertainty. To achieve sustainability, cities must mediate multiple tensions. Economic growth needs to be inclusive, allowing for the absorption of an increasing pool of migrants, and utilisation of a range of skills levels – rather than generating jobless growth. In the context of resource scarcity, economic growth needs to be ‘decoupled’ from natural resources, given ever-increasing scarcity – e.g. through shifting towards a low-carbon economy. Human development initiatives need to focus on improving the health and well-being of people, without adversely impacting on the natural environment. In today’s context, these fundamental sustainability outcomes are a focus point of most city strategies, with the tensions between conflicting priorities requiring careful mediation. To achieve this, cities need to use all available know-how, establish effective intergovernmental partnerships, deepen the participation of communities, and use legislation and regulations effectively to support objectives.

But planning, and more specifically, dealing with the act of balancing unpredictability, change and the need for continuity, is not simply a technical process. To respond to uncertainty, adapt adequately to change and ensure appropriate adjustments to existing programmes and interventions where this is necessary, cyclical reviews are important. Understanding change is also about a social dialogue. Social dynamics are nuanced, quick-changing and complex – and can only be understood through ongoing, regular dialogue. Public dialogue provides an opportunity to get closer to communities, building intelligence from the bottom up. City strategies therefore serve as important tools for initiating this social dialogue, providing the opportunity for citizens to emphasize the things that matter most.

The City has produced a number of important strategies over the past decade, as a result of continuous reflection. Each strategy has built on the last, adjusting to issues of the day and serving as a living document, subject to change where needed. Each has framed both challenges and approaches. Joburg 2030 was developed to gear the city for economic growth and competitiveness, while the HDS aimed to counterbalance economic growth imperatives with a focus on pro-poor interventions, to reduce poverty. The 2006 GDS focused on consolidating various strategies and defining an overall vision for Johannesburg, articulated through a set of key principles and objectives. It balanced the need for economic growth with social and human development.

The shifts reflected in this document, GDS 2040, emerge in the context of climate change and natural resource scarcity. Without sustainable natural resources, human and economic development cannot be maintained in the long-term. Reframing economic and human development within the context of sustainability is not just a nice-to-have, but a necessity for survival. In keeping with the tradition of previous strategies developed by the City, this review therefore responds to its time, adapting and revising the envisaged path articulated in the 2006 GDS, while elevating the importance of sustainability in the context of jobless growth, natural resource scarcity, and the recognised need to promote greater governance and improve the lives of Johannesburg’s citizens. This 2011 review therefore frames a set of sustainability outcomes that give meaning and implementation force to the vision contained in the 2006 GDS. The process of consultation provides an opportunity for open discussion of the major risks facing Johannesburg, and crystallisation and fine-tuning of future actions to address these.

1.4 The GDS review process: key steps and planned outcomes

A number of processes have informed the writing of this document. These include numerous in-depth discussions with line departments within the City itself, technical research undertaken, consultation and dialogue with experts across various fields, and further in-depth desktop analysis. The emerging data and research findings from the above were analysed and captured internally – and are presented in this review. Together with the subsequent revisions made to the concepts included within the 2006 GDS, this has provided the basis for drafting GDS 2040.

The next stage in the review – the GDS Outreach process launched on 2 August 2011 – aims to ensure inclusive, thorough and wide-ranging stakeholder and community engagement, and the formulation of an inspiring local government strategy which galvanises all, in a shared sense of ownership. We will work collectively to produce a strategy that is both visionary and implementable. As noted by the Executive Mayor, the GDS Outreach process declares: “We are all players.” Key activities in this process will include:

- Nine weeks of focused stakeholder and community engagement, addressing nine key themes: liveable communities, resource sustainability, health and poverty, governance, transportation, community safety, the environment, economic growth, and the ‘smart city’;
- Ward-level participation, to incorporate the voices of local communities;
- An international conference, providing the platform for leading global, regional and local experts to discuss the critical issues and mechanisms through which they can be addressed; and
- A GDS Stakeholders’ Summit – to be attended by the city’s key stakeholders.

The input received through each of these steps will be rigorously reviewed and debated, for inclusion in the final GDS – GDS 2040. This updated document will then be taken to the Stakeholders’ Summit, for final engagement and approval. As such, it will be a document against which the city’s stakeholders can hold us to account.

Through the process of developing, engaging in and refining the City’s long-term strategy, we aim to:

- *Build:* - We will build on the important work undertaken in 2006, and the strong foundation created during the previous term of office. The 2006 GDS provides not only a vision for a future sustainable City of Johannesburg, but defines the City’s values in clear terms, through the GDS principles. This reviewed strategy builds on this legacy of:
 - Supporting the poor;
 - Building a diversified and inclusive economy;
 - Building liveable communities;
 - Ensuring resource security and environmental sustainability;
 - Achieving social inclusion;
 - Building social cohesion; and
 - Promoting good governance.
- *Inspire:* - We will focus on growing social cohesion and citizen commitment to transforming the city, inspiring citizens through the ongoing GDS outreach process.
- *Display positive activism:* - We will serve citizens as activist local government, demonstrating a proactive belief in the importance of a city transformed from its Apartheid divisions, and the need for a revival of our commitment to the poor.
- *Demonstrate boldness:* - The City will display no fear in dealing with tough challenges and hard strategic choices – applying the same boldness to the transformation of its own institution, thereby building a strong, competent cadre of urban managers able to deliver on the GDS vision.
- *Be realistic:* - We will give implementation force to the 2006 GDS, through ensuring this review results in the development of clear, achievable and realistic outcomes and targets for transformation.

- *Ensure accessibility:* - We acknowledge that the review of the GDS must be accessible, with buy-in from the general public and collective ownership of the strategy only possible through stakeholder engagement and wide-spread consultation.

1.5 Conclusion

To improve and sustain Johannesburg's performance, we have to change the current development trajectory. GDS 2040 presents some hard challenges, but this reflection is part of the process of forging new ways of being, if the goal of a more sustainable and inclusive city is to be realised. The review that follows, and the reframed GDS principles, paradigms and priorities for 2040, present a range of realities that require action:

- Johannesburg is acknowledged as a competitive city that, perhaps because of its competitiveness and the draw of its economy, has developed into one of the most unequal cities in the world – as represented in a high Gini coefficient – with this leading to a host of social, economic and political challenges.
- A natural environment threatened by poor resource management, resource-intensive economic growth and a carbon-dependent energy base. While complex technologies have been applied to ensure energy security for the city, this has had a severe impact on our natural environment.
- A future that depends on Johannesburg being able to secure energy without significant risk to the natural environment, and delivering economic growth that does not continue to generate high income inequality, environmental loss and social risk.

Johannesburg's greatest assets are its people – resilient, diverse and cosmopolitan. It is the citizens of this city who offer the greatest potential for change. Implementation of GDS 2040 will only succeed if all citizens are included in the process and feel part of a collective team, focused on a joint vision for a better, sustainable future.

Chapter 2:

A framework for the GDS: Paradigms, principles and vision

2.1 Introduction

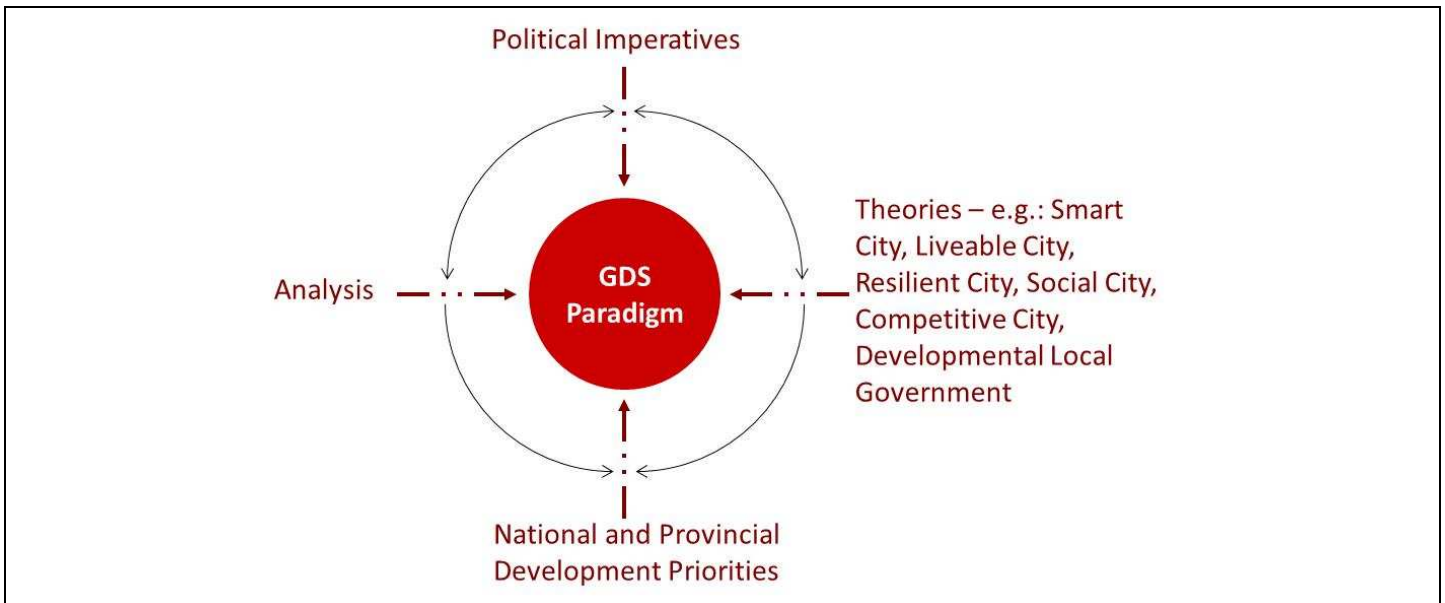
The chapter below outlines the updated GDS paradigm, the conceptual framework that underpins the City’s response to the challenges and opportunities articulated in the chapter that follows (Chapter Three). It is this framework that guides the City’s thinking in respect of long-term goals and strategic interventions, as defined in Chapter Four. The GDS paradigm is in turn informed by a set of principles and broader political imperatives, originally set out in the 2006 GDS.

While the African National Congress’ (ANC) discussion document entitled ‘Building Developmental Local Government in Johannesburg’, which informed the 2006 GDS principles and imperatives, remains important and continues to influence thinking, critical new policy, and political and theoretical insights demand attention. These necessitate a review of both the GDS paradigm and principles.

2.2 Elements contributing to a revised GDS paradigm

Changes to the GDS paradigm have been made as a result of a variety of inputs: the analysis undertaken to date, in the context of both past performance and current realities; theoretical concepts in respect of city development, the role of the city, and more specifically, the role of local government; national and provincial priorities; and refined – and in some cases – new political imperatives. As represented in the figure below, it is the combination of all of these elements that has resulted in a revised GDS paradigm.

Figure 2: Elements shaping the GDS paradigm



Each of these contributing factors is outlined further in the table below, and in the narrative that follows.

Table 1: Key elements contributing to the GDS paradigm

Element	Examples of contributions to the paradigm
Political imperatives	Polokwane National Conference, 2009; ANC National Election Manifesto, 2009; ANC Local Government Election Manifesto, 2011; Strategy and Tactics; Ready to Govern
Urban theories	Smart City; Resilient City; Liveable City; Social City; Creative City; Global City-Region; Developmental Local Government
National and provincial priorities	RDP; New Growth Path; National Planning Commission Diagnostic and forthcoming Plan; Presidency Outcomes; Gauteng Developmental Green Economy
Analysis	Global, national, provincial and city trends

Political imperatives

Various political imperatives have informed the GDS paradigm. These have been articulated in a variety of documents, and include the ideas communicated in sources such as, amongst others: the ANC's 2005 discussion document on 'Building Developmental Local Government in Johannesburg' (as noted above); the ANC's Polokwane Resolutions, following its 52nd national conference; the ruling party's 2009 election manifesto, and its 2011 local government election manifesto. Key points of emphasis include the need to transform our city into a non-racial, equitable and just society, with better opportunities for all who live and work here.

Concepts and theories of 'the city'

There are various theories that inform long-term city strategies both locally and globally – with some of the key concepts as follows:

i. Competitiveness

Cities serve as the dynamos of national economies, contributing disproportionately to global economic competitiveness. Those cities that succeed in attracting and retaining highly skilled, talented citizens – alongside successful local companies and globally competitive firms – hold a greater hope of continued competitiveness. This view has given rise to further theories on mechanisms for driving competitiveness – resulting in concepts such as the:

- 'Global City-Region';
- 'Collaborative/ Creative City'; and
- The 'Smart City'.

The concept of the *Global City-Region* (GCR) contributes to our understanding of the geography of competitiveness. GCRs consist of regional economies with one or more metropolitan areas – and surrounding hinterlands. Their economies are characterised by intricate networks of specialised but complementary activities, bolstered by large multifaceted local labour markets, with this combination resulting in a strong economy augmented by agglomeration effects.

City strategies that emphasize competitiveness focus on driving support for particular high-growth economic sectors, securing foreign direct investment, ensuring strong skills development and building a conducive environment for business. Joburg 2030 was such a strategy, focused predominantly on building a competitive economy. The primary critique of competitive cities, however, is that they do not necessarily ensure shared economic growth, or the promotion of job growth.

In contrast with GCRs, the related concept of the *Collaborative/ Creative City* posits that human intelligence, motivation, imagination and creativity are replacing other urban resources, such as location, natural resources and market access². The concept of creativity has recently been introduced in economic and urban policies as a key resource viewed as necessary for ensuring competitiveness in the global knowledge economy. Many innovative city strategies have focused on providing spaces – physical and social environments – to stimulate the production of creative output and innovative communities, while promoting the establishment of value-added economic activities and the regeneration of degraded urban areas.

Of relevance to the theme of competitive cities is the *Smart City* – an idea that is gaining prominence as an important feature of many city strategies. Smart cities are able to use Information and Communication Technologies (ICT) to enhance economic efficiencies and overall competitiveness. One of the main thrusts of the Smart City concept is the use of technology, or ‘smart systems’, to transform energy grids, to manage water more effectively, to reduce grid-lock on congested roads, and to improve the overall efficiency and functionality of services, processes and systems within the urban environment. There is a direct, positive link between competitiveness and resource use and optimisation. A city that monitors conditions and integrates information relating to its critical infrastructure³ is better able to optimise its resources, plan for preventive maintenance and monitor safety and security parameters, while maximizing service provision to its citizens. Smart cities carry a vision of the future technological city – with a view of municipal requirements, and the potential of real city-wide connectivity, data-rich information, and informed decision-making.

ii. Social urbanism – and liveability:

The concept of *social urbanism* has been included in city strategies to varying degrees. It finds greater expression in a number of catalytic social and cultural programmes. The concept has emerged in the context of development realities of cities such as Medellin and Bogota in Latin America. These cities reflect a key outcome of the social urbanism agenda: a drive to make cities more ‘humane’, by giving some of the poorest citizens access to transport, housing, health care and education.

Another concept that is closely related to social urbanism is *liveability*. This includes an array of different issues, underpinned by a common set of guiding principles that give substance to liveability: accessibility; equity; participation. The quality of life that citizens experience when living in a city is tied to their ability to access key infrastructure (e.g. transportation, water, sanitation, and means of communication,), food, clean air, affordable housing, meaningful employment, and green parks and spaces. The experience of differentiated access to infrastructure and amenities by assorted groups of people who live in a city, highlights questions of equity. The liveability of a city is also determined by the access that its residents have to decision-making processes focused on addressing their needs.

Liveability therefore refers to an urban system that contributes to the physical, social and mental well-being and personal development of all its inhabitants. It is about desirable urban spaces that offer and reflect cultural and sacred enrichment. Key principles that give substance to this theme are equity, dignity, accessibility, conviviality, participation and empowerment. The concept has been successfully applied to a range of city strategies in North America and Europe, and represents a comprehensive approach to the development of city strategies, with its focus on marrying multiple objectives.

² After Landry, C. *The Creative City: A toolkit for urban innovators*. London: Earthscan Publications Ltd, 2000.

³ This may include connecting transport systems (e.g. roads, bridges, tunnels, rail/ subways, airports and seaports), communications and technology infrastructure, economic and social infrastructure (e.g. that related to water, power, waste management, education and health), and even significant buildings.

A new theory of 'liveable urbanism' has also emerged recently in South Africa. The value of this theory lies in the definition it provides of cities, not as fixed physical artefacts or historical subjects, or simply spaces within which other things happen – but as, pre-eminently, emergent outcomes of complex interactions between overlapping socio-political, cultural, institutional and technical networks. These networks are in turn recognised as being in constant flux, as vast socio-metabolic flows of material resources, bodies, energy, cultural practices and information work their way through urban systems in ways that are simultaneously routinized, crisis-ridden and transformative. At its core is an understanding of cities as spaces through which socioeconomic metabolic flows happen. Liveable urbanism is also about the restoration of life, not just as an expression of identity associated with living in a particular space, but as an expression of a mode of production that will emerge, and has already started to emerge, in a post-growth, post-peak oil, low-carbon, and resource productive world.

Liveable urbanism is related to but also substantively different from green urbanism. It shares with green urbanism the assumption that the cities of the future will need to be low-carbon, more resource efficient and less negative in their impact on the environment. A hazard associated with green urbanism, however, is the fact that it is fast becoming a techno-fix for greening the elite residential enclaves and commercial parks – without facing the inescapable need to reverse over-consumption and address urban poverty, by bringing back the 'universal access' ethos of inclusive urbanism⁴. Liveable urbanism can find common ground with slum urbanism, which empowers the urban poor to build, from below local economies. To this extent, liveable urbanism is closer to the ethos of inclusive urbanism.

iii. Sustainability and resilience:

The concept of *sustainability* is represented in an end state where economic development, human and social development, and environment realities are balanced – a state where human and economic development imperatives do not erode the ecological carrying-capacity of cities. The concept has been further developed through the theory of 'decoupling', which entails separating economic production from natural resource use. The green economy typifies the sustainability concept, emerging in the context of new innovations in renewable energy, and global efforts to create systemic change in the way in which we produce and consume energy. A green economy is one in which business processes are reconfigured from an infrastructure perspective, "to deliver better returns on natural, human and economic capital investments, while at the same time reducing greenhouse gas emissions, extracting and using fewer natural resources, creating less waste and reducing social disparities."⁵ A green economy therefore "grows by reducing rather than increasing resource consumption"⁶. These economies have also been termed low-carbon economies.

Linked to the objective of sustainable cities is the concept of *resilience* – with increasing focus on building city resilience in the light of climate change. In this context, resilience focuses on transitions in ecological systems, from relative stability to increasing volatility. It provides a new basis for understanding cities as complex social, ecological, human and economic systems that operate as interlinked ecosystems, requiring balance and adaptation for survival. With rapid transformations taking place daily within any one of the global cities of the world, resilience is a requirement for continued growth and prosperity. However, as a concept relevant for inclusion in policy-making, deliberation relating to resiliency is still in its infancy. In policy terms, it is suggested that it is about maintaining a development pathway, in the face of potential unexpected challenges that could derail a city from its overall vision. An alternative view is that resilience is predominantly about working with the high potential for change and the unpredictable in the city context, instead of a focus on sustainability – where the target includes optimal balance. Instead, resilience is about the capacity to absorb unexpected 'shocks'.

⁴ Swilling, M. & Annecke, E. (forthcoming). *Just Transitions: Explorations of Sustainability in an Unfair World*. Cape Town: Juta.

⁵ UNEP, *Global Green New Deal: An Update for the G20 Pittsburgh Summit*, ii.

⁶ Swilling, *Growth, Resource Use and Decoupling: Towards a 'Green New Deal' for South Africa*, 5.

As is evident from the above, various city concepts and theories hold value for, and have informed, an array of South African city strategies. Developmental local government, as a discourse, integrates itself with the concepts of liveability and social inclusion. It asserts that “the central responsibility of municipalities is to work together with local communities to find sustainable ways to meet their needs and improve the quality of their lives” (The White Paper on Local Government, 1998, Section B). The concepts outlined above have, alongside others, found their way into a range of national and provincial policy documents.

The third element noted as impacting on the paradigm framing the GDS is that of national and provincial priorities – with key aspects outlined below.

National and provincial priorities

When the initial GDS was drafted in 2006, it drew a review of a range of strategies and perspectives which informed the development of the GDS’ framing paradigm. Documents taken into consideration included, amongst others, the National Spatial Development Perspective (NSDP), national government’s Medium-Term Strategic Framework (MTSF), the Accelerated and Shared Growth Initiative of South Africa (ASGISA) and the Gauteng Provincial Government’s Growth and Development Strategy. While these are important, new strategies that did not previously exist have emerged, and been included in the review, shaping the GDS paradigm and its supporting principles. These include, amongst others:

i. The New Growth Path

The New Growth Path was released in November 2010, with the objective of creating five million jobs in South Africa within the next decade. The central objective is to address the ‘jobless growth’ problem that some argue is South Africa’s challenge. The plan notes the structural barriers present in the economy, presenting a focus on driving more job-intensive growth. It recognises important trade-offs that need to be made between various macro-economic objectives. Amongst other decisions, government must prioritise its own efforts and resources more rigorously to support employment creation and equity; business must take on the challenge of investing in new areas; and business and labour together must work with government to address inefficiencies and constraints across the economy, partnering to create new opportunities for decent work.

Some key trade-offs identified in the plan include trade-offs between:

- Present consumption and future growth, requiring higher investment and savings in the short term;
- The needs of different industries in respect of infrastructure, skills and other interventions;
- Policies that promise high returns but also entail substantial risks, and policies that are less transformative and dynamic – but are also less likely to have unintended consequences;
- A competitive currency that supports growth in production, employment and the export market – and a stronger Rand, that makes the import of capital and consumer goods more affordable; and
- Present costs and future benefits of a green economy.

The New Growth Path incorporates the concept of sustainability, with a focus on shifting towards decoupling economic growth from natural resource degradation. There are specific targets defined for job creation in the green economy. The latter is one of the key areas of focus defined in the plan, with a recognition of the possible trade-offs of transition – as noted above. The plan also recognises South Africa’s carbon-intensive economy, and the need for a shift to a more energy-efficient economy. Employment creation targets have been identified for the following sectors:

- Infrastructure: - Public investment is to create 250 000 jobs a year in the energy, transport, water, communications infrastructure and housing sectors, through to 2015.

- The agricultural value chain: - The New Growth Path targets opportunities for 300 000 households in agricultural small-holder schemes, plus 145 000 jobs in agro-processing by 2020 - while the potential for upgrading the conditions of 660 000 farm workers is also noted.
- The mining value chain: - It is argued that the mining sector can contribute 140 000 additional jobs by 2020, and 200 000 by 2030 – without counting the potential for down-stream and side-stream effects.
- The green economy: - The plan targets the creation of 300 000 additional direct jobs by 2020, in relation to the greening of the economy, with 80 000 jobs to be created in manufacturing, and the rest to be created in the construction, operating and maintenance of new environmentally friendly infrastructure. The potential for job creation here is viewed as being well over 400 000 by 2030.
- Manufacturing sectors: - The plan targets the establishment of 350 000 jobs by 2020, in the industries that are not covered elsewhere.
- Tourism and certain high-level services: - It is envisaged that high level services can create over 250 000 jobs directly, in respect of tourism and business services alone – with many more viewed as possible in culturally-linked industries.

ii. The Presidency's Outcomes

The Presidency has developed 12 key outcomes, based on the Cabinet Lekgotla held from 20 to 22 January 2010. These outcomes include:

- Improved quality of basic education;
- A long and healthy life for all South Africans;
- All people in South Africa are and feel safe;
- Decent employment through inclusive economic growth;
- A skilled and capable workforce to support an inclusive growth path;
- An efficient, competitive and responsive economic infrastructure network;
- Vibrant, equitable and sustainable rural communities with food security for all;
- Sustainable human settlements and improved quality of household life;
- A responsive, accountable, effective and efficient local government system;
- Environmental assets and natural resources that is well protected and continually enhanced;
- The creation of a better South Africa and contribution to a better and safer Africa and World; and
- An efficient, effective and development oriented public service and an empowered, fair and inclusive citizenship.

At the end of April 2010, the President signed performance agreements with all 34 Cabinet Ministers. In these performance agreements, Ministers were requested to establish an Implementation Forum for each of the twelve outcomes. In each Implementation Forum, Ministers and all other parties responsible for delivering on each outcome are to develop a Delivery Agreement. All departments, agencies and spheres of government involved in the direct delivery process required to achieve an output are to be party to the agreement. It is important to note that the outcomes address the challenges identified in the Planning Commission's Diagnostic Report.

iii. The Gauteng 2055 Strategy

The Gauteng Provincial Government is due to launch its long-term vision and strategy, entitled 'Gauteng 2055'. It is beneficial that this process is taking place at around the same time – as this will allow for mutual alignment.

iv. The Gauteng Developmental Green Economy Strategy

The Gauteng Developmental Green Economy was produced in 2010. The Gauteng City Region Observatory was tasked with the development of a 'green economy' strategy for the province, as part of a broader Gauteng Growth, Employment and Development Strategy (GGEDS). Global economic thinking is currently experiencing a paradigm shift

from the current capital-focused resource-intensive development approach, towards a green economy model. The strategy sets important 'green economy targets' and also defines the institutional arrangements required to achieve these targets.

The last element viewed as a key input into the reframing of the GDS paradigm related to analysis, undertaken as desk-top reviews, position paper development, data mining and interrogation, and engagement with experts in the field. This is outlined below.

Analysis

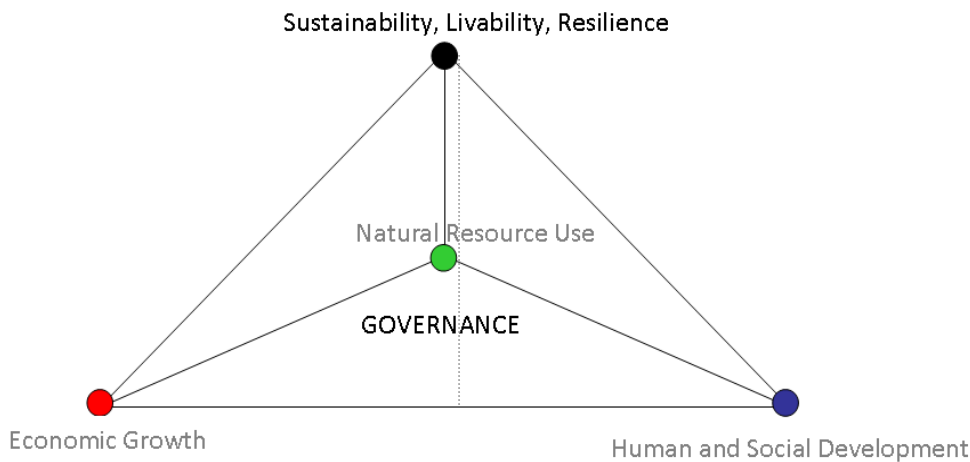
In initiating the GDS review process, the City commissioned fourteen position papers, addressing key strategic priorities and indicators in respect of major sectors and areas of focus: education; housing; community perceptions; community development; economic development; water; energy; public health; the environment; institutional development and governance; infrastructure; spatial planning and urban management. Each position paper was made available and presented at the City's "What the Future Holds" workshop in July 2010, thereby providing an opportunity for experts to discuss and debate critical strategic issues. A five-year demographic modelling research report was also commissioned, to model population growth for the period of 2010 to 2015. An infrastructure growth modelling exercise with a ten-year time horizon was also undertaken.

The emerging data and research findings from the above were analysed, captured and debated, and form a further, informed basis for the redraft of the City's GDS.

2.3 Reframing the GDS paradigm

The assessment of various concepts and theories relating to urban environments, and the review of research and analysis undertaken, and changes in National and Provincial priorities and political imperatives, has resulted in a draft update of the GDS paradigm. This then serves as a lens through which the City aims to view, conceptualise and refine its approach to development issues. The following diagram provides a pictorial representation of the proposed GDS paradigm, with further detail included below.

Figure 4: Refining the GDS paradigm



All cities aim to create a more sustainable, liveable and resilient urban system. To achieve this, cities have to mediate the tensions that exist between economic growth, human and social development, and the impact of these on the

environment and natural resources. There are resource limits to ever-increasing human development initiatives and economic growth. Recent work on sustainability aims to delink economic growth and human development from resource use – a principle that is at the heart of current sustainability discourse. Sound governance forms the basis for mediating tensions between human well-being, economic growth and the potential for over-consumption of natural resources. These various tensions are detailed below:

- *Tension 1: Human/ social development and economic growth:* - As noted above, sustained economic growth and competitiveness will not necessarily result in balanced and shared growth. Johannesburg has one of the highest Gini-coefficients in the world. Economic growth may generate further levels of inequality, if not managed in a balanced way.
- *Tension 2: Human/ social development and resource use:* - Human well-being is dependent on the availability of natural resources. As the population of a city grows, resource consumption is likely to increase.
- *Tension 3: Economic growth and resource use:* - The amount of CO₂ required to produce a city's desired Gross Domestic Product (GDP) serves as a measure of the carbon intensity of that city's economy. Decoupling economic growth from the use of natural resources mediates this tension. However, as the NPC notes, in a country where economic advantage is based on the low cost of a carbon-intensive economy, the cost and time associated with a transition away from resource-dependent economic activity is balanced against the harm caused to the natural and built environment, and the resources contained therein.

Ensuring effective, accountable and transparent governance is critical to sustainability and management of the tensions detailed above. Sound governance can be ensured through strengthening the voice of citizens, providing platforms for communication, and managing the demand and supply of services. These elements will all contribute to the establishment of a more active and engaged citizenry – and an equally active, engaged and responsive city government. Where the latter is held responsible for managing scarce resources, distributing economic wealth and increasing human development, the former are recognised, through sound governance mechanisms, as the co-managers of sustainable, inclusive development.

The GDS paradigm captures the various development tensions cities face, as they aim to become more sustainable, resilient and liveable. By recognizing these tensions, we are able to develop mechanisms for mediation. The paradigm defined above has been used to generate a set of GDS principles, listed below.

2.4 Refining the GDS principles

The principles articulated in the 2006 GDS still hold value and underlie the City's approach to development. These principles assist in confronting the tensions defined above, through the GDS paradigm. While the essence is largely the same, insights gained through the review proves have been used as a basis for updating the original principles, for greater alignment with the changing context and the shift in paradigm.

Principle 1: Eradicating poverty

The City of Johannesburg will continually assist the poor to build capacity, so as to access the city and step onto the ladder of prosperity. This involves an activist approach to helping new households, internal and circular migrants, those in hostels, informal settlements and historical ghettos, the unemployed youth, refugees and others who are vulnerable to access urban services. The aspirations of the poor may present considerable delivery challenges. Despite this, the City remains committed, as developmental local government, to working with the most marginalised communities, to promote social, economic and spatial inclusion.

Defined in the 2006 GDS, this principle revitalises our understanding of our Constitutional duty to look after the 'basic needs' of the community. Over the last few years, this duty has frequently been reduced to simply mean the provision of free basic services. In more concrete terms, this principle means:

- Enabling the poor to access basic livelihoods, inter alia by helping them to secure social grants, facilitating skills development and basic employment opportunities, and supporting 'self-help' projects, start-up micro-enterprises and community-based co-operatives;
- Ensuring the affordability of municipal services, public transport, and social facilities, through progressive tariff structures, creative cross-subsidisation and targeted social packages;
- Accommodating the poor, by working to ensure that they can find and retain decent low-cost rental housing opportunities, without needing to resort to living in informal settlements and inner city slums. A key priority is the assimilation of the poor, ensuring they are not relegated to the margins of the city, but can instead find residency in mixed-income residential spaces;
- Empowering the poor politically through meaningful participatory governance; and enabling them to feel part of the city, through the use of a range of measures – including sports, recreation, arts and culture – to minimise the experience of social exclusion; and
- Making allowances for the poor in terms of how the built environment – and the use of public space – is regulated and managed – e.g. through developing more innovative, supportive regulatory approaches for the management of informal trading, spaza shops and backyard dwellings.

Principle 2: Building and growing an inclusive economy

The City of Johannesburg will continue to support economic growth that is both competitive and job intensive – thereby ensuring that economic opportunities are shared. The 2006 GDS recognises the Apartheid legacy as reflected in a highly unequal economy that excludes the majority of Johannesburg's residents; an economy that has created labour market distortions that continue to benefit racial minorities. Facilitating shared growth, and engaging more citizens in economically productive activity, will serve to benefit all.

Principle 3: Building sustainable human settlements

The city is committed to building sustainable human settlements this is aligned to national imperatives for building sustainable human settlements but asks broadly questions about the context of sustainable human settlements in a city still divided across race and class. Building sustainable human environments must therefore address the triple challenge of; 'breaking through the Apartheid City', creating more liveable environments and confronting post-Apartheid urban exclusion.

Principle 4: Ensuring resource security and environmental sustainability

A healthy urban environment is critical for the well-being of all Johannesburg's residents, and those who work and play in the city. The City of Johannesburg is committed to transitioning to a low-carbon economy. In the context of high energy costs, a plan that does not include this transition will result in an energy base – and aligned costs – that place excessive burdens on the economy, negatively affecting the potential of all economic sectors. Increasing energy costs will also further disadvantage the poor, exacerbating conditions of energy poverty in the city. This City is committed to addressing energy poverty, by building an urban form that is energy efficient, and by ensuring that the urban poor are energy-secure. However, the management of scarce resources is the collective responsibility of all who live and work in the city. For success, this principle requires the development of compacts between the City, business, individual citizens and communities, with joint action representing the only option for adequately addressing resource security.

Principle 5: Achieving social inclusion

The City will ensure that social inclusion is promoted at all levels of society. Social inclusion will be promoted through addressing key obstacles, including issues relating to access to service infrastructure and social safety nets. Through the Expanded Social Package programme, the City aims to continually assist poor households in accessing the social package. Information and knowledge access will be promoted through subsidization of ICT infrastructure, to ensure affordability. Libraries and other related facilities will be promoted as access points, for information provision, social networking and community engagement. The City will continue to work with marginalized groups such as women, children, people with disabilities, migrants and refugees – developing specific programmes of support. The establishment of partnerships for social inclusion across civil society and business would form part of a programme addressing this principle – with it being essential that the City works stridently, outside the usual inter-governmental fiscal system, to raise capital for programme and projects. Early Childhood Development will remain an important programme, and will be scaled up further.

Importantly, the city will work more closely with communities, to minimize urban conflict arising from intolerance, prejudice and discrimination – as evidenced in recent xenophobic attacks, and crimes such as ‘corrective rape’. The City will deepen its relationships with marginalized groups and strive to understand new forms of social exclusion that are emerging. Building bridges across diverse communities is an important feature of social inclusion, and ensuring that trust is restored within and between communities. The City will assist communities to express their culture through the character of the built environment, while allowing neighbourhoods to develop their own unique character and cultural identities.

Principle 6: Promoting good governance

Good governance is central to all of the principles outlined above. It is the basis on which all other principles will be realised. The City commits to ensuring financial sustainability – and deepening participation. Financial sustainability is critical if the City is to meet the long-term demands for capital infrastructure. In addition, the City will focus on building more innovative mechanisms through which citizens and communities can be empowered to participate more effectively and meaningfully. Recognising that communication is critical for deepening participation, the City will transform the manner in which communicates with citizens and stakeholders.

2.5 The GDS Vision defined

GDS 2040 envisions Johannesburg as a World Class African City of the Future – a vibrant, economically inclusive and multi-cultural African city; a city that provides real quality of life, for all its citizens.

A city that is a symbol of learning - well-established, globally competitive, innovative, networked and sustainable.

A city that inspires active citizenry.

Joburg. My City – Our Future!

2.6 Conclusion

The City has a principled commitment to deepening local democracy through effective participation. While the democratic process and active communication supports more effective, targeted delivery of services to citizens, it also grows a more active, engaged citizenry – and a more active, engaged and responsive city government. The City will lead proactively in support of the principles outlined above, forging and deepening cooperative governance with

partners in other spheres of government, finding innovative ways of working in partnerships, managing and overcoming conflict, and engaging honestly with citizens.

GDS 2040 is based on the goal of building individual and community capacity and capabilities, so that the City of Johannesburg can transition to a more sustainable, inclusive future, in which communities and the individuals who live in them hold the potential and the means⁷ to imagine and grow their neighbourhoods, their communities and themselves. Theories of competitiveness, social urbanism and sustainability are important – and have already been incorporated into policy documents at provincial and national level.

Lastly, to give force to the concept of developmental local government, the City strives to be more activist in its approach to establishing partnerships with citizens and business. This is important for the implementation of large-scale change, and changing the development trajectory of the city. Encouraging citizens to become co-producers and co-managers will aid in the establishment of a more just, sustainable and equitable Johannesburg.

⁷ These 'means' may include access to social packages, free basic services or a combination of social services that allow citizens to build capabilities over time.

Chapter 3:

Confronting our reality: Challenges and opportunities

3.1 Introduction

The 2006 GDS presented an analysis of the status quo at the time, resulting in the formulation of the 2006 long-term goals and strategic interventions. Analysis relating to the 2006 status quo was presented within the context of the following themes: economic development, human and community development (including a focus on housing and infrastructure), environmental sustainability, spatial development, transportation, health, safety, financial sustainability, and governance and administration. At a macro level, the framing of the current analysis undertaken in respect of the challenges and opportunities faced by the City, as it moves into a new term of office, is in itself indicative of change. Themes under which both the status quo analysis and future-oriented goals and objectives are clustered include: health and poverty, liveable communities, resource sustainability, the environment, economic growth, transportation, community safety, the 'smart city', and matters of governance. These categories reflect a growing focus on challenges such as climate change, the complexities associated with balancing economic development with resource sustainability, the need for integrated human settlements that foster the concept of 'community', the prioritisation of good governance, and a focus on the benefits to be gained through smart technology.

In an extensively networked, integrated global environment, events in one part of the world frequently ripple across other regions, unsettling distant cities. This city is not isolated from these realities and risks, and nor is it immune to its own set of changes, challenges and opportunities – with these frequently mirroring others' experiences of rapid transformation and widespread volatility. The current context of global instability, typified by uncertainty in financial markets, global commodity constraints, oil price fluctuations, and massive political change and upheaval on the continent and in other parts of the world, casts new light on the role and purpose of city strategies.

Recent events on the global stage also remind us of the importance of real community and stakeholder engagement and participation when formulating a view of our city's reality. Not only is this important if the City is to ensure it holds an accurate and informed view of the status quo, but it is also a critical step in driving legitimate decision-making. The role and purpose of strategies is not only to capture change, but to review and confirm various imperatives through a process of dialogue and engagement. For success, the strategic decision-making process must be opened up, to source multiple opinions and divergent views.

In line with the above, the ideas presented here serve as a basis for engagement on 'what is' – with input and further debate welcome, to ensure the City is armed with all it needs to define the most appropriate long-term goals, in support of a sustainable, financially resilient, integrated Johannesburg by 2040.

With demographics and data relating to population realities and changes underpinning any city's status quo assessment, the discussion that follows starts from this point, and then moves into each of the respective themes identified.

3.2 Population dynamics

Demographic trends have a strong influence on the overall analysis that underpins the GDS. It is a cross-cutting issue that drives demand for infrastructure, community services, jobs and housing. Hence the importance of understanding the city's changing population.

On a global scale, the world's population reached 7 billion sometime in 2011. It is growing at a rate of approximately 200 000 people per day, with the expectation that it will rise to 9.2 billion by the middle of this century. Urban areas account for only 3% to 4% of the world's land area but hold half of the world's population. Urbanisation rates vary across the world, but Sub-Saharan Africa shows the fastest rates of urban population growth. Clusters of smaller cities (with urban populations of 1-5 million) are however growing more moderately.

Gauteng is the smallest, most densely populated and most economically important of South Africa's nine provinces. According to Statistics South Africa's (Stats SA's) 2010 mid-year population estimates, Gauteng currently houses a total of 11 191 700 people – 22.4% of South Africa's total population. The overall population change between the 2001 Census and 2007 Community Survey was 13.61% (adjusted to include Merafong), representing a growth of just under 2% per year. Gauteng's population is influenced not only by births and deaths – but by significant in-migration into the three metros, from surrounding areas such as Rustenburg, Potchefstroom, Sasolburg and Witbank/ Middelburg/ Secunda. Migration within metros is also a key feature, as people try to access economic opportunity and services by moving from the periphery, closer to the urban centre.

Gauteng is also the province within which Johannesburg is located – with the city falling within the Global City-Region or GCR (a concept addressed in more detail in Chapter Two), a cluster of cities, towns and urban nodes that together make up the economic heartland of South Africa. The GCR has features of a polycentric city-region (one that has multiple centres) that is anchored by the three large metropolitan municipalities (metros) of Johannesburg, Tshwane and Ekurhuleni.

Johannesburg's development is an integral part of the region in which it finds itself. In 2007, these metros, together, were home to a population of 8.9 million people, according to Stats SA's national Community Survey. Stats SA's subsequent mid-year population estimates indicate that, by 2009, Gauteng was home to 10 531 300 people. The GCR footprint is even larger than the province of Gauteng – and will further increase in size in 50 years from now. Johannesburg's demographic transition is therefore intricately linked to the GCR.

According to UNISA's Bureau of Market Research (2010) projections, Johannesburg has a population of approximately 3.8 million people, made up primarily of a young population aged between 30 and 39 years. This total population translates into roughly 1.3 million households⁸. The city's population is projected to increase to about 4.1 million by 2015, implying an annual growth rate of about 1.3% per annum. Household projections further indicate that the number of households in the city is likely to increase from about 1.3 million in 2010, to about 1.5 million in 2015 – with an average household size of about 3 persons⁹. Of the total number of households projected for Johannesburg by 2015, it is estimated that 33% will likely be headed by females, while the remaining 67% will likely be headed by males.

⁸ BMR Demographic Projections of City of Johannesburg - 2010 - 2015 - and Implications

⁹ Ibid

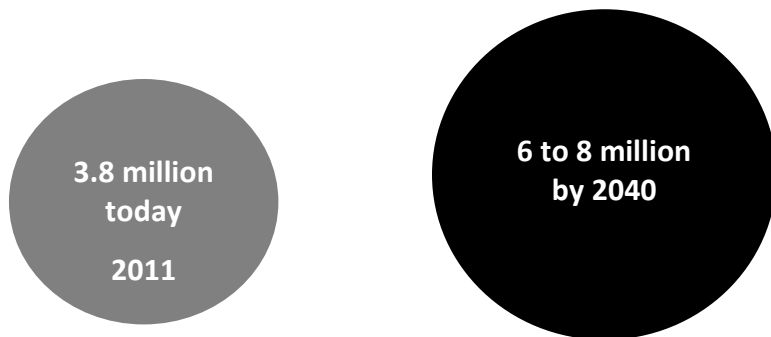
Box 1: The shifting realities of population on the African continent

“In 2009 Africa’s total population exceeded one billion. It took 27 years to reach one billion from 500 million... the next 500 million will only take 17 years”¹⁰.

In 1960 Johannesburg was the sole Sub-Saharan African (SSA) city exceeding 1 million inhabitants, in 1970 there were four (Cape Town, Johannesburg, Kinshasa and Lagos). By the late 1980s, the list also included Abidjan, Accra, Addis Ababa, Dakar, Dar es Salaam, Durban, former East Rand, Harare, Ibadan, Khartoum, Luanda and Nairobi. By 2010, SSA will have at least 33 cities of more than 1 million inhabitants, with 2 exceeding 5 million and 1 (Lagos) having more than 13 million inhabitants.”¹¹

Based on current trends, Johannesburg’s population will only double in 50 years from now, with estimates depicted below. Understanding both the age as well as anticipated growth of the city’s population will assist in planning for the anticipated demand for services and job opportunities.

Figure 5: Johannesburg’s estimated population growth – 2010 to 2040



A review of population growth would not be complete without comment on the impact of HIV/ AIDS. The number of people with HIV has begun to decline since 2004. However, the City is aware that “South Africa at large still has one of the highest per capita HIV prevalence and infection rates and is experiencing one of the fastest growing AIDS epidemics in the world”¹².

It should also be noted that Johannesburg continues to be an important switchboard for both domestic and international migrants. However, it is critical to mention that cross-border migration is still small in comparison to domestic migration. This suggests that the annual rate of population growth in the city is driven largely by positive net migration into Johannesburg, from other places in South Africa. Johannesburg will continue to attract migrants as long as it ensures – or provides the potential for – successful poverty alleviation, employment opportunities and access to goods and services.

The entrepreneurial spirit of migrants is an asset to the city, but diversity also presents challenges. Building social cohesion across diverse communities, with different cultures, ways of being, and ways of living in the city is a task for the World-Class African City of the future. Growing our city is, beyond the bricks and mortar, also about building a shared sense of belonging. The success of Johannesburg will be directly related to the extent to which all believe they

¹⁰ The State of African Cities 2010, UN Habitat, pg. 1

¹¹ UN-Habitat State of the World’s Cities: Trends in Urbanisation & Metropolitanization.

¹² Bureau of Marketing Research, UNISA. The Projected Economic Impact of HIV/AIDS in South Africa, 2003-2015

belong – with the promotion of an environment where everyone holds an equal opportunity to contribute, critical for long term sustainability.

3.3 Health and poverty

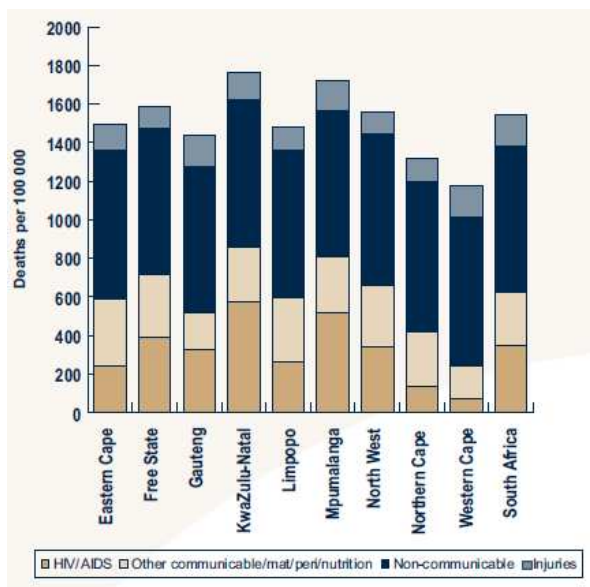
The elements of health and poverty are inextricably linked. Being healthy is dependent on a number of factors, such as where people live, the quality of air they breathe, access to affordable and high quality food, and the lifestyle choices they make. Improving the material conditions experienced by households can result in greater health and resilience to disease amongst those in our communities. A systems perspective of health and poverty demonstrates that no single solution can be followed for improving the health and well-being of our communities. In this section, we analyse health and poverty as interrelated, dynamic forces. We use the concepts of ‘burden of disease’ and ‘deprivation’ to take a wider view of these elements.

South Africa’s ‘quadruple burden of disease’

The phrase ‘double burden of disease’ is accepted internationally as describing the transitional health in developing countries, where the well-being or lack thereof of a population is displayed through both chronic forms of disease, such as diabetes, obesity and cardiac disease associated with an unhealthy lifestyle (typically seen in the developed world) – and those diseases associated with poverty and underdevelopment. South Africa displayed this picture in the 1980s and early 1990s. Taken together with a high level of injuries associated with trauma and violence, and the advent of HIV and AIDS, South Africa’s health system has seen a multiplied effect, leading to the ‘quadruple burden of disease’ that necessitates dedicated focus, if South Africa is to have a prosperous, healthy, productive citizenry.

The graph below depicts provincial estimates of mortality, based on deaths per 100 000 people. Deaths are divided according to cause – HIV and AIDS, communicable diseases, non-communicable diseases and injury. It is interesting to note that Gauteng experiences a high number of deaths related to non-communicable diseases. Studies such as the ‘Heart of Soweto Study’, undertaken to examine risk behaviours and clinical cases of heart disease in the Soweto area, provide further indications of the burden of disease, based on specific determinants.

Graph 1: Provincial estimates of the South African burden of disease (Source: SA Burden of Disease Study, 2000. Provincial Estimates of Mortality. Summary Report, 2006)



Isolating cardiovascular disease, it is noted that this problem is not specific to our city. In the next 20 years, the burden of cardiovascular disease is predicted to rise by approximately 150% within the developing world. In Africa alone, it is estimated that 1.3 million people will be affected per annum, over the same period of time¹³. Even in low to middle income countries such as South Africa, it is already responsible for close on 10% of healthy life-years lost; second only to HIV/ AIDS in this regard¹⁴.

Poverty

In 2004, the City of Johannesburg invited multidisciplinary research teams to contribute to the development of a report on the human development challenges faced by Johannesburg, as a city. Based on this data, the City's Human Development Strategy (HDS) was developed, addressing three strategic objectives:

- Safeguarding and the provision of support to poor and vulnerable households, through widening access to social protection and safety nets;
- Driving a reduction in inequality of a spatial, class, race, gender and generational nature; and
- The promotion of social inclusion.

The HDS was incorporated into the 2006 GDS, given the latter's overall aim of reducing poverty and fostering human development into the next decade.

In furthering the understanding held of this area, a team of researchers from different academic disciplines at the University of Johannesburg set out to build on formative research conducted in 2005 and 2006, collaborating with the City to develop a household survey aimed at collecting data on poverty, livelihoods and human development indicators from the City's seven regions. Households are the primary unit through which the City meets the needs of citizens, promotes access to resources and optimises opportunities for the realisation of social rights.

The research resulted in the development of a Multiple Deprivation Index map, depicting major pockets of poverty across the city – where 'poverty' is defined as a lack of resources to meet basic human needs. It refers to a "condition of material and social deprivation in which people fall below a socially acceptable minimum standard of living or in which they experience deprivation relative to others in a society"¹⁵. The Multiple Deprivation Index, which focuses on five areas of deprivation – namely, income/ material, employment, health, education, and living deprivation – was used further in the qualitative Johannesburg Poverty and Livelihoods Study¹⁶, to identify the most deprived wards on the basis of qualitative measures. Key findings provided insights into the realities of Johannesburg's poorer residents, with insights as follows:

- *Demographic and social profile:* Household size varied across the areas studied. There were relatively high levels of educational attainment, with 77% of respondents achieving secondary level qualifications, or matric.
- *Livelihood strategies:* Poor households employed a diversity of coping and adaptation strategies. In 80% of the households, at least one person was formally employed. Only 30% of households confirmed that they had people outside of the household, who they could turn to in times of need. Regular income was noted as coming from grants, welfare organisations, friends and family.
- *Vulnerability:* Poor households experienced extreme vulnerability as a result of life changing events (with the significant events that led to vulnerability including, in order, from most to least severe: the death of a member of the household, loss of income, severe illness in the household, and a lack of food). In total, 40% of

¹³ Murray CJL, Lopez AD, editors. The global burden of disease: a comprehensive assessment of mortality and disability from disease, injuries, and risk factors in 1990 and projected to 2020. Boston, Mass' Harvard School of Public Health; 1996.

¹⁴ Simon Stewart, David Wilkinson, Anthony Becker. Deborah Askew, Lucas Ntyintyane, John JV McMurray, Karen Sliwa; 2006. Mapping the emergence of heart disease in a black, urban population in Africa: The Heart of Soweto Study, International Journal of Cardiology 108 (2006) 101 – 108.

¹⁵ Hall and Midgley 2004:xii.

¹⁶ After Johannesburg Livelihoods and Poverty Study 2008 University of Johannesburg

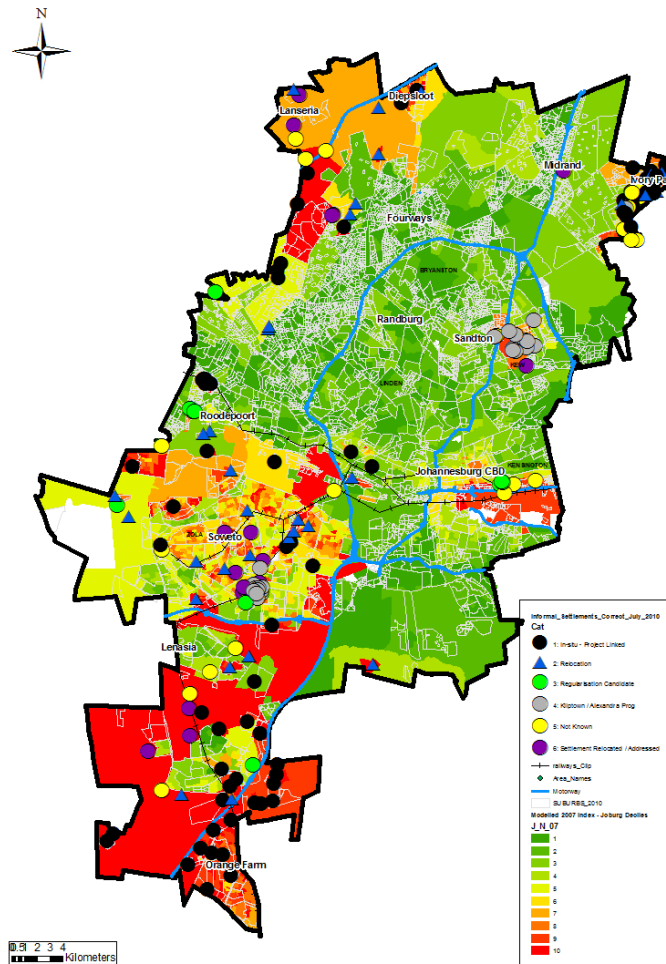
households noted that they did not make provision for unexpected events. Assessed in terms of concept of Household Food Insecurity, two thirds of households were either moderately or severely food insecure.

- *Health and psychosocial well-being:* Respondent households were affected by high levels of chronic illness, such as high blood pressure, diabetes and tuberculosis. Tobacco and alcohol usage was high, especially in certain areas. The overall incidence of symptoms of mental disorder was 40%. This highlights the significant levels of stress encountered in poor households. There were, however, variations between the respective areas surveyed.
- *Access to services:* High access was recorded for piped water, flush toilets and electricity.
- *Household and community trust, support and networks:* A large proportion of households indicated limited access to community support, with this lack of support more acute in some areas than others. Less than half of the households indicated that they felt unsafe in their neighbourhoods. While there were low levels of participation in political parties or unions, almost a third of households indicated they were active in community organizations.
- *Gender:* Almost one third of the households surveyed were headed by women, although this trend was not evenly distributed across all neighbourhoods. These households tended to be acutely affected by food insecurity.

While some of the findings can be generalized across various settlements, the nature of poverty differs from settlement to settlement. The multi-faceted reality of poverty requires an integrated and inter-sectoral approach, for successful redress.

The Multiple Deprivation Index map included below serves as a basis for spatial targeting and poverty tracking, while also facilitating better coordination and resource use. Areas depicted in red represent the deepest pockets of poverty. In reviewing the map, it is noted that pockets of poverty have deepened in the south, while there have been some improvements in the north-west periphery of the city, and in Soweto. This is not attributed simply to an increase in infrastructure investments, but rather to a range of factors. There are also locally-specific dynamics across the most deprived areas in the city.

Map 1: Index of Multiple Deprivation – Johannesburg, 2010 (Source: City of Johannesburg, 2010; Centre for Analysis of SA Social Policy, University of Oxford, modelled on 2007 data)



The functionality of each settlement needs to be understood, before interventions can be confirmed as appropriate (e.g. in respect of housing or infrastructure delivery). Each neighbourhood is likely to have a different set of poverty drivers, necessitating a unique response from the City.

While the Index of Multiple Deprivation is of immense value, one of the hazards of relying on ward-based classification of poverty relates to the fact that wards are primarily an electoral tool, with community engagement and planning then taking place within these parameters. Boundaries shift at times, with these changes not necessarily informed by the unique challenges faced by communities living within particular geographical areas. Instead, ward boundaries are shifted on the basis of voter numbers. Changes to ward boundaries impact on planning, and the ability to successfully address and track geographically-specific community challenges, in an optimal manner.

Poverty and food security

Food security is recognised as a challenge for many of those who live within the city – with the poor, in particular, compromised. The trend towards escalating global food prices – influenced by rising fuel prices, the related increase in transport costs, increases in the costs of other input factors (such as water and electricity), scarcity of certain

inputs, and market-linked dynamics of supply and demand – sees food insecurity emerging more regularly, with the poor being worst hit. Poor households are particularly impacted given that the food bill takes up a higher proportion of any meagre income. It is estimated that in South Africa, poor households will spend 37 % more on basic food items than previously¹⁷. Poor urban households are hardest hit, even with incomes which may be marginally higher than those earned by rural populations in developing countries.

Global food prices escalated to record highs in June 2008, prompting riots in Haiti and Egypt. More recently, food prices have climbed to their highest levels since 2008, in the context of escalating world food imports (where these exceeded \$1 trillion in 2010), dwindling natural water resource inputs, and global competition for foodstuffs. The global commodities crunch has been devastating for many city economies. Rising prices have made commodities such as soya beans, sugar and cotton more attractive to grow – with increased global demand for non-staple food stuffs inflating the international food bill¹⁸.

Whereas before, food poverty was associated only with rural areas, urban areas in South Africa are starting to face increasing risk. The effects are starting to show in Johannesburg and other South African cities. With estimates setting the percentage of the Southern African population that will be urbanised by 2050 at above 80%¹⁹, food poverty is increasingly shifting to urban areas. Poor urban households are adversely affected by the surge in commodity food prices. Between 2007 and 2008, South Africa's food inflation outstripped overall inflation by 12.1%. To maintain the same food basket in the context of this inflation, the poorest households in South Africa would have to raise their incomes by a minimum of 22%. Food prices in Johannesburg are a major factor affecting poor households' food security. Amongst poor households in the city, food insecurity is placed at 42% - based on a study carried out by the African Food Security Urban Network. To determine the extent of food insecurity within a city, an assessment is carried out of the number of households that have gone without food between 3 and 10 times in the preceding four weeks. Three cities in South Africa show alarmingly high levels of food insecurity – namely, Cape Town, Msunduzi and Johannesburg. The Urban Food Security Baseline Survey (UFSBS)²⁰ conducted in late 2008 found that levels of food insecurity among the urban poor in these three cities averages 70%. Levels of food insecurity in Johannesburg were, however, considerably lower – at 42%.

With poverty and food insecurity come health complaints – with dietary sufficiency and diversity important for adequate nutrition and the management of communicable diseases such as TB and HIV/AIDS. The link between HIV/AIDS, food and nutritional security are well established. Having AIDS also increases calorific nutritional requirements, as does ARV treatment, placing further burden on household members to meet food needs.

Johannesburg imports around 90% of its cereals and a high percentage of its fruits and vegetables, increasing its vulnerability to price hikes. Access to affordable and nutritious food for most residents is hampered by an underdeveloped public transport system, too few local markets, and resultant zones of exclusion emerging from the Apartheid planning legacy. The food economy is also impacted on by the presence of a large commercial agricultural industry, and the dominance of large retail food monopolies which constrain the growth of small medium and micro-enterprise food retailers. The active promotion of small and/ or informal providers of household food has not been adequately explored to date, although this represents an opportunity for linking small-scale growers with emerging small to medium size retailers, while addressing food security constraints. In the face of scarcity, only 3% of households in Johannesburg grow their own food. Urban agriculture remains necessity-driven, rather than opportunity-driven. This, in spite of the fact that localised food production systems do provide an option through which to reduce exposure to global food price shocks, while also addressing food vulnerability.

¹⁷ National Agricultural Marketing Council, South Africa, data quoted in Mail & Guardian 18 April 2008

¹⁸ Business Day, 18 November 2010 'Global Food bill to rise 15% to 2008 crisis levels'

¹⁹Source: UN World Urbanisation Prospects: 2007 Revision Population Database

²⁰The survey was conducted by the African Food Security Urban Network (AFSUN), and managed by the Programme in Urban Food Security (PUFS) at the University of Cape Town.

Cities like Johannesburg are vulnerable to global food commodity shocks, with food prices again set to rise in the near future. Recent events in Egypt demonstrate that urban food security is critical to political stability. The United Nations Food and Agricultural Organisation (FAO) argues that the factors which have contributed to high food prices remain unchanged, and that supplies have not increased at the required level to meet global demand. Other factors that place pressure on food prices include an increase in the areas dedicated to crops destined for biofuels, a growing world population, increasing migration and urbanization, exchange rate variability (especially the devaluation of the US Dollar) and finally, the impact of climate change events on weather, and the resultant variability of crop production²¹.

3.4 Economic growth

Poverty eradication is dependent on sustained, inclusive economic growth. While Johannesburg has established a competitive economy, growth is not evenly distributed. To drive ongoing growth and the levels of innovation that frequently support city competitiveness, the City of Johannesburg, as with other city governments, has an important role to play in facilitating a conducive environment within which firms can compete, access required skills, build capacity and prosper. We define a competitive economy as one that can create sustained economic growth and generate decent work for the majority of its residents. While contributing significantly to South Africa's GDP, Johannesburg's economy has featured evidence of jobless growth. With the financial services sector contributing significantly to economic performance, there is a role for the City to play in promoting and support alternative sectors that may be suitable for absorbing more skills, and generating greater volumes of jobs. Playing a role in driving global competitiveness is also important. The City's challenge is how to drive job intensive competitiveness - creating more decent jobs, supporting industry more effectively and defining new emerging sectors for growth.

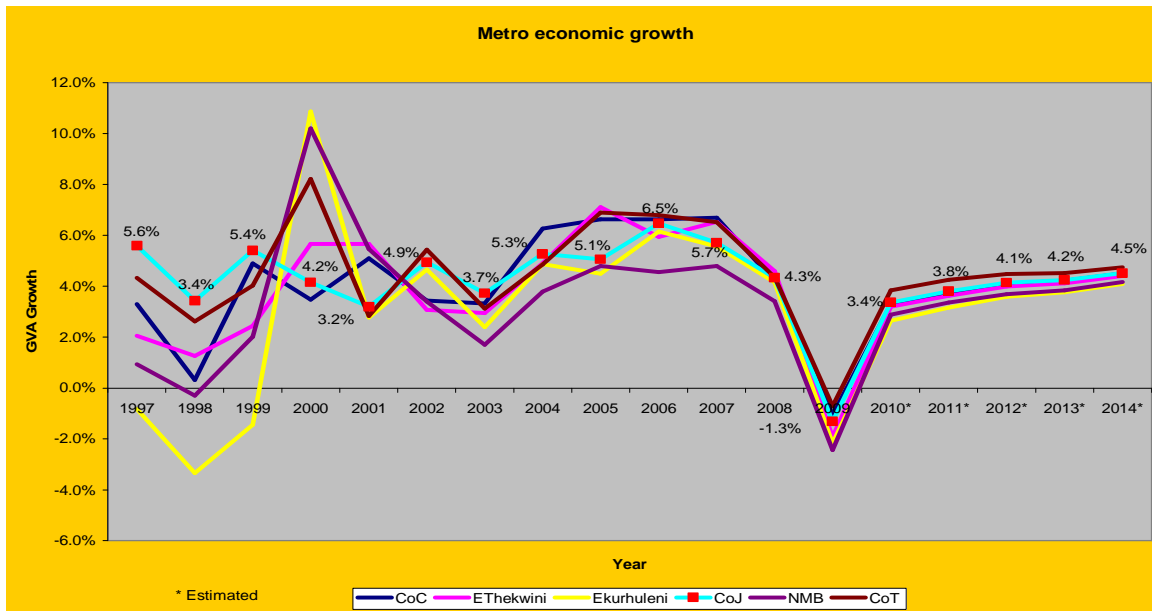
The vision for economic growth for the Johannesburg of the future is: "An economy that is inclusive, liveable and prosperous for all".

Economic trends

Johannesburg's economic structure is like that of any other large global city, dominated by service sectors. From an economy dominated by mining, the city has grown in diversity. However, the sectoral contribution and composition of Johannesburg's economy demonstrates the dominance of finance, insurance, real estate and business services. Combined, these sectors accounted for a third of the Gross Value Add (GVA). General government activities account for 14% of total GVA. Agriculture, forestry, mining and quarrying collectively contribute 2% of the city's GVA.

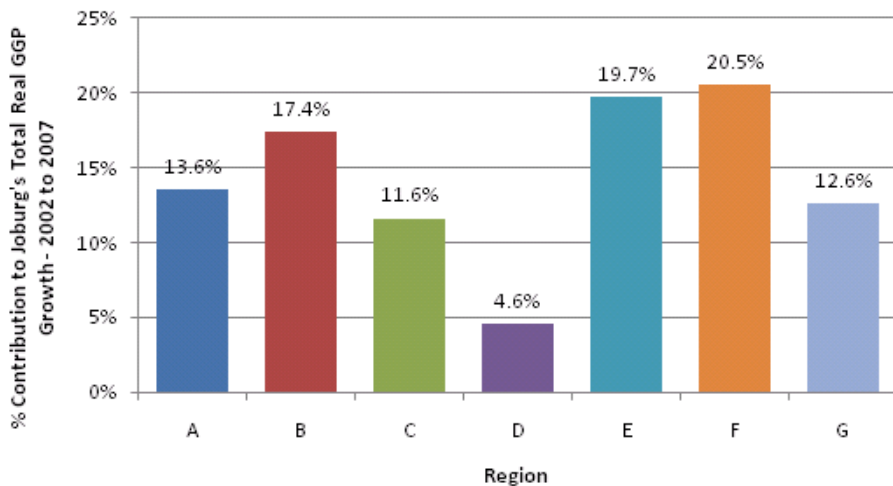
²¹ South African Food Cost Review 2009 Press Release

Graph 2: Economic growth patterns for SA Metros - 1997 to 2014 (City of Johannesburg, Department of Economic Development 2010)



When comparing economic growth patterns from 1997 to 2014, then Johannesburg continues to grow and its financial services sector continues to drive growth. However the city was not exempt from the financial crisis of 2008. The financial crisis resulted in 870 000 jobs lost in South Africa, Gauteng shed 108 000 jobs and Johannesburg lost 90 000 jobs. Recovery has been fast with projections of 4.5% GVA growth by 2014. But not all areas in the city are growing at the same pace; there are regional disparities of growth across Johannesburg’s seven regions. This provides opportunities for supporting emerging sectors in regions with lagging growth. Balancing economic activity spatially is important.

Graph 3: Contributions of the City of Johannesburg’s regions to real Gross Geographic Product (Source: Quantec Data 2010)

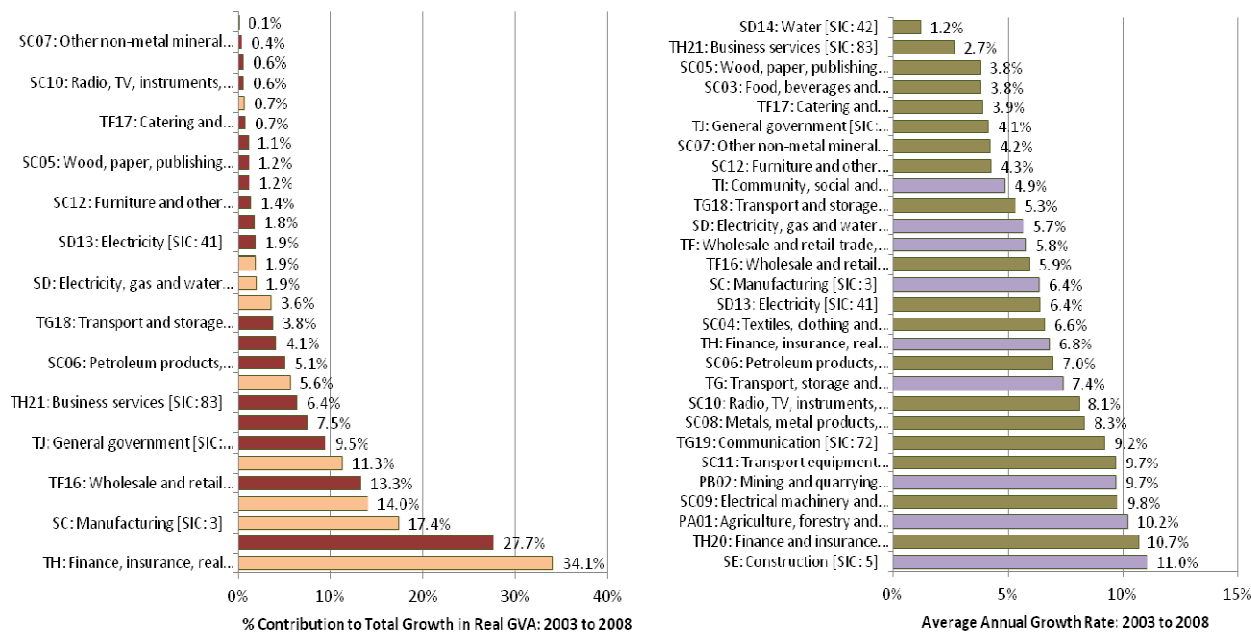


The economy however does face a number of challenges. The formal economy has not been able to create enough jobs. Between 2000 and 2008 formally employed people increased by 31%, just under 4% year to year.

Statistics indicate that unemployment rate (based on a narrow definition²²) in the City fell marginally from 19.6% in 2006 to 19.2% in 2007, in 2009 the unemployment rate was 21.9%.

Johannesburg has a key role to play in supporting emerging sectors that create jobs. The current National Policy environment provides an opportune time to create job intensive competitiveness. National and Provincial incentives are creating opportunities for South African cities to drive more intensive economic job growth. This includes the establishment of a 9 billion rand fund and 10 billion rand fund through the Industrial Development Corporation (IDC), 20 billion rand for tax breaks and allowances for expansion, upgrade in manufacturing. Most recent incentives are available for the establishment of Enterprise Zones as part of the country’s New Economic Growth Path plan. These incentives and policies provide a framework for increased growth.

Graph 4: Sectoral contribution of the City to Gross Value Add (GVA) (Source: Quantec Data 2010)



Growth sectors

Combining the economy’s sectoral composition and the respective growth rates of sectors and sub-sectors makes it possible to measure the weighted contributions of each sector to the total growth in real GVA between 2003 and 2008. These contributions are shown above indicates that more than a third of the increase in Johannesburg’s real GVA over the period was contributed by growth in the finance, insurance, real estate and business services sector – of which the bulk (almost 28% of the 34%) came from expansion of finance and insurance activities. About two-thirds of the growth in the metro’s economy came from just three major sectors – the aforementioned finance, insurance, real estate and business services, supplemented by manufacturing (17.4%) and wholesale and retail trade, catering and accommodation (14%). Although the construction sector showed the fastest average annual rate of growth over the period, its relatively small share of value added meant that it contributed less than 6% of the total change in real value added. There are opportunities to support growing sectors; the green economy, manufacturing, wholesale and retail trade are important for targeted growth.

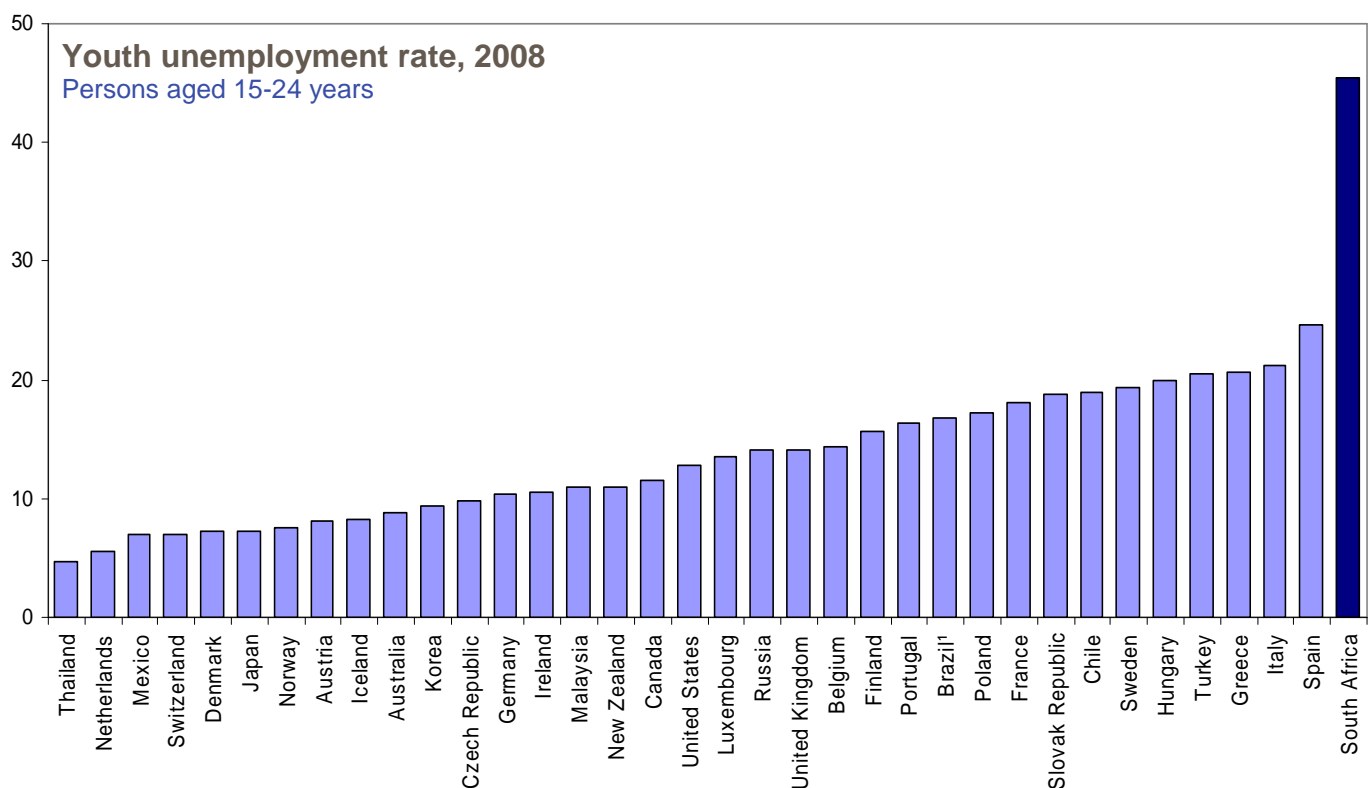
²² This is official unemployment. According to the narrow definition, people who have given up looking for work after a certain period are excluded from the so-called official unemployment figure

Youth unemployment

Youth unemployment is a critical challenge. Low education levels and slow formal sector growth are but two of the major causes of youth unemployment. South Africa loses R 550 billion a year of illiteracy²³ and ranks 137th out of 139 countries when it comes to the quality of maths and science education at primary school level²⁴. 11 000 primary schools and 7 000 secondary schools are without libraries and computer facilities. There are more than 3 million 'not in education, employment or training' NEET in South Africa. 72% of people between 20 and 25 do not have matric, 50% of those in 23-24 age group are NEETs.

A report of the ministerial committee on the review of the National Student Financial Aid Scheme indicates that among 23-24 year olds 50% are NEETs. High youth unemployment has been attributed to lack of experience. A youth wage subsidy has been introduced through the Department of Finance to decrease the cost of hiring young inexperienced workers however the bill has received mixed responses by organized labour and civil society groups.

Graph 5: Youth Unemployment rate for select OECD countries 2008 (Source: OECD Labour Force Statistics Database, Statistics South Africa, Quarterly Labour Force Survey)



Johannesburg has been a slow starter in developing its knowledge economy. Knowledge creation and innovation are driving new forms of economic competitiveness. Education is a critical driver for these new forms of growth, yet higher education outcomes for the majority of young people in the city are low. A growing youthful population, combined with low job prospects, has created a significant level of youth unemployment. Education also is a key determinant in improving the quality of life of citizens. In Johannesburg the vast majority of the youthful population

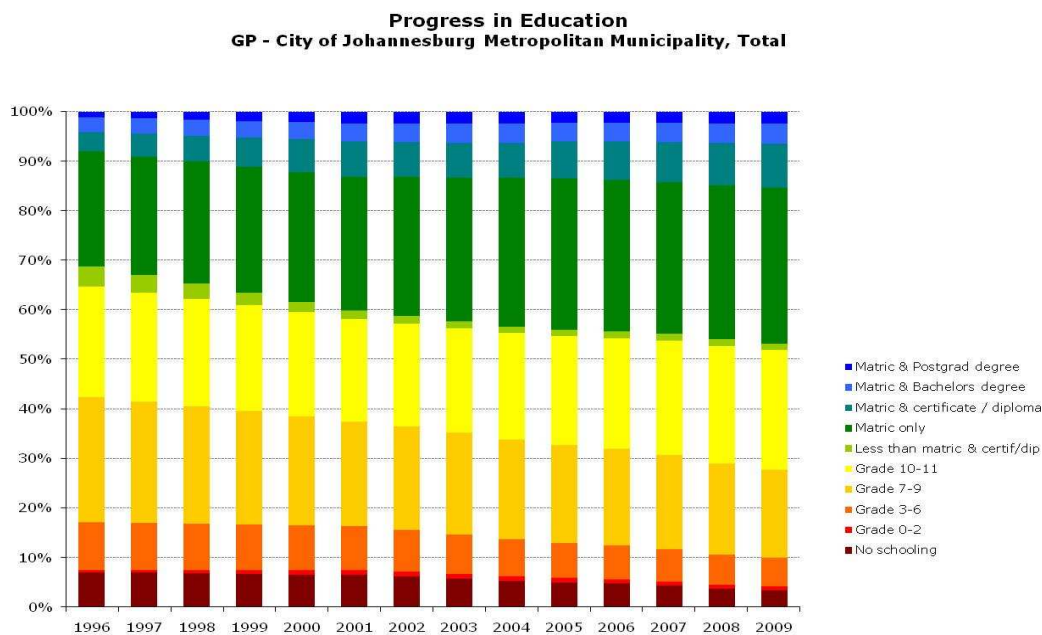
²³ Business Report 13 September 2010 'SA loses R550 bn a year on illiteracy'

²⁴ WEF Global Competitiveness Report 2010

only has a matric certificate and cannot access the labour market. The labour market is not creating enough jobs and the supply of educated skilled professionals is also lagging. The quality of education in public schools is inadequate, private education is unavailable to the vast majority of Johannesburg learners. The poor foundation skills of maths and science in public schools debilitate learners when entering university.

More than this of the 500 000 pupils who took part in matric exams nationally only half of those wrote maths and science, the university of Pretoria and the Witwatersrand require marks at 70-80% for maths and science related subjects. Compared to other large cities in India and China and given the relative population size of these economies, South Africa and Johannesburg’s engineering graduate rates are extremely low. China produces 600 000 engineering graduates a year, India produces 400 000, SA produces 1500 or 0.003% of the population. The Johannesburg population or even if we have to look at the Gauteng city-region population is small in comparison to cities in the BRIC countries. Given our low aggregate population we have to ensure that we have skilled and educated workforce in the future. There are critical demand side constraints regarding the macro-economy that the city has no control over. Neither is formal education a function of local government. However the City of Joburg can strengthen its current role in education and learning by making a number of critical investments in educated and skilling its workforce, but also by opening up the economy to ensure that even those lower level skills can still access the economy.

Graph 6: Progress in education – 1996 to 2009 (Source: Global Insight Data 2010)



The above graph shows the shares of population with regards to education cohorts. Illiteracy rates have decreased over the last ten years and substantial progress with regards to matric that has been made. However the total share of persons with matric and bachelors and matric and postgraduate degrees are extremely low when compared with other cities. The schooling system is producing matriculants with low numeracy and reading skills. Literacy level measured as those above 20 years and have completed grade 7 or higher is 87.3% compared to the national of 73.7%. This improved from 86.6% in 2005. The greatest proportion of the population with no schooling is among Africans (4.3%) and the least among whites (0.4%). Analogically, the greatest population with degree or higher is among whites (30.5%) and the least among Africans (4.1%).

Box 2: Jobs, skills, employment and education related challenges for South Africa and Johannesburg

In South Africa, more adults of working age are unemployed than employed – labour force participation rates are among the lowest in the world at 54% and labour absorption rates are currently 40.5% (meaning that 60% of 15 to 64 years are not working, some because they are at school or university). But between 7 million to 11 million more adults could be working or working more full-time. The formal sector only employs about 10 million out of 31 million of those in this age group. The official unemployment rate in South Africa is about 25%. By comparison, in Brazil the unemployment rate (narrow definition) is 6.2%, Russia 6.6%, India 10.7% and China 9.6%

Each year, about 300,000 adults joins the pool of low skilled, low level of literacy South Africans. This group has few prospects of ever becoming employed, and join a rough estimate of South Africans who would like to work and are able to work, but who have never had a job, this comprises of approximately 3 million people. At current rates about 6 million people over the age of 25 will never had a job since 1994 by 2020.

3.5 Resource sustainability

Economic growth will be inter-related with the demand for water, electricity and liquid fuel. Managing limited natural resources and delinking economic growth from natural resource extraction is important. Johannesburg has the opportunity to move towards a low carbon economy benefiting from recent experience in other cities. There are considerable challenges but equally large opportunities when making the transition to a low carbon economy. The largest challenge is the cost of new technology versus future benefit. The following section introduces two discussions on water and electricity. We begin by looking at water in Johannesburg and the peculiar nature of Johannesburg as one of the few cities not located on a major water source, we look at future water demand in 2040 and the complex issues surrounding supply and demand in the region, we also discuss water quality and threats to our water quality. We then discuss electricity; the nature and role of the City in electricity distribution, we finally discuss the relationship between climate change and energy security.

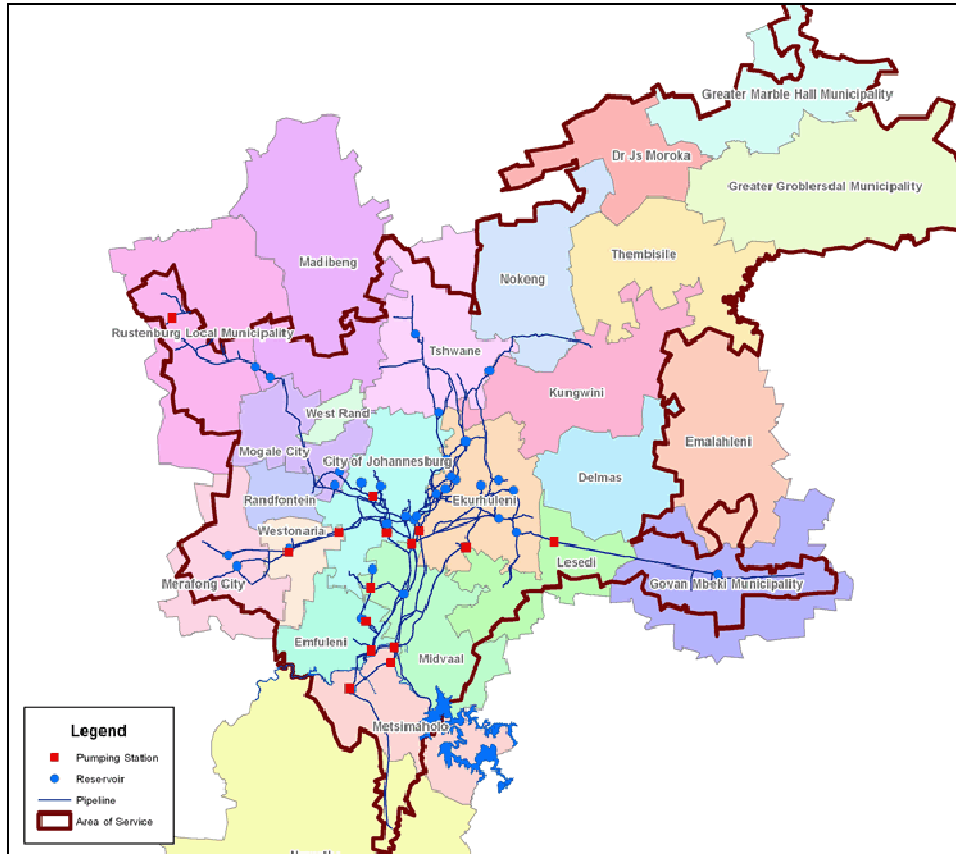
Water

Water scarcity and the increasing cost of water presents a challenge for the City. Johannesburg is one of the few cities in the world that is not located on a major river, lake or seafront. The city has become the motor of South African economy accounting for more than a third of the Gross Domestic Product. Water is central to economic production and the well-being of our residents yet most of the City's water is imported from elsewhere. Johannesburg's water comes primarily from Vaal River System, recently over time complex Inter-Basin Transfers have been established to bring more water into the Vaal Dam. Rand Water is tasked with bringing water to Johannesburg and the larger Gauteng city-region. Majority of water is supplied to the three metropolitan cities of; Johannesburg, Ekurhuleni and Tshwane. Water to Johannesburg is part of a much larger hydrological system that is connected across international borders and includes countries in the South African Development Community (SADC) - South Africa, Botswana, Namibia and Zimbabwe. This means that every river basin in South Africa is now hydrological connected to every other river basin across Southern African countries.

Johannesburg straddles a major watershed known as the Witwatersrand (translated literally as 'Ridge of White Waters'), which divides the continent of Africa into rivers that flow into the Indian Ocean to the east, and rivers that flow into the Atlantic Ocean in the west. Protecting water quality and ensuring supply of water meets demand is the challenge for Johannesburg.

The City of Johannesburg is a life supporting system, it contains a large concentration of hominid fossils, its economy is the motor for national growth and the roughly four million people who live in this city are from all over the country, Southern Africa, Africa and the rest of the world. There is a diversity of culture which is unique to the city, water is therefore critical to sustaining this life supporting conurbation.

Map 2: Showing Rand Water's area of supply (Source: Rand Water Engineering, After Turton, 2009)

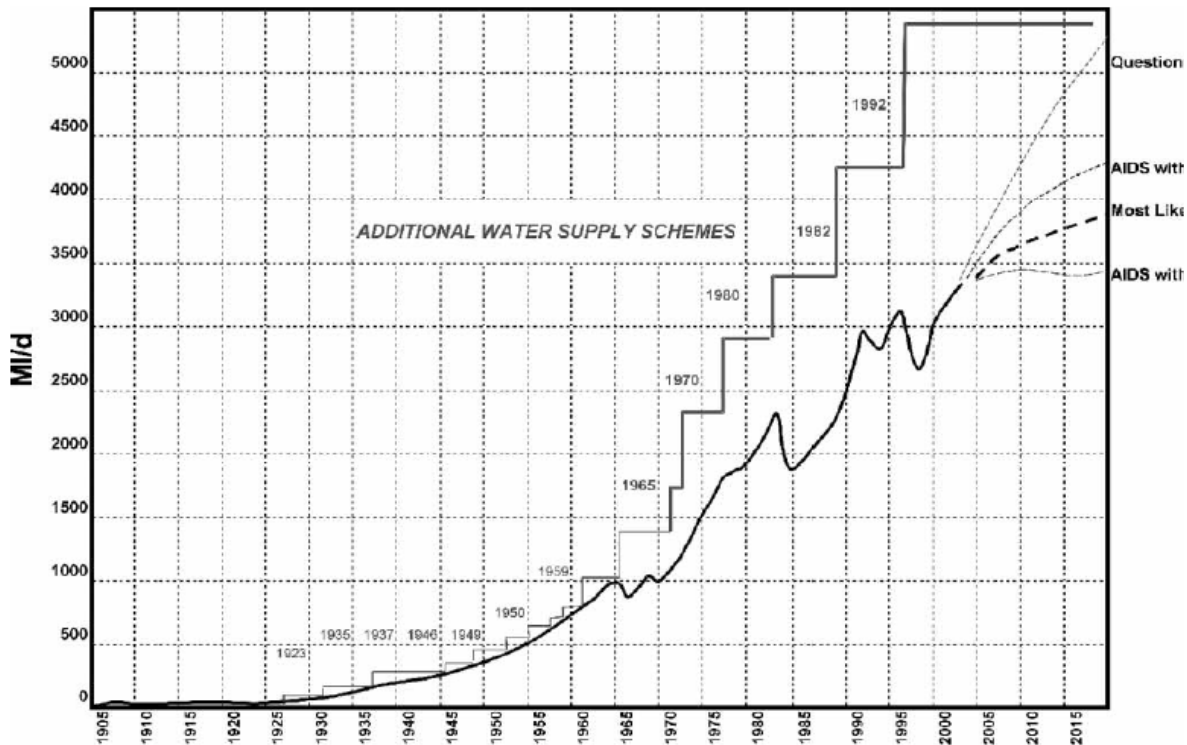


Rand Water is responsible for water supply and the City of Joburg is responsible for managing water demand. The City of Joburg purchases water from Rand Water and sells this water to its residents. The first stable bulk water supply coincided with the establishment of Rand Water Board in 1903. Water demand has grown steadily over the past 108 years. In 1920 Rand Water had to accommodate water demand of approximately 90 ML a day, today demand has grown to approximately 1396 ML a day. There are three strategic issues that affect water in Johannesburg; water supply, water demand and water quality.

Managing supply is a complex issue, droughts, erratic rainfall patterns affect overall supply to Johannesburg. Demand and supply are intricately linked. Real growth in consumption is managed by Rand Water, since the 1980s supply schemes have been developed to cope with increasing demand made possible by Inter Basin Transfers (IBT's) from the Thukela River and Lesotho Highlands Project. Since the 1980s, water demand has been curbed through conservation and demand side management strategies. Demand side management entails actions taken by Rand Water to reduce the quantity or patterns of use of energy consumed. Demand is also determined by population growth, economic growth and HIV and AIDS. The nature of the impact of HIV and AIDS in relation to water demand is complex.

The future projections for water demand have been broken down into four possible scenarios by Rand Water. Scenario 1 is the most optimistic, based on strong economic growth and no HIV/AIDS impact. Scenario 2 factors in the impact of HIV/AIDS in so far as the pandemic has been quantified, but assumes no additional WDM measures will be implemented. Scenario 3 is also based on the best estimate of HIV/AIDS impact, combined with additional WDM strategies to curb consumption. Scenario 4 is the most likely trajectory based on the best available current knowledge about HIV/AIDS. This shows a growth in demand but at a reducing rate, suggesting that aggressive water supply augmentation is not likely in the medium term.

Graph 7: Showing Rand Water's additional supply schemes (Courtesy of Rand Water Engineering, taken from Turton)



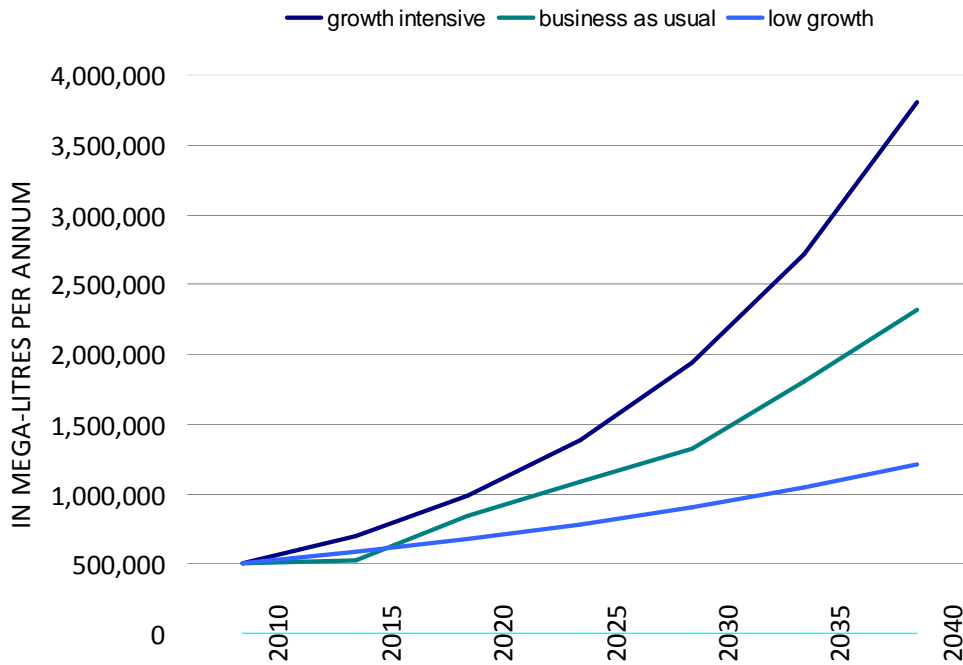
A key aspect of managing supply is determining the impact of population growth, HIV and AIDS and economic growth on demand. Each factor plays a role in future planning, however calculating actual demand is complex and therefore scenarios are important to give a sense of the ranges of possible demand. If HIV and AIDS continues then a decreasing population will result in underutilization of infrastructure if investment in infrastructure is not made and demand increases then there will be non-supply at critical periods.

Notwithstanding the complexities of supply and demand the City of Johannesburg must conserve its water resources. Water conservation and demand side management are strategic choices. Johannesburg's population growth is slowing and this provides some relief for managing demand. Demand must be substantially decreased through the City's existing demand side management program.

The figure for unaccounted for water in the City of Johannesburg is high – over 30 %. Unaccounted for water is water lost to the infrastructure system, through leaks in the reticulation system or through unbilled, unrecorded consumption. Water wastage in the Rand Water region and Johannesburg amounts of hundreds of thousands of Rands.

The City recently commissioned work to project water demand over the next ten years. This was based on a model developed for the Presidency. The Municipal Services Financial Model was used to project future water demand in Johannesburg based on economic and population growth estimates. Estimated demand for water is 5.2% per annum in absence of water conservation and demand side management strategies. The City currently comprises an estimated 1 297 860 households, and is projected to grow to 1 548 509 households by 2019. Using the current population growth rate Joburg’s population estimates for 2040 is roughly 6.5 million. Based on household growth rates we will be adding an extra 200 000 households every 10 years. The graph below uses this date to project future demand to 2040.

Graph 8: Scenarios for 2040 water demand growth



Three scenarios have been used to estimate future demand for water in mega litres (ML) per annum. These three scenarios only give possible estimates for future demand and should not be taken at face value. The predicted growth in demand for the Rand Water area when compared to Johannesburg’s growth demand indicates that Johannesburg’s as the largest economy in Gauteng occupies a larger share of the total water demand for the Rand Water area. Based on the business as usual model which projects 5.2% growth per annum then the demand by 2040 is over 2 million ML per annum.

Water security in the future is dependent on water supply from Rand Water. The City of Johannesburg would have to optimize its water conservation and demand side management to reduce overall demand. Rand Water can augment supply through the 2nd Phase of Lesotho Highlands project in 2019. Average growth in water demand over the last years has been lower than expected this is positive for demand side management.

The importance of demand side management is to curb water demand and save water. If we; reduce wastage, repair and maintain existing infrastructure thereby minimizing leakage, introduce water efficiency measures (washing machines, toilet cisterns) and introduce more strategic water recycling and harvesting then we could ensure water is available for future generations by 2040.

We can save significant amounts of water in the system if we address future demand more effectively. To do this we must look to achieve water savings by reducing overall unaccounted water that is water lost to the system through unbilled water and leakages in the reticulation infrastructure.

Small improvements in repairing and maintaining water infrastructure reticulation systems can achieve considerable savings. Joburg Water’s current WC/DM strategy aims to reduce demand in 2018 by 90 000 MI which can be achieved primarily through the retrofitting and removal of wasteful devices (JW and CoJ, 2008). The strategy includes the following:

Table 2: Average potential water savings - Mega-litres per annum (Source: City of Johannesburg’s Water Conservation and Demand Side Management Strategy)

Type of intervention	Average potential saving / annum (MI/annum)	% contribution to potential saving / annum (%)
Direct Measurable Interventions		
Pressure Management	4 794	4.4
Mains Replacement	781	0.7
Active and Passive leakage control	3 168	2.9
Retrofitting & Removal of wasteful devices	76 405	69.9
Indirect Measurable Interventions	24 144	22.1
	89 010	

The above table shows how we can achieve average potential savings from doing ‘the small things first’ we can save up to 89,010 MI per annum. Water Demand side management is a complex issue however with a combination of small and big things we can achieve considerable savings and create local opportunities for water savings.

Box 3: Protecting our water quality – acid mine drainage

Acid mine drainage has emerged in recent as a threat to the City’s water quality. There are 270 tailing dams or ‘slime dams’ in the Witwatersrand basin covering an area of 400 km.² Acid mine drainage is characterized by low pH and high concentrations of dissolved heavy metals which exceed drinking water standards up to toxic level. The problem is a result of reclaimed mine dumps for gold residues. An estimated 70 mine dumps have been reclaimed from the Johannesburg area²⁵ the tailings where then pumped to disposal sites to the south of the city.

Many of the tailings dumps have remained undisturbed in the Johannesburg area for almost a century, during which time they have been exposed to oxygenated rainwater. This has resulted in oxidation of the pyrite and other sulphides in the material, particularly an outer layer of the dumps several meters thick. Oxidation a process through which pyrite acidifies the water percolating through the dumps, then enters the ground water regime beneath the dumps. This has resulted in high contamination of the shallow ground water in Johannesburg mining areas to depths exceeding 18 m below the surface. Where the groundwater table is close to surface, the upper 20 cm of soil profiles are severely contaminated by heavy metals due to capillary rise and evaporation of the groundwater. Acidified water from mine tailing dumps contribute to 20% of stream flow in the area.

²⁵ Rosner et al 2001

We need to optimize our water management to meet future demand. Johannesburg has no control over supply of water but if we focus on demand side management/conservation and build opportunities for promoting water recycling and harvesting then the city would be able to ensure water for future generations. Conservation can be achieved through multiple strategies: technical losses through effective asset management and maintenance can achieve considerable savings. Effective billing based on accurate meter readings and precise consumption is vitally important for ensuring water supplied is not unaccounted for or lost. We can improve our billing system and make sure everyone contributes to paying for water. This means we must work to ensure water is valued and priced correctly.

We can reduce demand through changing behaviour and working with residents to reduce demand. There are significant opportunities for companies to promote water savings and build a manufacturing and service industry to support roll-out of water efficiency devices. Developing more green sanitation systems can create opportunities for businesses and reduce household consumption. Residents can benefit from reduction in water consumption at a household level. Recycling of water at scale remains an important strategic imperative for our City. This involves a new way of designing and delivering water and sanitation infrastructure systems as part of a city wide water recycling system providing benefits for residents and opportunities for new industries.

Electricity

For a population of over 48 million, South Africa level of CO₂ emissions per unit of GDP is among the highest in the world. The levels of emissions per unit of energy production is simply too high. South Africa is the most coal dependent economy in the world. Coal is a highly inefficient energy and converts poorly into GDP. Coal driven power stations account for 90% of the energy generation. An over-abundance of coal has kept electricity prices very low and attracted a number of energy intensive industries. Peak coal production in South Africa by 2020 will see an overall reduction in Green House Gas Emissions (GHGs) but will have catastrophic impact on the economy.

South Africa is the 13th largest emitter of Co₂ in the world but we are not the 13th largest economy, our population size of just over 48 million is small in comparison to India and China yet we are one of the most energy inefficient. There is a direct correlation between what a country produces in terms of GDP and what it emits (Co₂). The Co₂ converter index measures how much Co₂ is emitted or every dollar produced. South Africa is the 28th largest economy in the world and one of the inefficient converters of Co₂ into GDP. The goods we produce are at high costs to the environment. We are the eighth worst converter of Co₂, next to Ukraine, China, Iran, Egypt, Russia and India. Another measure is the amount of Co₂ emitted for every megawatt hour, South Africa is the second worst emitter (Poland is the worst) It costs 1.03 tons of Co₂ to generate 1 MWh of electricity. Our primary source of energy, coal is the worst fossil fuel for generating energy which generates three times Co₂ than natural gas. South Africa's reliance on coal will compromise sustained economic growth in the future. Historically there has been no incentive for industry to change or improve its own conversion ratios²⁶.

SA lags behind the rest of the world in terms of energy production from renewable resources but new legislation is set to change this. Wind power is a reliable and accepted form of generation and has grown globally by 30% a year, and there is potential for increased wind power generation. In 2007 SA accounted for just 0.07% of the global renewable electricity installed capacity this must change and cities have a key role to play to increasing renewable electricity generation. Government has released an Integrated Resource Plan 2 (IRP2) in 2010 defining the country's energy mix to 2030. The proposed energy mix in 2030 is coal (48%) nuclear(14%) open cycle gas turbine (9%) peaking pump storage(6%) , mid merit gas (5%) and imported hydro-electricity (2%). 2023 is the envisaged start date for the first 9600 megawatts of new nuclear power.

²⁶ Anthony Van Wyk, 'SA's reliance on coal-fired electricity costs too much' Business Day 12 October 2010

SA is a late starter and is now only beginning to develop its renewable energy market. However for South African cities this late start may in fact provide important ‘leap frogging’ lessons building on what has worked and not worked in other cities. Cities can make a move to a more efficient low carbon economy.

Johannesburg’s resource intensive economy

Johannesburg’s economy is dependent on coal powered generation. Johannesburg is a carbon intense economy delivering 66.7% of total Green House Gas Emissions (GHGs) from electricity. The City purchases 80% of its electricity from Eskom and the remaining 13% from Kelvin Power Station. Notwithstanding the current bulk supply challenges of electricity there are important reasons why Johannesburg should look to renewables to diversify its current electricity supply. Energy efficiency is important as a demand side management strategy but localised generation provides tremendous opportunities.

Table 3: CO2 emissions by fuel type (City of Johannesburg State of the Environment Report 2008)

Fuel Type	CO2 Emissions (tons)	Percentage of Total Emissions for COJ
Electricity	13 029 077	66.7%
Petrol	3 893 095	19.92%
Diesel	2 318 334	11.86%
Coal	102 425	0.52%
Paraffin	95 843	0.49%
Natural Gas	93 896	0.48%
Furnace Oils	7 976	0.04%
LPG	3 325	0.02%
TOTAL	1 954 971	

There are opportunities to define our energy mix by 2040. While the role of the City as a provider of electricity infrastructure has been strengthened over the last decade we will build on previous experience, developing incentives and regulation for renewable energy uptake. The policy and regulatory environment is moving quickly to introduce a range of incentives for uptake of renewable energies. This provides an important opportunity for the City of Johannesburg to play a leading role in adopting cleaner energy production and efficiency systems.

Solid waste

Johannesburg's resource intensity is also defined by the volume of waste it generates. The City is running out of landfill space. An aggregate of eight years of landfill space remains, but this varies considerably across the City's regions. The Strategic Roadmap aims for a 50% reduction in waste to landfill by 2012 and zero to waste landfill by 2022. The Polokwane declaration seeks to reduce waste to landfill by 25% by 2012. Additionally, the declaration also requires zero waste to landfill by 2030. The City of Joburg waste services are provided by Pikitup who currently diverts 11% of waste. Approximately 61 140 tons of green waste were reclaimed during 2008/09 via garden sites. Pikitup operates 42 sites. Composting facilities at Panorama can handle 40 000 tons of waste per annum. Capacity is currently exceeded and plans are underway for a second composting facility at Linbro Park. An estimated 29 580 tons of dry waste was recycled during 2008/09 through private initiatives.

"The City collects 1.8 million tons of garbage each year. 244,200 tons are in the forms of illegal dumping, and 1,779 tons of litter from the streets. The lifespan of certain landfill sites for the City's solid waste is reaching full capacity and a process has been put in place to identify new sites within the City. In addition to these challenges, recycling of solid waste should play a far more important role in waste disposal since only 13% of the City's waste is recycled." (SDF, 2007/8)

About 91.8% of the Joburg households' have their refuse removed either weekly or occasionally. The City also introduced changes in refuse removal charges. The Pikitup tariffs are scaled in relation to property values. Owners in properties valued R 150 000 or less pay no refuse charges, but only a small City cleaning levy. The general satisfaction with refuse removal has increased over the years. A total of 90, 1% of households have access to refuse removal once a week. In terms of net tonnage disposed of to landfills sites the following statistics were recorded for 2008/9 financial year. Total tonnage waste to land fill sites was 1 595 343, total tonnage recycled waste removed was 17 865 and total tonnage composted waste removed was 66 366.

The average amount of waste generated in Johannesburg is approximately 1.2 kg per person per day (DGE, 2010; p.97). To put this statistic in context, the global per capita footprint dynamics are generally that the typical daily average is 2kg/pp/day i.e. 3 to 4 times that in many European cities. People in informal settlements generate 0.16kg/pp/day, while 2kg/pp/day is not unusual in affluent areas. Consequently, landfill management costs are escalating more as a result of affluence and wealth. However, wider ecosystem damage on riparian habitats, wetlands, rivers, topsoil erosion and habitat degradation from dumping and informal sanitation is larger in informal settlements, where adequate sanitation and refuse removal services are not always available and/or struggle to meet demand.

3.6 Climate Change

Eleven of the last twelve years (1995-2006) rank among the twelve warmest years in the instrumental record of global surface temperature (since 1850) providing now undisputed scientific evidence that climate change is an inevitable part of our present reality. Another fact is that cities and their populations will be disproportionately affected by climate change and will have to allocate time, human capital and financial resources to developing mitigation and adaptation responses²⁷. Moving to a low carbon economy means more than just becoming energy efficient, it means producing goods and services that are not resource intensive. The net impact would reduce carbon emissions. When we reduce carbon emissions we mitigate climate change, but we also become more resource secure because we save scarce natural resources.

²⁷ After UN IPCC Fourth Assessment Report, 2007 pg, 30.

When we talk climate change we have to consider both how to mitigate and how to adapt. There are no easy answers. Climate change is driving multiple crises across the globe. Climate Change environmental refugees now occupy an increasing share of global migration. Coastal flooding, desertification, melting permafrost are the causes of major population movements, an estimated 25 million people globally are climate refugees and these numbers will increase to about 200 million by 2015²⁸. Global temperature increases will give rise to increasing frequency and intensity of extreme weather events. The Mozambique floods in 2000, 2001 and 2007 displaced thousands of people, 2000 environmental refugees entered South Africa every day.

The fifth UN Intergovernmental Panel on Climate Change (IPCC) Assessment Report is now underway. The focus this time is on understanding risks, vulnerability and adaptation options for regions across the world. Of particular importance is how climate change responses need to reflect a wider transition to sustainable development and building resilience of cities, work which already began as part of the fourth assessment report produced in 2007.

Assessment reports show that by 2050 in Africa, 75 - 250 million people are projected to be exposed to increased water stress due to climate change. Environmental stresses due to climate change have created conditions for conflict to emerge. Scarcity of fresh water increases the propensity for conflict and urban instability but may also be a catalyst for cooperation.²⁹ Coastal cities where most of the world's population are located face extreme vulnerabilities to extreme weather events; flooding and sea level rises. Increasing urbanisation also increases vulnerability to disasters as many mega cities are located in extremely seismic areas and on low elevation coastal zones prone to flooding.

Climate change will shift weather patterns and affect conditions for agriculture. As previously discussed climate change would also affect food security in urban areas and remains one of the most critical challenges. Climate change weather events will affect global food supply.

While climate change cannot be related to a single natural disaster event, fluctuations in global temperatures will affect the amount of energy in the climate system and drive more intense and frequent weather events. Long term changes over the last 100 years has resulted in; widespread temperature increases across the globe, increases in sea level rises and warming of oceans, decreases in snow and glaciers that has affected precipitation amounts in many regions and some extreme weather events have increased in intensity and frequency over time. Globally weather related disasters claimed 15 000 lives in 2009 and led to economic losses of close to USD 62 bn. Between 1980 and 2004 the global insurance industry paid out roughly \$374 billion in insured property losses to natural disasters. Insured weather related losses increased 17-fold between the 1960s and 1990s, outstripping increases in GDP, population or premiums.³⁰

Climate change and Johannesburg

Johannesburg has remained largely exempt from natural disasters given a range of geographic factors. This is largely due to the fact that Johannesburg is not located on a coastline nor is it in an area heavily affected by major weather-related natural disasters such as hurricanes or typhoons. An assessment undertaken in 2008 by Mastercard Worldwide Insight 1 rated Johannesburg as the fourth best placed city out of 21 major cities from Asia, the Middle East and Africa in terms of exposure to climate change-related risks³¹.

²⁸ National Geographic, State of the Earth 2010, taken from Intergovernmental Panel on Climate Change

²⁹ United Nations General Assembly, 6 November 2009. Conflicts over water have the potential for peace and cooperation. Sixty-fourth General Assembly Second Committee Panel Discussion (AM)

³⁰ Business Day, 25 August 2010, Insurance firms face stormy weather and bigger payouts' pg8

³¹ CoJ Climate Change Adaptation Plan

However scientific evidence suggests that the country and Johannesburg in the future will face increasing changes to weather patterns. Rainfall patterns over Johannesburg have shifted significantly over the last 50 years which will affect rainfall patterns with increased risk of flooding.

The future climate of Johannesburg will be hotter and wetter. Temperature increases based on downscaled models, for the Gauteng region show a maximum day temperature of approximately 0.5°C. A decrease of between 0.27°C and 1.26°C is possible for April, May, June, and July. Minimum temperature increases between 0.6°C and 1.16°C in the minimum day temperature for all months of the year, with no regions experiencing below zero temperatures. Total annual rainfall will increase across all areas. Future annual rainfall is expected to range from 301 mm to 758 mm per annum. The majority of this rainfall is expected to fall during the summer months (December-January-February). An extension of rainy season is also expected. The climate change science at times may seem contradictory however extreme fluctuations in weather patterns in itself are an indication of the unpredictability of future weather patterns. For example increases in rainfall to Johannesburg combined with higher temperatures will increase evaporation during the summer months.

The risk of increased flooding will impact on existing storm water drainage systems. The number of rain days per month is expected to increase by between 1.036 and 2.188 days. This small change in the number of rain days per month compared with the increase in rainfall demonstrates that the intensity of rain events and possibly the severity of rain events may increase. The lower limit of change shows a decrease in the number of rain days for the majority of the year; this may also be a likely possibility.

Unlike coastal areas in South Africa, facing increasing coastal storms, sea level rises and a number of weather related extremities the primary outcome of climate change in Johannesburg would be increased temperature and rainfall. Increased rainfall events may lead to greater risk of urban flooding but may also provide opportunities for water harvesting. The poor will be disproportionately affected by climate change, and related risks such as flooding in urban slums. The City has recently developed a flood risk assessment highlighting areas of risk. Disaster management plans for each area will be developed. Increased flooding will also impact our roads and storm water infrastructure. There are opportunities for developing multi-year budgets to finance improvements in storm water capacity and develop new 'natural systems' to minimize the impact of urban flooding.

3.7 Transport

Our transport system is central to our economy and people. After years of underinvestment in public transport infrastructure during Apartheid that created separate systems for Black and White commuters –transportation is poised for a new future in the City. The introduction of the country's first Bus Rapid Transit system, the Gautrain high speed rail link holds tremendous potential for integrating our fragmented city. Building a mass public transport system also reduces our risk to global fuel price shocks and has a positive effect on reducing carbon emissions. In the following section we highlight the important role of transport in the economy, we also argue that public transport is the surest way of overcoming the legacy of Apartheid planning, we conclude by highlighting some of the major risks to our transport sector arising from the increasing cost of petrol and diesel.

Apartheid planning and transport

Apartheid planning created separate systems for Black and White commuters. Black township areas were under-served with long commuting distances for Black township residents who had to endure long travel times to work. Public transport consisted of commuter rail and subsidized state buses serving townships. Private mini-bus taxis and buses emerged to service an under capacitated state service is now the predominant mode of transport. Historical trends show modal shift changes amongst lower income groups from publicly-owned public transport (bus and rail)

to privately owned public transport (taxis). Use of mini-bus taxis increased from 3% in 1975 to 41% in 2009 with bus declining from 22% to 4% and train from 20% to 8%. With the flexibility of taxis, travels times for this group have remained static, or declined in places.

Johannesburg metro rail system connects Soweto with the CBD and other satellite towns, the system transports large volumes of workers but is not safe and reliable. The city of Johannesburg is not responsible for rail but runs its own bus company (Metrobus). There are two important features that define Johannesburg's transport system, the vast majority of residents do not own cars and travel by public or private bus, public rail or private mini-bus taxi's, middle income residents are resolutely car-oriented and travel times have increased dramatically since 1980 (nearly 60%)³². However there has been no viable mass public transport system to facilitate a modal shift change from private car to public transport of middle income residents. Continued urban sprawl has also created conditions for more intensive private car use.

Urban sprawl and traffic congestion

Congestion in the city has been increasing over time, this is as a result of private cars and private taxis. Johannesburg's sprawl has contributed to congestion. The decentralization of business to other areas such as Sandton and Midrand has compounded congestion around major nodes business nodes in the city. The movement from rail to road freight has also had a major impact on our road system both in terms of congestion and maintenance. Johannesburg interfaces with other road networks in the Gauteng city-region. The movement of freight goods and people across the Gauteng city-region adds to congestion as a large majority of the population in the region commute from other surrounding cities to work in Johannesburg.

Gauteng city-region's road network has to cope with an annual traffic increase rate of 7% with 1.8 million drivers and 2.8 million registered vehicles (Malefane, 2006). 40% of the national fleet and traffic has been increasing on the M1/N1 corridor roughly 7% a year over the past 10 years. The average travel time to work in the region has increased from 41,5 minutes in 1995 to 50 minutes in 2003, that is, a 17% increase over eight years. By 2040 Johannesburg would have an extra 2.5 million inhabitants. The existing system based on the dominance of private cars is unsustainable. More people, means more cars and more congestion ultimately negatively affecting the quality of life of residents.

³² After presentation made by Professor Phillip Harrison Looking Back, Looking Forward: Transport and Land Use Planning in the City of Joburg

Box 4: The high cost of traffic congestion in Johannesburg

Johannesburg ranks the highest in the world when it comes to commuter experiencing long commuter times. IBM produces its commuter pain survey. Last year was the release of the 'Globalization of Traffic Congestion' report. IBM conducted a survey of adult drivers in twenty major cities around the world – repeating similar surveys done in the U.S. alone in May 2008 and August 2009. This survey, intended to gather drivers' opinions about local traffic and related issues, was conducted in native languages in Amsterdam, Beijing, Berlin, Buenos Aires, Houston, Johannesburg, Los Angeles, London, Madrid, Melbourne, Mexico City, Milan, Moscow, Montreal, New Delhi, New York, Paris, Sao Paulo, Stockholm and Toronto. There were 8,192 responses in the final data set – at least 400 from each city.

*When it comes to pain, perception is reality, and the commuters in this survey clearly felt that roadway traffic has become worse in the last three years. 49% said it had become worse and 18% said it had become a lot worse. Conversely, only 20% of those surveyed said the situation had improved at all and only 5% said it had improved substantially. Interestingly, in the category of substantial improvement, New Delhi and Beijing led the way at 17% and 16%. This can be attributed to new transportation capacity being aggressively added in both these cities. The cities where respondents were most likely to say that the traffic situation had worsened somewhat or a lot were **Johannesburg (80%)**, Moscow and Toronto (64%), Mexico City (62%), Sao Paulo (61%), Milan(59%), and Buenos Aires (57%)³³.*

Drivers also reported on the most frustrating aspects of their commute. 43 % said it was the stop-start traffic; 32%, the rudeness and aggressiveness of drivers; and 26%, the unreliable journey time. The stop-start traffic was particularly pronounced in Johannesburg and New Delhi (66%), Mexico City (63%), Beijing (55%), and Madrid (53%). Further, the unreliable driving time was significantly more the case in Moscow (57%) and Beijing (49%) than in other cities. An interesting feature of this set of findings was that low speed was less of a frustration than was stop-start traffic.

Peak Oil and increasing transport costs

The increasing cost of petrol also poses a challenge to road freight, the mini-bus taxi industry and private car users. Petrol and diesel prices have trebled in nominal terms over the past five years in South Africa. The wholesale price of diesel in Gauteng is now three times more what it cost in 2002, the price of fuel in South Africa increased by 761.8% between 1990 and 2009³⁴. In terms of diesel and petrol demand in Gauteng, data from the oil industry (for the period 1995 - 2005) indicates an increase in demand for diesel of 88.69%, and an increase in the demand for petrol of 13.92%. The comparison with growth in national demand for the same products indicates that diesel growth in Gauteng is exceptionally high³⁵. The cost of road transport is becoming very expensive, road freight a major economic sector will be affected, the cost of road infrastructure is also increasing. The Gauteng Highway Improvement tolls will increase the cost of transporting goods services and people.

Private cars also affect the environment and quality of air. Cars produce large amounts of air pollution. Liquid fuels are major contributors to GHGs. Every litre of petrol burnt adds 2.30 kg of CO₂, every litre of diesel adds 2.63 kg CO₂, to the atmosphere (BP, 2006). If an effort was made to reduce the 2005 consumption volumes of both petrol and diesel by 10%, this would result in a reduction in greenhouse gases by 1.48 Mt pa for Gauteng alone.

³³ Taken from the Commuter Pain Survey 2010

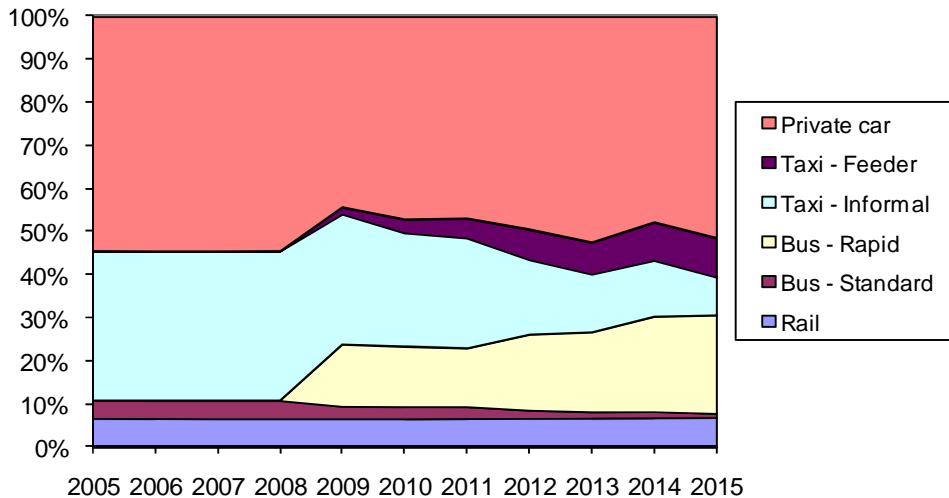
³⁴ South African Food Cost Review 2010, NAMC

³⁵ C J Cooper 2007, Energy and transport issues for Gauteng, South Africa. Journal of Energy in Southern Africa, Vol 18 No 2

The future of public transport in Johannesburg

The city faces a number of transport challenges however with recent key public transport interventions such as the Gautrain- a provincial led project and Rea Vaya Bus Rapid Transit System- a city led project, the City is laying the basis for a new era of mass public transport.

Graph 9: Modal split for City of Johannesburg - 2015



To mitigate against increasing petrol prices, cost of maintaining road infrastructure and increasing air pollution a modal shift change from private to public transport is the answer for the future city of Johannesburg. Modal shift changes from private to public modes presents a number of opportunities for economic development and improved city living. The figures in the above graph are not actual they are based on the assumption that Rea-Vaya Phase 1 would carry 430,000 passengers a day. This assumption is modelled and shows major impact on modal shift changes and changes to the use of private vehicles. However by 2015 private cars still predominate some indications are with the full roll out of BRT further reductions in private cars could be achieved. However if we project into 2040 then we could achieve considerable increases in the use of bus and rail.

The goal of BRT is to place 85% of the City's population within a 500 kilometres of a BRT feeder or trunk route. Passenger numbers average 30 000 a day and with better fuel standards considerable reduction in carbons emissions can be achieved. This goal can be achieved by 2040 and would have tremendous positive returns of transport investments and social benefits.

Future transportation in the region is developing into a system of high speed modern rail systems connecting major systems, supported by corridor bus services such as BRT, smaller bus and mini-taxi feeder routes. Gautrain as a modern high speed rail service, now an approximately 80 km route connects Johannesburg and Pretoria with the OR International Airport with trains running over 120 kilometres an hour. Most of the Gautrain route in Johannesburg and its suburbs will be underground, moving from park station in the city centre under the Johannesburg hospital in Park town towards Rosebank and on to Sandton to the airport. The system was not conceptualized as a panacea for mass public transit, rather it was developed as a high speed corridor route to connect major cities with Gauteng city-region.

Both BRT and Gautrain provide opportunities for corridor development and transit oriented development and this already beginning to take place in areas like Rosebank, Braamfontein and a number of other nodes in the city. There

are also opportunities for improving rail freight into the city, historically freight has shifted from rail to road because of an unreliable rail system which made road freight cheaper. New investments in improving the national rail infrastructure will bode well for shifting freight onto rail in the city. The opportunities exist for diversifying existing modes of travel to include bicycling, walking, rail, bus. Developing multi-modal transport infrastructure will be an important opportunity to be realized as the size of the city is small in comparison to other large global cities. These new projects provide a basis for developing a transport system more appropriate to the poly-centric city of Johannesburg, were previously the city form created a 'hub and spoke' transport system with the CBD acting as a central station now new transportation plans at a Gauteng provincial level and in our own city are laying the basis for a system based on poly-centricity.

3.8 Liveable Communities

The spatial DNA of a city plays an important role in creating liveability³⁶, the design of the city, streets, buildings and spaces are powerful determinants of liveability. Liveability is also defined by giving citizens access to a range of cultural and social services and facilities. There have been a number of important policy shifts. Nationally, the move to Sustainable Human Settlements provides an important policy framework. The City of Johannesburg has achieved high levels of service infrastructure coverage with over 90% of our residents who have access to basic service infrastructure however the challenge is to transform our Apartheid city, build liveable communities and create a more humane city. In the following section we discuss the form and shape of our current city and the challenges we face. The focus is on changing our built environment so that we may improve the lives of our citizens, in this section we discuss urban sprawl and Johannesburg, housing and managing future growth.

Urban sprawl

Johannesburg's urban form is a consequence of its history, the City grew as the popularity of the private automobile grew. Apartheid planning also contributed to urban sprawl as racialised townships were deliberately developed on the periphery of the city. The legacy of Apartheid planning, the era of the automobile and capital flight to suburban neighbourhoods in the 1970s are all historical conditions that over time have given rise to a sprawling city. Our sprawling city is also a divided city, places of work are far from where the vast majority of our population lives. The historical north south divide with a large number of our population living in the south of the city and jobs located predominantly in the north of the city has increased travel times considerably for those travelling from the south to the north. The inner city is centrally located closer to economic activity in the north hence the demand for housing which has steadily increased and now outpaces supply.

Using urban density as a proxy for compactness then Johannesburg has some of the lowest urban densities when compared to global cities. Average densities within the metropolitan region indicate show 521 persons per square kilometre. There are larger numbers of persons within the inner city with considerable overcrowding in particular neighbourhoods. Average densities in the inner city are estimated to be 2,270 within a 10 kilometre radius but this is likely to be an underestimation.

Housing

In the future to effectively restructure the inefficient urban form of the City we would have to do more than simply manage growth but define in clear and unambiguous terms a series of spatial reconfiguration projects paying careful attention to the form, morphology and structure of the city. A vision followed by detailed planning equal to the vision of the Apartheid city vision is needed. Mobility, integration and access are important drivers to effect change. The

³⁶ After Urban Age Report

Bus Rapid Transit is important in terms of improving mobility, but is only one intervention. Access-bringing people closer to jobs, markets, social networks is an important and fundamental right.

The housing process which up until now has lead infrastructure development which is turn is dictated through provincial government arrangements and the availability of cheap land has continued to drive urban sprawl. Waiting in the future for these settlements to become better located until mass public transit lines reach the periphery of the city is not the answer. Infrastructure investment decisions can no longer be led by a low cost housing ownership model that destroys economic mobility and places further pressure on new bulk infrastructure development. Strategic land banking and releasing is a critical tool for the restructuring and integrating the city.

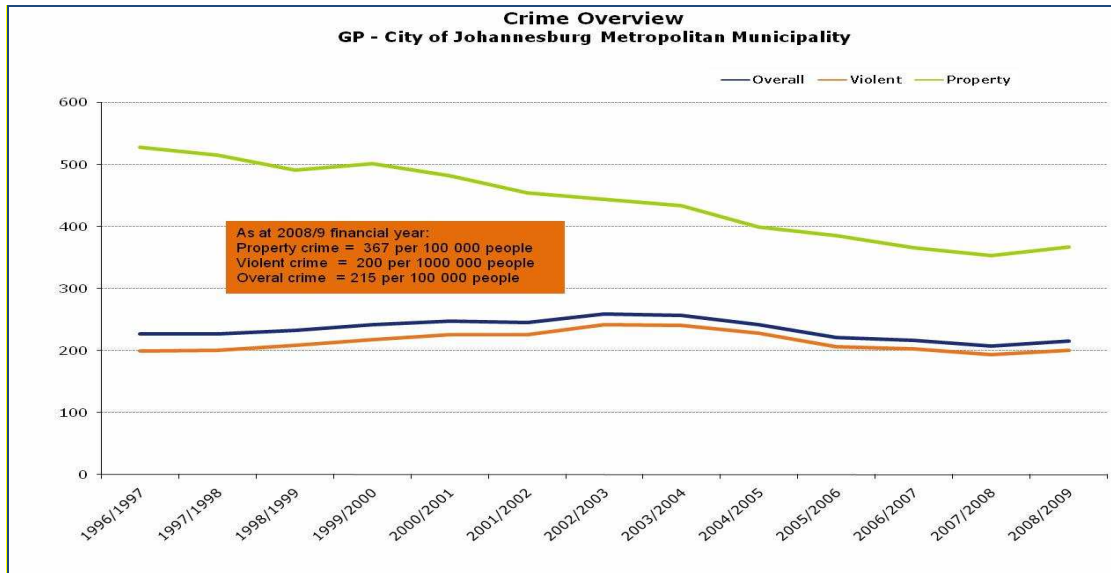
Over the last ten years to tackle the Apartheid urban form we had to address two main forms of spatial exclusion. Firstly, exclusion by design which was based on deliberate underinvestment in township areas and planned township dormitory towns and secondly exclusion by decline, well located inner city areas such as Hillbrow, Berea and Yeoville which experienced historical decline as a result of a collapse of the inner city property market. Inner City Regeneration initiatives have done well to address some of the issues of inner city decline but cheap, affordable rental supply remains a challenge. Targeted investments in Soweto have broken the cycle of underinvestment in former townships areas with visible improvement in the property market. The introduction of the Rea Vaya Bus Transit System has transformed the city and will make previously considered spatially dislocated township areas well located in terms of accessibility. However as we focussed on addressing 'exclusion by decline' and 'design', new post-Apartheid exclusion forms have emerged. Urban crime and violence and private developer led housing projects have created islands of exclusion adding another layer to the already fractured and divided Apartheid City. A National Survey on gated communities in South Africa indicate that's that Johannesburg has the highest number of combined road closures and security estates in South Africa, the Gauteng City-region municipalities also display some of the largest numbers of secure estates across the country³⁷. In the following segment we identify existing spatial trends and features in the City.

3.9 Community Safety

Crime in South Africa in general and Joburg in particular, is a serious cause for concern. The data over a thirteen year period shows little improvement, with violent crime and the overall crime rate remaining constant at the 200 per 100 000 mark. However, property crime has declined significantly over this period.

³⁷ A National Survey of Gated Communities in SA, 2003, Karina Landman CSIR Building and Construction Technology

Graph 10: Crime overview: City of Johannesburg (1996 to 2009) (Source: Global Insight data, 2010)



“Stranger crime”, where the perpetrator and the victim do not know one another, are at inordinately high levels. These include theft, burglary, robbery, car hijacking, assault and murder – and these categories are often in combination with one another.

Interpersonal crime and violence, where the perpetrator and victim are known to one another, involves assault, murder and/or domestic abuse. Young men (15-29 years) are disproportionately involved as victims and as perpetrators; and the homicide rate of women killed by their intimate partners is especially high. The social dynamics that underpin violence are widespread poverty, unemployment, and income inequality; patriarchal notions of masculinity that valorise toughness, risk-taking, and defence of honour; exposure to abuse in childhood and weak parenting; access to firearms; widespread alcohol misuse; and weaknesses in law enforcement

Safety in Joburg is a key challenge, but it is often reduced to crime and violence, with insufficient attention being paid to a number of other dimensions of safety at the individual and community level. The other set of concerns with respect to safety concern injury or death due to road traffic accidents, fire and environmental risks. South Africa’s injury death rate (157.8 per 100 000 population) from intentional and unintentional (e.g. road traffic accidents) injuries is almost double the global average. A disproportionate number of victims of road traffic accidents are pedestrians due to both motorists’ negligence and pedestrians’ own lack of care or risk taking.

In recent years, Joburg has witnessed an increase in injury or death from fire, especially in crowded inner city slums and informal settlements. Another trend that has become discernible in recent years is drowning at streams due to flash floods in both suburban and township areas, coupled with flooding of houses due to inadequate storm water systems.

3.10 Smart City

Only 15.8% of households in South Africa have access to computers and even fewer households (7%) have access to the internet³⁸. This even more pronounced when access to a broadband network³⁹ is considered, which has been a motive force for growth and development around the world.

A significant minority enjoy high-speed access via corporate networks, domestic connections and the wireless 3G networks. Broadband networks are clustered in the main urban economic nodes, effectively excluding township areas, informal settlements and non-urban/agricultural areas. This has been characterised as the “digital divide” that mirrors the broader socio-economic disparities that have been bequeathed by the apartheid system to contemporary South Africa.

At the same time, there is strong evidence that the majority of households – indeed, the vast majority of adults – have access to cell phones, reflecting a global trend of massive uptake of cell phone usage. Smart phones, which are able to connect wirelessly to the internet via a broadband 3G connection is becoming increasingly ubiquitous, including among the urban poor. This means that there are important opportunities for bridging the digital divide through the use of wireless broadband networks.

Government as a whole has not optimised the use of information and communication technologies (ICTs) to improve its service offerings to the citizenry. There are opportunities for government, across all spheres, to provide seamlessly to all citizens in a given locality.

Use of ICTs by the City of Johannesburg itself has been quite uneven across the municipality’s different departments/functions. In some cases, the City has invested heavily in ICTs, such as the billing and revenue collection systems, but these have often translated into significant customer dissatisfaction. At the same time, the rapid development of technology may offer solutions for current challenges, such as intelligent infrastructure.

At quite a different level, the economy of the Joburg area is dominated by sectors such as financial services, which are among the most intensive users of ICTs. South Africa’s four largest commercial banks are headquartered in Joburg and rely on their in-house IT departments and the wider software development industry located in the city to support ongoing innovation of their e-services. There are therefore opportunities for strengthening the nascent ICT sector for the overall socio-economic development of the city.

The idea of a “Smart City” is predicated upon the idea that the optimal deployment of information and communications technology (ICT) can play a critical role in a city’s development; and indeed, it may permit “leapfrogging” to take a city to a qualitatively higher state of development.

³⁸ Taken from Fast Facts for Local Government Issue 1/2011 Source: The Gaffney Group and the South African Local Government Association, Gaffney Local Government in South Africa 2009-2011

³⁹ A broadband connection is typically one where the connection is in excess of 2 mega bits per second (Mbps).

3.11 Governance

The fundamental principles of good governance, as reflected in the Constitution of the Republic of South Africa, include the rule of law, accountability, accessibility, transparency, predictability, participation, and responsiveness to people's needs. Governance therefore underpins everything the City does.

In the last term of office (2006-2011), the City of Johannesburg implemented new governance and institutional arrangements. The revised model sought to ensure improved oversight, enable scrutiny and ensure greater accountability of the Executive to the Council (where the latter represents the Legislative component of the City). While significant progress has been made, many challenges and anomalies still exist in the city's governance processes:

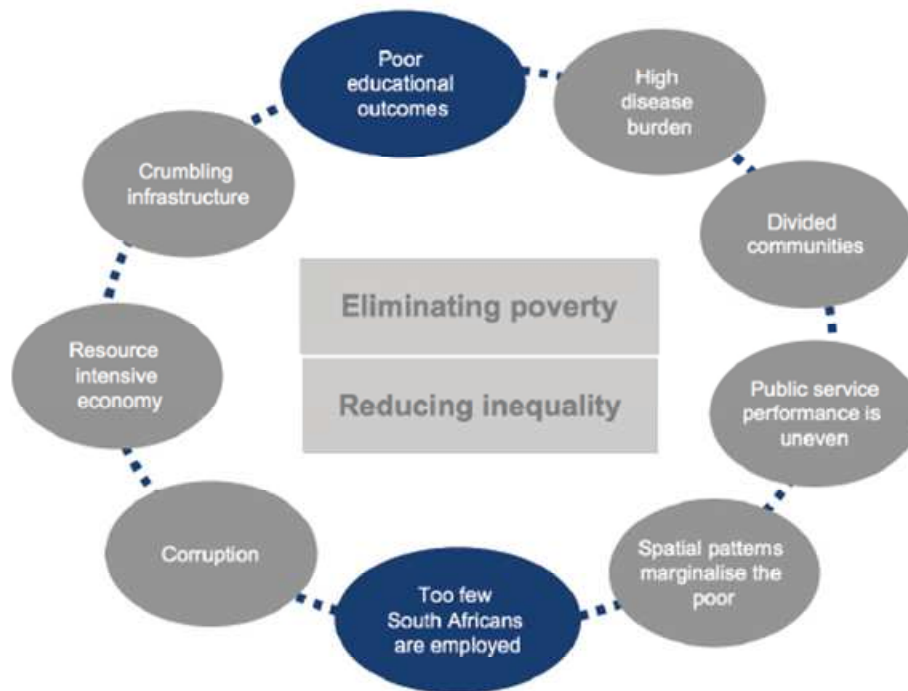
- Oversight committees require additional support and capacity to perform their responsibilities;
- Need to address shortcomings related to the efficient and effective functioning of departments and municipal entities and the need for public and customer oriented staffing;
- Performance management system, oversight and reporting needs to be enhanced;
- Financial turnaround strategy must be systematically implemented, with specific focus on financial stabilisation, alternative funding options, long-term capital planning and competitive tariffs to support sustainability;
- Community and stakeholder participation in planning and budgeting remains one of the areas of concern for the city;
- Ward committee structures need to be supported to enable them to advocate communicate development and communicate government programmes on an ongoing basis;
- Need co-operative governance to ensure seamless service delivery from all spheres of government and other social partners;
- Need to effectively communicate with citizens and stakeholders of the city on an ongoing basis;
- Need for participation by people in the resolution of their own problems; and
- People understand their rights and duties and act as responsible citizens.

3.12 Conclusion

The analysis contained herein provides a holistic perspective of the challenges – and opportunities – that lie ahead. On reflection, it is noted that the conclusions drawn through this process are strongly aligned with the issues identified within the South African National Planning Commission's (the NPC's) Diagnostic Report, made public in June 2011.

The Commission has been tasked with developing a vision for 2030 – and a plan for achievement of this vision. The Diagnostic Report is comprised of elements of a vision statement, and defines key challenges facing South Africa. Elements noted as falling into the category of South Africa's 'largest challenges' include ongoing inequality, and high levels of poverty. The figure below, drawn from the NPC's report, depicts a variety of factors viewed as contributing to this reality.

Figure 3: Elements requiring focus in reducing inequality and eliminating poverty (NPC, 2011, p. 7)



The Diagnostic Report provides a range of insights into each of the elements depicted above, at a national and more nuanced local level, and concludes:

“Our society needs to make significant progress in all of these areas if by 2030 we are to be much closer to the promise of an inclusive, just society as envisaged in our Constitution... We need leaders and citizens to commit to a bold programme to build a better future, based on ethical values and mutual sacrifice. The leadership required will think and act long term, rising above short-term personal or political gain... The citizens of a South Africa firmly on the road to inclusion, cohesion and shared prosperity will need to fiercely hold to account both public representatives and the public service at all levels. However they will be equally energetic in exercising their responsibilities. All citizens have a responsibility to build family and community, to grow their own skill and productivity base, and that of their children and to join government in the fight against crime and corruption⁴⁰.”

The report combines concepts of social urbanism with sustainability. With the envisaged 11 November 2011 release of the detailed Plan, a further review of input, in the context of the refined GDS, will be possible.

⁴⁰ The National Planning Commission Diagnostic Report, 2011, p. 28

Chapter 4:

Building our vision: Focus areas for the path ahead

4.1 Introduction

The following chapter defines major goals and objectives under each sector. These goals and objectives can achieve major outcomes as we work to realise the 2006 GDS vision. We have made significant progress since 2006. However, the goals and objectives in this chapter further build on the work we have undertaken over the last five years.

4.2 Health and Poverty

Goal: Reducing poverty and improving the health and well-being of all who live in our city

Objective 1: Towards zero deprivation

The City will work to achieve zero deprivation, with the intention of eliminating poverty and vulnerability. This will be facilitated through the provision of access to:

- Subsidised/free basic services, including alternative energy/sanitation for those living informally;
- Housing/shelter, including affordable rental through the Registered Social Landlords programme;
- Food security support;
- Targeted health interventions; and
- Subsidised transportation.

Objective 2: Ensure social inclusivity

The City will focus on equal access for all, encouraging inclusive participation.

Objective 3: Scale up Early Childhood Development (ECD)

It is widely recognised that quality Early Childhood Development (ECD) leads to substantially better educational outcomes. The City's ECD programme will be significantly scaled-up to ensure widespread access, regulation of existing facilities and improved quality of ECD teaching.

Objective 4: Reduce the quadruple burden of disease

The quadruple burden of disease, namely, HIV and AIDS, infectious diseases, trauma and violence as well as non-communicable diseases need to be addressed.

Interventions aimed to prevent/minimise new HIV infections through life skills training, health promotion, (behaviour modification) and trough programmes such as Prevention of Mother and Child Transmission to minimize vertical transmission if the HIV virus from the HIV positive mother to the new-born child. Other aspects of the programme is aimed at providing treatment and support to the HIV positive persons (management of opportunistic infections and

ARVs) to improve the quality of life of these individuals. The national programme target is to provide ARVs at all primary health care facilities.

These are “poverty related diseases” which can be largely preventable e.g. vaccine preventable conditions in children, malaria, diarrhoea. Many of these can be alleviated by improving the socio-economic circumstances and improving access to health services.

Due to inter-personal violence, suicide, road accidents (transport related) and other unintentional injuries. The problem can only be successfully tackled on multiple levels, using a multi-pronged approach and by involving several sectors Health Promotion, Traffic, Social Development and Policing.

The Chronic conditions of lifestyle linked to risk factors such as hypertension, raised cholesterol, tobacco use, lack of exercise and obesity were commonly associated with developed countries. However, the SA National Burden of Disease Study, 2000 shows all these chronic diseases of lifestyle are prevalent in South Africa and will probably become more so as a more westernised lifestyle is adopted. The ongoing management of these chronic conditions and their complications, once established, places a tremendous strain on health services. Therefore, health promotion targeting young people to avoid these conditions from developing should be emphasized.

4.3 Economic Growth

Goal: Enabling and growing a job intensive competitive economy

Objective 1: Ensure more balanced spatial economic development

The City will drive spatially targeted economic development, to ensure a diversified and shared space economy. Focus will be placed on skills development, sector support and infrastructure investments in specific areas, such as the inner city; secondary business nodes such as Randburg, Roodepoort and Lenasia; township CBDs such as Jabulani precinct and Orange Farm.

Objective 2: Support skills acquisition

The quantity, quality and variety of skills are important for a growing and diverse economy. The City will work with its partners to ensure that over time there sufficient supply of skills to support the key sectors of the economy.

Objective 3: Support and grow competitive creative industries

The City will develop and support its creative entrepreneurs through direct dialogue and engagement to better understand the contribution to the economy and the support required to grow these businesses.

Objective 4: Support business incubation

The City will support business incubation by supporting growth of economic clusters using a number of mechanisms and incentives.

Objective 5: Support agriculture producers and build produce markets

The city will support emerging small scale farmers and develop markets for agricultural produce in the city so as to ensure food security and develop a job intensive sector of the economy.

Objective 6: Building the freight economy

Building the freight economy involves supporting the existing freight economy and supporting logistics companies. This would involve careful analysis of our current freight and logistics industry and developing incentives and regulation to support freight industry.

4.4 Natural Resources

Goal: Conserving water for future generations

Objective 1: Invest in urban rainwater harvesting systems

Increased rainfall events as a result of climate change hold opportunities for rainwater harvesting in the city. Rainwater can be used to flush toilets and for irrigation, thereby reducing the amount of mains potable water required. Large rain water tanks also have the advantage of providing a back-up supply for fire fighting and in case of mains water supply interruptions.

Objective 2: Scale-up water conservation and demand side management (DSM)

The City will work to ensure effective demand side management (DSM) in line with its strategy which includes sanctions and incentives; and the introduction of water efficiency measures, such as the use of water efficient appliances (washing machines, toilet cisterns etc.), low flow shower heads and water efficient gardens.

Ensuring systematic rehabilitation of ageing infrastructure is important both from a water conservation point of view (because old pipes are more prone to leaks) and from water quality and environmental point of view (because old aeration equipment at wastewater treatment works, for example, are more prone to breakdowns). This is recognised as a high priority for the City and is addressed in its plans. Reducing real losses to 5% over the next five years would involve just over 5% improvement year-on-year, creating a saving of approximately 50 000 to 100 000 mega litres over the next ten years.

Objective 3: Develop green infrastructure

Green infrastructure should replace non-sustainable infrastructure over the medium term. This includes smart metering systems which will be developed and rolled out across the city to improve demand side management and the implementation of green sanitation systems to provide alternatives to water borne sanitation systems.

Objective 5: Deepen water quality research

The City will develop research capacity to anticipate and plan for threats to its water quality. This initiative aims at building a more proactive culture within the organisation when confronting critical water quality issues in the future.

Goal: Transition into a low carbon economy

Objective 1: Retrofitting the City

The City's current retrofitting programme has focused on municipal owned buildings. The aim is to reduce emissions by 15% as set out in the Energy and Climate Change Action Plan. However there exist significantly greater opportunities to embark on a city-wide retrofitting strategy that can have a larger impact on reducing emissions across the city. Moreover the City can play a supportive role by assisting companies to retrofit buildings and reduce their building footprints. The City has been developing partnerships with key players in the energy sector e.g. Clinton Climate Initiative. It will complement existing frameworks and guidelines for energy efficiency with the necessary regulatory frameworks.

Objective 2: Scale up a range of key energy-saving interventions

The City will focus on a range of interventions to transition to a low carbon economy such as facilitating access to clean energy; building intelligent infrastructure that is essential for resource efficiency; scale up demand side management initiatives to reduce over consumption; and develop innovative incentives for energy efficiency across the city targeting households, businesses and government buildings.

Goal: Building a recycling economy

Objective 1: Separation at source

It is our objective to separate waste at source which involves setting up the necessary systems and procedures for recycling thereby reducing total waste to landfill.

Objective 2: Reduce, reuse and recycle

The City will change its waste management business model focusing on recycling, re-using waste and reducing the overall generation of waste. There exist opportunities for recycling particularly in e-waste recycling, developing buy back centres and promoting green waste recycling.

Goal: Building adaptive capacities for climate change

Objective 1: Ensure climate adaption and mitigation

The city will develop appropriate adaptation and mitigation interventions to respond to climate change, which includes implementing effective disaster management strategies and a range of initiatives to assist communities to build resilience to climate change.

Objective 2: Develop innovative systems for storm water management

The city will implement innovative systems for storm water management to mitigate against increased flooding from climate change.

4.5 Transport

Goal: Building an efficient and reliable mass public transport system

Objective 1: Scale up provisions for mass public transit

Reducing congestion is important for improving the lives of our citizens. The City will scale up provisions for mass public transport. The Rea Vaya Bus system lays the basis for building a mass public transit system the City will work with other state transport partners to improve overall efficiency, planning and safety of public transit. The objective is a major modal shift change over the next five to ten years to bus and rail. Metrorail needs to be improved consistently over the next term of office to improve safety and efficiency of the service. The city has a major role to play in planning inter-modal transfers between, Gautrain, Metrorail lines and Rea Vaya.

Objective 2: Promoting Non-Motorised Transport

As part of an integrated modal plan, walking and cycling are important mobility choices. The city has developed a Non-motorised transport (NMT) framework for major areas which will be implemented. This includes walking, cycling, rickshaws, wheelchairs, animal-drawn carts and recreational activities such as equestrian, rollerblades, skates and scooters.

Objective 3: Making our streets safe

The car dominance of Johannesburg has eroded the safety of majority of pedestrians in the city. Streets and pavements are fundamental for improving the safety and quality of life of Johannesburg's residents. Significant improvements to street and pavement will be made to create great pedestrian environments.

Objective 4: Facilitate Transit Oriented Development

The city will facilitate transit oriented development around major transport nodes to stimulate economic development.

4.6 Liveable Communities

Goal: Building liveable communities and thereby improving the health and well-being of all our communities

Objective 1: Reducing urban sprawl

The objective to reduce urban sprawl by using incentives, mechanism, land use controls and planning to densify strategic locations in the city. .

Objective 2: Adopt incremental tenure approach

There are two critical issues that need to be addressed with regards to informal settlement upgrading. Firstly the location of the settlement, upgrading on the periphery of the city come at huge social costs to communities the high

cost of transportation exacerbates poverty in informal settlements. The second issue is ensuring tenure but tenure that is far more flexible and does not lock the urban poor into a serviced RDP stand. The incremental upgrading tenure approach is critical in this regard and must be adopted as an approach and method for ensuring better well located settlements and tenure that can be strengthened and upgraded over time.

Objective 3: Increase small scale rental supply

Affordable rental to households earning less than R 3500 a month will be a priority in the future, giving residents far more rental choices and options. This would involve harnessing the power of small scale renters across the city. This would involve developing regulation and incentives for small scale renters. These interventions may range from adjusting town planning regulation for backyard shacks in township areas, to providing incentives for increasing supply of garden cottages in suburbs to improving quality of rental stock inner city suburbs. Small scale rental already supplies accommodation in townships. In the future the potential for broader reach both in terms supply and economic opportunity will be maximized the City must develop innovative regulations for standards and service levels. The scale of affordable rental has been limited but would be increased over the coming decades. This is important to ensure more housing choice and mobility in the City.

Objective 4: Transform our townships

49% of Johannesburg's population lives in townships there are significant opportunities for increasing small scale rental in township areas while simultaneously improving the quality of the built environment in townships. The city will scale up its efforts to transform townships. This would involve developing transformative plans and using finance e.g.: Neighbourhood Development Partnership Grant and private sector capital to drive new capital investment in townships.

Objective 5: Building an Inner City for the future

The inner City of Joburg is the most strategic resource. The inner city represents many of the liveable urban features we aspire to building by 2040. It offers appropriate densities, high levels of economic intensity and is the most walkable space within the city. There have been considerable positive developments in the inner city, inner city regeneration has managed to transform the inner city in a relatively short space of time. However as we imagine the future of the Inner City current regeneration efforts need to be scaled up. The focus to transform the inner through major improvement and investment in infrastructure, new housing and turnaround of 'bad buildings'- the City needs a major capital works programme to generate jobs and drive new growth in the construction sector. This would involve major turnaround of the inner City of Joburg, expanding development on the periphery of the CBD and driving private, public sector investments in the CBD and inner city. The City has developed its Bad Buildings Strategy which addresses inner city blight. This strategy will be implemented building sustainable housing management in the inner city.

The most important opportunity is developing appropriate land use controls and spatial strategies that achieve the vision of a more compact city within one generation. Building a more strategically dense and compact city is important for a number of reasons particularly in a city that has continued to sprawl over the past decade. Apartheid planning in Johannesburg perpetuated low density and promoted the high consumption of land. Townships on the periphery of the city has increased the per capita cost of land infrastructure and services but also were developed with sub-standard infrastructure. Building a more compact city of the future would restructure Johannesburg's Apartheid city building a more equitable and integrated neighbourhoods currently still deeply divided across race and class.

Objective 6: Promote compact and dense CBDs across the city

Localized CBDs will be developed and promoted with increased densities, mixed use developments and potential for City Improvement Districts. Townships are currently characterized by medium population density in single dwelling low rise housing. The built form may change over time with consolidation and parcelling of individual erf's.

4.7 Community Safety

Goal: Everyone must feel and be safe in our city

Objective 1: Implementation of an integrated city safety strategy

An integrated city safety strategy is premised on the idea that safety is not only about the elimination of crime and violence through law enforcement. But that it requires a range of interventions that work in concert so as to produce the positive safety outcomes that are needed for an improved quality of life. There is therefore a need for a revised, integrated city safety strategy that ensures that all the dimensions of city safety are addressed. The City of Johannesburg must be at the forefront of formulating the strategy in conjunction with all the key stakeholders.

Objective 2: Effective policing and enforcement

Effective policing is a centrepiece of any city safety strategy. Police need to be visible and responsive to the needs of residents of the city. Close collaboration between the Johannesburg Metro Police Department (JMPD) and the SA Police Service (SAPS), along with the private security industry, is essential in this respect. An improvement to the overall efficiency and effectiveness of the entire criminal justice system, which is being driven by national government, also needs to be strengthened and supported. The city can play a major role in ensuring rollout of surveillance cameras in other parts of the city, building on its success in the Joburg central business district.

Objective 3: Social crime prevention

In many parts of world, it has been shown that crime can be prevented if initiatives, facilities and programmes are in place to prevent crime by directing the people – especially young people – towards socially constructive activities such as sport, recreation, art and culture.

Objective 4: Crime prevention through environmental design

The form and structure of the built environment has a strong influence on the perpetration of crime. Therefore, environmental design that prevents crime and promotes safety is an important part of the overall safety strategy of the city. There are often simple interventions that would assist in the creation of a safe environment e.g. public lighting, through to planning new neighbourhoods that are not conducive to crime, avoiding fortification of households and neighbourhoods.

Objective 5: Road safety

A combination of more rigorous law enforcement of traffic laws and public education should lead to a significant reduction of injury or deaths on the roads.

Objective 6: Effective partnerships for the promotion of safety

Partnerships at all levels are required for a safe city. These include intergovernmental partnerships (especially between SAPS and JMPD); between the different arms of the criminal justice system; between communities and the police, especially through the mechanism of Community Policing Forums; and between the private security industry and government policing agencies.

Objective 7: Ensure effective disaster management

The City of Johannesburg needs to scale up its own disaster management capacity through risk identification and mitigation and the establishment of the necessary facilities and structures of disaster management. As the effects of climate change begin to manifest, disaster management would need to play a key role in ensuring the safety of the citizens and the protection of property and the wider environment.

4.8 Smart City

Goal: Build a Smart City for rapid socio-economic development

Objective 1: Build a Smart City

The idea of a “Smart City” is predicated upon the idea that the optimal deployment of information and communications technology (ICT) can play a critical role in a city’s development; and indeed, it may permit “leapfrogging” to take a city to a qualitatively higher state of development. This requires a vision and strategy that will ensure that all aspects of a Smart City are fully integrated.

Objective 2: Building city competitiveness and smart industries

The competitiveness of firms in the local economy, which is a prerequisite for economic growth and job creation, is strongly dependant on the strategic deployment of ICTs. The city needs to examine ways in which it can support firms in this respect.

Another aspect that requires attention is the attraction and retention of a wide range of enterprises that constitute the knowledge economy in general and the smart sector in particular. These include firms specialising in software development, biotechnology and aerospace, whose agglomeration benefits will lead to a more competitive smart sector. The City of Johannesburg, along with its partners in other spheres of government, the tertiary education sector and the private sector need to come together ensure that the supply-side needs of this sector are addressed.

Objective 3: Bridging the digital divide

Broadband access, it has been suggested, will become a human right in the same way that access water and shelter has become under our Constitution. This is the case because it provides information, enables access to services and employment, ensures interpersonal and professional communication and the ability to use it is fast becoming a prerequisite for a significant proportion of jobs in the economy.

The City of Johannesburg, in conjunction with a private sector partner, is currently rolling out a high-speed fibre optic network to parts of the city that has been traditionally under-served. This is a major advantage that must be built upon in a number of ways: explore possibilities for schools in disadvantaged areas to get access; ensure provision of

broadband internet access at libraries and other City-owned community facilities; and examine ways in which the internet can be used to address the skills mismatch and other employment-creation initiatives.

Objective 4: Scale up e-Government

The arena of e-Government provides significant opportunities for the City to find ways to improve service delivery and access at all levels: customer metering and billing; number of payment channels; development planning and building plan applications; rental collections for social housing schemes; finding municipal information; and for improvement of accountability and transparency.

Objective 5: Provision of smart infrastructure

Smart infrastructure means service provision that is more efficient, effective, and environmentally sustainable. These include smart meters, intelligent public lights, intelligent traffic management systems and surveillance systems that will go a long way to improve development and delivery in the City of Johannesburg.

4.9 Governance

Goal: Enhance effective decision-making, oversight, accountability and inclusive governance processes

Objective 1: Strengthen good governance

As one of the major cities in South Africa, Johannesburg has a responsibility to make a contribution to re-building and improving the basic requirements for a functional, responsive, accountable, effective, and efficient developmental local government.

Objective 2: Sustain the City's financial position

The system of public finances represents one of the most important foundations of a municipality's governance. It must also establish effective systems (internal and external) and controls to ensure proper enforcement and compliance to laws governing public finance. A sustainable fiscal position is essential for the long term health of the City.

Objective 3: Support and improve oversight structures

As part of strengthen accountability, transparency and responsiveness to citizens' needs, the City will have to continue strengthen its performance management system and enterprise risks and performance audit processes. Furthermore, City will have to continue with its zero tolerant (decisive and bold action) to anyone found to be looting state and public resources and to improve its procurement processes and oversight.

Objective 4: Enhance participatory planning and budgeting

The 2011 ANC Local Government Manifesto states that "Municipalities are the places where government's commitment to participatory governance should achieve meaning and content". In order to achieve the overarching goal or vision of this outcome, there is need to address the following critical issues namely:

- Enhance community based planning approach;
- Strengthen participatory governance; and
- Innovative communication and marketing

The City will focus its interventions on measures aimed at promoting social cohesion, building consensus through dialogue, promoting trust and integrating conflict prevention into programmes and services.

Objective 5: Breeding a new cadre of local government activists

In light of the service delivery expectations from communities, the City needs to focus on the development of skilled, competent and patriotic workforce. Furthermore, as one of the major cities in the country, the City has a responsibility of producing “new cadre” of local government practitioners and councillors in this term of office.

Objective 6: Entrench Batho Pele principles in the City’s workforce

The City need to embark on a vigorous training programme and campaign of all staff on Batho Pele as part of its agenda of improve customer care, productivity, efficiency and effectiveness. There is also a need for the City to inculcate a culture of knowledge sharing and learning.

Objective 7: Intergovernmental alignment, innovation and partnerships

The intention of integrated government planning is to facilitate harmonisation and alignment and the degree to which plans, budgets, and actions are coordinated and integrated in order to maximize the impact in a particular geographic space. In tackling the development challenges, the City will have to improve the relationship and utilize all governance structures available in order to tackle the developmental challenges it faces. Furthermore, the City needs to sustain engagement between itself and its stakeholders in finding sustainable solutions.

Objective 8: Promote social cohesion and moral regeneration

The City of Johannesburg, with its diversity of people, its diversity of languages and its diversity of faiths – has a lot of bridges to build. Through its governance structures, levers and processes, the City has a responsibility to build bridges between people, their respective cultures and faiths and also to contribute to nation building and social cohesion. Part of this agenda is to promote positive values and the responsibility of creating cohesiveness and to ensure lasting democracy, peace and prosperity in the City.

4.10 Conclusion

The strategy set out in this document is currently in draft form, with the launch of a public consultation process on 2 August 2011 marking the start of a rigorous period of engagement, debate, refinement and strategy finalisation with the stakeholders and citizens of this city. On completion of the 2040 Outreach process, as outlined in the Introduction, inputs will be interrogated and included, as appropriate, in the final GDS 2040. This will serve as a strategy against which the citizens of this city can hold us to account. To bring the ideas contained herein to life, the final GDS 2040 will include an Outcomes Chapter, with clear commitments and defined targets. This strategy is due to be launched at the Stakeholder Summit planned for October 2011.

We thank you for your active engagement in the development of this strategy – our strategy – and look forward to your input.