



*Catalyst for the development
of the South African
ICT industry*



human settlements

Department:
Human Settlements
REPUBLIC OF SOUTH AFRICA

Presentation to the Department of Human Settlements

**Connecting South
African Households to
Human Development via
the Information Society**

Prepared for SACF by Walter Brown

9th June 2016

SACF Representing the Following:



Catalyst for the development of the South African ICT industry

Department of Human Settlements



human settlements

Department:
Human Settlements
REPUBLIC OF SOUTH AFRICA

http://www.dhs.gov.za/sites/default/files/annual_reports/Strat%20Plan_low%20res.pdf



Strategic Overview

1. Vision

A nation housed in sustainable human settlements.

2. Mission

To facilitate the creation of sustainable human settlements and improved quality of household life.

3. Values

The Department's core values are based on the constitution and are:

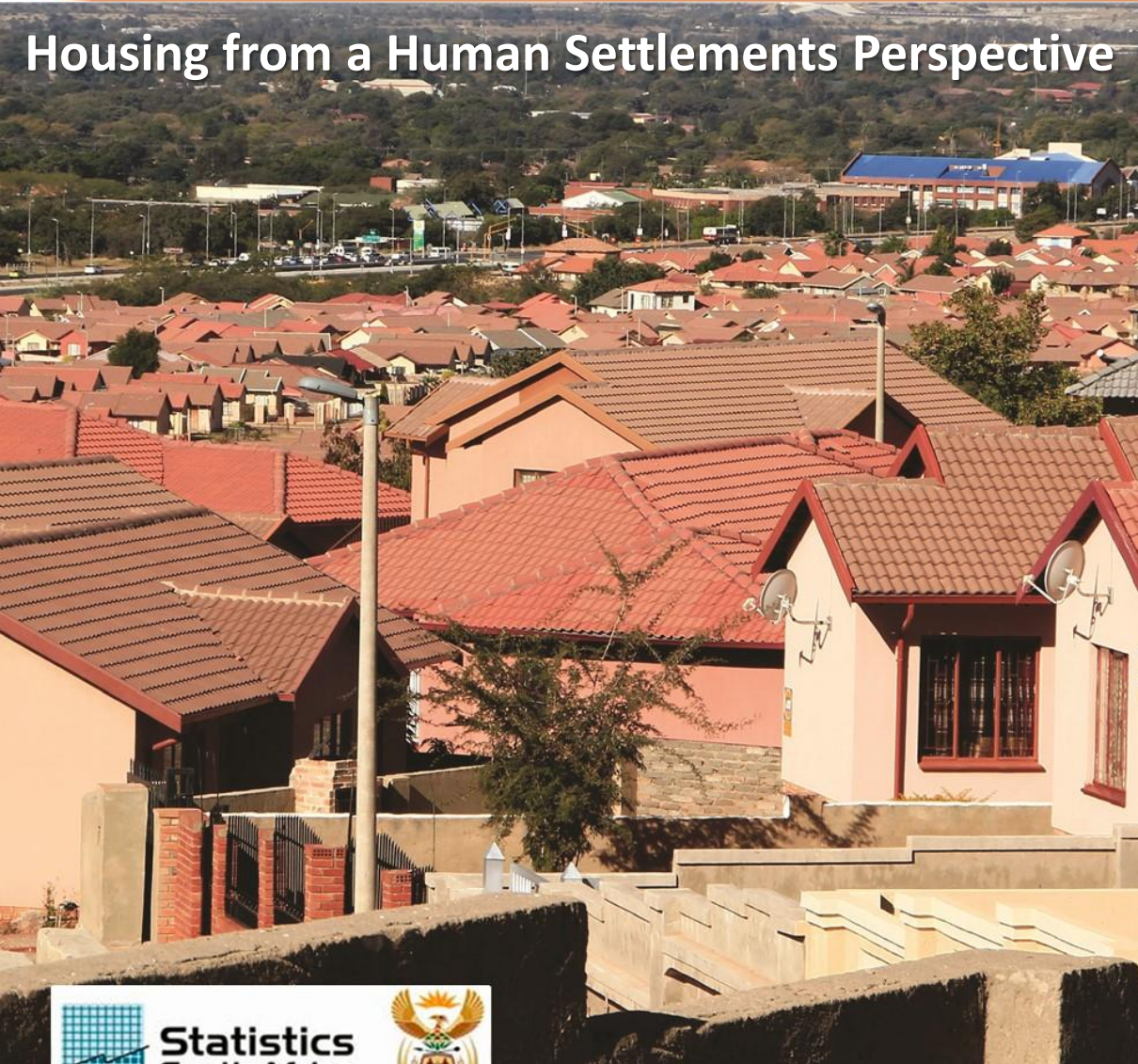
- Accountability
- Fairness and Equity
- Choice, Quality, and Affordability
- Sustainability
- Innovation
- Adherence to Batho Pele Principles

- Homes/Settlements built for many generations
- Many Generations begin with Children
- Strategic focus on GROWTH – Children to Adults

A Clear Focus on Long Term Sustainability:
That means CHILDREN

A Quick Overview

Housing from a Human Settlements Perspective



Human Settlements is about Human Development: The statistical foundation for this presentation draws from:

- Statistics South Africa
- The 2015 UN Human Development Report
- Other global reports on South Africa's socioeconomic growth challenges

The primary focus is on South Africa's Future: up to and beyond the NDP's 2030

The Children of South Africa are this future: They must be the primary focus of our collective efforts

A Quick Overview

Pelican Park Housing Project



The Minimum Expectations of all South African Parents:

- A safe pleasant environment for their children
- Adequate food, care, nurture to develop their brain capacities
- Access to all learning resources for collective and self development

- **Cannot be delivered overnight: Rate of urbanization exceeds delivery capacity**
- **Slow delivery leads to social upheaval: Visible well-publicised progress mandatory**

Urgency of the Challenge



- The baseline challenge is daunting and volatile
- Impatience, hopelessness and lack of short term opportunity are breeding grounds for violent responses and other social deviances
- Visible application of all alleviating services, including self-help knowledge via affordable ICT will reduce impatience and improve opportunity for children and youth



Extreme Poverty in the shadow of Extreme Wealth

Children's long march to opportunity

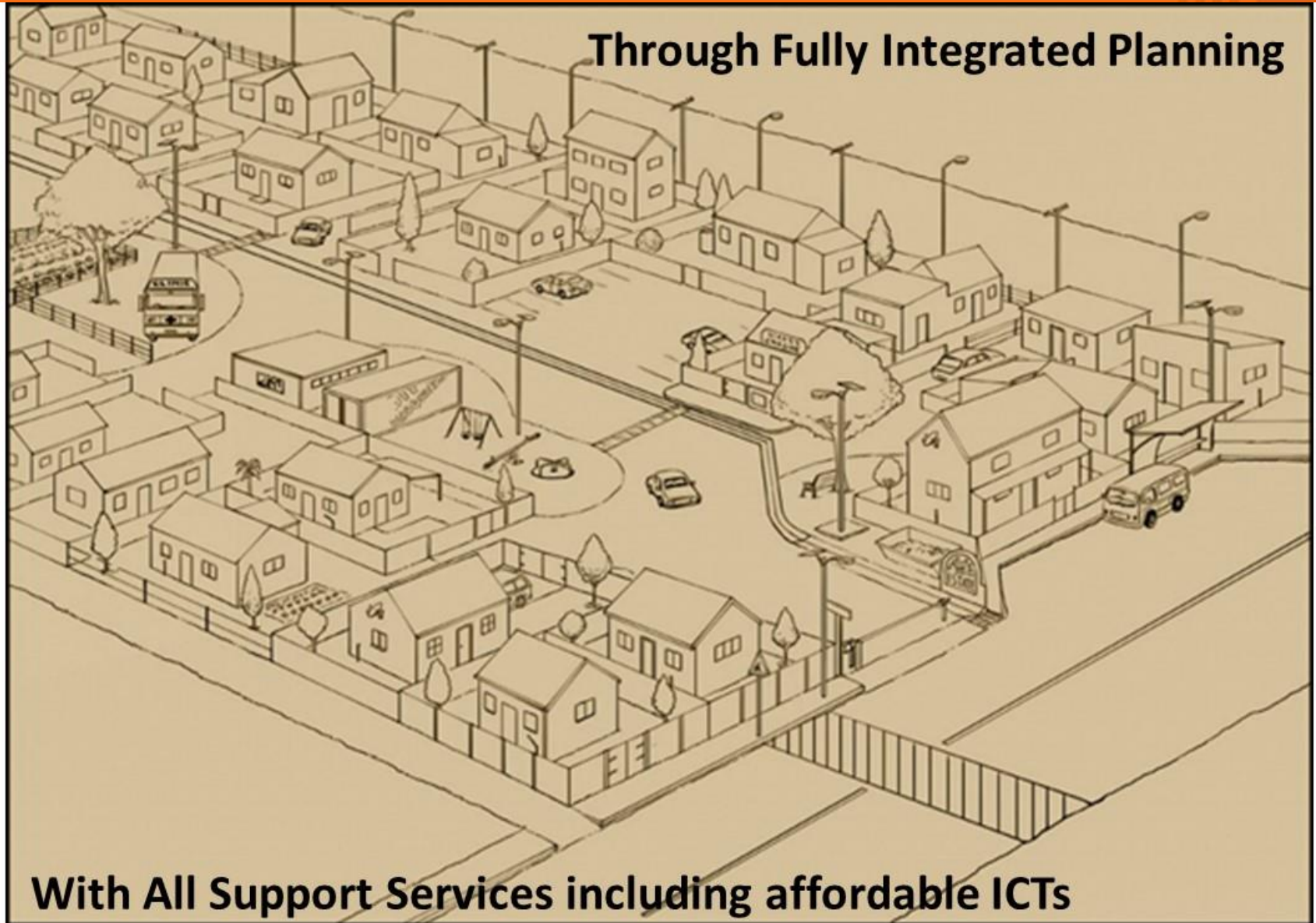
From This.....



Children from Gauteng's Cloverdene Informal Settlement seek an escape route from hunger in 2013

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Children's long march to opportunity



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Children's long march to opportunity

To this Minimum for all South Africans

High densification for rapid urbanization



Safe Play



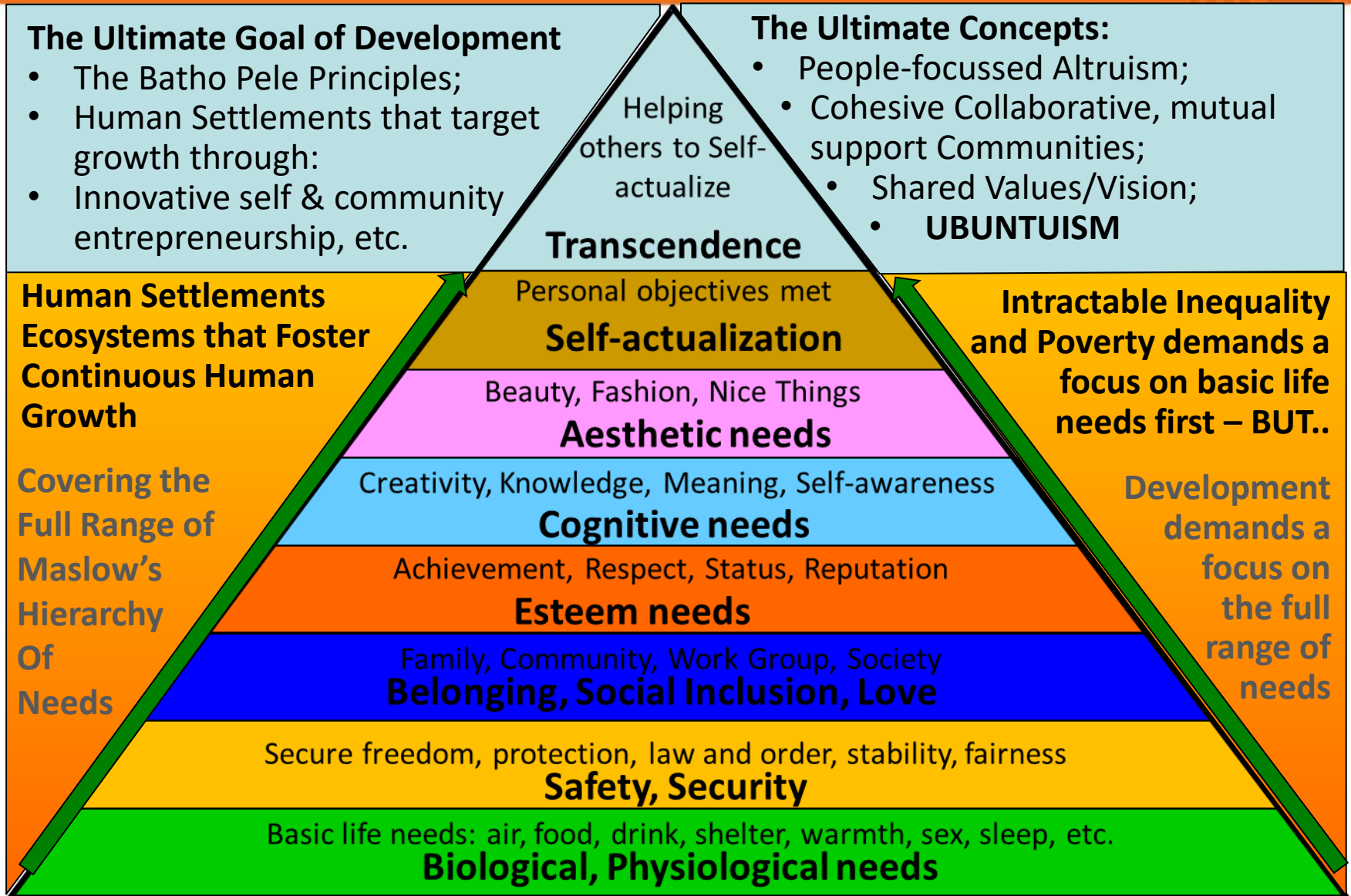
Nurture



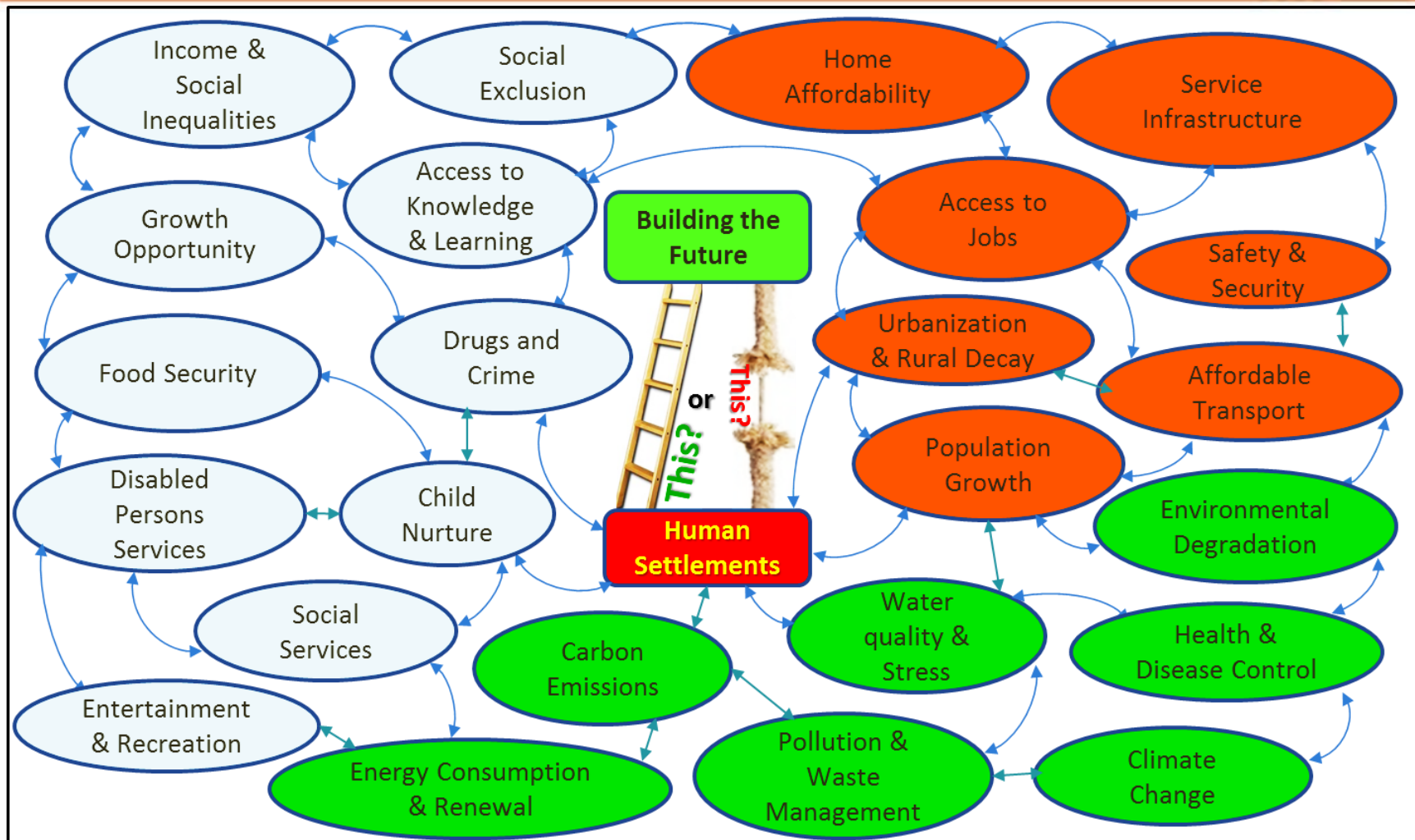
Safe Environment for Community and Family

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A Theoretical Foundation (Maslow)




A Massively Complex Challenge



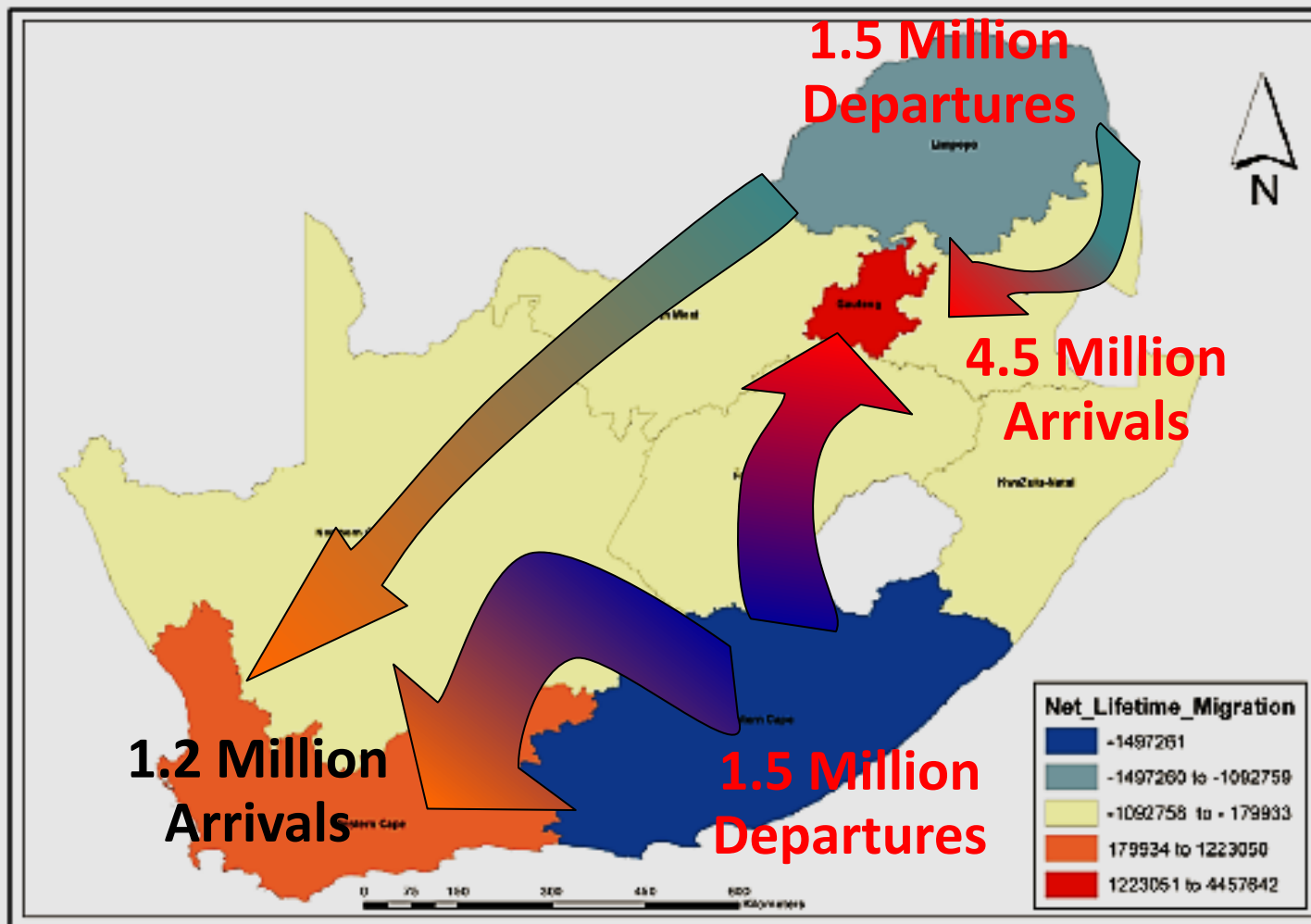
It's about the whole range of Human Development, Human Wellbeing, and Human Values: The full range of the Hierarchy of Human Needs

A Massively Complex Challenge

- All factors are interdependent and interrelated:
 - Failure in one challenge/node could lead to failure of the whole
 - Integrated and Coordinated Planning is Vital
 - Access to Knowledge by Developers and Residents is the key to success
 - Each thin thread is an ICT connection to information & knowledge – the road to sustainable human development
- 

It's about the whole range of Human Development, Human Wellbeing, and Human Values: The full range of the Hierarchy of Human Needs

Map 8.1: Net lifetime migration



Source: Census 2011: Migration Dynamics in South Africa

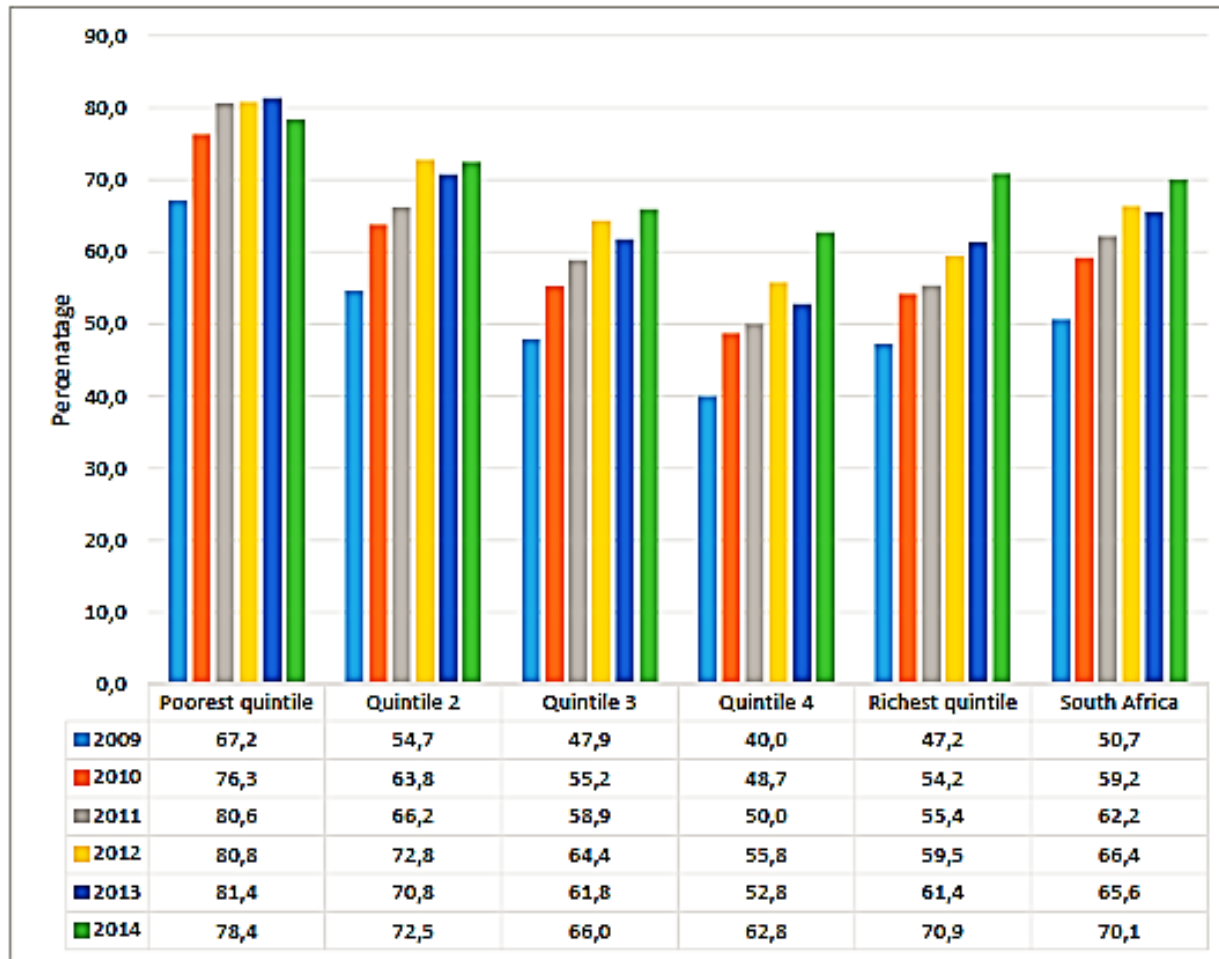
A Massive Challenge for Human Settlements Development

More major challenges: Affordability

Statistics South Africa

58

Figure 9.9: Percentage distribution of households experiencing challenges with housing affordability, GHS 2009–2014



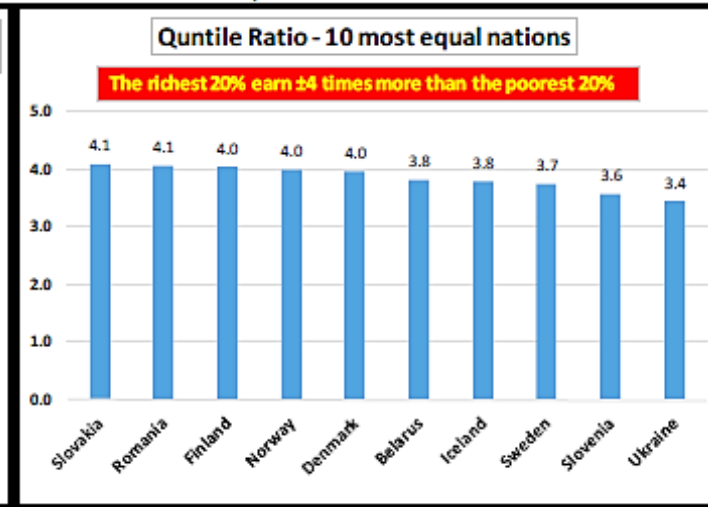
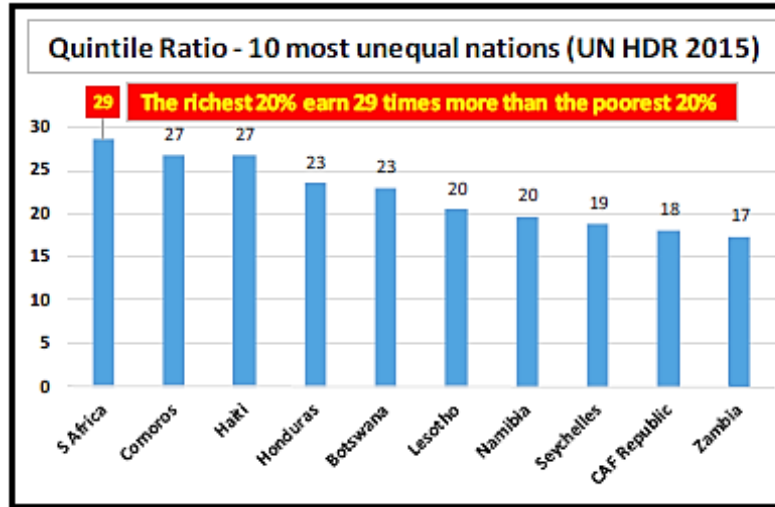
Source: GHS 2009–2014

70% of South Africa's Households experience difficulty in paying for their accommodation

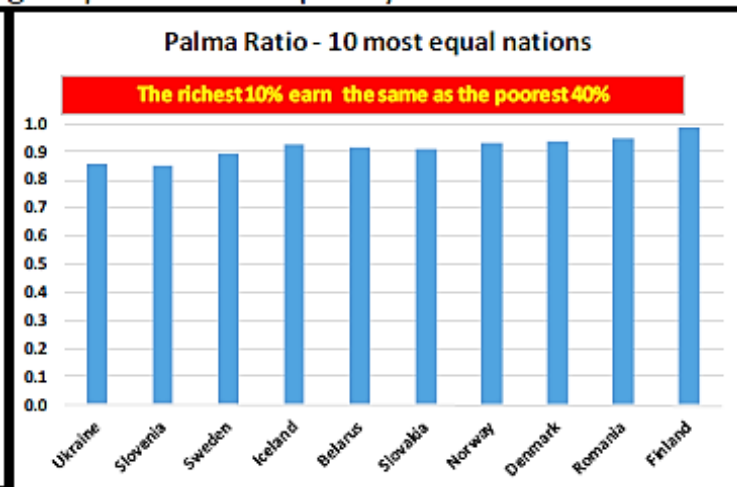
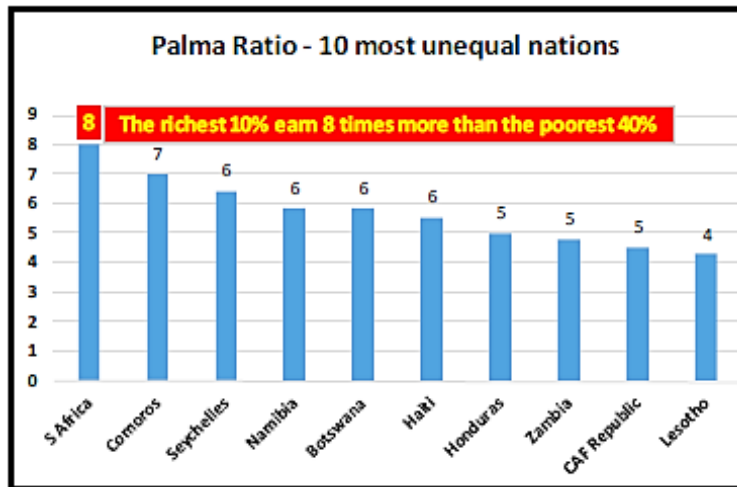
A Massive Social Challenge that must nevertheless be met

A Dangerous challenge: Inequality

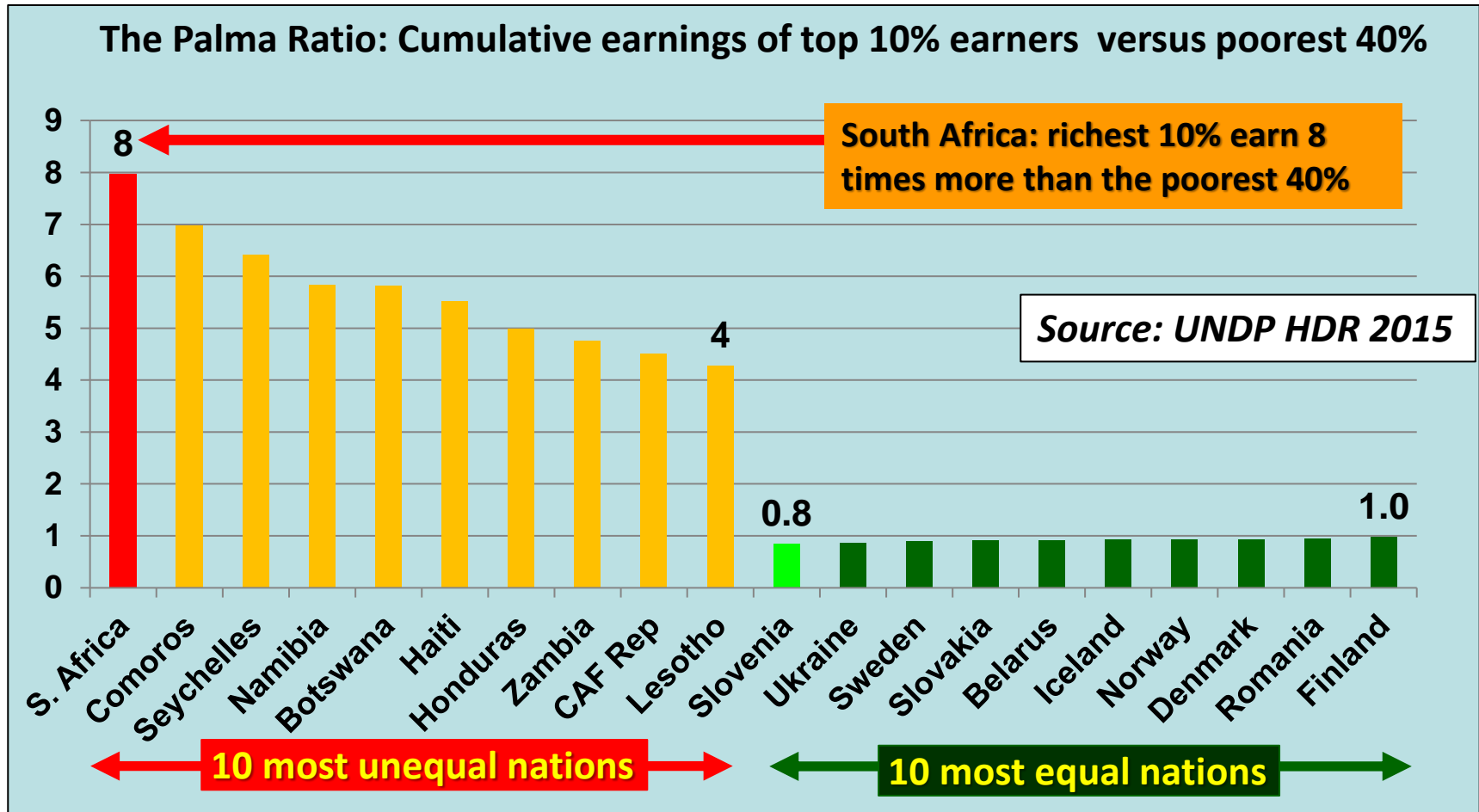
a. The Quintile Ratio: Cumulative earnings of top 20% versus poorest 20%



b. The Palma Ratio: Cumulative earnings of top 10% versus poorest 40%

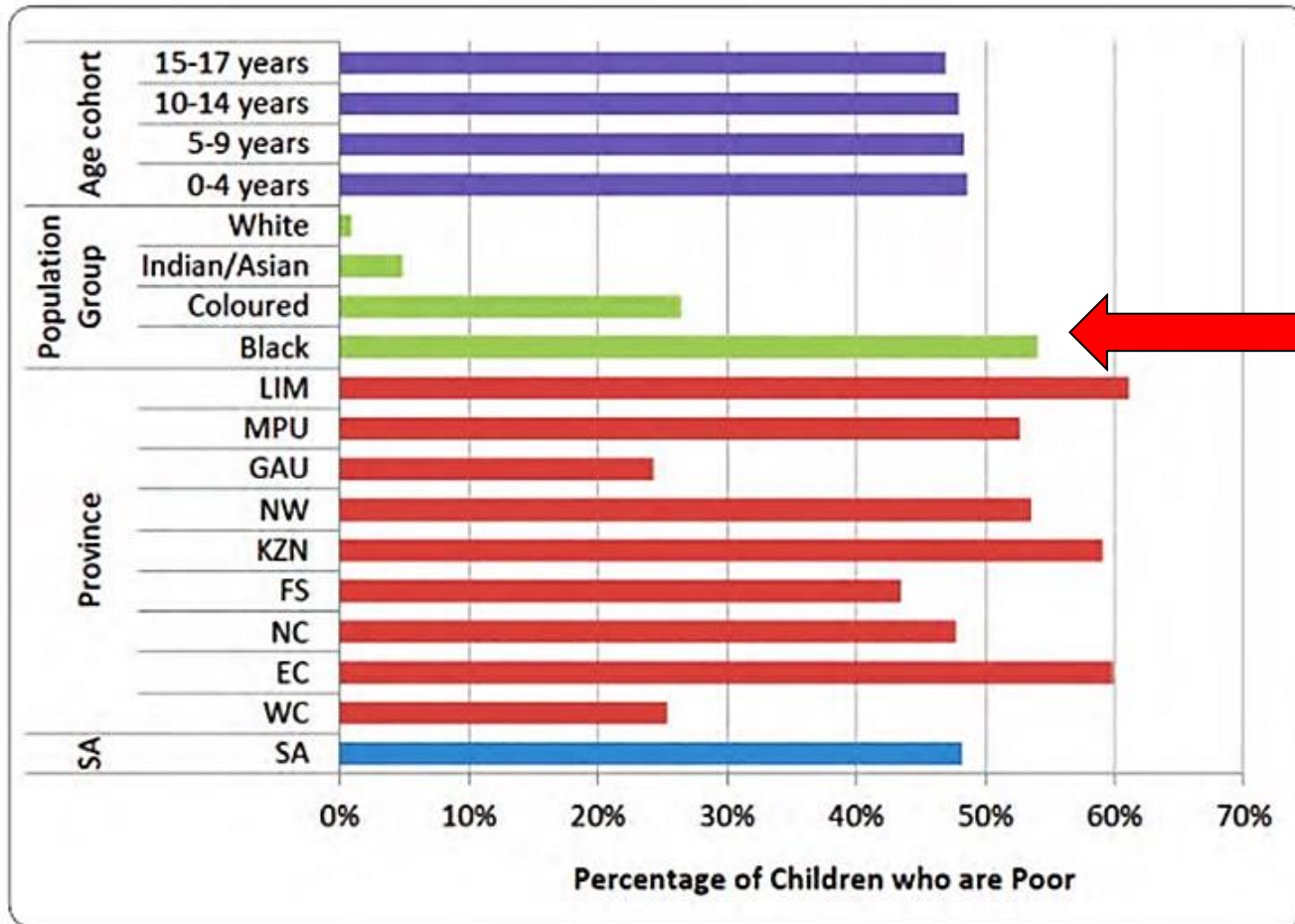


A Dangerous challenge: **Inequality**



An Obscene challenge: **Child Poverty**

Figure 2.3: Poverty amongst children in South Africa, 2010/11



- 60.5% of South Africa's Children live in poverty: Less than R 575 per month
- **The Racial Distribution of this metric is dangerously provocative**
- Children living in poverty stunt their brain development – depriving them even more of life's opportunities

Urgency for Human Settlements that reverse this trend

Source: <http://www.sahrc.org.za/home/21/files/Poverty%20Traps%20Report.pdf>

South Africa's Information Inequalities

INFORMATION AND COMMUNICATIONS TECHNOLOGIES

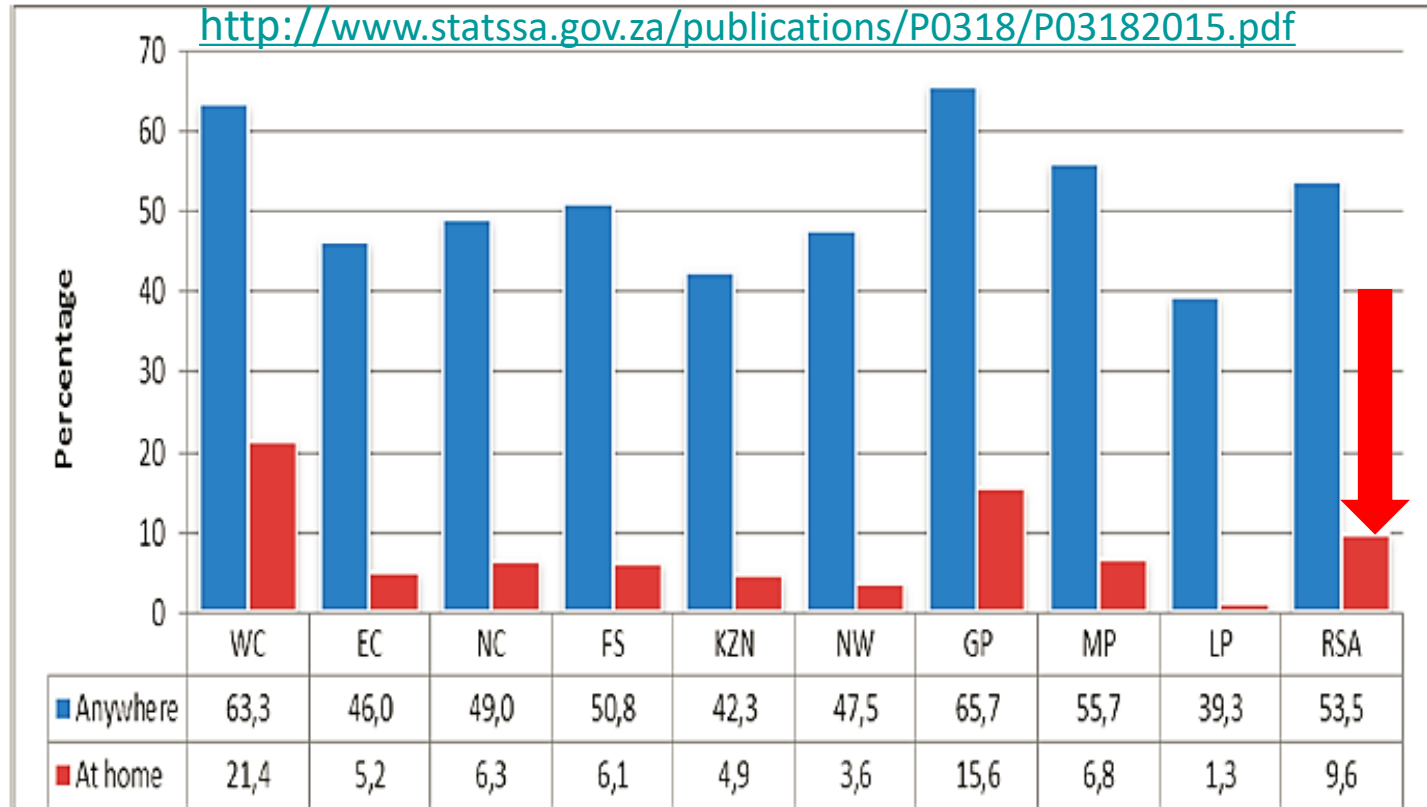
(ICT aka Broadband, Telecommunications, Wi-Fi, Smartphones, PCs, Tablets, etc.)

- ICTs bring the global information and knowledge to the neighbourhood
- The challenge is to bring it into the home 24/7 – integrated family communications, development and entertainment
- Children with access to play, rapid learning, and security
- Individual and community connectivity is the first challenge – the long term sustainable challenge is productive utilization of all ICT products and services

The immediate priority for the Department of Human Settlements is to connect individual homes and community learning/play centres to global information and knowledge via ICT: The next slides measure the size of this priority challenge

South Africa's Information Inequalities

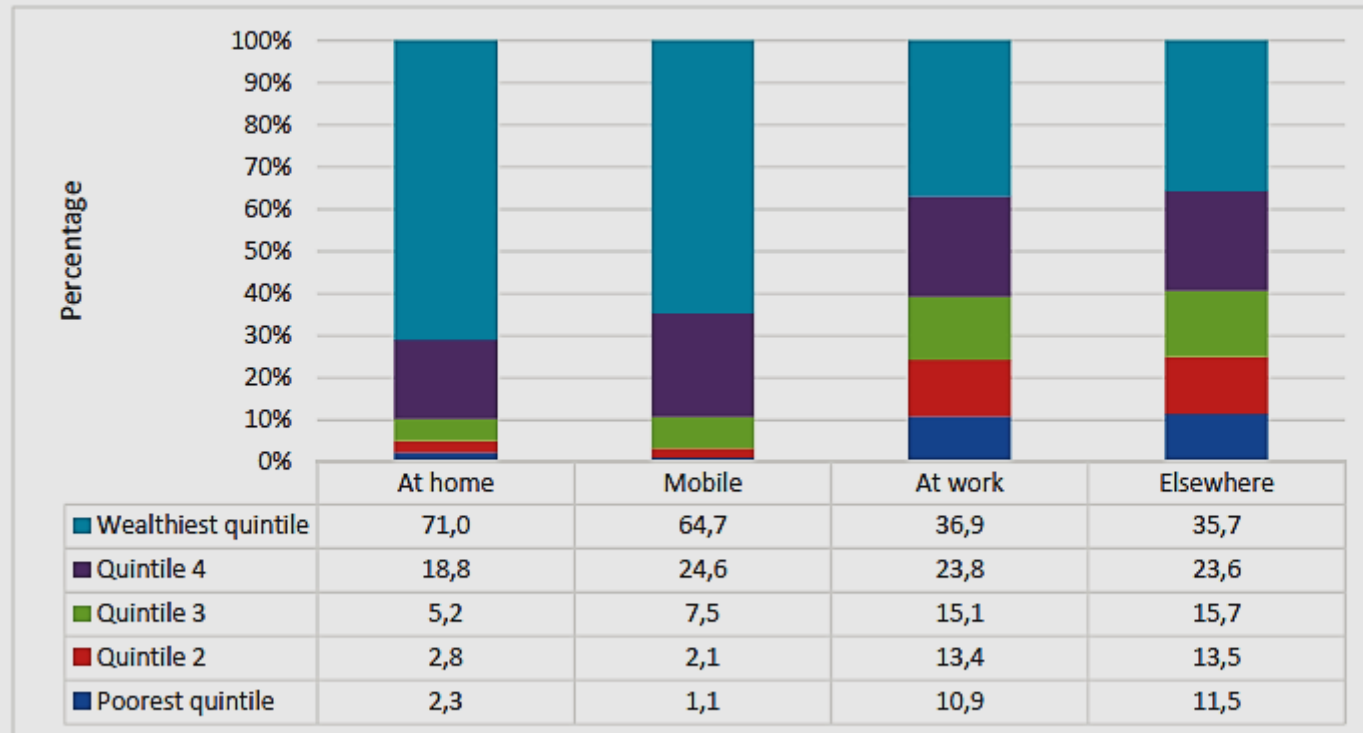
Figure 54: Percentage of households with access to the Internet at home, or for which at least one member has access to or used the Internet by province, 2015



Connection to the Global and National Information and Knowledge Society for all South Africans is a prerequisite for sustainable developmental Human Settlements

Information Inequalities skewed by income inequalities

Figure 18: Percentage of households with access to the Internet by type of access and per capita household income, 2013

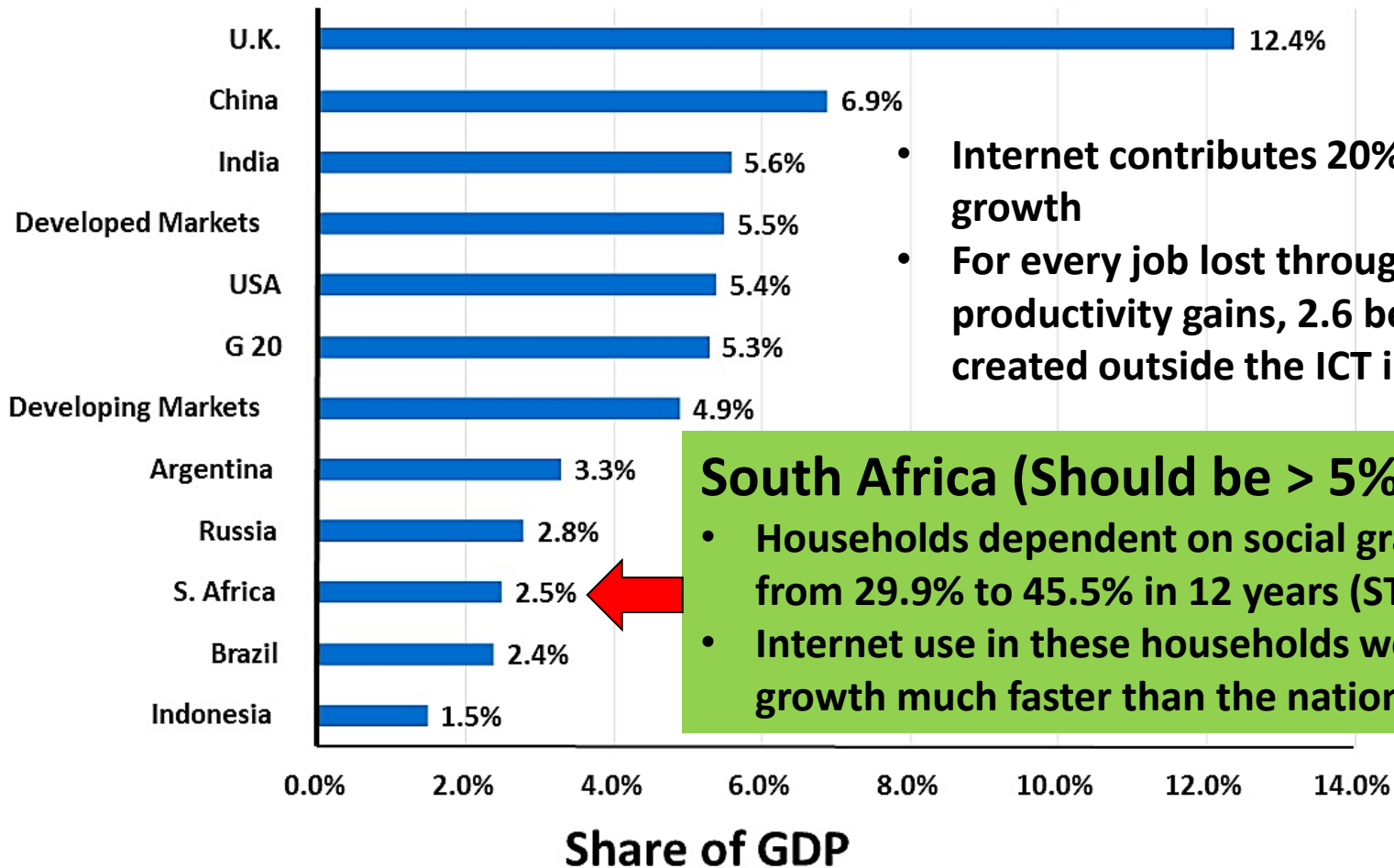


<http://www.statssa.gov.za/publications/Report-03-18-05/Report-03-18-052013.pdf>

- **Wealthy South Africans enjoy full access to Global information and Knowledge (71%)**
- **Poor South Africans lack access to Information and Knowledge for development – Maximum 5.2% in Quintile 3**
- **Access to knowledge at home is vital for child and youth development**

The Internet Drives Economic Growth

Share of the Internet Economy in 2016



- Internet contributes 20% of economic growth
- For every job lost through efficiency and productivity gains, 2.6 better jobs are created outside the ICT industry

South Africa (Should be > 5%)

- Households dependent on social grants increased from 29.9% to 45.5% in 12 years (STATS SA 2016)
- Internet use in these households would drive growth much faster than the national average

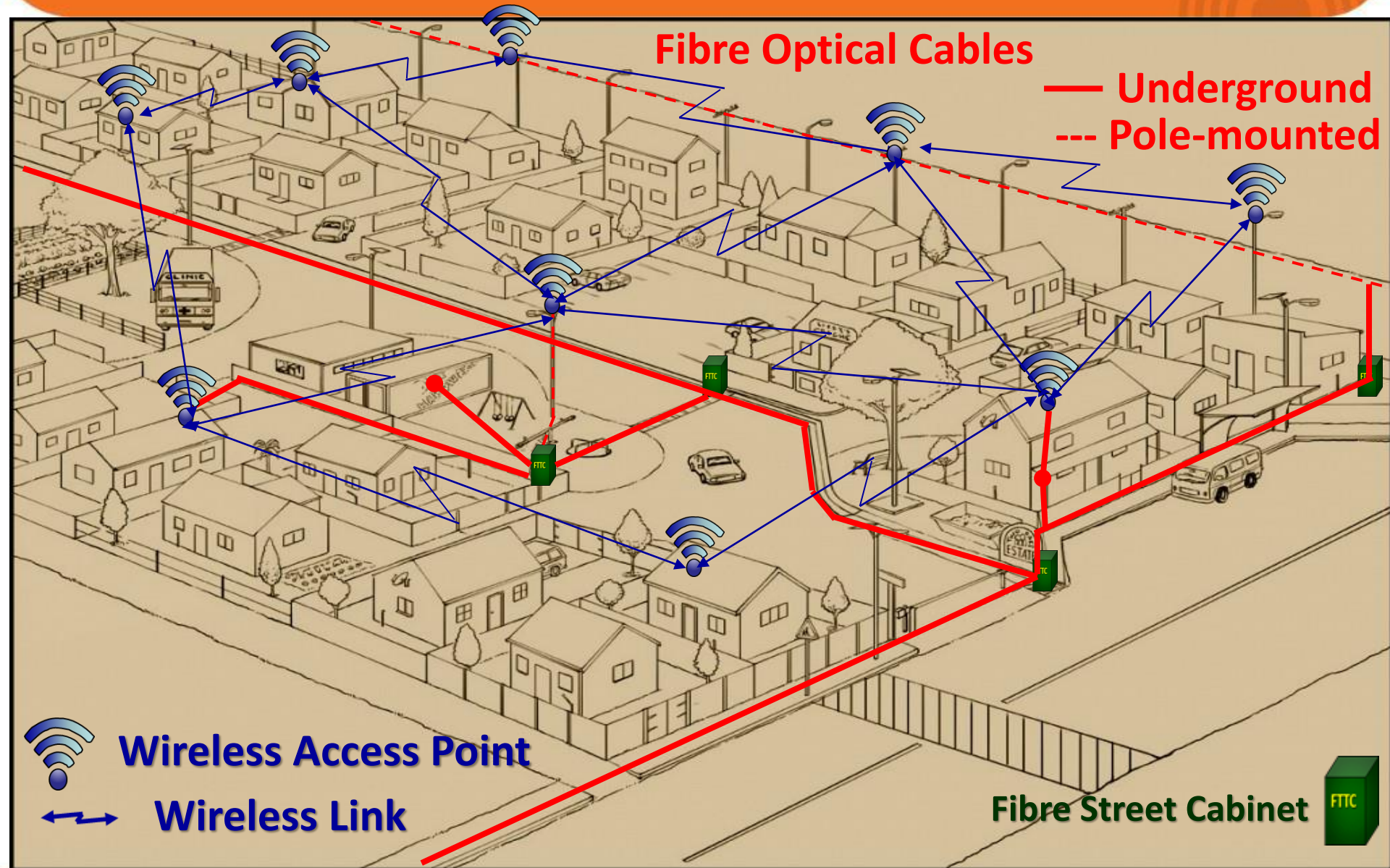
<http://www.statista.com/statistics/250703/forecast-of-internet-economy-as-percentage-of-gdp-in-g-20-countries/>

Connected Human Settlements Planning

A vital need for fully integrated planning and implementation

- **Recognise the critical need for information and knowledge communicated efficiently and shared by:**
 - **Planners and Constructors: Fresh and waste water systems and sewers; Roads and Transportation; Energy and Public Lighting; Building Construction; AND ICT;**
 - **Residents, especially Children: Safe use of information and knowledge for: Safety and Security; Community and self development; Governance and Management**
- **Recognise also that Information and Knowledge for Sustainable Development and Settlement Management is a Vital Enabler:**
 - **ICT Information and Knowledge reticulation can be lowest cost element of the whole Human Settlement Development initiative**

How to Connect Human Settlements



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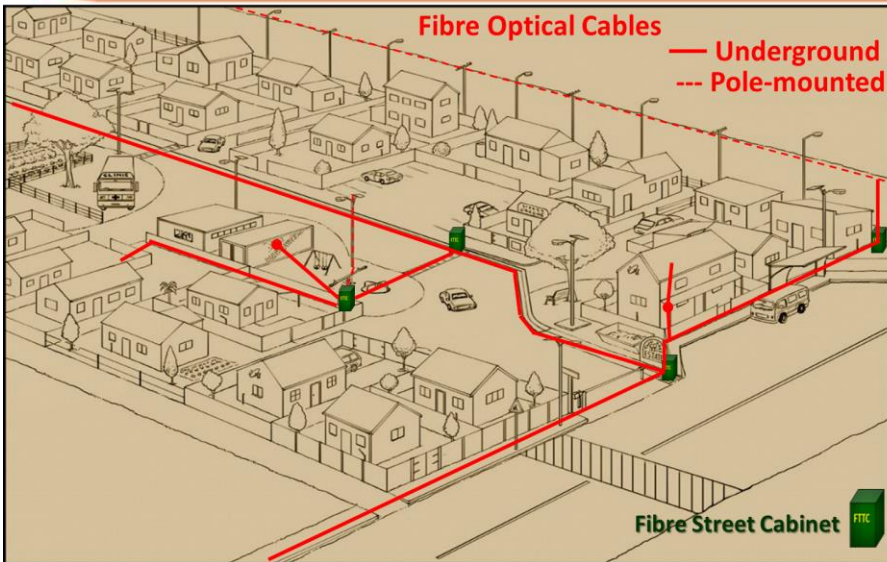
Fibre Optic Cable Components



- A large variety of optical fibre ducts available and used locally
- Cost-effective if installed jointly with other utility civil works, e.g., water, sewer, energy reticulation systems
- Low cost: Prices range from less than R 10.00 per metre
- Several hundreds of fibres easily “blown” or pulled through ducts
- Fibre prices from as low as R 1.00 per metre
- Equally numerous varieties of pre-formed fibre cables for direct burial or aerial suspension on any utility pole available and used locally – joint use of street lamps, low/medium voltage distribution

- **Complete fibre optic reticulation, including civil works, costs upwards from R700.00 per metre in South Africa: R700,000.00 per kilometre**
- **Fibre cable ducts with fibre can cost as low as R10,000.00 per kilometre**
- **Human Settlements Development can save up to R690,000.00 per kilometre by incorporating fibre optic cable infrastructure in civil works for other utilities**
- **Low cost connectivity for whole communities is thus possible, with fully integrated professional planning and implementation**

Fibre Optic Network Planning



Most Critical Planning Requirements

- **Very close coordination with other utility services developers**
 - Very high opportunity cost gain lost if not done
- **Excellent Topology Assessment and Plans**
 - Where do other utility trenches begin?
 - Where do they terminate?
 - Are they suitable for Fibre distribution?
- **What shared skills amongst utility developers?**
- **How to manage coordination?**

Other Critical Planning Requirements

- **Where are the nearest Fibre Access Points located? Spatial surveys are critical**
 - The planned fibre route must begin at these points, opportunistically use the wayleaves and new trenches of the nearest utility services, closely coordinate project management and timing
- **Economic Network and Business Modelling**
 - Short to long-term market projections, supported by market segmentation on affordability criteria
 - Market segmentation: Direct fibre customers; Fibre derived Wireless Access customers
 - Short-term network plans for cost reduction of critical backhaul infrastructure
 - Sourcing of network components and skills capacities for cost reductions
- **Socioeconomic business modelling**
 - Market and product segmentation along affordability lines; Low cost or zero-rated products and services for economically challenged market segments

Wireless Network Components



- Massive variety of cost effective wireless components: Wi-Fi; LTE; 5G
- Complete network systems available off-shelf, for both external and internal applications
- Indoor/Outdoor ranges from a few metres to 20 km
- Meshed cloud-based turnkey solutions available at low capital and operational and maintenance costs
- Numerous examples from developed and developing nations of applications targeting low income or remote human settlements
- 5 G ready; Gbps speeds with high quality, ≥ 100 users/access node

Most Critical Planning Requirements

- **Very close coordination with Fibre cable reticulation**
 - High sites reserved for wireless networks; Fibre access to high sites
 - Fibre backhaul and usage capacity plans to meet short and long-term market growth projections
- **Excellent Topology Assessment and Plans**
 - Joint use of street lamp and power utility poles for wireless access points, routers and repeaters
 - Internal and external equipment location on both residential and commercial/public buildings
 - Location of Fibre terminals and street cabinets
- **Public Service Access Requirements: Clinics, Schools, Public Admin, Commercial entities**
- **Localised Network Operations and Management, and training for this**
- **Market projections with services segmentations for affordability and needs**

General Observations

- **Wireless Access Technologies: Changing the nature of the Information Society (aka the Fourth Industrial Revolution):**
 - Microcell and 5G technologies expected in the next 2 years
 - They will reduce the cost of providing very high capacity broadband networks, AND be hugely disruptive of traditional networks and services
 - They will demand exceptional backhaul networks to deliver the broadband content from the point of origin to the users, and user generated content to the global network: The fibre backbone proposed provides this backhaul
- **The proposed fibre/wireless integrated networks will enable the emerging Internet of Things (IoT)**
 - IoT is currently focussed on developed economies - “Smart Cities”
 - It is expected that IoT will have an immense impact on the lives of the socially and economically disadvantaged communities:
 - Continuous monitoring and automatic reporting of disasters that affect the poor – e.g. fires and other natural disasters, crime, societal upheavals
 - Environmental monitoring for health threats including disease outbreaks and pollution, droughts, man-made environmental threats
 - Automatic monitoring of a wide range of socioeconomic issues at medical centres, schools, and commercial entities providing goods and services.

Social Development: Jobs

- **It is well known that efficiency and productivity gains enabled by ICTs lead to job losses in the ICT industry, BUT:**
 - For every job lost in the ICT industry, 2.6 better jobs are created outside it
 - Numerous opportunities for SMME and Entrepreneurship development.
- **The proposed integrated ICT networks address both issues:**

UN Recommended Intervention Areas in Southern Africa to reduce income inequalities:

As part of development policies, public authorities must mobilise urban young peoples' potentials and energies with proper training in entrepreneur skills and information/communication technologies, in order to enable them to set up and run their own businesses. Some urban authorities have tried to foster inclusive cities, but none have fully considered children and youth in their service provision and governance strategies. Cities should make more efforts to deliver broadband Internet to all urban neighbourhoods, rather than reinforcing existing inequalities in services delivery. (Page 24 of [UN Habitat State of African Cities 2010](#))

Massive opportunities for young South Africans to provide broadband services via public spaces such as Internet Cafes – examples are South Korea's "PC Bangs", Brazil's LAN Houses: Human Settlements planning must make provision for them.

What the ICT Industry can offer

The South African ICT Industry, through its representative forum the SACF, can assist the Department of Human Settlements by:

- **Advising or providing the critical planning and implementation expertise required to integrate modern ICTs into the Human Settlements Development function**
- **Assist the Department of Human Settlements setting up, monitoring, and managing pilot projects to test the possibilities**
- **In close collaboration with the Department of Telecommunications and Postal Services and ICASA, assist the Department of Human Settlements in the critical coordination mechanisms, including development of the requisite national support policies and regulatory instruments**

Concluding Summary

- **The most critical requirement is coordinated, collaborative, multi-disciplinary integrated planning**
- **Planning to include all social and economic needs, limitations, and projections:**
 - Full high quality commercial and public institutional ICT products and services including e-Governance and e-Commerce
 - Continuous planning for integrated utilization by citizens across the full range of affordability and ICT user capacities and skills
 - Focus on public access to complement affordability criteria
 - Integrated user focussed utilization: e.g. mixture of entertainment, play and learning/development especially for children and youth
- **Bottom-up user-centric approaches to planning: Avoid past top-down techno-centric approaches that have been costly and ineffective**
- **Recognition that access to and effective use of information and knowledge is the historically proven method of reducing inequality and poverty, and thus driving national development**



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Thank you



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