



REGISTRATION FORM FOR WRITTEN SUBMISSION

Form DSI1

About this form

This is a registration form issued pursuant to the Data Services Market Inquiry Guidelines for Participation.

The form is to be completed by parties making written submissions.

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Required Details

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Main focus of submission:

This submission focuses on just one aspect of the cost-to-communicate discourse, putting a human face on the faceless poor. The trigger for the market study is affordability, and yet, the poor who cannot afford the ICT services are neither defined nor quantified in the study report and resulting submissions. Only one submission, the DG Murray Trust, in the long list of submissions makes any attempt to specifically identify the poor. We know that South Africa's poor citizens number more than 30 million, more than 55% of our population, but the best that the processes underway can do is refer to these compatriots as "the poor". This submission attempts to correct that, quantifying and qualifying "the poor", and the immense challenges they face in obtaining the empowering and transformative ICTs that can help them to escape their multidimensional inequalities and poverty traps.

Summary of the issues (*a reference to an attachment is adequate*):

South Africa's socioeconomic challenges are very deep, verified by numerous statistical evidences generated in South Africa and internationally by the nation's global partners. The ICTs have always been known to be potent enablers for the amelioration of these socioeconomic challenges, but this enabling feature of ICTs has been drastically diluted in modern South Africa. Too many South African citizens have been excluded from the benefits of ICTs as enablers of development. This exclusion is the *raison d'être* of the Competition Commission's Data Services Market Inquiry, and all related attempts by South Africa as a whole to seek policy and regulatory solutions to arrest and reverse this exclusion. These attempts, as currently conceived and structured, will not succeed; the depth of inequality and poverty in the country is far too high for these top-down interventions to be effective.

Could it be that the question we should be asking is not how we can force the ICT industry to reduce ICT prices, or how we can set up a more competitive ICT environment for such reduction, but how we can directly provide the empowering and transformative capability of ICTs to the majority of South Africa's citizens who are poor? The submission suggests that one of the most elegant ways of positioning ICT to enable the amelioration of South Africa's so-called "triple threats" of inequality, poverty and unemployment, is to link the ICTs directly to the nation's Sustainable Development Challenges. Each one of the seventeen Sustainable Development Goals (SDG) should be the target of ICT applications, ICTs are classified as enablers of all SDGs. The process of linking the ICTs to all SDGs has already begun, the first draft strategies are available at [ICT4SDG](#); [ICT4SDG1](#); [ICT4SDG2](#); [ICT4SDG3](#); [ICT4SDG4](#); and [ICT4SDG5](#) – the remaining SDGs are at the drafting stages. The most urgent next step is to escalate this process to all national stakeholders, especially the ICT industry and its government oversight agencies, and to this Data Services Market Inquiry.

Signature:  Date: 13 June 2019

BRIDGING THE ICT AFFORDABILITY DIVIDES IN SOUTH AFRICA

An opinion submitted to the Competition Commission South Africa

On the

DATA SERVICES MARKET INQUIRY

Can the Data Services Market Inquiry lead to affordable, empowering and transformative ICT services for the nations economically marginalized population?

About the Author of this submission

Walter Brown is a retired former ICT engineer and executive with more than fifty years of professional experience in the African ICT space. Walter graduated at London South Bank University in 1968, and spent the rest of his career developing African ICT networks and their supporting policy and regulatory frameworks. His work was undertaken in various private and public ICT companies in Africa and the USA, the International Telecommunication Union (ITU), and SADC. Following his retirement from the South African Communications Forum in 2016, Walter continues his ICT advocacy work on a voluntary basis. He is not attached to any entity, hence the opinions presented in this submission are his own, and do not represent any corporate or organizational interests. Walter is currently researching the relationships between ICT and each of the seventeen Sustainable Development Goals as they apply to South Africa.

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EXECUTIVE SUMMARY

The intervention by the Competition Commission South Africa into the competitive environment of the South African ICT sector is warmly welcomed and timely. South Africa faces numerous developmental challenges which ICT can help to alleviate, but ICTs must first be positioned appropriately for such alleviation. The challenges are massive: more than 50% of the nation which survives below the national and international poverty lines, cannot afford the full suite of ICT services they need for self and family development, irrespective of the outcomes of current and proposed top-down interventions. This submission attempts to address the challenge of positioning ICT to serve the empowerment and transformative information and knowledge needs of South Africa's economically marginalized majority population.

The numerous submissions made in this round of the market inquiry will not be analysed or discussed in detail, besides the general observation that "the poor" were neither identified, nor were their specific ICT needs and opportunities expressed. A very brief word search of the Commission's Provisional Findings and Recommendations Report, the written submissions, and the presentations, returned 55% references to "the poor" or similarly nondescript references to the +30 million South Africans living in poverty. The remaining 45% references to "poor" were technologically or business-oriented, none of them specific, quantifiable, or related in any way to the nation's poor majority citizens. The rare exception was the submission by the D. G. Murray Trust, which attempted to "put a face" on "the poor" by referencing and quantifying the extreme inequalities and the income levels that define them as reported by STATS SA. Similarly, the 461 pages of transcripts provided contain 119 references to "the poor" or similar nondescript wording without definition, and 11 business or technical references to "poor services", "poor regulations", "poor policies" or "poor competition".

This Data Services Market Inquiry, this and other submissions, are continuations of nearly two decades of discussions and studies on South Africa's cost to communicate, nearly all supported by rigorous international benchmarking. Typical examples are:

- [August 2004: OPA slams Telkom cost structure](#): 500GB in the U.K. R2 875 per month: 200GB in South Africa R40 000 per month;
- [September 2004: Policy Announcement by Minister Dr Ivy Matsepe-Casaburri](#): *"Our economy needs a skilled and informed work force that is equipped, from childhood, to meet the demands of the information society and knowledge economy. Access to ICT's is critical in the process and enriches the learning environment. However, the cost to access these technologies needs to be minimized and the ability for people to benefit from lower cost structures should be facilitated."*
- [July 2005: Cheaper telecommunications services needed](#) – Deputy Minister Roy Padayachie at a two-day Telecommunications colloquium on pricing of telecommunications services;
- [November 2013: National Broadband Policy formulation](#): International Experts Forum convened by Minister of Communications Yunus Carrim: *"The cost to communicate target of 2.5% of average monthly income needs closer scrutiny and attention. With a GINI Coefficient of 0.7, the use of a national average to set a cost to communicate benchmark will not address the affordability crisis, it may even exacerbate it. A cost to communicate target weighted for income disparities has been suggested by some delegates at the Workshop during informal networking discussions"* (item 7 (iii) on page 4 of the report).

The Competition Commission's Data Services Market Inquiry is a response to *"persistent concerns expressed by the public about the high level of data prices and the importance of data affordability for the South African economy and consumers"*. These public expressions of concern include the [#DataMustFall](#) mass public campaign launched in 2016, an attempt to give voice to the voiceless majority who cannot afford to use ICTs for their growth and development. Can this market inquiry lead to action finally, after more than two decades of "talk shops" as implied in the short summary above? Perhaps recalling the wisdom of one of the most prescient scientists of the modern era may help: *"We can't solve problems by using the same kind of thinking we used when we created them"* – Albert Einstein, 1879 to 1955. South Africa has been using the same kind of thinking to develop its ICT ecosystems over the past 160 years – we should change our thinking towards the needs of 100% of the nation, instead of just 45% or less of the population who already have much.

Structure of the Submission

This submission will not attempt to review all the work that has already been undertaken within this market inquiry, but will instead present self-explanatory statistical data and charts with comments that suggest where the national focus should be if South Africa is to use ICT to ameliorate and reverse the immense challenges faced by South Africa's poor population. The explanatory charts are listed as follows:

1. Page 7: **History of ICT growth in South Africa:** A close review of the history of ICT growth in South Africa suggests strongly that the nation has not been able to provide empowering and transformative ICTs to the poor population since the introduction of ICTs in their electronic forms in 1860.
2. Page 8: **Socioeconomic Inequality in South Africa:** This challenge, and the directly related challenge of poverty, are perhaps the most debilitating challenges faced by South Africa today. The ICTs on their own will not reduce inequality, but their judicious repositioning can help.
3. Page 9: **Poverty: How can South Africa reposition ICTs to tackle Poverty?** Inequality and poverty are fully interrelated and interdependent, but the discussion of these relationships is beyond the scope of this submission, and will be deferred to any implementation phases or discussions that may arise from the submission. Many nations have, and are overcoming the challenge of extreme poverty, using ICT as one of the tools. South Africa needs to examine both the global success stories and failures, drawing lessons from both to craft interventions that align with the nation's socio-economic-cultural environment.
4. Page 10: **ICT Affordability: Much more than current strategies needed:** This challenge lies at the core of the origins and reasons for this submission. A short self-explanatory statistical summary is provided for an immediate visual presentation of the problem. It is vital that all South African stakeholders renew their quest for effective solutions to this debilitating challenge.
5. Page 11: **Unemployment: A potentially devastating challenge that needs urgent 4IR solutions:** Jobs have become the principal means of survival in this economically-driven age. The absence of jobs leads directly to deepening inequality and poverty, a sure recipe for civil decay and instability. Human history abounds with examples of such social disruptions: (a) The whole world is still trying to recover from [Mohamed Bouazizi's self-immolation](#) in Tunisia 2010 that launched the "Arab Spring"; the trigger was unemployment; (b) [Cape Town, March 2018](#): "Income inequality is a problem. If you don't do something about it, they will set up the guillotines. Marie Antoinette's life did not end well.", Michael Bloomberg at "The Future of South Africa" summit; (c) South Africa June 2019: [Xenophobia on South Africa's Highways? "Burning of trucks on N3 highway amounts to economic 'sabotage', Blade Nzimande says"](#) – "Foreign drivers are taking our jobs!". South Africa needs to act now, to forestall the damage that could arise from 4IR automation, and to promote instead the immense advantages that could be gained from such automation.
6. Page 12: **Education: The route to South Africa's Sustainable Development?** There is very little doubt that South Africa's education systems faces immense challenges: Small highly visible pockets of excellence exist alongside a massive national school system portraying mediocrity or worse. The statistics presented in this section, and discussed in greater detail in [ICT4SDG4](#), quantify the breadth and depth of this critical national challenge. Pockets of excellence existing alongside massive ineffectiveness and mediocrity are a sure way of fuelling inequality further, as indicated by the 33-country [Hechinger Study of 2015](#)¹. ICTs are vital tools for all educational systems, but they need to be applied with great wisdom if their unexpected negative consequences are to be avoided. Reversing South Africa's Sustainable Development Challenges through education and ICT is an extremely long-term process that must be intensified now.
7. Page 13: **Conclusions**, with examples of past and present attempts to position ICTs for inequality and poverty alleviation. Key references with details are [ICT4SDG4 – Education for all](#), and [ICT4SDG5 – Gender Equality](#).

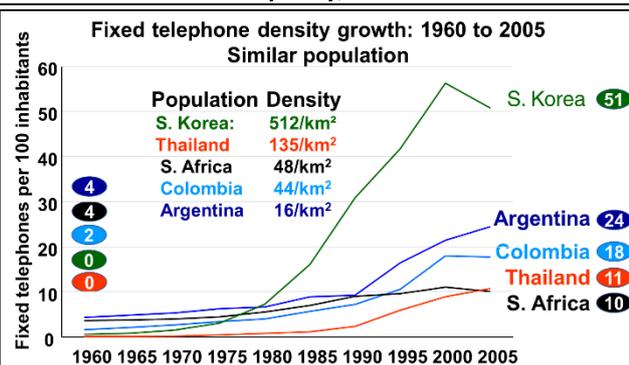
¹ Hechinger Report: <https://hechingerreport.org/schools-exacerbate-the-growing-achievement-gap-between-rich-and-poor-a-33-country-study-finds/>

History of ICT growth in South Africa

4.1.1. A brief history of ICT in South Africa

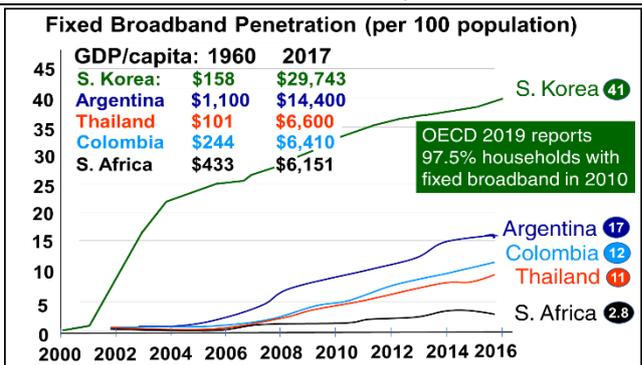
- [1860: First telegraph between Cape Town and Simonstown](#), just 16 years after Morse’s 1844 launch;
- [1878: First telephone lines in South Africa](#), just 2 years after Alexandra Graham Bell’s patent;
- [1879: First undersea cable between South Africa and Europe](#); 89 years later, SAT-1 South Africa to Europe submarine cable launched. Major upgrades 41 years later, Seacom and EASSy submarine cables launched;
- 1898: First RFQ for a [wireless telegraph system](#) intended for use in the Anglo-Boer wars of the late 19th century;
- 1994: 96-years later, South Africa becomes a democracy, introduces cellular mobile telephone services;
- 1991: Launch of dial-up Internet services; 22 years later (2016), 9.6% fixed broadband connected households;
- 2004: 106-years after first wireless usage, ICASA publishes [Spectrum Band Plan for 20MHz to 70GHz](#);
- [2019, March 28th](#): 121 years after introducing wireless technologies, the Minister of Communications reiterates the department’s commitment to finalising the policy directive on licensing high demand spectrum;
- 2017: Entry Level fixed broadband price basket was 2.73% of GNI per Capita ([Table 4.6 of ITU MIS Report V1 of 2018](#))²; The equivalent price basket for 30.4 million (55.5% population)³ living below the national poverty lines was approximately 23% of average monthly expenditure, falling to 14% for 500MB mobile broadband per month.
- 2019: [MNOs scramble for 5G spectrum](#) fuels “[Big Data](#)” price competition: bundle prices for 20 to 50GB “anytime” data per month range from 26% to 66% of average monthly expenditure levels of 30.4 million South Africans.
- 2019: In a renewed attempt to render national ICT prices affordable by the majority of the nation’s citizens, the [South African Competition Commission](#) published its “[Provisional Report on the Data Services Market Inquiry](#)”⁴ on April 24th 2019. Follow up public discussions and hearings are planned.

Chart 1: Growth of Telephony, 1960 to 2005



Source: ITU World Telecommunication/ICT Indicators 2014

Chart2: Growth of fixed broadband, 2000 to 2016



Source: <http://www.itu.int/ITU-D/ict/statistics/explorer/index.html>

1. Chart 1 illustrates the growth of telephony from 1960 to 2005, a direct commentary on the priority assigned to ICT to drive national growth. A measure of population density is provided in the growth trend line to defeat the commonly-held notion that nations with low population densities are disadvantaged – Argentina has a very low population density but still grew faster than South Africa.
2. Chart 2 provides the growth rate of the vital fixed broadband anchor, viewed against long term economic growth in GDP per Capita from 1960 to 2017. How did South Korea achieve this impressive growth after entering 1960 nearly three times poorer than South Africa? How did Colombia, with a similar economy, population, and population density as South Africa do so much better?

The benchmark countries were chosen on the basis of similar populations, and economies (GDP/capita) at the 1960 starting point of the benchmark. Did ICTs fuel the higher economic growth rates of South Africa’s peers as shown? What lessons can South Africa derive from these benchmarks?

² Measuring the Information Society Report 2018 - Volume 1: <https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-1-E.pdf> (Note: estimates based on comparative prices in US\$ using exchange rate of 14:1)

³ Poverty Trends in South Africa: <http://www.statssa.gov.za/publications/Report-03-10-06/Report-03-10-062015.pdf>

⁴ Competition Commission South Africa 24 April 2019: DATA SERVICES MARKET INQUIRY: <http://www.compcom.co.za/wp-content/uploads/2017/09/Data-Services-Inquiry-Report.pdf>

Socioeconomic Inequality in South Africa

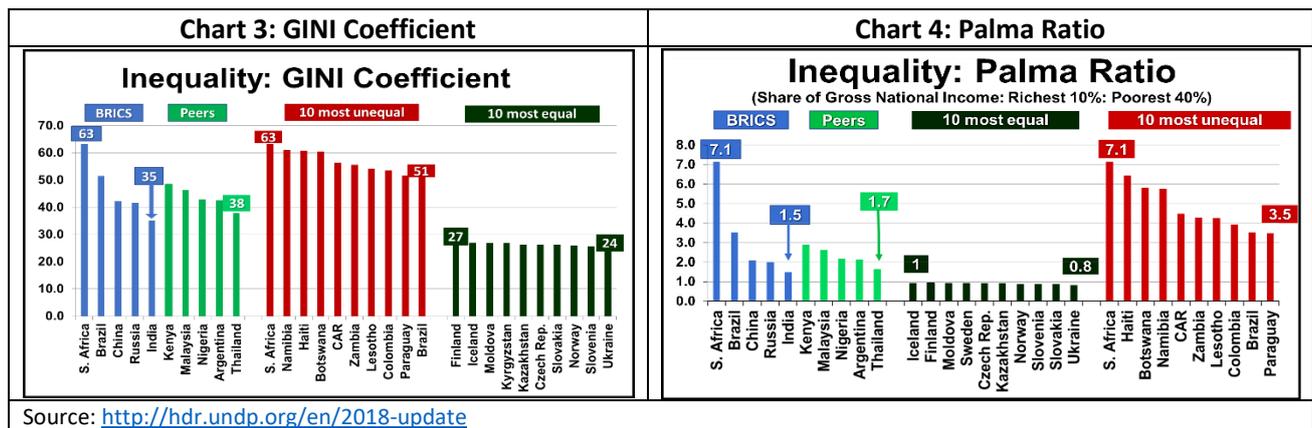


Chart 2 and Chart 3 illustrate the extreme levels of South Africa’s income inequalities, using the popular GINI Coefficient, and the Palma Ratio to express this inequality. The Palma Ratio is gaining international favour for its ability to directly reflect a nation’s income disparities: the top 10% citizens earn seven times more than the cumulative income of the poorest 40% of the population. South Africa’s own analyses paint an even bleaker picture than that represented by the GINI Coefficient and the Palma Ratio – more than 55% of the population live in poverty, below South Africa’s own definitions of poverty (STATS SA 2017).

Economists, philosophers and historians throughout human history, from Greece’s Plato circa 400BC to today’s Walter Scheidel⁵ of Stanford University, and Joseph Stiglitz, awarded the Nobel Prize for Economics in 2001, all argue that extreme inequality is a major societal disrupter, leading to societal decay and failed statehood at best, and major conflicts like civil war and the last two world wars at worst. Scheidel argues that extreme socioeconomic inequalities are reduced and reversed by failed statehood, societal decay, and civil and global wars, but once defeated, inequality returns to repeat the cycle. This rather dismal view is countered to some degree by Joseph Stiglitz⁶ who presents a more optimistic view of the impact of inequality on modern society:

“The good news - according to Stiglitz - is that, if inequality is the result of our actions, then we can reverse course by changing the rules. We can restructure our economy so as to restore more equitable conditions and govern the Fourth Industrial Revolution in a more sustainable manner, distributing - or redistributing - the benefits of technology, and avoiding a further increase in inequality”

South Africa’s celebrated scientist (late) Phillip Tobias agreed with Stiglitz from a genetic science perspective (page 3 of [ICT4SDG5](#)), as did the renowned evolutionary biologist Richard Dawkins in his [Selfish Gene](#) theories. Given South Africa’s global leadership in income inequality, which model should the country choose? Walter Scheidel’s pessimistic view of waiting for inequality to correct itself through revolution and civil strife? Or Joseph Stiglitz’s optimistic view of positioning technology and the 4IR to ameliorate South Africa’s extreme inequalities before they cause irreversible damage to the nation, including its technological industry?

Joseph Stiglitz view is clearly preferable, and ICTs are central components of the Fourth Industrial Revolution. But, whittling away at the cost of communications using the traditional models of ICT growth, necessary as this may be, will not reduce the nation’s inequality challenges. The nation as a whole, and especially its ICT industry and its oversight agencies, need to focus attention and technological interventions directly on the needs of the +30 million South Africans who are too poor to afford developmental quality ICTs. Highly creative and innovative solutions are needed to avoid damaging the nation, and with it, its vital ICT industry.

⁵ “The Great Leveller” by Walter Scheidel 2017: https://www.unwe.bg/uploads/Alternatives/11_Alternativi_english_broi_3_2017_rev.pdf

⁶ Joseph Stiglitz: “Inequality, technology and growth: some reflections”: https://adecogroup.it/wp-content/uploads/2017/11/Stiglitz_inequalities_theadecogroup_feltrinelli-UK.pdf

Poverty: How can South Africa reposition ICTs to tackle Poverty?

1. **Mount Frere District, 2005: Managing Distance: The Social Dynamics of Rural Telecommunications Access and Use in the Eastern Cape, South Africa**⁷: Andrew Skuse and Thomas Cousins suggest that the inescapable dependency on mobile phones drives already poor people deeper into chronic poverty:

“With telecommunications access deepening in rural areas, the question arises as to its net effect on poor households in particular. In absolute terms, access to telecommunications is often still beyond the reach of the very poorest and therefore ICTs could be argued to constitute both a driver of inequality and an indicator of chronic poverty (see Aliber 2001 for a discussion of chronic poverty in South Africa). Further, income inequality between the richest and poorest may widen as a result of the enterprise opportunities that can be gained by the former and not the latter..... Evidence from poor village households in the Mount Frere District indicates a significant monthly financial outlay on cellular telecommunications that needs to be further contextualized within the types of investments poor households make, the vulnerabilities they face and the strategies that they engage for ameliorating that vulnerability”

2. **Pretoria, 2017: Feeding the rural poor and hungry in the 21st Century with technology, David Fincham**⁸:

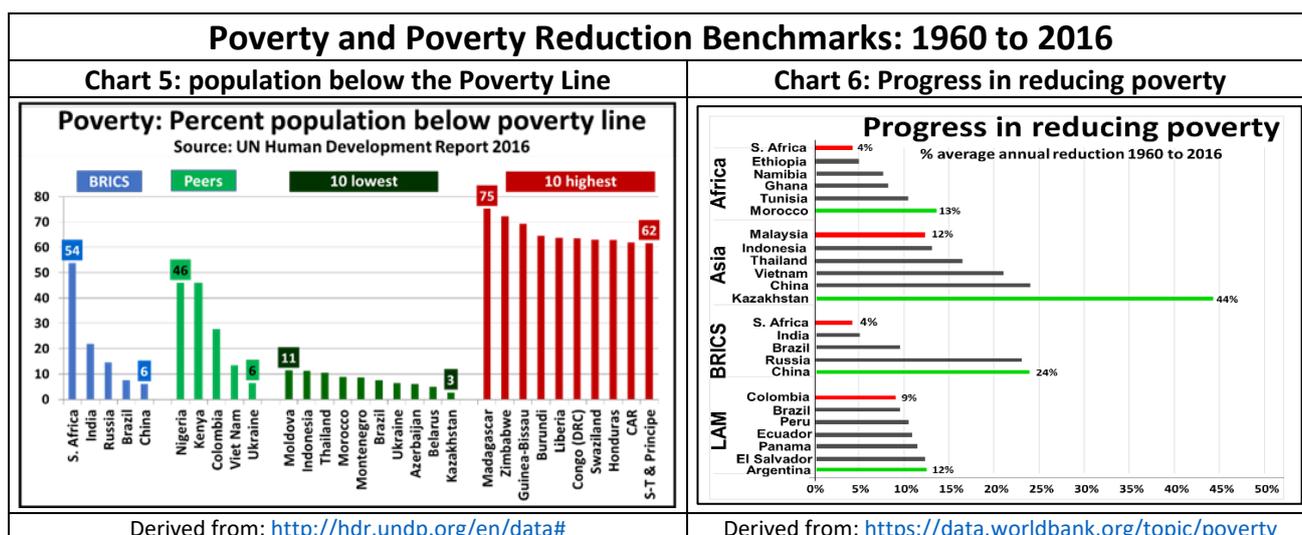
David: “How does your family at home eat?” Response: a bewildered look “Huh?” David: “How do they put food on the table?” Response: “They buy it” David: “No, they don’t” (pulls out his cell phone from his pocket) – “They get it from this.....”. A hungry rural-dwelling mother SMSs her city-based son for money to buy food. Son SMSs R100.00. Mother pays R20 for transport to the store; R20 for airtime for the next plea for help; R20 to buy white maize meal; R20 for vegetables; R20 for meat: chicken heads, chicken entrails, and chicken feet. The family eats for another week - until the next SMS to help stave off hunger.

See TEDx presentation via the link in the footnote below.

The formal research by Andrew Skuse and Thomas Cousins, and the anecdotal evidence by David Fincham, an expert Aquaculture specialist promoting Tilapia farming for hunger alleviation in Africa, explain the dilemma of ICTs as a “double-edged” sword: they most certainly do help feed families, but in doing so, do they exacerbate the inequality and poverty challenges as well?

Chart 5 and Chart 6 below provide the raw statistical evidence of South Africa’s poverty. South Africa is not the poorest country on earth, but the nation’s progress in reducing poverty compares poorly against similar developing country peers.

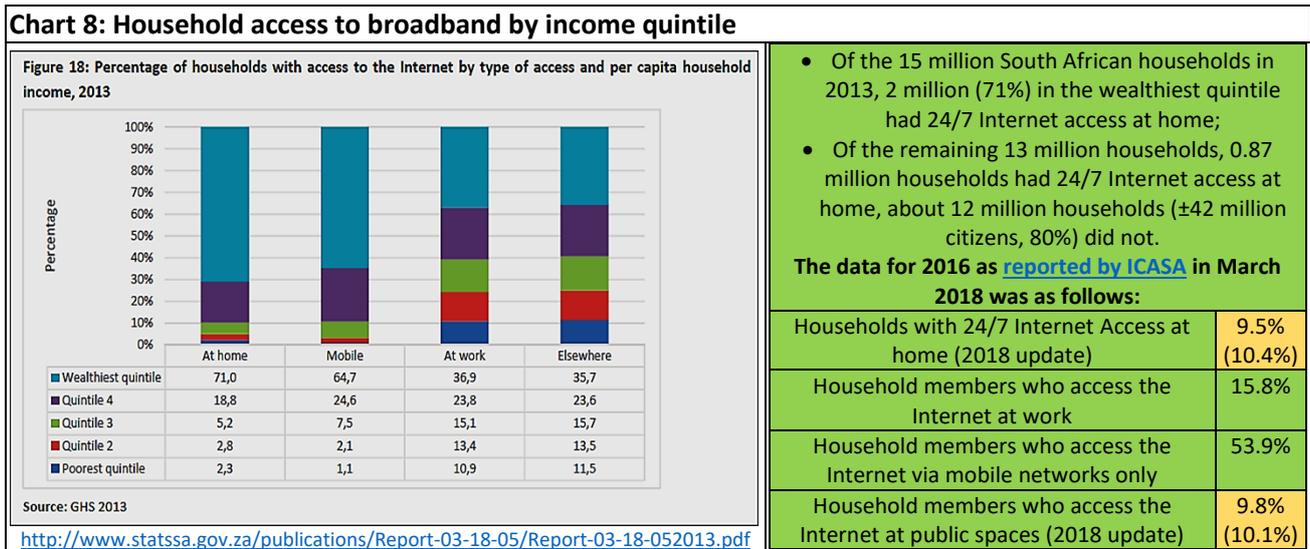
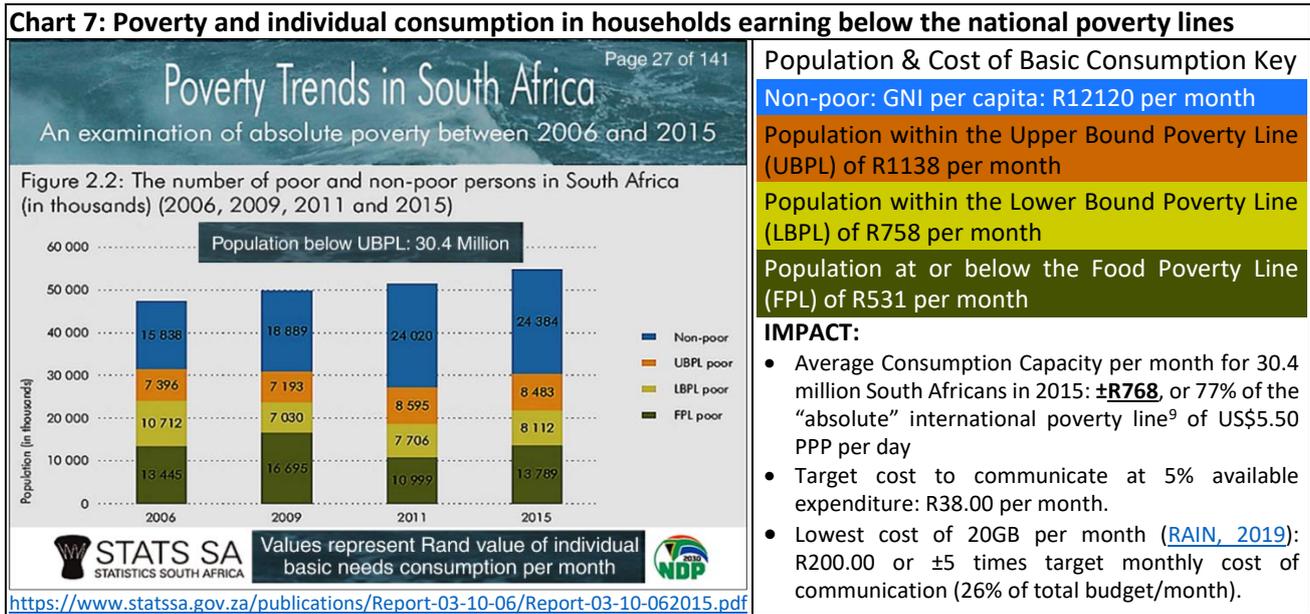
South Africa must ask the critical question: How can we position ICT to do more than just “put food on the tables” of the poor?



⁷ Managing Distance: Skuse and Cousins, 2005: <https://assets.publishing.service.gov.uk/media/57a08c88ed915d622c0013eb/R8232-ISRGWP1.pdf>

⁸ Feeding the rural poor and hungry in the 21st Century with technology: Pretoria February 2017: <https://www.youtube.com/watch?v=sr3yhNXWPI0>

ICT Affordability: Much more than current strategies needed.



Charts 7 and 8 speak for themselves: poor people in South Africa cannot afford empowering and transformative ICT services. The question that rises is: what are these empowering and transformative ICT services? The simple answer is access to developmental qualities and quantities of information, knowledge and opportunity for self, family and community development. The more complicated answer is: what kind and how much of these ICT services will provide the requisite information, knowledge and opportunity? A much more important and urgent question is: how much of these empowering and transformative ICTS can be purchased from the R38 per month limit of the affordability of ICTs by the poor, as stated in Chart 7?

The above questions need address if South Africa is to position ICTs to reduce the nation’s deep inequalities, poverty and unemployment. A beginning has been started in each of the draft documents linking ICT to the Sustainable Development Goals: [ICT4SDG1](#) – poverty; [ICT4SDG2](#) – hunger; [ICT4SDG3](#) – health and wellbeing; [ICT4SDG4](#) – education; and [ICT4SDG5](#) – gender equality. These beginnings need to be expanded.

⁹ Absolute International Poverty Line derived from: World Bank 2017 - A richer array of international poverty lines: <http://blogs.worldbank.org/developmenttalk/richer-array-international-poverty-lines>.

Unemployment: A potentially disastrous challenge that needs 4IR solutions

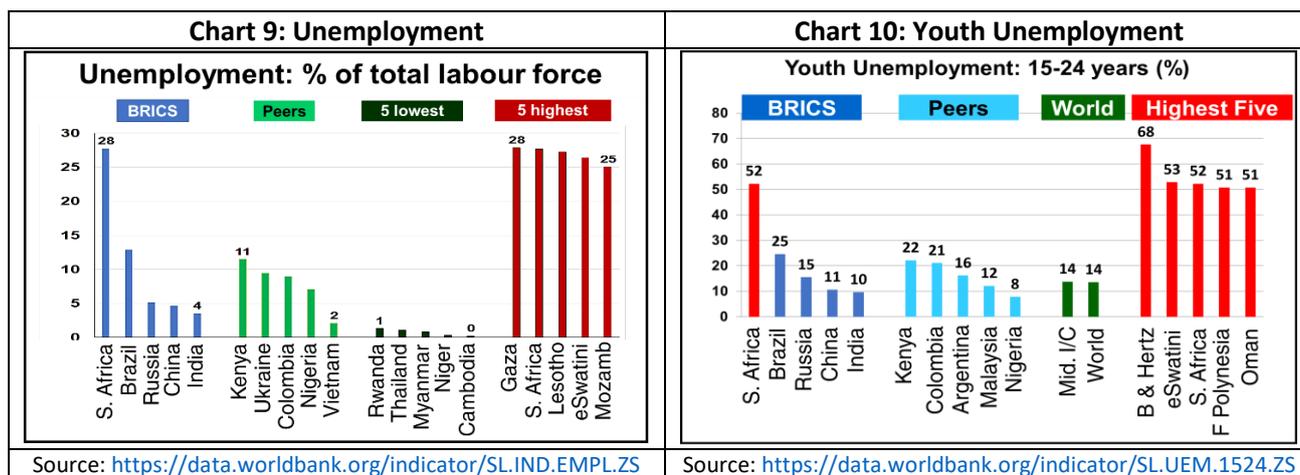


Chart 9, which draws from South Africa’s own assessments by STATS SA, rendered internationally representative by the International Labour Organization (ILO) and the World Bank, ranks South Africa’s unemployment levels second only to the West Bank and Gaza. This of course excludes failed states or states which do not measure or report employment data, but it must nevertheless concern all South Africans. South Africa’s unemployment challenges are immense, extremely complex, economically and politically destructive, and debilitating at the personal and family levels. But they are mere symptoms of much deeper challenges: unemployment is a symptom of South Africa’s deep inequality and poverty, which includes the vital inequality and poverty within the national education systems, and therefore the ICT systems.

As indicated above, the unemployment challenge is merely a symptom of the challenges of inequality and poverty. The majority of South Africans are generally unskilled, ill-prepared for the consequences of automation in this unfolding 4IR age. And yet, this “mere” symptom generates potentially devastating expectations: jobs, work, and living wages are the only means of survival in this age of [Homo economicus](#) and [Homo technologicus](#), new terms coined by the irrepressible march of technologically-driven human progress. The “survivalist” dependency on jobs has inevitably spawned highly aggressive mass movements in the form of labour unions, but their success is in direct conflict and contradiction to the inexorable march of technology. Technology strives to replace human labour, but as human labour, i.e. jobs, become the primary means of survival, technological progress becomes the enemy of the people.

As Joseph Stiglitz implied in his discussion on inequality and the 4IR (footnote 6 on page 8), technology can help to build a stable future with completely redefined notions of work, jobs, and employment. Chart 10, portraying the potentially disastrous level of youth unemployment, must be deemed a wakeup call for South Africa. If we do not begin to aggressively imagine the future through the eyes and opportunities of our youth, we may become consumed by the failed statehood suggested by Walter Scheidel (footnote 5 on page 8).

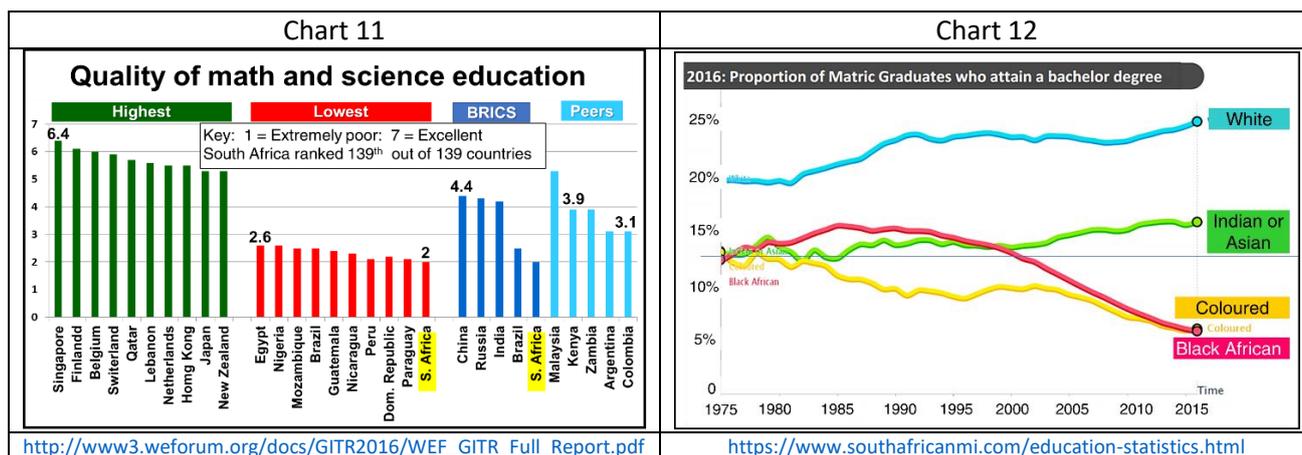
The power of ICT has always been its ability to share knowledge, experience, and ideas; and to encourage cooperation and collaboration amongst citizens and socio-economic-political leaders for individual and national development. ICTs have in the past, and can in the future, coexist with the nearly exclusive commercial focus of the ICT industry today, and the social compacts that ICTs enable in the alleviation of inequality, poverty and unemployment. The current global debates on the (still controversial) concept of a Universal Basic Income (UBI)¹⁰ may in a future 4IR world become a panacea for South Africa’s deep inequalities, poverty and unemployment. If ICTs are positioned for this purpose, they can further facilitate and strengthen local consideration and tests of the UBI concept underway in South Africa today. As the inevitable low-skill job losses accumulate in South Africa as the 4IR unfolds, the UBI concept may be the nation’s best response.

¹⁰ UBI: ILO Working Paper No. 62: <https://socialprotection-humanrights.org/wp-content/uploads/2018/07/55171.pdf>

Education: The Bottom Line for South Africa’s Development?

The most recent STATS SA Household Survey¹¹ states on page 10 of 203 that “Almost one-half (46,8%) of parent or guardians never read books with children while 43,1% never drew or coloured with the children”. We also know that according to our own government’s participation in the “[Progress in International Reading Literacy Study \(PIRLS\)](#)” report for 2016, that South Africa ranked 50th out of 50 participating countries: 78% of South Africa’s grade 4 learners cannot read for meaning.

Is South Africa preparing its future generations for the Fourth Industrial Revolution through education? The statistics referred to above, and Charts 11 and 12 below, suggest that the nation is failing to build the future through its children.



The use of technology, particularly the ICTs, to complement national educational processes and systems is well-known, a vital cog in the dissemination of information and knowledge for development. But, as discussed in some detail in the document [ICT4SDG4 – Education](#) – the success of ICTs themselves have spawned significant dangers, threats and risks for children and youth. Extreme caution in the use of ICTs in education is necessary, but neglecting to use ICT in education itself imposes serious dangers, threats and risks for children and whole nations.

The most effective solution to the above conundrum – the unintended consequences of ICT use for the education of children, versus the risks of not using ICT for the education of children, is to provide developmental quality broadband services to all homes, where greater supervision by parents and/or older siblings is possible. Raising the level of broadband connected households from the very low levels of 10.4% as depicted in Chart 8 on page 10 is vital and urgent, but realistically, this can only be a medium to long-term objective. Short-term solutions that enable full family access to broadband are urgently needed; raising the level of public access to broadband from the low level of 10.1% to nearer 100% is one such solution. Public access facilities can be structured to provide more sustainable access to broadband for whole economically marginalized communities, provided that the many errors of past attempts are fully acknowledged and avoided.

Numerous analyses of 4IR skills needs, including those of the World Economic Forum¹², list ten critical skills for growth and survival in the 4IR age. These are listed and discussed in section 3 page 8 of [ICT4SDG4](#). They include capabilities like critical thinking, creativity, complex problem solving, etc., all of which demand very strong foundations in mathematics and science, delivered preferably at the earliest Early Childhood Development stages.

ICTs have immense capabilities to support delivery of the above foundational skills, but they must first be available and positioned for such delivery. Chart 11 suggests that this ICT requirement is extremely urgent in modern South Africa.

¹¹ STATS SA General Household Survey 2018: <http://www.statssa.gov.za/publications/P0318/P03182018.pdf>

¹² The Future of Jobs: WEF16: http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf

CONCLUSIONS:

South Africa needs to find ways of positioning ICT to reduce and reverse the nation's numerous developmental challenges. The country has an extremely deep association with technology, extending back to the early cognitive development of the species some 100,000 years ago, as suggested by internationally acclaimed researchers undertaking vital work in South Africa itself. A few notable South African researchers who have done this, or are conducting this research as this submission is being crafted are:

1. [Professor Phillip Tobias \(1925 – 2012\)](#). Durban (eThekweni) born paleoanthropologist Phillip Tobias helped to change the world's knowledge about the human species, tracing the ancestry of all living humans back to Africa, and southern Africa in particular. His insights into how the human species can use its common identity, and its natural innovative instincts, to change society for the defeat of all divisive socio-cultural-economic-ethnic-political-racial challenges must be acknowledged and used to form the thinking of South Africa's and the world's future generations.
2. [Professor Christopher Henshilwood](#) (born Cape Town 1951): Professor Henshilwood's excavations at Blombos Caves and other world heritage sites dotted throughout South Africa, go a very long way to tracing the origins of humanity, and the technologies that humanity has invented and used, directly to South Africa. His ground-breaking work summarised in his video documentary "[Time Machine - the origins of innovation](#)", traces the origins of the Fourth Industrial Revolution and all technological advances that preceded it, to human cognitive awareness that emerged in South Africa some 100,000 years ago. The world, and South Africa, should listen to Christopher Henshilwood's insights. South Africa's ICT industry should be positioned to shape the thinking of South Africa's future generations based on these scientific knowledge developments.
3. [Professor Zenobia Jacobs](#) (born late 20th century, possibly in Benoni, South Africa): One of the lead "inventors" of the [optically stimulated luminescence](#) system of dating ancient artefacts and fossils, which helped to "unearth" the "[world's first technological industry](#)" in the Sibudu Caves of KwaZulu Natal some 70,000 years ago. These "discoveries" led to the most recent genetic analyses of the "[Ballito Boy](#)", a young boy whose parents lived in the Sibudu Caves some 2,000 years ago, and whose DNA helped to push back the knowledge of the origins of our species to 350,000 years before now.
4. [Professor Naledi Nomalanga Mkhize](#) (Born South Africa, 1981) is a historian and educator who follows the above researches, translates them into child-friendly books that teach all South African children about their proud histories and origins, currently working on a history book of African technological innovations that draws from the findings of the above scientists, and the socio-cultural heritages of South Africa.

Reports indicate that Professor Mkhize struggles to gain support to complete her work, which deserves the full support of the ICT industry and the nation as a whole. This support must help her to go further and translate her research and books into child-friendly online learning materials suitable for all children of all ethnicities, genders, and socioeconomic circumstances. None of the invaluable research outputs from any of the above scientists can change the entrenched mindsets of especially the poor adult population of South Africa, they are too busy eking out a living out of their difficult life-circumstances. The best that South Africa can do is to shape the future thinking of the nation's children and youth. The ICTs must be positioned to do this.

Professor Mkhize features prominently in a highly disturbing and provocative video documentary about South Africa's education systems as they apply to the poor. This disturbing video, commissioned by the Legal Resources Centre, is available at <https://www.youtube.com/watch?v=hiEUu-Is0Ao>.

What has all the above got to do with the price of data in 21st century South Africa? The Cambridge English Dictionary defines "data" as "*information, especially facts or numbers, collected to be examined and considered and used to help decision-making*". If the majority of South African citizens cannot afford the "information, especially facts or numbers" that define their daily lives, opportunities or lack thereof, how then can they "examine, consider and use" such information and facts to improve their own lives, the lives of their children and communities, and their country as a whole? There seems to be a need to return to the original definition of "data" in this "cost to communicate" discourse. We need to change our views of data from the technocentric "Megabytes" (a unit of information equal to one million or, strictly, 1,048,576 bytes) and

“Gigabits per second” (one billion bits transferred from one point to another in one second), and put a human face back into “data” so that it helps to empower people, helps them to make the right decisions, and thereby transform their lives to something better. If that is what “data” is supposed to do, then what should it cost in order for it to empower people and transforming their lives and the fortunes of their country?

The “information, especially facts and numbers” that comprise the original meaning of “data” must be rendered affordable so that all South Africans can use such data for their own development, and the development of their country. The scientific information “unearthed” by the scientists listed above must be spread through affordable ICTs in formats that the whole population understands. This information, or “data” lies at the core of the nation’s challenges, most of which are embedded in interpersonal and intercultural misunderstanding, fear, suspicion, and ultimately dislike and distrust. These challenges must be tackled from a knowledge base of our common identity that transcends ethnicity, race and physiological differences.

How can this Data Services Inquiry help to steer South Africa’s Information Society towards a knowledge base that uses “information, especially facts and numbers”, in other words “data”, to resolve the nation’s deep societal challenges that are depicted in the charts and discussions above? How can the macroeconomic imperatives that drive the national ICT industry be balanced against the equally important imperatives to defeat the nation’s triple threats of inequality, poverty and unemployment that retards national progress in every possible way?

One simple single answer to the above very complex questions is that South Africa must strive to do both: reduce the general cost to communicate in any way possible through inspired compromises between all stakeholders, as this inquiry seeks to do, AND to prioritize the delivery of “data” in its human developmental “[philosophical](#)” meaning, to the current “information-excluded” 55% of the population. The risks of not doing both is that the “popularity” and “profitability” of data may lead to increases in inequality and poverty, and worse, to data abuse, a growing global threat that transforms vital “information, facts and numbers” into insidious algorithm-generated “big data” that undermines individual and national development, and socio-political stability. The poor are particularly vulnerable to data abuse, especially by sexual predators as discussed in [ICT4SDG5](#).

Recommended areas for further consideration:

1. In Chart 7 and the associated discussions that follow on page 10 above, an estimated affordable price for “developmental qualities and quantities” of broadband services needed by South Africa’s economically marginalized majority is provided – R38 per month. This affordability level cannot be delivered under any outcome of the current data services market inquiry. One model proposed in all the related documents in the ICT4SDG series is the concept of mass public access – a single high capacity high speed broadband link shared by many in clusters of public access facilities. The broadband providing entity receives its planned price for the service, the community share this price equitably and affordably.

The modified Internet Café model that served Brazil so well, and with significant government reservations, China and India also, presents significant opportunities for South Africa to begin construction of the bridge that defeats information exclusion. The concept is not new to South Africa, all major ICT service providers have attempted the model in the past, but under what circumstances and business strategies? The discussion document [ICT4SDG5](#) discusses this model in some depth as an instrument to reduce and reverse the brutal gender and child violence that positions South Africa as the Rape Capital of the World by several authorities, including Interpol.

2. The [ICT4SDG5](#) document also introduces on page 24, a concept that needs far more scrutiny and support, the [Zenzeleni](#) self-help initiative at Mankosi village in the Eastern Cape. The concept is relatively simple, originating as it does from the global Internet Governance Forum: a self-help initiative based on the exasperation of the failure by national governments and ICT industries to provide connectivity for the poor. The possibilities demonstrated by the Zenzeleni initiative are impressive, and include local residents acquiring impressive technical skills for network construction without formal training - see the BBC documentary at BBC Africa: <https://www.youtube.com/watch?v=R9u-hfxAeBo>. The project is a potent demonstration of possibilities, but continues to face challenges that this data services inquiry process can help to resolve:

- How quickly and at what cost can the concept be scaled up to serve all South Africa's +30 million poor citizens in both rural and urban enclaves?
 - With a population of about 6,000 residents (3,500 cooperative members), approximately 70% unemployment, average monthly incomes of R390 per month, what "developmental qualities and quantities" of broadband access can be "self-provided" to the citizens and children of Mankosi village at the affordable price of R19.50 per month (5% of available spend)? Can such services match the quality of services enjoyed by the villager's wealthier compatriots so that the inequality gap is not fuelled further by the successes of the latter?
 - These are difficult questions, but if South Africa is to bridge its inequality divides, they must be asked, and solutions found.
3. There are numerous possibilities to deliver both models outlined above through policy and regulatory provisions, but simple in principle as they may be, they have remained elusive:
- Judicious allocation and assignment of spectrum. The "Digital Dividend" spectrum bands of 450MHz, 700MHz, and 800MHz (UHF spectrum bands) have been available in theory for more than a decade now, but their allocation to pro-poor ICT service provision, or their release from the broadcast sector, has been elusive. All three spectrum bands are eminently suitable for rural communications. Why then is it impossible to think about allocating say the 450MHz and 700MHz for dedicated pro-poor ICT services? The mobile operators have access to all other high demand spectrum bands, and the idea that these two UHF bands are needed by the large mobile operators to better "penetrate walls" in high-density high-income enclaves seems irrational when compared to the greater needs of the 30 million information-excluded South Africans.

There are numerous global examples of how developing and developed nations are using, or planning to use these lower UHF spectrum bands to provide the most modern ICT services, e.g. 5G, to connect rural communities to the modern version of the Information Society. The USA for example is testing innovative ideas of using 5G to connect underserved rural communities: (a) [USA 2019: AT&T plans to test 5G in rural areas](#); (b) [USA 2018: T-Mobile and Nokia](#) have achieved the world's first 5G data transmission on 600MHz spectrum, promising nationwide 5G coverage for everyone everywhere. The 600MHz spectrum band in the USA is equivalent to the 700MHz spectrum band available to South Africa.

- There are numerous possibilities to extend fibre optical broadband reticulation through joint use of overhead pole routes owned by Eskom and other utilities, including Telkom, but the national will to do this has been lacking. Many developed and developing nations have used this model very well, including the United States of America, South Korea, and most Scandinavian countries. South Africa's municipalities have built, or intend to build, broadband fibre capacities on high voltage power lines, but the will to extend these to serve the poor has remained unattractive. For example, the [City of Tshwane has such a plan](#), broadband fibre optical cables embedded in the earth wire of 132kv high voltage lines, but no indication of services to the poor areas through which these high voltage power lines transit.

Further details of all the above possibilities and more are available in a discussion document "*Tackling South Africa's Inequality, Poverty, Unemployment, From the base of the nation's development pyramid*", available for download at: <https://www.sakan.org.za/Docs/Concept%20Paper%202017.pdf>

Can this Competition Commission's Data Services Market Inquiry trigger a renewed debate into the possibilities listed briefly above? The main body of this submission provides statistical evidence of the immensity of South Africa's growth challenges. The cost of the proposals listed above are miniscule compared to the costs of inaction.

End of submission: Johannesburg, 13th June 2019.