

Sustaining Consulting Engineering is Key to Growing the Economy Presented by

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1. Introduction

Consulting Engineers South Africa (CESA) aims to be the 'Voice of Consulting Engineering in South Africa'. CESA represents for its members, a body that promotes their joint interests and, because of its standing, provides quality assurance for clients. Over 500 firms employing just over 24 350 staff, who collectively earn a total fee income of almost R20.4 billion per annum, are members of CESA. CESA is committed to business integrity, the principles of sustainability and the promotion of engineering excellence.

Naren Bhojaram our Past President, in his 2013 theme "Sustainability is Everyone's Business" identified five key sustainability indicators for South Africa. These being:

- education,
- economic and political certainty,
- job creation,
- eradication of corruption, and
- responsible development.

The National Development Plan (NDP) also identified these indicators as some of the key issues to be addressed in order to achieve sustainable economic growth. We also stressed the importance of ethical balance in selecting leaders. John Maxwell states: "Everything rises or falls on leadership".

At our 2013 annual conference we successfully launched our"CESA Sustainability Policy Framework" to help CESA members to pro-actively integrate sustainability within their business structure. This framework is now part of the CESA Code of Conduct and hence a condition of membership alongside our Quality Management System (QMS) and Business Integrity Management System (BIMS).

2. 2014 Presidential Theme

Our theme for this year, "Sustaining Consulting Engineering is Key to Growing the Economy" is built on our previous year's theme and further defines consulting engineering as an essential service without which infrastructural and economic development will at best falter, and at worst, not meet the needs of our developing economy.

In this theme we:

- address the socio-economic context within which consulting engineering exist in South Africa,
- touch on elements of the NDP pertaining to infrastructure development,
- explore the role of consulting engineering in the NDP, and
- Provide answers to the question "What should government be doing to enhance the role of consulting engineering to contribute to the realization of the objectives of the NDP?"







3. Contextualizing Consulting Engineering in SA

South Africa is a "developmental state" in which Government is a pre-eminent force in driving the country's social and economic development. Some of the notable socioeconomic programmes that Government has embarked on include the Reconstruction and Development Programme (RDP), Accelerated and Shared Growth Initiative for South Africa (ASGISA), Growth, Employment and Redistribution Strategy (GEAR) and the New Growth Path (NGP).

The South African economy has grown, millions of South Africans homes have been provided with running water, sanitation, electricity and communities with RDP houses. South Africa also embarked on a number of mega infrastructure projects such as Coega, Gautrain, Soccer World Cup stadia, roads, dams, power stations, etc.The South African consulting engineering industry played a leading role in these developments.

Despite these developments the overarching triple challenges of unemployment, poverty and inequality persist. According to Statistics South Africa, by the third quarter of 2013 unemployment was 24.7%; and 31.4% of youth aged between the ages of 15 and 24 were not employed, being educated or trained. The proportion of people living below the poverty line is still a major concern at 48%.South Africa remains a highly unequal society with the richest 20% earning 70% of the national income in contrast to the poorest 20% of the country earning 2.3% of the national income. The recent World Economic Forum (WEF) identified unemployment as a 'hot button' issue worldwide and inequality as the biggest driver of instability in nations. South Africa is sitting on the time bomb – something needs to be done as a matter of urgency.

Most economic analysts believe that SA's long term performance cannot exceed 3.5% at best. This is a concern as the forecast falls short of the National Development Plan's (NDP) growth target of 5.4% year on year to 2030.

Underlying the sluggish growth outlook is the low growth in Gross Fixed Capital Formation (GFCF), from 4.3% (annualized) in 2012 Q4 to 2.5% in 2013 Q1.



Capital spending has not yet recovered to the levels reached in 2008, before the global economic recession. The GFCF for public sector currently stands at approximately 7.6% and that of private sector at 11.9% of GDP while the NDP's GFCF targets are 10% and 20% respectively.







Business confidence remains weak (below the 50 level), which means the private sector still lacks impetus to increase investment. Strikes, rating agency downgrades and policy uncertainty were listed by Treasury as factors contributing to weakened confidence which postponed private sector investment decisions.



The delays in projects such as Medupi impacted negatively on Government spending. Actual Government spending on infrastructure over the 2010/11 to 2012/13 Medium Term Expenditure Framework (MTEF) period was R642 billion against a target of R846 billion. This amounts to a 76% expenditure of the allocated budget. Addressing this under spending should be one of the top priorities for the implementation of the NDP.

According to the CESA Bi-Annual Economic and Capacity Survey, the capacity utilization rate for consulting engineers currently stands at 91%.



Capacity Utilisation Rate

4. CESA's view of the National Development Plan

The NDP was created as a policy instrument to develop South Africa's economy. Its main objectives are to decrease the unemployment rate from 24.7% to 6% and eliminate inequity while growing the economy to triple its current size by 2030.







Government through the NDP has identified infrastructure development as key to the socio economic development of the country. Investment in social infrastructure includes for example, the development of hospitals, clinics, schools and the provision of water, sanitation and electrification aimed at improving service delivery and uplifting the lives of communities. Economic Infrastructure is the basis on which the economy is built and includes the development of rail, ports, airports and road systems to support the economy.

What makes the consulting engineering sector excited about the NDP is the fact that it is accompanied by a framework to enable the planning and implementation of the infrastructure roll out. This framework includes the following components:

- The Presidential Infrastructure Coordinating Commission (PICC) established to coordinate and fast track the planning and implementation of infrastructure. Studies have shown that where national infrastructure projects have been most successful around the world you will find the president or prime minister has personal control, as they did in the UK and Jamaica. The PICC is chaired by President Zuma.
- The National Infrastructure Plan (NIP) with an initial 18 Special Infrastructure Projects (SIPs) with high socio-economic impact. These projects are already at various stages of planning and implementation and some of our members involved in these projects.
- The Infrastructure Bill which provides for the designation of SIPs through the NIP and ensures that the NDP outlives change in the Government administration.
- Aligning all other Government plans and initiatives to the NDP. This is particularly important in cases where reticulation infrastructure is reliant on completed bulk infrastructure for providing a service.

The NDP has all the requisite ingredients to succeed but only implementation will differentiate it from the other plans that came before it.

R827 billion has been allocated for public sector spending on infrastructure over the next three years. We are concerned that this amount is less than the R846 billion allocated in the previous budgetary cycle as this interrupts resources planning and development for our industry.

Our economic, social and environmental quality of life is directly related to the state of our public physical infrastructure.

5. The role of Consulting Engineering in the National Infrastructure Plan

Infrastructure systems, as part of the built environment, exist at the intersection of the social (or socio-economic) system, the natural system and the technological system. This system which is driven by engineering (planning and design) consists of three chronological processes involved in infrastructure development, namely, engineering; construction; and operations and maintenance.

The role of consulting engineers, as custodians of technology, and science and engineering skills, is to provide:







- Independent advice to client son the most suitable approaches, methodologies and solutions to infrastructure projects within the constraints imposed by the natural and socio-economic environment – TRUSTED ADVISOR;
- Services relating to the design and supervision of construction work; and
- Assistance to capacitate the public sector through transferring of engineering skills and knowledge to clients.

Consulting engineers are the designers that create the large scale infrastructure projects that:

- Generate employment opportunities for millions of unskilled, semi-skilled and skilled workers. Its job creation capability goes beyond the construction sector to impact on other related sectors such as materials suppliers, plant hire;etc.;
- Improves the quality of life of the South African citizens and impacts positively on inequity;
- Contributes to economic growth by:
 - Stimulating the development of other economic sectors such as mining, manufacturing, services and farming by providing supporting economic infrastructure such as rail, ports, airports, electricity generation, road systems, etc.,
 - Attracts foreign investment tas infrastructure is considered to be one of the most important factors that foreign investors take into account when making investment decisions;

The Minister of Finance, Pravin Gordhan, in his recent MTBPS statement acknowledged that consulting engineers are key to the government infrastructure programme, and the exception to Government's mooted ban on the use of Consultants. We are excited about this as it marks the beginning of the journey to reposition consulting engineers as the trusted advisers and strategic partners of government in infrastructure development.

5.1 Consulting engineering and employment creation (and poverty eradication)

KPMG have estimated that2.4 million job opportunities could be created in the next three years if the whole MTEF infrastructure budget of R827 billion is spent. If the NDP infrastructure spending objectives estimated at R1.1 trillion (10% of GDP) is spent then 3.4 million job opportunities could be created in the next three years. These job opportunities include direct employment through the infrastructure projects, indirect employment opportunities due to spending in other sectors such as suppliers of materials to these projects, and the induced knock-on effects resulting from workers spending their income and creating additional employment opportunities in the retail sector.

It is highly unlikely that the entire amount will be spent taking into account the existing challenges of poor planning, lack of technical capability and capacity in the public sector, lack of funding allocation and corruption.







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Table provided courtesy of KPMG.

5.2 Consulting engineering and equity

The CESA 2013 BECS reported an increase in black equity (including executive directors, non-executive directors, members and partners) increased to 35.5% from 30.1% and 28.1% in the previous two surveys. This equates to approximately R7.2 billion of our industry turnover.

6. What should Government be doing?

With Government's plan to grow the economy and triple GDP by 2030, the Consulting Engineering Industry has a significant role to play in achieving this growth through infrastructure provision. In order to ensure that this crucial industry matches, or ideally supersedes, the country's projected growth a number of challenges need to be addressed as a matter of urgency.

Based on the latest CESA Bi-Annual Economic and Capacity Survey, we have selected seven (7) challenges that must be addressed to enhance the role of the consulting engineering industry in infrastructure development and in meeting the NDP goals:

6.1 Challenge 1: Procurement of consulting engineering services

How the services of consulting engineers are procured have an impact on their relationship with the client (Government) and the output of their services. This begs the question: "Is price the appropriate basis for competing for consulting engineering work?"

In terms of the current procurement regulations government procurement of consulting engineering services is done on the basis of price and BBBEE with functionality / quality only used as a minimum pre-qualification threshold and the balance of the procurement decision is based on price.







This approach reduces consulting engineering services to a commodity with the value thereof dependant on the availability of work. When there is abundance of work the value of consulting engineering services (tender prices) will be high and low during work shortages. In fierce competition, as we are currently experiencing, the tendered prices are below input costs which compromises the ability of the industry to innovate, train staff and attract young engineers to the industry. Something is wrong here - you cannot pay different prices for the same service depending on when you want that service. Just imagine going to a doctor when there is a flu epidemic and being told that the consultation fee has increased one hundred fold because there is high demand for the doctor's professional services

This method is particularly inappropriate in cases:

- Where the scope of work and quality of investigations cannot be adequately defined upfront like it is the case with many infrastructure projects,
- Involving complex specialist infrastructure projects, which demand the kind of creativity, innovation and foresight that comes only with exceptional expertise and experience. In such cases alternatives must be considered and multiple options and technologies investigated before a final solution is obtained.

What then should be the basis for procuring consulting engineering services?

Section 217(1) of the Constitution requires that when organs of state contract for goods or services, they must do so in accordance with a system which is equitable, transparent, fair, and competitive and result in cost-effectiveness. In other words, the aim is to procure goods or services from a contractor on the best <u>possible terms</u>. Clearly the best terms for procuring consulting engineering services are those that optimise the total project life cycle costs.

Consulting engineering dictates how infrastructure should be constructed and maintained and it impacts on the construction and maintenance costs. Decisions made during the project planning and design phase can have a far reaching impact on the project construction, operation and maintenance costs as well as the reliability of service provided by the constructed infrastructure. The opportunity to improve the outcome of the infrastructure project in terms of innovation, appropriate technology, etc. is high during the engineering (planning and design) phase of projects and diminishes with the construction, operation and maintenance phases. The cost of making changes to improve the outcome of infrastructure projects increases with the progression from engineering to construction, operation and maintenance phases. It therefore follows that investing in engineering is good investment for the economic development of the country.









The international best practice for selecting engineering consultants is Qualifications Based Selection (QBS) in which engineering consultants are selected on the basis of quality and competence and then negotiate a fee that is equitable and appropriate for the scope of services. This allows engineering firms to develop and deploy the necessary resources required to meet client's expectations, to innovate and to add value which means better services and savings to taxpayers and the community.

As an interim measure CESA calls on Government to reintroduce quality as part of the total procurement point's calculation alongside price and BBBEE points (cidb Method 4). We have engaged National Treasury in this regard and the review of procurement regulations is underway. We are particularly excited by the statements made by Minister Pravin Gordhan in his 2013 medium term budget speech that the amended Public Management Finance Act (PFMA) would separate infrastructure related procurement from procurement of goods and services. In his 2013 budget speech he also mentioned that the amendments in the PFMA would encourage greater focus on quality when assessing project bids. It is not clear though as to how this will be done. We await draft procurement regulations with great expectations.

At the same time we challenge Government to conduct a comprehensive review of the current procurement system to determine its impact on infrastructure development with a view to moving towards a QBS. Many countries like Canada, the United Kingdom and the United State have done so.

6.2 Challenge 2: Access to work opportunities by emerging and small firms







There is a strong outcry from emerging and small consulting engineering firms, particularly those that are not specialists, over the lack of access to large projects from Government and public entities. These firms make up a significant portion of the CESA membership and they represent a niche segment of the market that frequently provides specialist services or services to local municipalities. They also provide an important vehicle for empowerment within the sector.

Often these firms lack resources, expertise and experience related to large projects. CESA believes that the participation of emerging and small firms in large projects can be best facilitated by using targeted procurement procedures. These procedures create contractual obligations for large firms to engage small firms in the execution of a contract by either specifying minimum participation goals as a percentage of the contract amount or specifying portions of services which must be subcontracted to targeted enterprises.

The participation goals can be achieved by either subcontracting work to targeted enterprises or forming joint ventures between large and small firms. SA has developed standards for this. We however caution that set goals must be fair, equitable and cost effective and the process of forming relationships between large and small firms must be streamlined and monitored to ensure that the required development actually occurs.

6.3 Challenge 3: Infrastructure investment

Some of the challenges associated with infrastructure investment include:

a) Cyclical nature

The consulting engineering industry is already gearing itself up for the implementation of the Government infrastructure programme by boosting capacity and capability. The number of partnerships with international firms attests to this. However, Government's committed infrastructure spending will encourage the industry to commit more resources to training, research, etc. However, the cyclical and inconsistent budgeted infrastructure spending is still a concern for the industry. We plead with Government to ensure uninterrupted infrastructure spending during the NDP period. This will ensure optimal use of industry resources and will further encourage industry to invest in skills and resources.



b) Low investor confidence





Business is sitting with R560 billion in savings that it is not re-investing into the economy. A clearer project pipeline, more standardisation of deal structures, policy stability and better information about the performance of projects at their various stages would all encourage infrastructure debt investment.

The potential of Public Private Partnerships (PPPs) to entice private sector investors into infrastructure development is not fully appreciated in SA. Government needs to address regulatory constraints to unlock this potential.

c) Under spending of infrastructure budgeted spending

Persistent under spending of infrastructure budgets robs the nation of the much needed infrastructure and will in the long term impacts negatively on the objectives of the NDP. It also impacts negatively on resources planning for the consulting engineering industry. We call on Government to speedily address poor planning and the lack of capacity and engineering skills in the public sector in order to correct this expenditure pattern.

d) Poor and lack of maintenance of existing infrastructure

Premature failure of infrastructure due to lack of or poor maintenance put pressure on the already strained Government infrastructure budgets. Costs associated with maintenance are a fraction of reconstruction costs once the infrastructure has collapsed. It also disrupts service delivery which contributes to rampant service delivery strikes and decline in investor confidence.

We suggest the creation of a dedicated National Municipal Infrastructure Maintenance fund and the staffing of municipal maintenance teams with experienced technicians.

6.4 Challenge 4: Regulatory environment

In addition to procurement regulations we have identified a further three (3) regulations that impact on the effective role of the consulting engineering industry in infrastructure development: These are:

a) Broad Based Black Economic Empowerment (BBBEE)

CESA supports BBBEE which is necessary to transform business and contribute to the eradication of inequity – an NDP objective. However, the requirement for a consolidated / joint BBBEE scorecard for joint ventures discourages the formation of joint ventures which are crucial for skills transfer between large and small firms, international and local firms as well as for creating critical mass between smaller firms to enable them to handle a bigger project. There is also a cost implication associated with consolidating two or more scorecards which further burdens the industry.

We propose that a formula be developed to enable the calculation of consolidated BBBEE scorecards of two or more entities forming a JV.







b) Municipal Finance Management Act (MFMA)

Some appointments for consulting engineering services are made for a fixed three (3) year term. This is not a problem if construction falls within the same period and where the design is not delayed by planning issues such as compliance with Environmental Impact Assessments (EIA) and land acquisition. In instances where construction begins within this period but is completed outside it, the appointment of the consulting engineer lapses at the end of this three (3) year period. This interrupts construction and provision of infrastructure. The consulting engineer runs the risk of not being remunerated should they continue.

In cases where the three (3) years lapses before construction commences, appointments get terminated and the projects are put out to open tender again for the balance of the design and subsequent stages of professional services. Apart from the cost to the industry for such re-tenders, infrastructure implementation is also delayed in the process. Consulting Engineering firms spend an enormous amount of highly skilled resources and money on the tendering process.

With projects getting bigger and some taking more than three years to implement from design to construction completion, we urge Government to review and align the Municipal Finance Management Act and Municipal Systems Act.

c) Designation as local

CESA is also lobbying to have consulting engineering designated as a local service to receive preference over international companies, who do not have a presence in South Africa, when bidding for work. A proposal, in this regard, submitted to the Department of Trade and Industry is currently being reworked. This will facilitate referencing of local SA firms in procurement. By local firms we mean firms that have offices in SA and comply with all statutory requirements for operating as a business in SA such as SARS, BBBEE, Employment equity, etc.

In instances where local firms lack the required skills, international firms could be engaged conditional to teaming up with local firms to build such skills locally. This is not only necessary for the later maintenance and operation of the developed infrastructure, but is crucial in raising the country's competitiveness.

We are pleased with the announcement by President Zuma that Government intends to implement a policy of 75% local procurement. We believe this will boost our application to have consulting engineering designated as a local service.

Infrastructure needs a cadre of engineers focused not only on planning, design, tender specification, evaluation and adjudication but also on maintenance and operation. Therefore, localisation needs to be looked at carefully as you cannot create employment and address inequality unless established South African companies are fully utilised.







6.5 Challenge 5: Lack of capacity

Lack of technical capacity and chronic shortage of experience engineers in Government impacts on Government's ability to create a consistent project pipeline, appropriately procure consulting engineering services, monitor contracts and maintain infrastructure. This is more pronounced at Provincial and Local Government level.

Employments of appropriately qualified people in Government positions as well as improving their working environment are central to addressing lack of skills in Government. For example, properly qualified and experienced individuals need to be appointed to critical Government technical posts and their contracts need to be based on performance of technical work – nothing less and nothing more.

CESA member firms have the skills and the capacity to assist Government in unlocking infrastructure development in the immediate term through secondments and the establishment of Project Management Units. Creating over time a strong public sector is fundamental for infrastructure project creation.

6.6 Challenge 6: Corruption

Corruption in South Africa is still rampant with the Auditor-General Thembekile Makwetu reporting that government entities incurred R2bn in wasteful expenditure, R26.4bn in irregular spending and R2.3bn in unauthorised spending in the 2012-13 financial year.In October 2011 Willie Hofmeyr, then head of the Special Investigating Unit (SIU) estimated that between R25-billion and R30-billion of government's annual procurement budget alone was lost to corruption, incompetence and negligence. Corrupt activity hinders development, contributes to the depletion of the public purse and distorts markets, further hindering local and foreign direct investment.

We welcome the recent announcements by government of the new Public Administration Management (PAM) Bill, which among other things aims to bar civil servants from doing business with Government.

CESA is committed to fight corruption in procurement processes and has increased its capacity and ability to do so by recently creating litigation fund and also forming partnerships with other corruption fighting organisations.

6.7 Challenge 7: Education

We commend Government for their implementation of the schools infrastructure programme. However this must be complemented by the improved quality of classroom teaching and overall school management. The low success rate at universities suggests that schooling does not meet the requirements of higher learning and the economy. Our public education crisis is defined by:

- The poor teacher supply and provisioning norms; and
- The poor quality of teaching and its impact on learning.

The quality of teaching is related to the quality of our teachers.







We welcome Government initiatives, which include the introduction of compulsory grade R learning, aimed at addressing this crisis. However we are disappointed that other measures have been stopped by the unions. These include:

- The introduction of competency tests for matric markers.
- The reintroduction of inspectors to assess teachers' performance in the classroom.
- The introduction of performance related pay.

We call on Government to resolute in implementing these measures. Teaching must be made a 'career of choice' and attractive to top achievers by paying salaries comparable to those of other professions, especially for maths and science teachers.

7 Conclusion

CESA strongly believes that the NDP and its objectives will never materialise unless consulting engineers are involved at all levels of infrastructure provision, especially in the planning and design phases as trusted advisors to Government. We make a clarion call on Government to address the challenges identified in this presentation in order to ensure the development of the consulting engineering industry which underpins the success of the NDP:

- Implement the NDP by increasing Government's infrastructure spend from 7.6% to 10% of the GDP and ensure that funding continues until 2030.
- Improve the procurement and regulatory environment within which the consulting engineering industry operates by reviewing and repealing relevant regulations.
- Create technical capacity and capability within Government or procure the required services from consulting engineers.
- Improve the quality of education, with particular emphasis on math's and science.



