

## The role of structural engineers in poverty reduction

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### Summary

The paper first presents the strategy of the South African government for development of infrastructure which, on a macro level, will assist to alleviate poverty in the country and the region. The role of the structural engineer in these projects is undeniable.

On a micro level it is shown how individual projects can create employment opportunities, skills training programs and can provide access to amenities and employment opportunities. This is described through four example projects.

Although the contribution of the above initiatives cannot be discounted, the real sustainable impact on poverty alleviation is described here as the transfer of hope and vision to poor communities. This component requires a mind shift from the average structural engineer, where it requires careful planning and personal dedication to create opportunities for interaction with communities.

**Keywords:** Poverty alleviation, skills development, hope and vision, educational programmes

### 1. Introduction

There are many areas in the world where poverty is an acute social and economic problem. This paper explores the role of the structural engineer in addressing this social problem.

Poverty can be expressed in a variety of different terms, but an example is the unemployment rate of 25.3 % in South Africa. Specific programmes in the country aim to reduce poverty and certain objectives have been set to achieve this. Three approaches can be identified and are presented here to demonstrate the role of structural engineering in achieving these objectives. These approaches are:

- Provision of basic infrastructure: Economic growth is enabled through infrastructure which provides access to basic services, access to markets and access to employment opportunities;
- Employment opportunities, education and training: Through the execution of projects there are opportunities to provide employment and to develop skills. Examples of these opportunities on a project level are presented in the full paper;
- Poverty can only be effectively alleviated when people are given hope and vision. A programme is presented here to show the benefits and possibilities of such encouragement.

### 2. Project descriptions

18 Strategic Infrastructure Projects have been identified by the South African Government to be executed over the next 15 years. These include:

- Rail line expansions in several provinces;
- Improvements of ports, roads and dams;
- Basic infrastructure ;



- New integrated urban spaces and modernising public transportation;
- Green energy projects;
- Power stations and electricity generation facilities;
- Electricity transmission and distribution;
- Public hospitals and health facilities;
- Renovation and building of new schools and tertiary institutions and related facilities;

These projects will play a major role in creation of employment opportunities, stimulating the economy, and will through the provision of basic infrastructure enable access to services, markets and amenities. The role of the structural engineer is undeniable in realising such projects.

Apart from the macro benefits, each of these identified Strategic Infrastructure Projects will themselves have components of employment creation, skills training and education. These components are actively pursued on South African projects, of which a few examples are presented in the full paper.

### **3. The role of education and hope**

The project examples described above demonstrate the role of the structural engineer in alleviating poverty. Employment opportunities are created and skills are developed through projects in poor communities. These contributions are meaningful and can make a real difference in the lives of beneficiaries.

In another “project” school learners are given hope, which is the essential ingredient for people to start helping themselves. The “project” consists of a non-profit programme on national level, with its objective to provide support for education of science and technology in secondary schools in the country. It is offered to schools in developing communities where there is a dire need for quality education and a need for vision and hope. The programme provides syllabus content, equipment, vocational guidance information, and other material to these learners.

Personal communication by the author with educators, and success storeys from learners, identified the following critical aspects which are gathered from this programme, specifically seen in the South African context:

- Learners in poor communities seldom have hope or vision;
- Often, teachers at schools in developing communities are themselves depressed due to a lack of own education, lack of results, large classes, and shortage of suitable educational equipment;
- It is seldom that teachers in disadvantaged communities can provide hope and vision to learners;
- Once learners are provided with a vision and with hope, they themselves motivate each other, form learning groups and reach for the stars.

### **4. Conclusions**

Infrastructure project create opportunities for economic growth on a macro level. It also provides employment opportunities and develops skills during the execution of the projects. The role of the structural engineer in these projects and initiatives is undeniable. It is however often found that once a project has been completed, the employment opportunities move away from a community, and the positive spin offs in terms of local employment (and even the benefits of having “new skills”) turn out not to be sustainable. It is therefore necessary to find ways and means where a more sustainable solution can be found towards poverty alleviation.

The real sustainable impact on poverty alleviation is described here as the transfer of hope and vision to poor communities. This component requires a mind shift from the average structural engineer, where it requires careful planning and personal dedication to create opportunities for interaction with communities to transfer to them hope and vision.