green skills

Building capacity for a sustainable future

21 Step Methodology: Skills for and through SIPS

Green Skills Methodology Case Study

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Introduction

What is the status of this research?

The 21 Step Process methodology was central to the development of the Strategic Integrated Projects (SIPs) Skill Plan. The research was conducted over three years resulted in a 324 page 'Skills for and through SIPS' report that can be accessed on the SIP Skills Portal. A summary of the 21 STEP methodology and a library of 43 templates are also available through the SIP Skills Portal. This case study was developed by Adrienne Bird of the Department of Higher Education and Training (DHET), and Green Skills researchers Leigh Cobban and Zoë Visser. Adrienne is the Head of the Special Projects Unit (SPU) charged with developing and overseeing the implementation of a skills plan for the SIPs.

Purpose

What problem or question motivated the research?

The 21 Step Process methodology was formed following the announcement of the National Infrastructure Plan, launched in President Jacob Zuma's State of the Nation address in 2012. Under this plan, 18 Strategic Integrated Projects (SIPs) were announced to drive economic growth and social development in South Africa. In addition to being oriented towards industrial and economic development, these projects were intended to generate skills and create jobs. For this reason a Special Projects Unit (SPU) was established to develop a Skills Plan for SIPs.

The methodology was developed to generate a list of occupations in demand for the SIPS nationally, and define actions needed to address any identified scarcities. The methodology was trialled and subsequently refined into what it is now: a 21 Step Process that can be used to develop such lists and intervention strategies for the SIPS at provincial and sectoral levels, and for new strategic projects.

The 21 Steps Process is not specifically focused on identifying a green skills demand, though some of the SIPs do inherently have an environmental focus (e.g. SIP 8 – Green Energy in Support of the South African Economy) and most SIPS will presumably require some environmental impact assessment and management skills. Rather, the 21 Steps Process provides a possible methodology for outlining the demand, supply and gaps for all skills (including green skills) in any sector, taking into account different scales and role-players. By focusing across the full value chain, the 21 Steps Process incorporates both the workplace and educational institutions, demonstrated in the report title "Skills for and through SIPs": skills 'for' refers to training in advance of projects and skills 'through' refers to training that takes place on projects themselves. This is again reflected in the core principle of SPU, which is that skilling people is as critical as building physical assets.

Design

What methodology was used?

The 21 Step Process covers the full value chain of skill demand, supply and possible mechanisms to address any identified gaps, and takes into account different scales, role-players and timeframes. The process is not simply a mechanical sequence of tasks. Rather, it centrally includes the involvement of those intimately connected with the occupations in demand, including: i) those that provide the foundational training; ii)

those seeking the skills (employers in the main); iii) those that hold the standard to the occupation (such as professional bodies where established); and iv), where necessary, the practical training centres. These occupational teams provide the 'quality' oversight of the work and were key places for intervention for the environmental sector. A researcher was also hired to assist with research on the Statistics SA database.

The full 21 Steps are summarised in the Box below. All of the steps of the process were undertaken by the Project Management Unit to some degree. Steps 2 - 4 are the technical methods for estimating demand, Steps 6 - 7 for estimating supply, and Step 8 for estimating gaps.

Summary of the 21 Step Process for assessing the demand, supply and gaps in skills.

- **Step 1 - Project List.** Researchers developed a list of SIPs projects planned for the area, and regularly updated it. A template, for capturing relevant project information (inputs, duration, location, etc.), was developed and captured on the SIP Skills Portal.

Demand side steps

- **Step 2 - Skills Prototype.** Researchers developed skills prototypes consisting of the occupations needed in typical projects in different sub-sectors together with an estimation of scarcity, derived from the experience of project managers[1]. These prototypes were checked by experienced technical managers responsible for the oversight of SIPs projects. The prototypes were then used to estimate the skill requirements of similar projects, by scaling the prototype up or down to reflect the size of the new project under review. Experienced technical managers were also consulted for the scaling factor used for each project, and to estimate which skills were difficult to find, to form a scarce skills list. The total number of skills required is estimated by combining the skills needed for all the projects.
- **Step 3 - Skills Required.** This step involved estimating the total skills required for all the planned projects in each SIP. Inputs for all the planned projects in each SIP were collected from the relevant SIP owner, including critical identifying data such as scope, size, budgeted cost, start and end date of each phase. Working closely with the Presidential Infrastructure Coordinating Commission (PICC), this was collated for short-, medium- and long-term scenarios. This stage of input collation represented the most critical aspect of data collection and involved a number of meetings with the identified bodies such as Eskom, Transnet, PRASA, IDC, Department of Basic Education, Department of Health, Department of Public Works, Department of Agriculture, TCTA, SANRAL, various municipalities and so on. Where projects were part of wider programmes, these programmes were taken into the database where the identifying data could be summarised in a format acceptable to the database.

  Step 4 - National Demand. In this step, researchers used the Linked Macro-Education Model (LM-EM) developed by Dr Asghar Adelzadeh (2013) to forecast the estimated *national* demand for occupations considered scarce, or use detailed research per occupation where available. The LM-EM i) forecasts future macroeconomic sector employment trends, using industrial and economic policies and key external drivers, and translates these forecasts to forecasts for occupations, and ii) considers the supply of skills graduating from education and training systems.
- **Step 5 - Occupational Teams.** Researchers set up Occupational Teams (OTs), composed of theory and practical training providers, employers (drawn from all sectors where the occupation is

[1] To achieve this, projects were clustered into sectors, (e.g. energy, rail, etc.) and then into sub-sectors (e.g. for energy: generation, transmission, distribution) and where relevant into sub-sector types (e.g. for generation: solar, coal, wind, biofuels, nuclear). An Excel-based toolkit has been developed for this purpose, which can be found on the skills portal. It has drop-down menus to make the task of generating the prototypes easier. It enables experts to capture the occupations required for each typical project under a set of standard headings.

employed) and those from registering or certifying bodies. The OTs acted as expert advisers per occupation.

Supply side steps

- **Step 6 - Skills Available**. This step included: i) using the Quarterly Labour Force Survey published by Statistics South Africa (StatsSA) to determine those with the required skills in employment; and ii) using the Department of Labour's (DOL's) Employment Services South Africa (ESSA) to get insight into the number of similarly skilled people in the ranks of the unemployed.
- **Step 7 - Inflow of Skills.** Researchers estimated the number of those entering the labour market with the required skills. The DHET provided projected graduation rates of learners with the necessary qualifications using data from the South African Qualifications Authority's (SAQA) National Learners' Records database (NLRD). Researchers also considered the use of retirees, transfers, immigration and other short-term options.
- **Step 8 - Where are the Gaps?** The project team determined which occupations were not being developed at the required rate to meet the demand, by developing graphs for each occupation based on the Lawless Skills Flow Model, using data from STEPS 4, 6 and 7 plus other sources for occupations identified in STEP 3.
- **Step 9 - Where and When?** The project team provided an indication of the scale, place and timeframe of demand for each occupation, by mapping occupations back to projects under Step 1. To do this, the team reviewed the project list to work out geographically where hubs of demand are going to be. These results were mapped through a GIS programme.
- **Step 10 - Training on Project Sites.** The Construction Industry Development Board (cibd) Training Standard was brought to the attention of those who issuing the tenders for projects listed under STEP 1. This standard encourages structured workplace learning through SIPS projects.
- **Step 11 - School Support.** Where there are nodes of development, local schools were considered as feeders for training, career guidance and support for gateway subjects. The National Career Advice Portal (NCAP) can be used by local schools to see the occupations in demand in their area. This is a stand-alone step, with related standards under development.
- **Step 12 - Centres of Specialisation.** The project team determined which education and training providers should focus on developing which skills. TVET colleges were presented with short list of skills at intermediate level, and given the opportunity to motivate for why they should become centres of specialisation for a particular skill, near to the source of a demand. At present, these applications are being assessed. If they are approved, occupational teams will put together a plan to lift performance of a college in that area.
- **Step 13 - Delivery Capacity.** OTs for each priority occupation visited the Centres of Specialisation to determine the capacity and support needed, and co-produced costed plans for interventions and measures for supporting learners and the institution.
- **Step 14 – Workplace.** Workplace-based learning opportunities were identified for the occupations in time. Public and private employers were informed of the workplace-based learning opportunities, and incentivised.
- **Step 15 – Resources.** Resources for the OT plan (Steps 13 and 14) from SETAs, NSF, the three tiers of government, public entities, the private sector and other sources were secured. The National Skills Fund has allocated R800 million in support of the process. Dedicated project managers will ensure that plans are implemented within a cluster of occupations.
- **Step 16 - Implement, Monitor & Evaluate Plans.** Funded plans were implemented with simple, streamlined systems for monitoring and evaluation. The implementation of the projects listed under STEP 1 has implications for government. Government officials are frequently the ones to

conceptualise the projects, undertake (or cause to undertake) pre-feasibility and feasibility assessments, environmental impact studies, consider water licenses and land use applications, secure funding, manage contracts, ensure delivery to the required quality, within budget and given timeframes and undertake operations and maintenance once construction is completed. The capacity of relevant departments needs to be evaluated to determine whether they are able to perform these functions to the required standard. This is a function which falls under the mandate of the Department of Public Service and Administration and the Department of Cooperative Governance and Traditional Affairs. It goes to the heart of service delivery and must be addressed as part of the overall plan. The project planning template can be downloaded from the SIP Skills Portal.

- **Step 17 - Which Departments?** The project team determined which municipal, provincial or national departments need to play a role in the implementation of the SIPs.
- **Step 18 - What Skills are Needed?** The project team defined the roles each must play, and associated skill requirements matched against available skills. The suitability of organograms, job descriptions, conditions of service, and the education, training and experience of those filling posts associated with each of the roles should be considered.
- **Step 19 - Planning and Resourcing.** The project team put together a plan in response to the needs identified, and identify resources. The plan included revision of structures, appointment of additional staff, development of current incumbents and/or putting long-term skills training plans across the whole skills pipeline in place for each department.
- **Step 20 - Implement, Monitor & Evaluate Plans.** The project team implemented, monitored and evaluated these plans for government capacity building.
- **Step 21 – Governance.** The project team is in the process of establishing a robust governance structure to oversee the implementation of project implementation plans. Projects of this complexity, with all the necessary partners, need to be managed carefully as a whole – with responsibility for each step carefully allocated and resources for its execution identified. A two-tiered approach is being debated – with national policies, systems and procedures (templates, portals, norms and standards for funding, funding sources, etc.) complemented by provincial, district and municipal project plans implemented and overseen at the relevant level. Partnerships with the Offices of the Premiers are currently being sought for the next phase.

Findings

What did the research find in relation to the research question?

- The 21 Step Process methodology was developed reflexively over a period of 3 years of application and refinement to answer the question ‘What skills are needed for the SIPs?’, and subsequently, ‘What should be done?’ The early skills prototypes for each SIP principally contained data relating to the planning, development and construction phases, and did not focus on the skills that government departments would need to generate the work or oversee the contracts and take over responsibility once the work is completed. Hence, the 21 Step Process outlined above includes Steps 16 – 20, to cover government’s role in these phases in the projects’ life cycles.

- The 18 SIPs are at different stages in applying the 21 Steps and developing their own integrated skills plans and skill development strategies. SIP Skills Coordinators were appointed to develop and manage these plans. Occupational Teams (OTs) were established and produced first draft reports in 2013, which identified scarce major occupational clusters and identified related problems. A common problem identified across the SIPs was that of throughput – i.e. the cost pf carrying a high rate of drop-outs and failures. Each report contains recommendations for remedying skill and occupational shortages, drawing on learning pathways and blockages.
- SIPs with an inherent environment or 'green' focus, such as SIP 8: Green Energy in support of the South African Economy, achieved a number of new partnerships and training opportunities in response to the skill gaps identified. For SIP 8, this included new centres for green energy skills: i) the South African Renewable Energy Technology Centre (SARETEC), a national centre for renewable energy training and education based at the Cape Peninsula University of Technology; and ii) and the Renewable Energy Centre or Excellence (RECE) in the Northern Cape in partnership with several South African and international universities.

Reflections on the research

- The SIPs vision should be situated in a context of background challenges. These challenges that are particularly relevant to this methodological case study, are that: i) SETA Sector Skills Plans have historically not permitted occupation- and specialisation-level planning; iv) Quarterly Labour Force Survey data is misleading as occupations are not defined with the correct qualification level; and v) no specific Standard Industrial Classification code exists for the environmental sector.
- The data provided by Stats SA presented a huge problem. In the Stats SA database, people associated with a particular profession – for example engineering – had a range of skill levels. Researchers had to make assumptions to deal with the inclusiveness of these categories, in some cases disregarding numbers of professionals below a certain skill level. Parallel studies were undertaken to check the Stats SA data. Once data was compiled, occupational teams made a professional call on the numbers, which in some cases changed quite a bit.
- Not all trades are organised, which means that getting information was more difficult in some cases.
- All of this work involves a large number of people located at different sites. Building collaboration between them is at the heart of the 21 Step Process. Governance of the entire process is still under construction, with partnerships with the Premier's Offices of the provinces being a central element for demand signals. But the Process requires that both the demand siders (those seeking to employ the skills) and the supply siders (the education and training institutions together with employers for workplace learning) collaborate in new ways and in this regard the Occupational Teams have a vital role to play.

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