

EUROPEAN MODELS FOR PRASA SKILLS DEVELOPMENT

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ABSTRACT

The New Skills for New Jobs project is a partnership between the European Union, the Department of Higher Education (DHET), PRASA and the CSIR. The project aims to develop a better understanding of future infrastructure skills needs and how these can be met through improving the links between education, skills, labour markets and industry.

The paper presents the methodology developed in the project, reviews European rail sector best practice examples in their context, and outlines the way forward for PRASA and DHET.

BACKGROUND

South African skills planning

Closely aligned with the New Growth Path and the National Development Plan, in 2012 the South African Government adopted a National Infrastructure Plan to transform the nation's economic landscape while simultaneously strengthening the delivery of basic services and creating significant numbers of new jobs. This National Infrastructure Plan sets out the challenges and enablers to which South Africa needs to respond in planning and developing infrastructure which fosters economic growth and poverty alleviation. (Presidential Infrastructure Coordinating Commission 2012.)

Clearly, skills planning and skills development are central to the success of the National Infrastructure Plan. South Africa's Department of Higher Education and Training (DHET) has accordingly developed an "Infrastructure Skills Plan Framework", the purpose of which is to ensure that the skills will be in place to meet infrastructure requirements and also that the infrastructure projects will themselves provide workplace learning opportunities. This of course requires considerable foresight, as in for example identifying the skills needs way in advance, and ensuring inter alia: recruitment of suitable trainees; the provision of training facilities and training staff; the adequacy of training and mentorship (including workplace skills transfer); qualifications frameworks and mechanisms (including recognition of prior learning); and accreditation of qualifications. (Inter alia, DHET 2014.)

Europe's NSNJ initiative – and South Africa

In the course of European Union (EU) / South African bilateral discussions during 2011, it was realised that a particular planning methodology developed in Europe within the context of "Europe 2020", a 10-year strategy proposed for advancement of the economy of the EU, could be of value to South Africa's skills planning needs as outlined above. This planning methodology is known as the "New Skills for New Jobs" methodology. (Abbreviated "NSNJ".)

The purpose of the European NSNJ initiative is to:

- Promote better anticipation of future skills needs
- Develop better matching between skills and labour market needs
- Bridge the gap between the worlds of education and work.

In 2013, the EU Delegation to South Africa agreed to fund a limited two-year South African version of NSNJ, with a focus on understanding European experience which could be of value to skills planning, for two selected sectors, in the face of significant changes in technology and work organisation. It was quickly determined that the Passenger Rail Authority of South Africa (PRASA) modernisation programme, which involves major investment in traction and signalling systems, requiring extensive training (and retraining) of existing staff and of staff to be recruited, would be a particularly fitting application.

PRASA volunteered to partner in the NSNJ project because it foresaw how this initiative could complement the major effort which it is already making to ensure that it has the right skills on board to both:

- optimally operate – and maintain – its new infrastructure as this is progressively commissioned over the next few years; while simultaneously
- operating and maintaining that of its existing infrastructure, some of it of significantly different technology to that being acquired, which is expected to give good service for many years to come.

The other principal partner identified by DHET and the EU Delegation was the Council for Scientific and Industrial Research (the CSIR). The CSIR volunteered because it foresaw how the initiative could benefit aspects of skilling for the provision and utilisation of all types of built environment infrastructure in South Africa. Noteworthy CSIR interests in this respect include maintenance, improved space utilisation, and improved building sustainability (including topics such as energy efficiency).

To sum up: the main objectives of the South African NSNJ project, broadly stated, are:

- ***to assess the applicability of the NSNJ approach of the EU to skilling for large-scale public sector infrastructure investments in South Africa; and***
- ***to learn methodological lessons which can be shared with all the SIP¹ skills coordinators in the first instance, and more broadly in due course.***

¹ Strategic Integrated Projects (SIPs), a key element in rolling out the National Infrastructure Plan.

From this point on, unless otherwise specifically stated, this paper describes the South African NSNJ project in the context of the rail sector only.

METHODOLOGY

The EU assistance to the South African NSNJ project has comprised:

- two European "sectoral experts", one in rail infrastructure and one in the maintenance of infrastructure in more general terms, together with a South African-based Research Manager;
- a small select group from DHET, PRASA and the CSIR undertook a study mission to Europe and, guided by the EU and by the two sectoral experts, held discussions with pre-identified Europeans who could offer the most relevant advice grounded in their own experience; they also visited pertinent institutions and facilities; and
- the sectoral experts, and others with specialist experience in the two sectors, visited South Africa to impart their knowledge to a wider audience.

Guided by the EU and the project European rail sector expert, PRASA was exposed in the desktop research, and on the mission to Europe and by the visit of European experts to South Africa, to countries and institutions where (i) systems for imparting skills and (ii) systems for rail operation are not necessarily typical of all countries in the EU, but are at or near the forefront of good practice.

By these means, the project set out to assist the South African participants to:

- Understand the skill strategies adopted in the face of the technological, social, political and economic conditions under which new jobs in identified European countries were introduced.
- Understand the ways in which the challenges were understood in each country (e.g.:
 - How choices were made of the technologies to introduce and how these decisions were or were not influenced by the associated skill requirements of different options or the job creation benefits which could flow from them.
 - How maintenance did or did not achieve a higher profile in the process.
 - How research was undertaken to inform these choices and strategies).
- Understand how the job structures themselves were developed.
- Understand how new job structures were translated into skill prescriptions.
- Understand how the education and training responses to these skill prescriptions were developed and implemented.
- Understand how those trained were inducted into the new workplaces.
- Understand how successful these interventions have been.
- Evaluate the applicability of all of the above to South Africa.
- Along the way gather appropriate documentation (e.g. research reports, job profiles, skill profiles, qualification details etc). (EU 2014.)

RAIL SECTOR LEARNING FROM EUROPE

National and international rail context in Europe

The rail sector is significant throughout Europe. The largest network is in Germany, followed by that of Poland, then Austria, then France.

The most significant rail developments over the last 20 years in Europe have been:

- Institutional restructuring with separation of infrastructures and operations, starting in the 1990s in UK and Sweden.
- Restructuring the economic system in East Europe after the fall of the Berlin Wall, and consequently also restructuring the transport system.
- Introduction of "European train management", and "moving to interoperability". (For example interoperability of the four or five different signalling systems and three different gauges, so that locomotives and drivers from one country can operate on the infrastructure of another country. For another example, interoperability through standardisation of the signalling systems in place of the four or five different signalling systems which currently exist.)
- Introduction of high-speed lines.
- That job profiles in railways are changing.

In respect of the last bullet point: there has been a huge impact on job profiles of (i) organisational change in the European rail industry, and of (ii) the new interfaces between companies, e.g. between infrastructure and operations, but also between railway companies and various new railway authorities². Not forgetting the increasing numbers of private operators which also need trained staff. And also that, under pressure to cut costs, the state railway companies are reducing staff.

The focus of the South African study of European good practice was on three countries (Germany, Austria, and the Czech Republic) with strong rail sectors and extensive rail infrastructure.

Good practice

Good practice in these three countries is manifest in three principal ways, the first two of which are not unique to the rail sector:

- the general education and training system of those countries, and the specific education and training for technical skills;
- the partnerships, of various types, and with various purposes; and
- specific to the rail sector, a set of policies – and their implementation. (These policies relate to, principally: institutional form (and reform over the years); investment in capital, operation, maintenance and human resources; funding (e.g. funding amounts, and funding methods); and education and training. (The role of the EU has been significant here.)

² The sectoral expert advised that some EU countries (e.g. Greece) have been reluctant to reform their railway sector.

A fourth, and very significant factor in the way in which this good practice is manifest, is a combination of:

- what appears to be an national ethic³ of responsible operation and usage (practised by all, including most if not all rail sector users) and of responsible maintenance of infrastructure; and
- national economies which are among the most prosperous and stable in the world.

This fourth factor has many pertinent effects, including:

- low unemployment rates;
- strong construction and (especially) manufacturing sectors; and
- high levels of public and private sector funding available for investment in infrastructure.

Key rail-specific observations

- Much of the transformation process in the European railway sector (e.g. separation of infrastructure and operations, open market in operations, improved safety standards, interoperability) was imposed by EU directives which obliged the member states to adopt or adapt them into their national railway law – despite which, actual implementation of the reform differs widely over the EU. Without the pressure exerted by the EU, many member states may not have reformed their railway sector to the same extent.
- Transformation processes in the German and Austrian railway sector were carried out in close cooperation among management and staff (trade unions) – the so-called model of “social partnership”. (This cooperative approach could serve as a model for transition and change management processes with PRASA.)
- The increasing outsourcing and tendering of tasks formerly carried out by the state railways themselves nonetheless requires retention of sufficient in-house know-how to act as “qualified buyers”, so that they do not become too dependent on suppliers.
- The practice-oriented training and educational institutions (dual education system, universities of applied science) are embedded in cooperation networks of public authorities, railway infrastructure managers, railway undertakings and suppliers and equipment manufacturers. The cooperation for education and training purposes even works among competing companies (e.g. construction companies, railway undertakings). In this way, high-quality education and training which closely meets the requirements of the employers is facilitated.
- The dual education and training system as it is applied in Germany, Austria and other Central European countries is highly successful in reducing youth unemployment while at the same time ensuring sufficient human resources and skills for the railway sector (and other business sectors).

³ The word "ethic" is used for want of a more suitable word.

- The apprentice training workshops complement the practical experience of the apprentices in their places of employment. For example, they transfer knowledge on “old school” techniques which are rarely used in day-to-day practice anymore, but are nonetheless very useful as training methods. In this way, all craftsmen have a standardised minimum knowledge on both state-of-the-art and traditional, even dying out, techniques. (This could be a model for the training for integration of “old” and “new” equipment at PRASA.)

FINDINGS FROM EUROPE

The main findings from Europe are:

- The importance of the "dual vocational training" system, referred to elsewhere in this report also as the dual vocational education and training system.
- The importance of the integration and cooperation within rail sector institutions: for example between train operations and customer services, and of IT with the rest of the institution.
- The importance of the coherence between policy and implementation.
- The importance of the partnerships between institutions. In particular:
 - the partnerships between, variously, public and private sectors, and "social partners", such as the unions, in order to find common ways forward;
 - the partnerships between education and training institutions and employers/operators of infrastructure; and
 - the partnerships between public and private sector in the interest of improved service delivery.
- The standard of education and training.
- The value of appropriate training at shop-floor level.
- The value of mentors.
- The good practice observed: in the rail sector, but also in respect of other infrastructure sectors.
- The importance of the role of the EU as an incentiviser and driver at a high level.

How changes prompt or may even require skills responses

After decades of under-investment, PRASA is in the early stage of rolling out an infrastructure development programme which will see the expenditure of R 150 billion (at current prices) over the next 20 years. Most of this will be spent on rolling stock (including motor coaches), and train movement control and signalling (inclusive of telecommunications and energy), while large amounts will also go to trackway and to depots and stations.

Clearly, a massive programme of training and retraining of staff and partners such as suppliers has to accompany this. The high profile of “retraining” is not misplaced – current employees may have over many years acquired experience on PRASA’s existing rail technologies, but they will now be required to operate the new infrastructure, some of it utilising significantly different technology to that which they

are accustomed. They have thus to be trained on that also. Conversely, new recruits must be trained not only on the new infrastructure but also on the existing, much of which is expected to give good service for many years to come. Jobs and skills are thus “new” not only in the sense of technologies or systems new to the institution (PRASA in this case), but are “new” both to new recruits and to the old hands.

But other circumstances can also lead to jobs and skills being “new”. “New” jobs, requiring “new” skills, can arise in response to – or be required by – a variety of challenges and opportunities which arise. In the European experience, these are usually one or more of the following (sometimes in combination):

- changes in technology;
- regulatory requirements – for example improved safety standards, or improved rail interoperability;
- improvements (however prompted – sometimes motivated by employers wishing to gain market advantage) in service requirements – including improvements motivated by the wish to (among others) improve service frequency, reduce service interruptions (e.g. reduce the time that train services are interrupted because of track maintenance), reduce cost, improve worker conditions, and other reasons; and
- the wish to professionalise certain occupations.

In Europe, none of this skills response – e.g. development of standards, or curriculum development – starts from scratch. Always, the participating parties:

- can (and do) draw on previous rounds of this skills response and of its elements;
- have a large stock of experience to contribute; and
- have precedents for co-operative action and how to make progress.

The response of the various partners to for example a new energy target, or a new maintenance specification, or a new technology, is never 100% new. Always, it is built on a solid foundation of trust and experience. This is the case whatever may have triggered the need for a response, whether that trigger be raising standards, greater “green” requirements, EU requirements for improved interoperability, or anything else.

Most if not all advances are a result of high levels of cooperation/collaboration between all partners. (The cooperation might sometimes not be willing, but that is beside the point.)

The cooperation could be at one or more stages of progress, including:

- identifying the need for change to targets, specifications, standards, technologies or any other relevant matters;
- lobbying for this change;
- giving shape to this required change;
- identifying and shaping the skills required to cope with this change.

For example:

- In response to a mutual desire (which, as just noted, may or may not be uniformly desired by all of the partners) to raise safety standards, the partners thrash out what is acceptable in terms of safety performance.
- They then specify the skills needed by workers if these standards are to be achieved.
- Then the curriculum is developed.
- The parties next address how the skills will be improved, who will be responsible for what, where this will all happen, who will fund each aspect, and so on.
- If appropriate, the government or statutory body then publishes regulations. However what the regulations lay down has been agreed to beforehand by all the partners (again, not necessarily willingly, but nonetheless they have all contributed and agreed).

Progress is made not in a clear series of steps where there is no going back on steps completed. Rather, the progress is iterative – to a degree, that is, as long as development steps build on prior steps, progress is made, and milestones are reached. And of course each process can take several years from start to finish.

Finally, to reiterate two points:

- From the above, the importance of the many partnerships around skills matters – and of the partners perceiving more benefit in participating than in staying out, can readily be seen.
- However these partnerships are separate from and in no way inhibit negotiations between employers, unions and employees on conditions of service, including on wages and other benefits.

Analysis of findings

All the above is highly pertinent to PRASA (and DHET) skills and jobs planning. Particularly, without a favourable economic, incentive and partnership environment, no single-purpose skills and jobs programme will succeed.

For example, an environment such as that afforded by the social partnerships (government, private sector and unions), especially in respect of their support for training in the interests of the survival and prosperity of the sector of which all three of them are part. All three parties in the sector must realise the value in it for themselves. Hence the social partners have to acknowledge that it is ultimately their responsibility to do what is necessary. No one else is going to do it for them. (Even more so in Europe, given that there is no equivalent of a Sector Education and Training Authority (SETA) to which the responsibility for ensuring of a pool of skills for the future of the sector can be left.)

The country context is important to the success of the social partnerships. For example, given that, compared to South Africa, unemployment rates are much lower, there has in EU member countries generally been more willingness by the trade unions to accept staff reductions in the interests of long-term sector survival.

The country context is also important to the infrastructure, and to service delivery. On the one hand, there is invariably more funding for investment in infrastructure when the national economy is stronger. Complementing this would be the willingness of government at all levels to invest in infrastructure, and also a policy environment which enables the private sector to make a greater contribution to infrastructure. On the other hand, there would need to be recognition across the board, public and private sector, institutions and users, of the importance of investment in not just capital improvements but also in all operations and, particularly, maintenance – and also in meeting the skills requirements.

All of this in the cause of improved service delivery.

Specifically, about education and training, skills, and human resources generally, the project conveyed:

- The major importance of the "dual education" system, which is well entrenched in Germany and Austria, less (but still significantly) so in Switzerland, and to a lesser extent in Netherlands and Denmark. It is noteworthy that the EU regards this system to be best practice, and is promoting it in other countries.
- How changes (e.g. introduction of new technologies, or of new standards) have prompted or even required skills responses.
- How mentorship and workplace skills transfer are valued and rewarded, and how they are structured.

Specifically, about the rail sector, the project conveyed:

- The introduction of "European train management", and "moving to interoperability".
- How the formerly state rail institutions have been restructured, but differently from country to country.
- The objectives of this restructuring (again, not quite the same from country to country), usually including the wish to improve service delivery, to improve cost-efficiency, and to improve the modal share of rail (or at least to arrest the decline in modal share).
- How perceived overstaffing has been reduced (attrition has usually played a major role).
- Capital investment, and operation and maintenance investment and practice – and the high standard of all of this.

PRASA and DHET were also advised of:

- The extensive shedding of jobs, usually due to the need to reduce costs, and/or due to the introduction of new more capital-intensive technologies.
- The generally increasing average productivity per worker, usually as a result of both improving the skills levels of many workers and the increased capital investment in ways of doing work.
- Some close long-term relationships between public, private and parastatal entities) – e.g. Plasser and Theurer with Austrian State Railways (OBB) – which might not be permitted in terms of South African supply chain management procedures. But it can be argued, in principle and on a case-by-case basis, that there is often much of value in these relationships.

The project has brought home the importance of the role of the EU, particularly in its strong advocacy (sometimes with incentives) of measures which it perceives to bring benefits:

- across all infrastructure sectors, raising standards in respect of operational procedures, safety, maintenance, and other factors; and
- in respect of the rail sector:
 - interoperability; and
 - improving modal share.

Finally: a number of issues (they might be challenges to applying the European lessons in South Africa) can be identified, including:

- Much European rail sector progress has been achieved in the context of a way of life characterised by what appear to be more strictly applied principles of ethics, discipline and competence. For example that the need to maintain infrastructure, and to fund this maintenance work, is much more accepted than in South Africa.
- The European-style social partnerships are not common in South Africa.
- The German/Austrian education and training system, or even aspects of it, cannot simply be transplanted, because these countries build the dual education and training system on the foundation of a basic education system which is different to that in South Africa.

CONCLUSIONS

The key to achieving the objectives of the South African NSNJ project is to:

- understand how, in Europe, changes (e.g. new technologies, changes in regulatory requirements) have prompted or even required skills responses – and what have the formulations from time to time of these skills responses had in common; and
- understand the significant points of difference between European and South African conditions, and what therefore about European skills responses and their formulation is and is not of value to South Africa.

Given the obvious synergies of PRASA and Transnet working together in identifying new jobs and new skills, and then implementing a NSNJ programme for the rail sector, that they should work together is strongly recommended.⁴ In partnership with DHET, this process has commenced. Skills needed by the rail sector alone (e.g. track master, electric train driver, railway switching and signalling operator, and train control officer) and by other sectors as well (e.g. welder, fitter and turner, millwright) have been identified, and workgroups have been set up, under DHET auspices, to

⁴ Together, PRASA and Transnet can potentially achieve much more, and more economically, than separately. Especially as so many of the skills which both require are similar. But how is still work-in-progress. Both have large scale infrastructure capital and staff upscaling programmes underway, with further planned. For example, Gibela Rail is predicting that by the second half of 2017 it will begin assembling the first of 580 state-of-the-art commuter trains to be built in South Africa. In readiness for this, it has already done much of its preparation for coping with issues such as skills sets required, curriculum and training facilities. ("Business Day" 2015.)

develop models (including forms of partnership with training centres) to address the skills needs.

Arguably:

- The immediate ways forward which the South African rail sector has chosen are paths which it could or should have taken anyway.
- On the other hand, the NSNJ initiative has been the spark/inspiration for DHET, PRASA (and Transnet) to focus for a while on issues both important and of shared concern, and to see the opportunities. NSNJ has given them an incentive and "energy boost" in that direction. Also, through the exposure to European stakeholders and practitioners, it has shown them good practice examples of how some of the important tasks can be done.

Thus the NSNJ project, for these sectors, has primarily enabled:

- them to focus; and
- them to see opportunities – not only (but not least) opportunities in cooperating with stakeholders and initiatives important to their sector.

Finally: whereas DHET has broad responsibilities for post-school education and training across the nation – and, in the current context, particularly to enhance the skills supply for the SIPs – the NSNJ initiative has suggested principles, and specific approaches, which DHET is considering for application beyond the rail sector.

DHET, being responsible for post-school education and training across the nation, has been identifying topics such as: processes followed to identify the types of training required, the skills prerequisites of trainees; approximate numbers of those requiring each type of training; the resources required to provide that training; identification of sectors and institutions most suited to provide that training; and the identification of suitable training materials and programmes already on hand, together with the development of new where required. Any significantly different approaches to education and training (not just post-school, and including retraining, continuing professional development, recognition of prior learning, and workplace skills training – to name a few topics) are of interest to DHET.⁵

To sum up:

- in the rail sector, PRASA and Transnet have responsibility for implementing, and taking much further, the lessons of the project;
- DHET has the broad responsibility, across all sectors, for applying the lessons of the project, overseeing what sector players do; and
- DHET has the overall responsibility for skills matters to do with infrastructure.

⁵ For example, with the assistance of the German national aid agency GIZ, DHET is piloting a limited trial of the vocational training methodology in the plumbing and electrical skills training sector.

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