



Sixth Services Experts Meeting
*Domestic Regulation and Trade in
Professional Services*

Engineering Services Trade:
the Case of South Africa

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EXECUTIVE SUMMARY

This study shows that Engineering Services, in the South African context particularly, are significantly interlinked with the main infrastructure and productive sectors which they have historically serviced, in particular with the minerals and energy sectors and their related supporting infrastructure. It is useful to segment engineering services according to Professional & Other Business Services, Construction and & Engineering-related Services; and Engineered Machinery sectors, even though there are considerable overlaps between these categories in that a specific project is likely to require all three of these service categories. Based on the analysis of South Africa's engineering service sector, the following issues are shown to have an important impact on engineering services trade:

- Procurement procedures, particularly for public sector engineering service work, where these are shaped by other public policy objectives
- Integrity of the national professional accreditation system
- Integrity of the immigration/visa system
- Nature, linkages and competitiveness of the engineering services sector

Procurement procedures

In South Africa, all engineering service firms (foreign and local) tendering for public sector work are required to be accredited and graded by the Construction Industry Development Board (CIDB) according to competency, experience and credit track record. Government has consciously used public sector purchasing power to achieve a mixture of public policy objectives, including:

- safety (compulsory registration of firms bidding for public service tenders),
- industry development (accreditation graded according to capacity and track record of respective firm),
- employment creation (by promoting a structured progression from small contractor to larger corporate entities) and
- empowerment of historically disadvantaged people, many of whom fall into the small contractor category.

The CIDB is a relatively new institution and has had some difficulty in managing the flood of accreditation applications that it received during the ramp up period of registration from 2003-2006. Many firms, domestic and foreign appear to have had their applications held up in this process, which is nearing completion with 13,662 firms registered in the last 2 years. Foreign firms do not appear to be disadvantaged any more than their domestic counterparts are in terms of the prevailing CIDB registration requirement.

In South Africa's case, the public policy objectives that have shaped procurement criteria, namely industry development have the support of a relatively well organised and resourced private sector. It is not clear that the Southern African Development Community (SADC) countries have been able to apply similar public policy objectives to procurement policy given that the institutional base is often relatively

weak in both public and private sectors. Private sector engineering service firms in SADC tend to be small and operate in a fragmented manner, although they are making attempts to organise themselves. Some have alleged that domestic industry development is actually impeded by the complexities in the way in which a large proportion of the projects are funded through donor aid.

Integrity of the national professional accreditation system

South Africa has a number of (mainly) public safety related legislative Acts which reserve certain work for accredited professionals. Public safety considerations and the associated requirements of professional accreditation in health and occupational safety legislation is common in most industrial economies and are not inherently trade restrictive.

Since 2000, South Africa has been implementing a very comprehensive accreditation system that incorporates the full range of professional services and covers all **individuals** who are engaged in each of the major engineering service professions including architectural, engineering, landscape architectural, project & construction management, property valuer's and quantity surveying professions

With regard to the standards and regulations that are in place for individual professional accreditation and for corporate accreditation, there is little evidence to suggest that these have constituted serious impediments to the import of Engineering Services into South Africa, or of deliberate discrimination by the accreditation processes against foreign professionals. However, dysfunctional, inefficient or administratively strained accreditation machinery will prejudice all applicants. In the case of professional associations such as the Engineering Council of South Africa (ECSA), there is a move to compulsory registration for all professionals, on the basis of public safety. Any inefficiency in ramping up registrations is likely impede both foreign and local applicants from practicing their trade.

It is the case, however, that individuals who are accredited with foreign organisations that are part of the Washington, Dublin and Sydney Accords have easier and quicker passage to accreditation. Such accords clearly enhance the mobility of professionals, and hence of engineering services trade. There is, however, a possible negative consequence of this in that it could accelerate the emigration of scarce skills that developing economies like South Africa and SADC require to retain.

It would appear that many SADC countries, with a few exceptions like Tanzania, are struggling to strengthen relatively weak regulatory institutions, including (where they exist) those responsible for engineering standards, professional accreditation and company accreditation. ECSA has an active programme to support sister organisations in SADC and the South African Association of Consulting Engineers (SAACE) is providing secretarial support to a regional grouping of consulting engineering institutions.

In a developing economy, it is difficult to envisage alternate ways to ensure public safety and industry development through mechanisms other than some form of compulsory registration. South Africa's accreditation systems are very comprehensive and ambitious, but can be achieved given the level of organisation of private and public sectors. In emulating this, it will be important for SADC countries to guard against such systems being operated in the narrow interests of the respective professions or industry groups to the detriment of other social and economic interests.

Integrity of the immigration/visa system

Bilateral initiatives, such as the visa waivers between South Africa and its trading partners for short stays, particularly the 30 day reciprocal agreements with some SADC member states, do enhance engineering service trade (professional services, construction & related engineering and engineered machinery).

For longer term stays, South Africa's tiered visa system constitutes a significant impediment for foreign engineering professionals wishing to practice their trade **as individuals** in South Africa. In 2005, Government passed legislation to create a streamlined mechanism for "critical" skill imports, but the implementation of this has been delayed. Impediments to securing longer term visas/work permits appear to particularly impede the commercial presence of consulting firms.

South Africa's visa mechanism for intra-corporate transferees has been in place for some time and appears to offer an easier and quicker mechanism to the import of engineering professional skills compared to the requirements for individual professionals.

Time did not allow for a thorough review of corresponding SADC legislation but professional/consulting firms in particular cited visa/work permit requirements for the establishment of a commercial presence as an important impediment. Conversely, construction firms interviewed did not find work permits to be a major impediment. A possible reason for this relates to their involvement in much larger projects which accord them more negotiating power in addressing various impediments that affect the critical path of the project.

Competitiveness of the engineering services sector

South Africa has a very well developed and competitive engineering services sector. Its competitiveness is partly reflected in its almost completely liberalised GATS commitments. In its objective of enhancing the competitiveness of engineering service sectors, the South African government has ensured statutory public participation on the governing bodies of the professional associations to avoid an unhealthy outcome of the council being controlled solely by the respective members of the profession.

Could the public policy objectives be met through less restrictive means?

In South Africa's case, the three mechanisms that could be regarded as restrictive include the visa requirements for individuals, professional accreditation for individuals and corporate accreditation systems. As outlined above, there are sound reasons for the existence of such system and the key is to ensure that they are structured fairly and operated efficiently. Maximising the transparency of operation of these systems could contribute to reducing impediments related to any inefficiencies or maladministration in the implementation of such systems.

Finally, the negotiations on the SADC services protocol should be supported. There is a clear linkage between this OECD services trade initiative and the SADC protocol's stated work programme which is to commence with a more detailed documentation of regulatory processes that affect services trade.¹

1. INTRODUCTION

1. This paper focuses on the South African construction and related engineering services sector as defined by the GATT classification, Table 1.

¹ http://www.unido.org/file-storage/download/?file_id=60483

Table 1. 1991 GATT Classifications of Services Sectors

GATT Classification - GNS/W/120 List
1. Business services.
2. Communication services.
3. Construction and related engineering services.
4. Distribution services.
5. Educational services.
6. Environmental services.
7. Financial services.
8. Health-related and social services.
9. Tourism and travel-related services.
10. Recreational, cultural, and sporting services.
11. Transport services.
12. Other services not included elsewhere

Source: OECD (2002)

2. Chapter 2 discusses the size, composition and recent trends in South Africa's engineering services trade. Despite the dearth of relevant disaggregated official statistics, a reasonably accurate picture of this sector is developed. This chapter also traces how the sector's trade patterns have evolved in recent years and what the major drivers of change have been.

3. The import of engineering services into South Africa is the subject of Chapter 3, which identifies and documents the key regulatory requirements that foreign professionals and corporate entities respectively have to fulfil in order to practice their profession. Chapter 4 provides a preliminary assessment of the prevailing regulatory requirements in countries to which South African engineering services are destined.

4. Conclusions are drawn in Chapter 5.

2. THE SIZE OF SOUTH AFRICA'S ENGINEERING SERVICES TRADE²

5. The United Nations (2002; 42) Manual of Statistics on International Trade in services defines Construction Services as: “.....all goods and services that form an integral part of construction contracts, including site preparation work, construction work for buildings, construction work for civil engineering, installation and assembly of machinery, and other construction services, such as renting services of construction or demolition equipment with operator or exterior cleaning work of buildings. Also included are construction repairs.”

Table 2. Defining Engineering Services data

ISIC Classification	SIC 4 th ed	Description	CPC Classification ³
Professional & Other Business Services			
ISIC Other Business Activities (881, 882, 883 & 884)			
881		Legal, accounting, bookkeeping & auditing activities, tax consultancy, market research & public opinion research, business & management consultancy.	
882		Architectural, engineering & other technical activities	Architectural CPC 8671, Engineering CPC 8672, Integrated CPC 8673, Urban planning & landscape architectural CPC 8674 Services
883		Advertising	
884		Business activities N.E.C.	
Construction & Engineering-Related Services			
ISIC (501, 502, 503, 504 AND 505)			
501	51	Site preparation	General construction work for buildings CPC 512
502	52, 53	Building of complete constructions or parts thereof, civil engineering	General construction work for buildings CPC 512
503		Building installation	Installation and assembly work CPC 514, 516
504		Building completion	Building completion and finishing work CPC 517
505		Renting of construction or demolition equipment with operators	CPC 511, 515, 518
Engineered machinery			
	353-355	Metal products excluding machinery	
	356-359	Machinery and equipment	
	361-366	Electrical machinery and apparatus	

² This section draws on the work of Stern & Teljeur (2002), who provide a good overview of the statistical datasets that pertain to the engineering services sector in South Africa

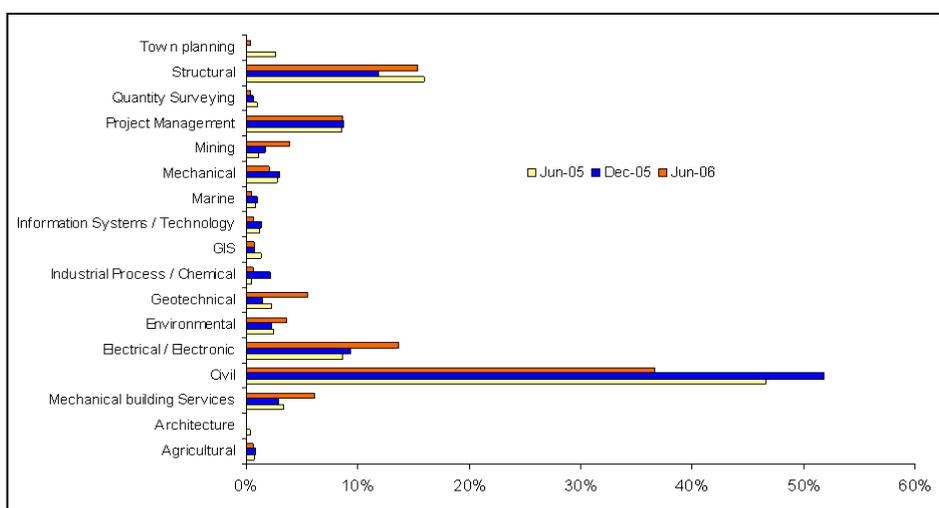
³ United Nations' Central Product Classification (CPC) as used by the GATS Agreement.

6. Engineering services can usefully be clustered around the categories; Professional & Other Business Services, Construction and & Engineering-related Services; and Engineered Machinery sectors (Table 2).

2.1. Professional Services (Engineering Consulting)

7. With regard to the former category, national statistics are not sufficiently disaggregated to measure the engineering component of ISIC 882 (Architectural, Engineering and other technical activities). Such work includes design work, scoping and feasibility studies, engineering survey work, detailed engineering as well as consulting, supervision and project management activities. A dataset that can be utilised as a proxy is extracted from annual survey data compiled by the South African Association of Consulting Engineers (SAACE), a voluntary organisation with a current membership of more than 420 firms in over 870 offices nationwide, representing an estimated 90% of consulting engineers operating in South Africa.

Figure 1. Consulting Engineering Industry Fee income earned by Sub-disciplines: % Share June 2005 vs June 2006

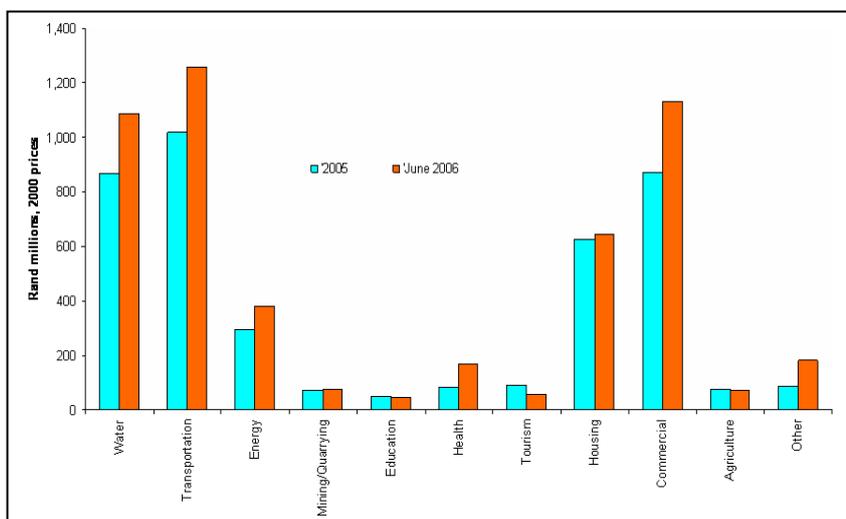


Source: SAACE

8. The SAACE estimates 2006 consulting engineering fee income to be of the order of R7 billion, involving employment for about 11 000 people who work on projects with a total construction value in excess of R40 billion. Although it fluctuates somewhat, civil and structural engineering disciplines predominate (Figure 1) in the housing, water, commercial and transportation sectors (Figure 2).

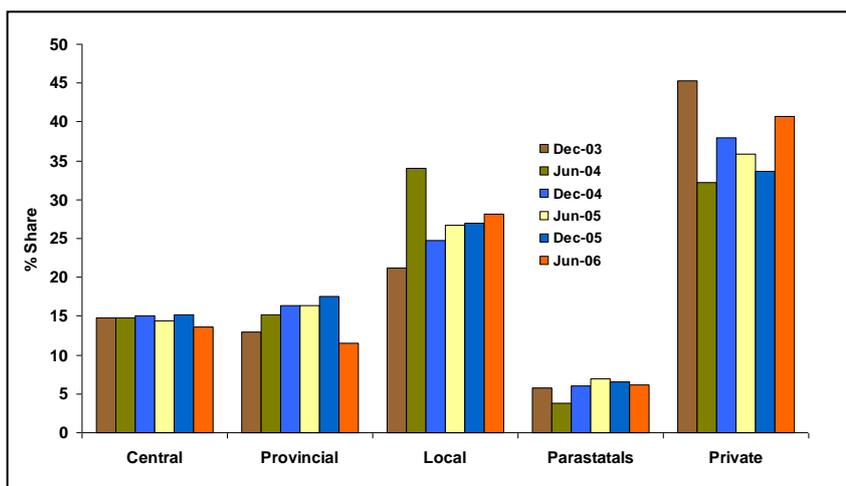
9. Approximately R450m of 2006 fees (or just over 6%) were earned through exports of engineering services. Of the total exports, 80% was earned in Africa (mainly SADC countries) and the balance mainly from the Middle East.

Figure 3. Consulting Engineering Industry Fee income by economic sector - June 2005 vs June 2006



Source: SAACE

Figure 5. Consulting Engineering Industry – client segmentation June 2005 vs June 2006



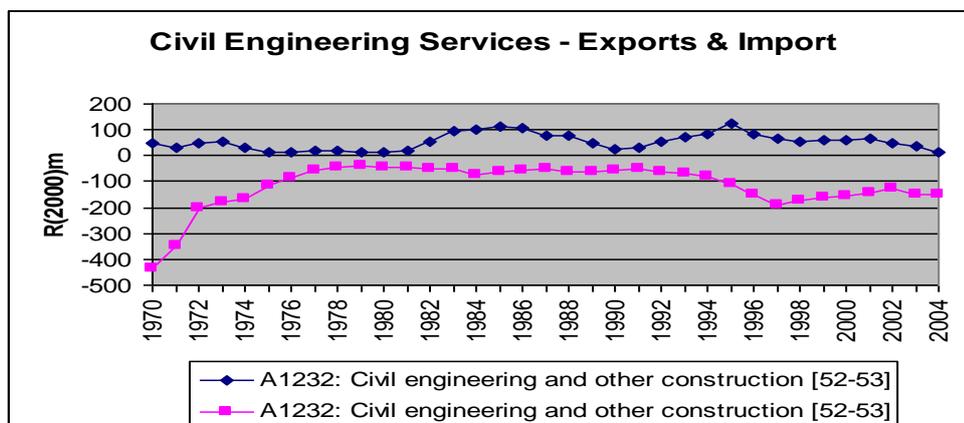
Source: SAACE

10. About 40% of fees are earned from private sector clients, 25% from local government and the balance from central, provincial governments and parastatal firms.

2.2. Construction and engineering-related Services

11. South African national statistics are available for SIC categories 51(Building Construction), 52(Civil Engineering) and 53(Other Construction) and those associated with Metal Products and Machinery (see next section).

Figure 7. Civil engineering and other construction – trade trends



Source: Quantec

12. Official trade statistics for the construction and civil engineering sectors (Figure 4) showing zero exports in 2004 do not accurately capture the extent of engineering services activity associated with cross-border projects. Much of the associated project value is likely to be recorded as trade in construction materials and in engineered equipment (see next section below). SAACE record more than R500m of professional consulting engineering service exports in 2004, and these would have been associated with projects of much higher value. Although official statistics above reflect almost zero exports in 2004, one civil engineering firm (Group 5) reflects several hundred million rands in revenue from non-South African projects in its annual report of that year.

13. Such discrepancies can be explained by the fact that many engineering projects are procured on a turnkey basis, such that the trade of the engineering “service” component is not recorded separately from a project captured under (say) ISIC 503 (Building Installations) or IDIC 361-366 (Electrical Machinery and Apparatus). A further complexity is that a part of engineering services trade takes place as intra-firm trade and may not be formally recorded.

14. A considerable portion of engineering services that support cross-border investment projects are provided internally by the investing company itself. Pogue (2000) provides an excellent case study of the Anglo American Corporation’s mining division and the way in which this process worked. In a large firm, technical and engineering resources are usually available internally to define and manage smaller projects. The preliminary feasibility studies of larger projects are usually carried out internally, using project teams drawn from across the division of the group. The implementation of larger projects is usually outsourced but with strategic oversight being applied on the Engineering Service provider. Pogue (2000) also shows that, even though non-core, the development of new engineering services also takes place internally within some large mining houses. (eg. Coal washing technology development within Anglo American Coal)

15. Nevertheless, South African exports still constitute a very small portion of the total African and Middle East market for construction and engineering projects. (Table 3)

Table 3. Construction & Engineering Market – Middle East and Africa

Construction and Engineering Market	Annual Contract Value (\$ million)
Southern Africa	7,000
North Africa	12,000
Rest of Africa	4,000
Gulf	25,000
Total	48,000

Source : Group Five Annual Report 2004

16. The construction-related segment of the engineering services sector in South Africa is today dominated by a small number of large construction and engineering firms, the main ones described in **Error! Not a valid link.**

Table 4. Major Engineering Service firms operating in South Africa

Company	Revenue Rm	Revenue Segmentation (Rm)
Aveng (2006)	20,589	Engineering & Construction (Grinaker-LTA) - RSA & Africa (R7,498) Engineering & Construction (McConnel Dowell) - Australasia (R2,956) Steel & Allied Fabrication (R5,600) Cement (Holcim) (R4,535)
Murray & Roberts	11,920	Construction (R3,674) Engineering (R611) Mining (R2,681) Fabrication & Manufacturing (R968) Construction Materials & Services (R3,986)
Group Five	5,865	Building/Housing (R2,788) Civils/Roads (R1,663) Engineering (R624) Toll Road operation (R316) Fabrication & Manufacturing (R473)
WBHO	5,800	Building & Civil Engineering (R4,400) Roads & Earthworks (R1,200)
Basil Read (2005)	607	
Bateman Engineering NV (2006) ⁴	2,400	Metals & Minerals (R1848) Engineered Technologies (R440) Metal Recovery (R112)
EL Bateman Group (2005)	551	Equipment Timber Holdings

Source: Annual Reports, Investment Analyst Presentations, Engineering News, Financial Media

17. All of these firms have been listed on the Johannesburg Stock Exchange (JSE) for many years. As can be seen from the revenue segmentation, most firms retain a core dependence on civil engineering

⁴ Prior to its listing on London's AIM board, Bateman Engineering was a wholly owned subsidiary of Bateman Holdings, which remains listed on the JSE.

(including roads and earthworks for major projects) and building construction, mostly in the domestic market.

18. The larger firms have diversified into construction materials and building product manufacturing (including steelworks). Group Five is developing a niche competence in Toll Road concessions, going beyond providing the engineering service to taking on long term operational risk in the projects. Other firms, such as Bateman, have continued to specialise in metal and mining projects.

19. The bulk of construction and engineering-related projects by value in South Africa is contracted through private sector procurement processes rather than public sector processes. Table 5 shows that of total 2005/6 national infrastructure expenditure of R261 billion, R80 billion was procured by the public sector. The implications of this will be discussed in subsequent chapters.

Table 5. South African Infrastructure Expenditure Plan 2005-2010 - Government

R million	2005/2006	2006/2007 Estimate	2007/2008 Medium Term Estimate	2008/2009 Medium Term Estimate	2009/2010 Medium Term Estimate
National Departments	5,178	5,636	6,386	7,075	8,189
Provincial Departments	22,741	27,414	34,554	40,340	42,910
Municipalities	21,084	22,238	25,537	30,870	32,637
Public private partnerships	728	3,368	3,366	4,849	3,947
Extra- budgetary public entities	3,875	4,378	5,257	5,565	6,340
Non-financial public enterprises	26,424	38,322	44,681	50,324	56,929
TOTAL - Government	80,030	101,356	119,781	139,023	150,952
Percentage of GDP	5.1%	5.8%	6.2%	6.6%	6.5%
Total GFCF - Private + Government	261,425				

Source : Group Five (2006), SARB Online Statistics

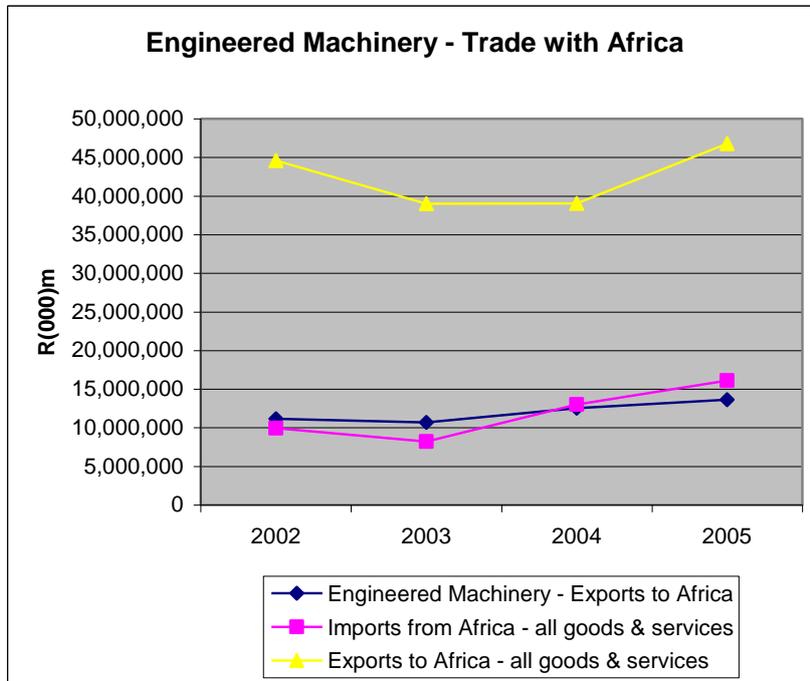
2.3. Engineered machinery

20. Engineering service equipment exports are largely destined to African destinations (mainly SADC). Figure 5 shows that between 2002-2005, Engineering Service Equipment⁵ exports with Africa

⁵ Engineering service equipment defined as Iron & Steel & Articles (HS Chapters 72,73), Nuclear reactors, boilers, machinery & mechanical appliance (HS Chapter 84), Electrical machinery & equipment (HS Chapter 85) and Railway or tramway locomotives, rolling stock & parts (HS Chapter 86). These are equivalents to SIC Metal products excluding machinery [SIC 353-355], Machinery and equipment [SIC 356-359] and Electrical machinery and apparatus [SIC 361-366].

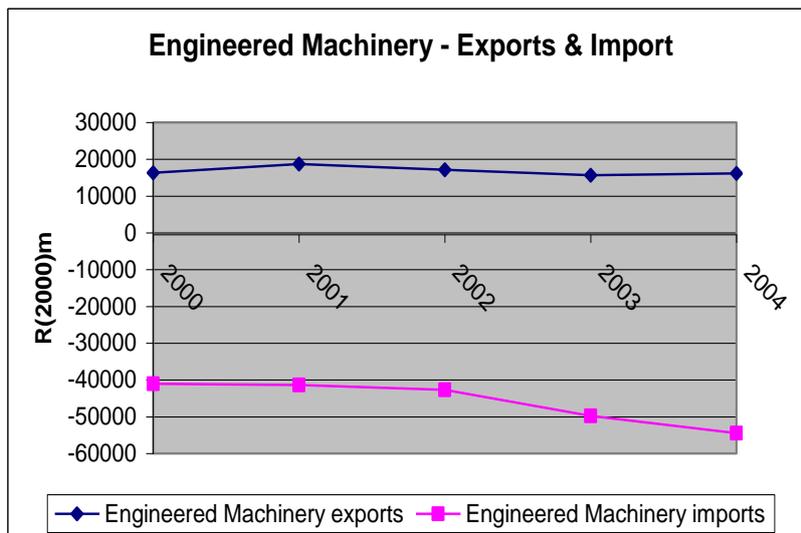
have been running at between 25%-30% of total exports to countries on the African continent. In 2005, more than 90% of national Engineering Service Equipment exports were to sub-saharan African countries.

Figure 9. Engineered Machinery - trade with Africa



Source: <http://www.thedti.gov.za/econdb/raportt/RgC41.html>

Figure 11. Engineered Machinery – imports and exports



Source: Quantec

21. Engineering service imports into South Africa are three times larger than exports, and are dominated by machinery imports largely from the EU, North America and Japan. This is also reflected in close and long-standing relationships that have been forged between leading European, North American

and Japanese OEMs/ Engineering Service specialist firms and South Africa over decades of industrial and infrastructure investment. **Error! Not a valid link.**, while not exhaustive, lists a number of these, most of which have established a strong commercial presence in South Africa. Moreover and particularly since the end of apartheid sanctions, the major OEM firms have increasingly used South Africa as an engineering service hub for the rest of Africa.

Table 6. Sample of specialist Engineering Service firms operating in South Africa

Sector	Firm	Global Head Office
Mining	Hatch Bateman	Netherlands/RSA
Chemicals and Oil Refining	Fluor Daniel Foster Wheeler Chiyoda	USA UK Japan
Pulp and Paper	Jaco Poyrie Linde	
Non-ferrous metals	Hatch Pyromet	RSA
Iron & Steel	Mitsubishi	Japan
Nuclear	Framatome	France
Power	Steinmuller ABB Siemens GE	Germany Germany Germany USA
Water	Suez	France
Transport	Bell	RSA

22. Major OEM engineered equipment suppliers are increasingly drawn into providing engineering services in the market concerned. The procurement processes of the mining, utility and manufacturing sector firms are also changing. OEMs are being called upon to play a life cycle support role that encompasses engineering service functions. Walker (2005:14). The implications will be discussed in the next two chapters.

2.4. Conclusions – Size, structure & Role of South Africa’s Engineering Service sector

23. Engineering Service providers play roles ranging from providing end-user firms with advice on product requirements, specifications and availability through to providing lump-sum turnkey solutions. In larger projects, engineering service providers often play a role in integrating the engineering, procurement, construction and management (EPCM) components of the project, and this is usually captured contractually as the EPCM contract. This function is depicted as a Tier 1 function.

24. It is useful therefore to segment engineering services according to Professional & Other Business Services, Construction and & Engineering-related Services; and Engineered Machinery sectors, even though there are considerable overlaps between these categories in that a specific project is likely to require all three of these service categories.

25. Although there are complexities associated with data, sufficient empirical information exists to assess major trends.

26. All three categories of Engineering Services, at least in the South African context, are significantly interlinked with the main infrastructure and productive sectors which they have historically serviced, in particular with the minerals and energy sectors and their related supporting infrastructure. All three categories of engineering services are heavily dependent on domestic fixed investment.

27. In South Africa, **Professional Services** (using consulting engineering as a proxy) derive 60% of their total R7 billion fees from the public sector, which contributed only 35% of total national infrastructure investment. This disproportionate revenue segmentation could suggest that public infrastructure may be more engineering service intensive than private infrastructure but it is more likely that it reflects the fact that some of the larger private sector client firms involved in mining, manufacturing and construction activities retain varying degrees of in-house engineering service capacity.

28. Exports of professional services, running at around R400-R500m per annum, reflect two phenomena. First, increased outward investment by clients of the professional service providers, with the former taking the latter with them. Second, professional service/consulting engineering firms are themselves targeting niche markets in (mainly) African countries.

29. **Construction and related engineering services** is the largest segment of the engineering service “family”, with the seven largest firms recording more than R40 billion of construction-related turnover in 2005/6. The industry is increasingly reflecting a tiered structure where these large firms have accumulated considerable experience, playing the EPCM role in large projects, while smaller construction and related engineering firms take up other engineering roles in major projects.

30. The cyclical nature of domestic fixed investment, during declines, prompted the larger construction and related engineering services firms to diversify into building material production and construction input manufactures as well as to export engineering services. Government’s target to raise the GFCF/GDP ratio from 25% by 2014 is rapidly being achieved, rising from 16% in 2004 to 18% in 2006, driven by public infrastructure expenditure. Export trade in construction and related engineering services from South Africa is therefore likely to reduce, irrespective of any reduction of regulatory impediments that might exist in export markets.

31. The trade in **engineered machinery** reflects deep historical relationships between global tier 1 engineering equipment/systems providers who have retained well worn and structured relationships between major client firms in the mining, manufacturing and utility sectors. The OEM firms have also developed a tiered structure amongst themselves and in their relationships with client firms. While most EPCM firms are domestically owned, the OEM’s are mainly subsidiaries of specialist transnational firms. Walker (2005). The shift by both private and public sectors to procure on a life cycle support basis, outlined in Chapter 1, are likely to cause engineering service providers to seek a commercial presence in the respective markets.

32. In recent years, there has been significant growth in engineered machinery imports into South Africa, driven by growing fixed investment in infrastructure and the productive sectors, as well as growth in exports, particularly to SADC and other African markets. It is likely that a large part of South Africa’s imports and exports of engineered machinery trade is intra-firm related, with many global engineered machinery OEMs, some with significant assembly and production capabilities in South Africa, increasingly utilising South Africa as a service hub for the region.

3. REGULATIONS GOVERNING ENGINEERING SERVICE SECTOR IMPORTS INTO SOUTH AFRICA

3.1. South Africa' GATS commitments

33. Engineering Services are supplied according to four modes as defined by the GATS, outlined in Table 7

Table 7. GATS Modes of Supply of Services

Mode	Description
1. Cross-border supply	Takes place when the consumer remains in his or her home territory while the service crosses national borders, the supplier being located in a different country
2. Consumption abroad	Occurs when a consumer moves outside his or her home territory and consumes services in another country.
3. Commercial presence	Recognises that it is often necessary for services to establish a commercial presence abroad as a way to ensure a close contact with the consumer in his or her home territory at the various stages of production and delivery, as well as after delivery.
4. Presence of natural persons	Occurs when an individual has moved into the territory of the consumer to provide a service, whether on his or her own behalf or on behalf of his or her employer. Thus, it covers two distinct categories of natural persons: self employed and employees.

Source: OECD (2002)

34. RSA's Engineering Service 1994 commitments to GATS reflected considerable openness to the trade of such services. As Table 8 shows, there are no limitations on market access or on national treatment in any of the engineering-related **professional services** with the exception of Mode 4.

35. **Construction and engineering-related services** are also unrestricted with the exception of Mode 1 (because of technical limitations) and Mode 4 (presence of natural persons), where the national regulations pertaining to immigration would apply and which are elaborated on in the horizontal section of the GATS offer and discussed more fully in below. In this regard, intra-corporate transferees (executives, managers, specialists and professionals) and personnel engaged in establishment can provide services in South Africa temporarily, up to three years.

36. The category "**engineered machinery**", and the OEM firms supplying such equipment together with associated technical services are equally affected by the above regulations.

Table 8. South Africa - GATS Engineering Service Commitments

Sector or Sub-sector	Limitations on Market Access [None = fully liberalised] [Unbound = no liberalisation]	Limitations on National Treatment
Professional Services		
Engineering services (CPC 8672)	1) None 2) None 3) None 4) Unbound except as indicated in the horizontal section	1) None 2) None 3) None 4) Unbound except as indicated in the horizontal section
Integrated engineering services (CPC 8673)	1) None 2) None 3) None 4) Unbound except as indicated in the horizontal section	1) None 2) None 3) None 4) Unbound except as indicated in the horizontal section
Other Business Services		
Engineering related scientific and technical consulting services (CPC 8675)	1) None 2) None 3) None 4) Unbound except as indicated in the horizontal section	1) None 2) None 3) None 4) Unbound except as indicated in the horizontal section
Maintenance and repair of equipment (CPC 633)	1) None 2) None 3) None 4) Unbound except as indicated in the horizontal section	1) None 2) None 3) None 4) Unbound except as indicated in the horizontal section
Construction & Related Engineering Services		
<u>General Construction Work for Buildings</u> (CPC 512)	1) Unbound* 2) None 3) None 4) Unbound except as indicated in the horizontal section	1) Unbound* 2) None 3) None 4) Unbound except as indicated in the horizontal section
<u>General Construction Work for Civil Engineering</u> (CPC 513)	1) Unbound* 2) None 3) None 4) Unbound except as indicated in the horizontal section	1) Unbound* 2) None 3) None 4) Unbound except as indicated in the horizontal section
<u>Installation and Assembly Work</u> (CPC 514+) (CPC 516)	1) Unbound* 2) None 3) None 4) Unbound except as indicated in the horizontal section	1) Unbound* 2) None 3) None 4) Unbound except as indicated in the horizontal section
<u>Building Completion and Finishing Work</u> (CPC 517)	1) Unbound* 2) None 3) None 4) Unbound except as indicated in the horizontal section	1) Unbound* 2) None 3) None 4) Unbound except as indicated in the horizontal section

Source: WTO (2003)

3.2. Regulations governing South Africa's Engineering Services sector

37. South Africa has a comprehensive system of accreditation applying to both individual professionals as well as to corporate entities that provide engineering services.

3.3. Accreditation Regulations - individual professionals

38. South Africa has adopted a structured statutory system of reserving work of an engineering nature for the exclusive performance by registered persons in certain areas, mainly where public safety may be affected. The following Acts of parliament specify the areas reserved for registered persons:

- National Water Act, 1998 (Act 36 of 1998) (Chapter 12 section 117)) - in terms of which an approved professional person must be registered with the Engineering Council of South Africa and approved by the Minister after consultation with the Engineering Council of South Africa (ECSA) before being permitted to undertake certain dam safety related tasks;
- National Building Regulations and Building Standards Act, 1977 and regulations, in terms of which a "competent person" is defined as a person registered with the ECSA;
- Lifts, Escalators and Passenger Conveyor Regulations promulgated in terms of the Occupational Health and Safety Act, 1993

39. The Engineering Council of South Africa (ECSA) operates in terms of the Engineering Professions Act, No. 46 of 2000 and governs the accreditation and registration of individuals as well as accreditation of education institutions that teach engineering in South Africa. The ECSA is also charged with establishing procedures by which individuals may have their South African accredited qualifications and professional status recognised outside South Africa.

40. A suite of similar legislation, which mirrors the ECSA Act, governs the accreditation of individuals practicing in other specialised areas of South Africa's engineering service industry and was also enacted in 2000, including:

- Architectural Profession Act – No.44 of 2000
- Landscape Architectural Profession Act – No.45 of 2000
- Project and Construction Management Professional Act – No.48 of 2000
- Property Valuer's Profession Act – No.47 of 2000
- Quantity Surveying Profession Act – No.49 of 2000
- Council for the Built Environment Act – No.43 of 2000 (CBE Legislation)

41. The legislation was introduced for the following reasons⁶

- It addressed existing conflicting legislation faced by the Department of Public Works who is legislatively and administratively responsible for the professions of Architects, Engineers, Quantity Surveyors and Property Valuers,
- In terms of existing legislation, the council for each of these professions operates independently and in isolation,
- Inconsistencies in the execution of the core functions of the different statutory Councils;

⁶ Extracted from Public Services Select Committee, 14 June 2000, Built Environment Professions Bills, <http://www.pmg.org.za/viewminute.php?id=5000>

- Lack of proper co-ordination between the different professions with respect to national development priorities
- Lack of coordination- with Government
- Inconsistent standards and procedures
- Insufficient and, in some cases, no recognition of different categories of professions (eg Architectural Technologists / Technicians)
- Inability to respond to change, professional development and new disciplines
- This new legislation challenged the preserve of the professions who were then exclusively represented on existing governing councils. The new legislation proposed representation by the profession, state and the public at a ratio of 60:20:20,
- Two new councils were established for Project Construction Management and for the Landscape Architectural Profession
- The legislation re-established the then existing councils for the four professions, namely Engineering, Architecture, Quantity Surveying and Property Valuers.

42. The Council for the Built Environment (CBE) is the statutory umbrella body which aims to address the inconsistencies and lack of coordination between the various professional bodies mentioned above.

Process for accreditation of individual professionals

43. Table 9 illustrates the process ECSA uses to register individuals at professional engineer level and the structured manner in which foreign qualifications and experience are considered.

44. The ECSA 2006/7 Annual Report record that for professional engineer status applications, 83 foreign qualifications were evaluated of which 36 were recognised, 29 were approved on the basis of interviews and 16 were not recognised. For candidate engineer status, 164 foreign qualifications were evaluated of which 37 were recognised, 36 were approved on the basis of interviews and 21 were not recognised. This suggests that the accreditation process is not being applied as an impediment to engineering service trade.

45. Table 10 illustrates the tiered system administered by ECSA. ECSA has currently registered 27,660 practitioners and estimate that there are another 27,000 unregistered practitioners that are not currently registered. The council is preparing to implement a compulsory registration system by 2008.

Table 9. The ECSA registration process for professional engineering status

Application process flow	Lodge an application form with ECSA for registration as a Professional Engineer
	All applicants must have had at least three years of post-qualification training and experience before their applications will be considered. For more information about ECSA's requirements refer to Policy Statement R2/1A, and the Discipline Specific Guidelines.
	Accredited qualifications or foreign qualifications recognised by ECSA in terms of the Washington, Sydney and Dublin Accords (see below), will not be subjected to a detailed evaluation of their qualifications
	In cases where an applicant's qualification is not known to ECSA (foreign degrees) the applicant is invited to a personal interview to determine the level at which their degrees were awarded by the university concerned and to determine whether they meet ECSA's educational requirements for purposes of the principal route.
	<p>If the qualification is assessed as not meeting ECSA's requirements, the applicant must meet the following prerequisites to enrol as an "Alternate Route Candidate" whereby,</p> <ul style="list-style-type: none"> • If the applicant does not have an academic qualification at least equivalent to an accredited National Diploma, the application is refused. • If the minimum qualification requirement is met, the ECSA further considers the application and if the applicant's work experience is considered equivalent to 10 years experience at the level of competence and responsibility expected of a professional engineer after graduation, the application proceeds to the next stage. If the work experience is not considered to be acceptable, the application is refused. • The candidate must thereafter specify the University at which he/she proposes to study, and must provide a list of the second, third and fourth year subjects available at the University concerned. • The ECSA assesses the applicant's academic qualification and recommends which specific subjects the candidate should complete in terms of these guidelines. • On successful completion of the required examinations, the candidate must submit proof thereof to ECSA to qualify for professional engineering status.

Source: ECSA

Table 10. The ECSA registration process for professional engineering status

Registration Category	31 Oct 2003	31 Oct 2004	31 Oct 2005	31 Oct 2006
EMF				
International Professional Engineers	7	14	19	19
Professionals				
Professional Engineers	14,879	14,880	14,903	14,810
Professional Engineering Technologists	2,471	2,613	2,712	2,851
Professional Certificated Engineers	806	818	831	904
Professional Engineering Technicians	661	1,005	1,235	1,488
Candidates				
Candidate Engineers	3,427	3,408	3,522	3,655
Candidate Engineering Technologists	588	621	732	857
Candidate Certificated Engineers	106	105	114	133
Candidate Engineering Technicians	658	839	1,006	1,215
Specified Category				
Registered Lift Inspectors	161	163	163	165
Dormant (since 28 August 2001)				
Registered Engineering Technicians	1,288	1,213	1,158	1,099
Reg. Eng. Technicians (Master)	519	504	491	464
TOTAL	25,571	26,183	26,886	27,660

Source: ECSA

Recognition of foreign qualifications

46. The ECSA is also empowered to consider the recognition of any examination or qualification obtained within or outside of South Africa. To this end, ECSA is a co-signatory of the Washington Accord, essentially a quality assurance process, which recognises the equivalence of Accredited Engineering Education Programs leading to the Engineering Degree and is applicable only to Engineers.

Table 11. International agreement on accredited engineering education -Washington Accord Members

Full Members	Provisional Members (1)
Australia (IEAust)	Chinese Taipei
Canada (CCPE)	Germany (ASIIN)
Hong Kong, China (HKIE) – 1995	Korea (ABEEK)
Ireland	Malaysia (BEM)
Japan (JABEE)	Singapore (IES)
New Zealand (IPENZ)	
South Africa (ECSA)	
United Kingdom (EC ^{UK})	
United States of America (ABET)	

Source: ECSA

(1) A *Provisional Signatory* has demonstrated that the accreditation system for which it has responsibility appears to be conceptually similar to those of the other signatories of the Washington Accord. By conferring provisional status, the signatories have indicated that they consider that the provisional signatory has the potential capability to reach full signatory status. Award of provisional status in no way implies any guarantee of the granting of full signatory status.

47. ECSA is also a signatory to two other agreements; the Sydney Accord for professional engineering technologists and the Dublin Accord for professional engineering technicians.

48. Other professional associations, such as the South African Institute of Electrical Engineers have similar accreditation processes for membership in terms of which foreign qualifications and experience are evaluated on merit.

3.4. Corporate engineering service entities

49. Foreign engineering service companies that register as corporate entities in South Africa are treated in law on an equal basis to domestically-owned corporate entities (national treatment) and are also subject to a number of specific legislative Acts which regulate all corporate behaviour, in particular the following:

The Labour Relations Act, No. 66 of 1995, which establishes a single industrial relations system for all employees, promotes collective bargaining, establishes new procedures and institutions for resolution of disputes and provides for workplace forums.

The **2003 Regulations in terms of the Occupational Health and Safety Act, 1993** places responsibility and liability for health and safety on both the client and the contractor, from design through to implementation.

The Employment Equity Act, 1998 to achieve equity in the workplace through equal opportunity, fair treatment and the elimination of unfair discrimination, and through affirmative action to redress the employment disadvantages of designated groups.

The **Broad-based Black Economic Empowerment Act, 2004** establishes a legislative framework for the promotion of black economic empowerment and empowers the Minister to publish transformation charters and issue codes of good practice relating to procurement criteria, indicators, weightings and guidelines.

Since 1994 over 789 laws or Amendment Acts, including the above, have overhauled the entire legislative framework in alignment with the new constitution, and in support of the country's development ethos.

3.5. Accreditation regulations governing engineering service contracts issued by the public sector

50. The Construction Industry Development Board (CIDB) Act – No.38 of 2000 governs the accreditation of corporate entities.

51. The Act states that a contractor may not undertake any construction works or portion thereof for public sector contracts awarded in terms of a competitive tender, unless the company is registered with the CIDB and holds a valid registration certificate issued by the board.

52. The detailed requirements for CIDB registration as a contractor are contained in the published regulations⁷. In terms of section 10(3) of the regulations, the CIDB must evaluate the application, determine the category of contractor registration and register the contractor within 21 days of receiving a fully compliant application.

53. Contractor grading is determined according to 9 scaled grading levels which largely measure the contractor's financial strength (financial turnover), creditworthiness, works capability (largest contract

⁷ <https://registers.cidb.org.za/reports/saveToPDF.asp?doc=Regulations August 2006.pdf>

undertaken) and professional skill complement. Table 12 and Table 13 illustrate the respective grading requirements of the CIDB.

Table 1. CIDB financial capability grading

Financial Capability		Track Record		Minimum Current Financial Capability
Designation	Maximum value of contract that a contractor is considered capable of performing (upper limit of tender value range)	Minimum Average Annual Turnover Over The Last 2 Years	At Least one Contract During The Last 5 Years With a Value Greater Than	Employable Capital (EC) of at least (<i>Nett Asset Value x Bank Rating Factor</i>) + <i>financial sponsorship</i>
1	R 200 000	R 0	R 0	R 0
2	R 500 000	R 0	R 80 000	R 60 000
3	R 1 500 000	R 780 000	R 260 000	R 195 000
4	R 3 000 000	R 2 400 000	R 800 000	R 600 000
5	R 5 000 000	R 4 800 000	R 1 600 000	R 1 200 000
6	R 10 000 000	R 9 000 000	R 3 000 000	R 2 250 000
7	R 30 000 000	R 24 000 000	R 8 000 000	R 6 000 000
8	R 100 000 000	R 78 000 000	R 26 000 000	R 19 500 000
9	No limit	R 240 000 000	R 80 000 000	R 60 000 000

Source: CIDB

Table 3. Professional capability grading

Works Capability		Minimum Number of Full-time equivalent Qualified Persons Required for Registration in a Category of Construction Works				
Designation	Maximum Value of Contract that a Contractor is Considered Capable of Performing	General Building (GB)	Civil Engineering (CE)	Electrical Engineering (EE)	Mechanical Engineering (ME)	Specialist Works (SP)
1	R 200 000	-	-	-	-	-
2	R 500 000	-	-	-	-	-
3	R 1 500 000	-	-	-	-	-
4	R 3 000 000	-	-	-	-	-
5	R 5 000 000	-	-	-	-	-
6	R 10 000 000	-	-	1	1	1
7	R 30 000 000	1	1	2	2	2
8	R 100 000 000	2	2	3	3	3
9	No limit	3	3	4	4	4

Source: CIDB

54. A person is considered to be a “qualified” person for the purpose of regulation if that person, for the classes of construction works “Civil Engineering”, “Electrical Engineering” and Mechanical Engineering” is registered in accordance with the Engineering Profession Act, 2000 or the Project and Construction Management Professions Act, 2000. For the classes of construction works “General Building” and “Specialist Works” the person must be registered in accordance with the Project and Construction Management Professions Act, 2000, the Engineering Profession Act, 2000, the Architectural Profession Act, 2000, the Quantity Surveying Profession Act, 2000 or the Landscape Architectural Profession Act, 2000.

55. Although not directly relevant to this study, an additional important objective of the CIDB is to provide a structured and sustainable system to support the growth and development of contractors from previously disadvantaged communities and to grow South Africa’s contracting capacity, moving smaller contractors into mainstream construction and training.

CIDB requirements for non-South African contractors

56. There does not appear to be any differential treatment for non-South African contractors. The regulations stipulate that the CIDB will use the exchange rate prevailing on the date of receipt of the application for registration to determine the grading level. The regulations also require any documents not submitted in the English language must be accompanied by a sworn translation in English.

57. The CIDB legislation was enacted in 2000. The implementation of the Act has been gradual with the registration process only gathering momentum after 2005. CIDB (2006) highlight some of the organisational difficulties encountered in dealing with the flood of registration applications as the mandatory trigger dates were reached.

National register of projects

58. In addition, the CIDB is mandated to keep and publicise a national Register of Projects on the nature, value and distribution of projects, the objects of which are to provide the basis for a best practice project assessment scheme to promote the performance of public and private sector clients in the development of the construction industry.

59. Employers (a person, body of persons or organ of state who enters into a prime contract with a contractor for the provision of construction works) are responsible for registering construction works contracts above the prescribed value at least monthly (public employers) and quarterly (private sector employers).

60. Employers are responsible for registering any construction works contract⁸ which exceeds R200,000 (public sector) and R3m (private sector project) within 1 month (public sector) and 3 months (private sector) of the employer accepting the contractor's offer.

61. Public service contracts are also subject to the **Preferential Procurement Policy Framework Act – No.5 of 2000**, which legislates that all organs of national, provincial and local government implement a preferential procurement weighting of a maximum 10% of the tendered price (20% if contract value is below a prescribed threshold) for categories of tenderers who were historically disadvantaged by unfair discrimination during apartheid in accordance with the criteria outlined in section 217(2) of the Constitution. This legislation has leveraged opportunities for black- and women-owned firms to supply goods and services to government in the face of (often) oligopolistic practices by white-owned firms that evolved during the apartheid era into the conglomerate form outlined above.

62. The Act also provides discretion to the Minister of Finance to allow exemptions for foreign-owned firms but many such firms entering the South African market for the first time would, in any case, likely chose to work with local partners initially.

Private sector contracts

63. In contrast to the above regulatory environment outlined above for public sector tenders, engineering service providers who respond to private sector tenders are not required by law to be registered with the CIDB. However, the project associated with the respective tenders must be registered with the CIDB.

⁸ A contract for the provision of a combination of goods and services arranged for the development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration, dismantling or demolition of a fixed asset including building and engineering infrastructure.

3.6. Case study – Major infrastructure project awarded to Chinese contractor

64. In 2006 the Trans-Caledon Tunnel Authority (TCTA), a South African state-owned enterprise responsible for bulk national water infrastructure, awarded a major tender for the construction of a pipeline to the China National Overseas Engineering Corporation (Covec), reported to be the 8th largest construction group in the world. The winning bid of R425m was reported as being some 20% lower than the bids made by two established South African engineering contractors. Covec, which had carried out some work recently in Botswana, responded to an international tender advertisement, a condition imposed by one of the financiers of the project, the European Investment Bank.

65. This followed an award in 2005 of a R445 million contract to Chinese industrial consortium Citic Acre to build a coke oven battery and gas plant at publically-listed Mittal Steel's Newcastle steel mill. Mittal addressed criticism from domestic contracting firms on the basis that Citic had more experience in building such plants.

66. A controversy ensued, in which local competitors made a range of accusations against Covec, including:

- That they were subsidised by the Chinese government,
- Their bid was based on lower costs including shipping in lowly-paid Chinese labour,
- That Covec would not train South Africans in the process of fulfilling the contract in the way that South African firms would be required to.

Interviews with the TCTA (employer) and with Covec (construction contractor) outline the following:

Covec experience - Registration of individual professionals

67. In terms of the contract, Covec is charged mainly with the construction component of the project. Covec has no design responsibility or liability and, hence, professional certification of individuals is not necessary. TCTA used a domestic consulting engineering firm for the design work.

68. It appears that some clients are more stringent in their requirements – the state-owned enterprise responsible for a major nuclear technology programme, the Pebble Bed Modular Reactor (PBMR) reportedly requires all professionals that contractors deploy onto their projects to be registered with the ECSA.

Covec experience - Registration with the CIDB

69. Covec applied for and received accreditation at the highest level (level 9), requiring them to have at least 3 Full-time equivalent qualified persons in their employ, in terms of the criteria outlined in Table 13.⁹

70. However, their application took significantly longer than the 21 days stipulated in the CIDB regulations. Covec and TCTA pointed out that this was not because Covec was not a South African firm but that the CIDB are struggling to address the backlogs in the regulatory system in which, in terms of the regulations, the onus on tracking the status of applications lies with the applicant and not with the CIDB. Applicants need to actively track their applications in case they are regarded as incomplete by CIDB assessors and set aside, resulting in delay.

⁹ <http://registers.cidb.org.za/reports/ContractorListing.asp>

71. CIDB (2006:19) record that "...by the end of March 2005 just 1 296 contractors had been registered on the Register of Contractors. Up to the end of June 2006 registrations had leapt more than tenfold to 13 662 contractors. And the flow of applications has steadily increased rising from 250 per week in December 2005 to 500 per week by April this year, placing severe strain on the registers service and requiring increased capacity and enhanced systems."

72. Covec also complied with Preferential Procurement Act by partnering with Mathe Construction, a black-owned firm that has been operating in the construction market since 1985. Interestingly, Covec's empowerment partner, Mathe Construction, also had their registration delayed by 11 months due to CIDB assessors classifying their application as being incomplete. This was despite the fact that Mathe's application was submitted through a Department of Public Works Incubator programme aimed at developing emerging contractors. Notwithstanding this, Covec are having difficulty in meeting the preferential procurement conditions stipulated and enforced by TCTA. For example, Covec must purchase 10% of its requirements from 100% previously disadvantaged-owned firms. Failure to do so carries multimillion rand penalties.

73. This suggests that the CIDB accreditation system is not intentionally discriminatory to foreign engineering service firms, but that inefficiencies in accreditation processing do impede the professional services trade.

Environment and Safety legislation impediments faced by Covec

74. Anecdotal accounts of Covec and other firms operating in the engineering service environment suggest that South African Environmental and Safety legislation (particularly after the 2003 Regulations pertaining to the Occupational Health and Safety Act) is of a demanding standard compared to other developing economies and furthermore, the legislation is more stringently enforced by clients, particularly the State-owned enterprises operating in this sector including TCTA, Eskom and Transnet; as well as the private sector mining industry (which, because of the dangerous deep-level conditions, is governed by separate mining legislation), Sasol and others.

Input supplier credit impediments

75. Covec, like most new entrants to a particular market, also experienced difficulties in opening credit lines with materials suppliers because it had no financial track record. Consequently it is purchasing cement and aggregates for the R425m project on a cash basis. A Covec project manager lamented that in other Covec projects he had been involved in (Bangladesh, Macau and China), materials suppliers were willing to supply under more favourable terms. It is likely that this hard credit approach by South African materials suppliers is a reflection of the very tight supply conditions that the construction boom in the last 24 months has given rise to.

Work permit impediments

76. This is acknowledged as an impediment faced by many firms (domestic and foreign-owned). South Africa is not producing the requisite skills fast enough to maintain the current levels of growth. Government has recognised this and has committed to fast tracking the imports of certain categories of skills which are not available locally. However, the experience of Covec suggests that this message has not got through to the South African embassy in Beijing.

3.7. Regulations on the movement of natural persons

77. South Africa has agreements with a large number of countries, including the EU, USA and Japan under which their citizens do not require visas to enter South Africa for stays of up to 30 days.

78. In addition, South Africa has reciprocal 30-day visa waiver agreements with Zambia, Swaziland, Namibia, Mozambique, Mauritius, Malawi and Lesotho and a 90-day visa waiver with Botswana, which is likely to facilitate certain types of engineering service trade.

79. For longer term presence, South Africa's horizontal commitments on the movement of natural persons apply as outlined in Table 14 and the regulatory processes are detailed in this section.

Table 14. South Africa - GATS Horizontal Commitments – Limitations on Market Access

Unbound, except for the temporary presence for a period of up to three years, unless otherwise specified, without requiring compliance with an economic needs test, of the following categories of natural persons providing services:
<p>A. Services Salespersons Natural persons not based in South Africa and acquiring no remuneration from a source located within South Africa, who are engaged in activities related to representing a services provider for the purpose of negotiating for the sale of the services of that provider, without engaging in making direct sales to the general public or supplying services. Temporary presence for Services Salespersons is limited to a ninety-day period.</p>
<p>B. Intra-corporate Transferees Natural persons of the following categories who have been employed by a juridical person that provides services within South Africa through a branch, subsidiary, or affiliate established in South Africa and who have been in the prior employ of the juridical person outside South Africa for a period of not less than one year immediately preceding the date of application for admission:</p> <p>Executives - natural persons within the organization who primarily direct the management of the organization or establish goals and policies for the organization or a major component or function of the organization, exercise wide latitude in decision-making, and receive only general supervision or direction from higher-level executives, the board of directors, or stockholders of the business.</p> <p>Managers - natural persons within an organization who primarily direct the organization, or a department or subdivision of the organization, supervise and control the work of other supervisory, professional or managerial employees, have the authority to hire and fire or recommend hiring, firing, or other personnel actions and exercise discretionary authority over day-to-day operations at a senior level.</p> <p>Specialists - natural persons within an organization who possess knowledge at an advanced level of continued expertise and who possess proprietary knowledge of the organization's product, service, research equipment, techniques, or management.</p> <p>Professionals - natural persons who are engaged, as part of a services contract negotiated by a juridical person of another Member in the activity at a professional level in a profession set out in Part II, provided such persons possess the necessary academic credentials and professional qualifications, which have been duly recognised, where appropriate, by the professional association in South Africa.</p>
<p>C. Personnel Engaged in Establishment Natural persons who have been employed by a juridical person for a period of longer than one year immediately preceding the date of application for admission and who occupy a managerial or executive position and are entering South Africa for the purpose of establishing a commercial presence on behalf of the juridical person.</p>

Source: WTO (2003) [Unbound = no liberalisation]

80. There are several types of work permits, legislated under the South African Immigration Act 2002 and Immigration Regulations 2005, which govern the movement of engineering professionals, outlined in the GATS horizontal section criteria (Table 14). The key steps involved in visa applications by engineering service professionals are as follows:

- Application is lodged by the applicant with the relevant high commission or embassy, who have delegated discretion to issue a work permit:
- Processing time varies, reportedly from 1 week in the UK to significantly longer in Beijing. Travel can commence immediately after issue of the work permit

- Documented proof of the following are required with each application¹⁰:
 - a valid return air ticket,
 - a deposit or a written undertaking by the employer accepting responsibility for the costs related to the deportation of the applicant and his or her dependent family members, should it become necessary,
 - a yellow fever vaccination certificate if applicable to a yellow fever endemic area
 - a police clearance certificate
 - medical and radiological reports in respect of each applicant,
 - the documents relating to marital status

Additional requirements pertain to the specific type of visa application, as follows.

Intra-company transfer regulations

81. The work permit application must be accompanied by:

- the foreigner's contract of employment with the company abroad
- a letter from the company abroad confirming that that foreigner shall be transferred to a branch of that company or an affiliated company situated in South Africa
- a letter from the South African company confirming the transfer of the foreigner contemplated as well as specifying the occupation and capacity in which that foreigner shall be employed.
- Where the service providing company does not have a subsidiary office in South Africa but is sending a professional consultant to fulfil a services contract, the professional concerned is required to be appropriately skilled and, where necessary, accredited by the relevant professional association

Covec's application example, outlined above, would have been made under this category.

Individual engineering service professional – seeking employment

82. The regulations provide for the application for work permits by individuals under the quota/critical skills, exceptional skills and under general work permit categories:

83. An application for a quota/critical skills work permit requires:

- confirmation that the foreigner possesses the necessary qualifications, as certified by the South African Qualifications Authority, and experience for the occupation,
- proof that the applicant complies with the registration requirements of the relevant professional body, board or council,
- Within 90 days of admission, the holder of a quota work permit shall submit to the authorities, confirmation of having secured employment within the category or class contemplated in section 19(1) of the Act and, within every 12 months thereafter, confirmation of continued employment within that category or class.

¹⁰ Immigration Regulations (2005), Government Gazette No.27725, 27 June 2005

This is a new system, aimed at addressing the growing shortages of critical skills in the South African economy, which is in the process of implementation. To date the quota/critical skills list has not been finalised.

84. An application for a **general** work permit requires:

- a contract of employment stipulating the conditions of employment and signed by both the employer and the applicant
- proof of qualifications evaluated by the South African Qualifications Authority
- proof of experience and skills in line with the job offer
- a letter from the employer motivating why a citizen or permanent resident could not fill the position, as well as proof of efforts made to obtain the services of a citizen or resident, together with particulars of the unsuccessful candidates
- proof of publication of an advertisement in the national printed media
- if required by law, proof of registration with the relevant professional body, council or board
- full particulars of the employer, including, if applicable, proof of registration of the business with the Registrar of Companies; and
- a certificate from the Department of Labour or an extract from the database of a salary benchmarking organisation stipulating the average salary earned by employees occupying similar positions in the Republic.

85. An application for an **exceptional skills** work permit requires:

- a letter from a foreign or South African organ of state or from an established South African academic, cultural or business body, confirming the exceptional skills or qualifications of the applicant
- testimonials from previous employers and a comprehensive curriculum vitae
- other proof to substantiate exceptional skills or qualifications, such as publications and testimonials; and
- a letter of motivation indicating that the exceptional skill possessed by the applicant will be to the benefit of the South African environment in which he or she intends to operate.
- An exceptional skills work permit may be issued for a period not exceeding three years at a time.

Individual engineering service professional – Investor

86. In terms of the Immigration Act (Section 15(1), Regulation 24 and items 13 and 14 of Schedule A) an applicant for a temporary and permanent business permit would qualify if they invest a minimum of R2.5 million in their own business in which they would be employed, with or without a South African partner. Members of such person's immediate family would also qualify providing that certain requirements have been met.

4. ENGINEERING SERVICE SECTOR EXPORTS FROM SOUTH AFRICA

87. This chapter lists the commitments currently lodged under the GATS by a selection of SADC and other African countries, to which most of South Africa's engineering service exports destined (Chapter 1). It outlines the factors that have driven engineering services exports between South Africa and its partners, based on information gleaned from industry interviews, public reports and other literature. A preliminary assessment of the regulatory impediments faced by exporters is than made.

4.1. Engineering service GATS commitments by South Africa's trading partners

Table 15. SADC - GATS Engineering Service Commitments

Country	Professional Services – CPC 8672 + 8673	Other business services – CPC 8675 + 633	Construction & related engineering services – CPC 512 + 513 + 514 +516 +517
Angola	No GATS commitment	No GATS commitment	No GATS commitment
Botswana	1 Unbound 2-3 liberalised 4 Unbound –except horizontal	1-through commercial presence 2-Liberalised 3-Through commercial presence 4 Unbound –except horizontal	No GATS commitment
DRC	No GATS commitment	No GATS commitment	No GATS commitment
Lesotho	1-3 liberalised 4 Unbound –except horizontal	1-3 liberalised 4 Unbound –except horizontal	1 Unbound – tech.feasibility 2-3 liberalised 4 Unbound –except horizontal
Namibia	No GATS commitment	No GATS commitment	No GATS commitment
Malawi	No GATS commitment	No GATS commitment	1-3 Liberalised 4 Unbound –except horizontal
Mauritius	No GATS commitment	No GATS commitment	No GATS commitment
Mozambique	No GATS commitment	No GATS commitment	No GATS commitment
Seychelles	No GATS commitment	No GATS commitment	No GATS commitment
Swaziland	1-unbound 2-3 Liberalised 4 Unbound –except for accredited professionals	No GATS commitment	No GATS commitment
Tanzania	No GATS commitment	No GATS commitment	No GATS commitment
Zambia			1-3 Liberalised 4 Unbound –except horizontal
Zimbabwe	No GATS commitment	No GATS commitment	No GATS commitment

Source: WTO (2003)

88. A significant number of SADC and other African countries have not made any commitments under the GATS. Of those have, the pattern of the offer has mirrored that of South Africa's, namely liberalised Modes 1-3 and Mode 4 bound by horizontal section requirements, mainly relating to immigration/visa policies.

4.2. The impact of regional economic integration on Engineering Service sector trade

89. The underlying and supportive environment for regional economic integration has been an increasingly important driver on engineering service trade. The political tapestry of the Southern African region has changed significantly since the demise of apartheid. All of the major conflicts in the region have ended and increasingly stable multiparty democratic systems are taking root.

90. Since 1994, the South African authorities have pursued a range of policies aimed at increasing economic cooperation and integration within the region, including the renegotiation of the Southern African Customs Union (SACU members include South Africa, Lesotho, Swaziland and Namibia) agreement and the implementation of the Southern African Development Community (SADC members include SACU + Angola, DRC, Madagascar, Malawi, Mauritius, Mozambique, Tanzania, Zimbabwe, Zambia, Seychelles) Trade Protocol and the longer term New Economic Programme for African Development initiative (NEPAD). Recent reductions in indebtedness of countries in the region through multilateral debt reduction processes are likely to release more funds for critical infrastructure investment. The processes around the harmonisation/alignment of standards will make the engineering services trade environment more conducive. An annex to the SADC trade protocol on services is currently being reviewed by member states for adoption. It is based on the GATS model and will be used as the basis for negotiations.

91. This more conducive environment that followed the lifting of apartheid sanctions barriers allowed South African Engineering Service providers to play a greater role in civil and engineering projects in the Southern African region. Indeed, a number of South African **professional service** firms and **construction** firms have applied their expertise in SADC markets both as a defensive exercise to cyclical downturns in fixed investment in the South African market as well as actively pursued growth strategies in these markets.

4.3. The impact of South African capital investment in SADC countries on Engineering Service sector trade

92. Engineering Service firms have increased their activity outside South Africa as a support function to South African mining and manufacturing firms, as the latter expand their operations into the Southern African region and elsewhere. A growing body of literature has recently emerged analysing this phenomenon of capital exports from South Africa and the detail is not pursued in this paper.¹¹

93. South African investment has focused on mining; mineral processing; oil and gas; power generation, transmission and distribution; telecommunications; hospitality and tourism; retail and banking sectors. Most of these have engineering service components.

94. **Mining** - For example, mining sites in Africa are often located at remote sites which require roads, infrastructure, housing and buildings as well as power reticulation, supply of potable and industrial water and sewerage

95. **Mineral Processing** – A number of such projects are being implemented in the SADC region. Eg. BHP Billiton redeployed the entire existing Engineering Service project team, together with OEM equipment and material supplier consortia onto a repeat project of the Hillside 2 aluminium expansion project in South Africa that was nearing completion on to the Mozal Aluminium project in Mozambique.

¹¹ See for example HSRC (2004).

96. **Telecommunications** - The explosive growth of cellular telephony has seen South African-based firms Vodacom and MTN making significant investments in cellular infrastructure in Africa and elsewhere. As with electricity infrastructure, Engineering Service providers, particularly electrical machinery and software firms have followed and supported the cellular firms in the region.

97. The key challenges in the countries that Vodacom operated in by 2004 (Lesotho, Mozambique, Democratic Republic of Congo, Tanzania) included:

- Infrastructure development
- Tariffs/affordability
- Regulatory environment
- Interconnectivity

98. Davids (2004) indicates that because of the nature of the systems, it is more cost effective service cellular networks locally. So unlike aluminium mega projects, engineering services accompany the provision of telecommunications networks but then require to be localised to ensure network maintenance quality (perhaps such quality requirements are part of the telecommunications licence agreement and would constitute an important lever to encourage localisation of engineering services.

99. **Retail** – The South African retail sector is very well developed and the major chains have extensive networks in the region, often participating collectively in turnkey South African-driven shopping mall developments which require a range of engineering services.

100. **Hospitality & Tourism** - The expansion of South African hotel chains such as Protea Hotels (Resorts in 9 countries) Southern Sun Resorts (in 6 countries) Sun International Resorts (in 4 countries) in recent years has involved the support of Engineering Service firms, mainly in the construction and refurbishment of the resort facilities.

4.4. Regulatory impediments to Engineering Service exports from South Africa – Importing country regulations

101. This section is based on a literature review and a limited number of industry association and firm-level interviews in South Africa and should be regarded as work in progress.

Regulations on the movement of natural persons

102. There is considerable variation in the requirements of different countries. For example, it was reported that in Zambia, a foreign professional can work for up to 30 days per year without needing residence status or professional accreditation with the Zambian Engineering Council. This probably relates to the reciprocal 30-day visa waiver agreement between South Africa and Zambia, Swaziland, Namibia, Mozambique, Mauritius, Malawi and Lesotho and a 90-day visa waiver with Botswana.

103. There appears to be mixed experiences by firms in the ease by which they obtain work permits and visas. Some firms cited this as the greatest impediment to trade, while others gave this a lower priority. A rigorous analysis of individual country procedures and practices will be necessary together with a mapping of firm level experiences to determine the true picture here.

Regulations for professional accreditation

104. There appear to be few impediments relating to individual professionals to exporting engineering services from South Africa to countries in Africa, Middle East and further abroad. This is probably due to

the relatively high standard of South African engineering professionals, coupled with the international accreditation accords that prevail between South African professional institutions and their global counterparts.

105. As with South Africa, SADC country regulations on professional accreditation relate mainly to public sector projects. Private sector clients tend to have appropriately accredited personnel in-house.

106. In general, South African engineering service providers regard the regulatory and accreditation systems in SADC countries as being comparatively rather weak. Exceptions cited include Namibia and Tanzania.

107. While the South African regulatory system for individual professionals is the most developed on the African continent, in 2005 Tanzania became the first country in Africa to institute a compulsory accreditation and registration system for individuals wishing to practice as engineers in Tanzania.¹²

108. The South African ECSA is also working towards compulsory registration and legislative amendments are expected to be passed in 2008. Canada is also known to practice such a compulsory system.

109. Such professional and accreditation institutions are developing in the SADC region and there is close cooperation between these institutions and their South African counterparts, notably ECSA who is working to support sister bodies in SADC in their endeavours to strengthen both accreditation and engineering education systems.

110. Similarly, amongst the African consulting engineering fraternity, the SAACE is actively developing the Group of African Member Associations (GAMA) made up of 13 member associations in Africa of the International Federation of Consulting Engineers (FIDIC). SAACE provides the secretariat and the more active and organised associations include Nigeria, Uganda, Botswana and Zambia

Procurement regulations

111. As in South Africa, a significant portion of the engineering services in the SADC are procured through infrastructure projects which are often financed by foreign donor aid. The resulting procurement policies of government/donor agencies have been cited by domestic SADC engineering service firms as key impediments to them accessing such contract work.

112. "Of the total GDP of Uganda, 10 percent amounts to foreign aid and of spending on infrastructure in Uganda, 75 to 80 percent is foreign aid and of these contracts 90 percent of them are handled entirely by outsiders. As such foreign aid has not achieved its aims and is not a long term solution for African countries....The solution lies in strict economic reform, eradication of corruption and changing the procurement policies of foreign aid organisations. This can be done by breaking up large projects into smaller pieces, creating local and regional joint ventures and partnerships and changing the perceptions of foreign aid organisations."¹³

113. In general, South African firms are larger, better organised and less fragmented than their African counterparts and therefore more able to access such donor contracts.

¹² <http://www.saace.co.za/showpress.phtml?id=100>

¹³ Paul Sagala, chairman of the Uganda Association of Consulting Engineers (UACE), cited at the GAMA Convention in Kampala, Uganda from 13 - 18 March 2005.

114. Some South African firms indicated that Madagascar's government procurement requirement that tenderers must have at least 20 accredited French-speaking professional employees was a major impediment to services trade.

115. In general, private sector clients were regarded as easier to deal with, although they are also regarded as more demanding than their public sector counterparts. A few concerns were raised about some USA and French private transnational firms who insisted in contracting under the USA or French law, rather than the laws of the country in which the project was situated. Engineering service firms suggested that this practice heavily favoured engineering service companies based in the respective national jurisdiction of the client firm.

116. As indicated above, verification of these reports was not possible in the time allowed, but they are recorded here for further investigation.

Regulations concerning corporate entities (Engineering Service sector)

117. There were few clearly identifiable regulatory impediments relating to corporate entities that were cited by engineering service exporters during this investigation.

118. Firms pointed to differences between public and private sector clients. Projects with public sector clients are sometimes more difficult to manage because of the multitude of state and parastatal entities involved and the sometime more complex criteria that are stipulated by the public sector clients – for example, employment intensive construction, localisation of engineering activity, etc. Partnering with local firms has been a common way to address these challenges.

119. Regulatory impediments to project execution have often been negotiated up front, particularly for larger projects. For example, work permits and the import and transportation of components and equipment required for the particular project are usually anticipated and dealt with by the client and not by the engineering service provider.

120. Two impediments that were mentioned concerned certain aid-related projects which stipulate donor country sourcing of inputs and domestic industrial policies which mandate local sourcing. Engineering service contracts for supplying Nigeria's oil and gas sector are apparently linked to the development of their domestic oil and gas service industry.

121. The USA was cited as a country into which it is difficult to sell engineering services, mainly due to the risks of legal consequence and the high associated costs of insurance to cover against such risks. An example on how this was overcome related to RTZ Canada requiring Murray and Roberts specific expertise on an RTZ project in the USA – RTZ Canada took on the engineering service provider's team and carried the contract risk on its Canadian balance sheet.

Design and standards regulations

122. With regard to the design component of the engineering service, many countries do not have their own national design codes and tend to adopt and adapt codes from more developed economies. As indicated above, the consulting engineering profession is mainly involved in developing the design of the respective project. Depending on the project, there is often little need to do the design work in the country concerned. The engineering design function is increasingly a commoditised activity. The design of a bridge could take place anywhere. For example, Murray and Roberts has already created a design network hub between Johannesburg, Perth and Jakarta within which information flows freely. Some countries have developed specialist design capabilities. For example, Chile is regarded as having leading open cast mining design capacity – based on Chile's open cast mining sector – which has been utilised (virtually) to design

Australia open cast mines. Interestingly, it was reported that, partly due to high capacity utilisation, one firm was importing design work done in its Malawi office for use on a South African contract.

123. However, as indicated above, designs need to be adapted and tested for constructability, operability and durability in the respective locale and this is the activity that usually involves local consulting engineering experience.

124. As outlined above in the analysis of the South African legislation pertaining to registration and accreditation of individuals and firms, it is usually the design activity that requires endorsement and signing off by a competent/registered/ accredited professional. Similar legislation exists in SADC countries, although it has not been similarly documented in this study.

125. The South African Association of Consulting Engineers (SAACE) membership register reflects a significant physical presence of the larger consulting engineering firms with offices across Africa and other continents, where locally accredited professionals are able to sign off on designs and also participate, if necessary, in some aspects of oversight during project execution. For similar reasons, smaller consulting firms often work in collaboration with local engineering consulting firms.

4.5. Regulatory impediments to Engineering Service exports from South Africa – Exchange control regulations

South Africa exchange control

126. Exchange control regulations were imposed in South Africa during the sanctions era. Since 1994, exchange controls have been gradually lifted and today there are no regulatory impediments that apply to the import or export of capital by foreign investors. The only measures that still exist apply relate to the export of capital by South African residents and corporate entities.

127. Although there has been considerable investment by South African firms in the SADC region, these may have been impeded by exchange control regulations which only allowed such investment if the South African entity had 50% +1 share of the SADC entity. The objective of such regulation was to ensure control and repatriation of dividend flows. However, the risks involved in taking a majority shareholding might have prompted firms not to expand activities outside of South Africa.¹⁴

128. In the 2006 National Budget, the regulations were changed from 50% to 25% + 1 share and the previous limit of R750m, above which specific Reserve Bank approval had to be obtained, was lifted to R2000m.

SADC country exchange control

129. Consulting and construction firm interviews suggest that the regulatory structure governing repatriation of funds from SADC countries is not seen as being as significant an impediment as late payment. Late payment, particularly by government clients, appear to be a significant problem for SAACE members, many of whom are small and medium sized firms.

¹⁴ Ernst & Young (2006)

5. CONCLUSIONS – ENGINEERING SERVICE TRADE

130. This study shows that Engineering Services, in the South African context particularly, are significantly interlinked with the main infrastructure and productive sectors which they have historically serviced, in particular with the minerals and energy sectors and their related supporting infrastructure.

131. Based on the analysis of South Africa's engineering service sector, the following issues have an important impact on engineering services trade:

- Procurement procedures, particularly for public sector engineering service work, where these are shaped by other public policy objectives
- Integrity of the national professional accreditation system
- Integrity of the immigration/visa system
- Nature, linkages and competitiveness of the engineering services sector

Procurement procedures

132. This study suggests that infrastructure and capital investment are primary determinants to engineering service activity and that the regulatory impediments relate more to public sector procurement than to private sector procurement of engineering services. The only reported private sector procurement process impediments relate to practices by some French and US multinationals in their insistence in contracting under their respective national legislation.

133. In South Africa, all engineering service firms (foreign and local) tendering for public sector work are required to be accredited and graded by the CIDB according to competency, experience and credit track record. Government has consciously used public sector purchasing power to achieve a mixture of public policy objectives, including:

- safety (compulsory registration of firms bidding for public service tenders),
- industry development (accreditation graded according to capacity and track record of respective firm),
- employment creation (by promoting a structured progression from small contractor to larger corporate entities) and
- empowerment of historically disadvantaged people, many of whom fall into the small contractor category.

134. The CIDB is a relatively new institution and has had some difficulty in managing the flood of accreditation applications that it received during the ramp up period of registration from 2003-2006. Many firms, domestic and foreign appear to have had their applications held up in this process, which is nearing completion with 13,662 firms registered in the last 2 years. Foreign firms do not appear to be disadvantaged any more than their domestic counterparts are in terms of the prevailing CIDB registration requirement.

135. Firms are not required to be accredited by the CIDB in tendering for private sector contracts. However, the contracts must be registered on the CIDB project database.

136. In South Africa's case, the public policy objectives that have shaped procurement criteria, namely industry development have the support of a relatively well organised and resourced private sector.

It is not clear that SADC countries have been able to apply similar public policy objectives to procurement policy given that the institutional base is often relatively weak in both public and private sectors. Private sector engineering service firms in SADC tend to be small and operate in a fragmented manner, although they are making attempts to organise themselves. Some have alleged that domestic industry development is actually impeded by the complexities in the way in which a large proportion of the projects are funded through donor aid.

137. Impediments have also been cited relating to aspects of donor-funded procurement processes as well as certain language-related conditions imposed by some procuring governments. These would need to be investigated before any conclusions could be drawn.

Integrity of the national professional accreditation system

138. South Africa has a number of (mainly) public safety related legislative Acts which reserve certain work for accredited professionals. 139. Public safety considerations and the associated requirements of professional accreditation in health and occupational safety legislation is common in most industrial economies and are not inherently trade restrictive.

140. Since 2000, South Africa has been implementing a very comprehensive accreditation system that incorporates the full range of professional services and covers all **individuals** who are engaged in each of the major engineering service professions including architectural, engineering, landscape architectural, project & construction management, property valuer's and quantity surveying professions

141. With regard to the standards and regulations that are in place for individual professional accreditation and for corporate accreditation, there is little evidence to suggest that these have constituted serious impediments to the import of Engineering Services into South Africa, or of deliberate discrimination by the accreditation processes against foreign professionals. However, dysfunctional, inefficient or administratively strained accreditation machinery will prejudice all applicants. In the case of the CIDB, it appears that administrative logjam problems have emerged during the start-up phase of the organisation. In the case of professional associations such as the ECSA, there is a move to compulsory registration for all professionals, on the basis of public safety. Any inefficiency in ramping up registrations is likely impede both foreign and local applicants from practicing their trade.

142. It is the case, however, that individuals who are accredited with foreign organisations that are part of the Washington, Dublin and Sydney Accords have easier and quicker passage to accreditation. Such accords clearly enhance the mobility of professionals, and hence of engineering services trade. There is, however, a possible negative consequence of this in that it could accelerate the emigration of scarce skills that developing economies like South Africa and SADC require to retain.

143. It would appear that many SADC countries, with a few exceptions like Tanzania, are struggling to strengthen relatively weak regulatory institutions, including (where they exist) those responsible for engineering standards, professional accreditation and company accreditation. Such institutions take time to build. Even in RSA such systems still not sufficiently integrated – for example, the CIDB and ECSA carry out the vetting of academic accreditation independently of each other, although there have been no reported disjunctures between their processes.

144. ECSA has an active programme to support sister organisations in SADC and the SAACE is providing secretarial support to a regional grouping of consulting engineering institutions.

145. In a developing economy, it is difficult to envisage alternate ways to ensure public safety and industry development through mechanisms other than some form of compulsory registration. South Africa's accreditation systems are very comprehensive and ambitious, but can be achieved given the level

of organisation of private and public sectors. In emulating this, it will be important for SADC countries to guard against such systems being operated in the narrow interests of the respective professions or industry groups to the detriment of other social and economic interests.

Integrity of the immigration/visa system

146. Bilateral initiatives, such as the visa waivers between South Africa and its trading partners for short stays, particularly the 30 day reciprocal agreements with some SADC member states, do enhance engineering service trade (professional services, construction & related engineering and engineered machinery).

147. For longer term stays, South Africa's tiered visa system constitutes a significant impediment for foreign engineering professionals wishing to practice their trade **as individuals** in South Africa. In 2005, Government passed legislation to create a streamlined mechanism for "critical" skill imports, but the implementation of this has been delayed. Impediments to securing longer term visas/work permits appear to particularly impede the commercial presence of consulting firms.

148. South Africa's visa mechanism for intra-corporate transferees has been in place for some time and appears to offer an easier and quicker mechanism to the import of engineering professional skills compared to the requirements for individual professionals.

149. Time did not allow for a thorough review of corresponding SADC legislation but professional/consulting firms in particular cited visa/work permit requirements for the establishment of a commercial presence as an important impediment. Conversely, construction firms interviewed did not find work permits to be a major impediment. A possible reason for this relates to their involvement in much larger projects which accord them more negotiating power in addressing various impediments that affect the critical path of the project. Regulatory impediments appear to be reduced in the larger, propulsive projects in South Africa and SADC countries, as appears to have been the case of Mozambique's gas pipeline to South Africa and the Mozal smelter. Key potential impediments (including visas, work permits, import duty procedures and requirements, etc) that lie on the critical path of the project timeline are identified before commencement and usually overseen by a high-level oversight committee that has the authority to address any regulatory mismanagement or unnecessary bureaucracy. While obviously more desirable to reform or reduce unnecessary regulation, in the short term such an oversight mechanism may be a realistic interim measure for engineering service firms to consider.

Competitiveness of the engineering services sector

150. South Africa has a very well developed and competitive engineering services sector. Its competitiveness is partly reflected in its almost completely liberalised GATS commitments as well as in the analysis by Stern & Teljeur (2002) who conclude that, based on the Herfindahl-Hirschmann Index ($HHI > 1800$ is a cause for concern), and the CR4 (and CR5) indicator of cumulative market share of the 4 largest firms, there is considerable competition in the South African Engineering Service sector.

Table 5. Competitiveness of RSA's Engineering Service Sectors

PROFESSION	LARGEST MARKET SHARE (%)	HHI	CR4 (%)	CR5 (%)
Contractors	7.9	781.4	21.9	24.4
Architects	7.7	371.8	25.1	30.6
Consulting engineers	11.4	604.5	33.0	38.1
Mechanical engineers	16.3	1933.3	28.9	42.6
Electrical engineers	21.9	1365.5	36.7	40.6

Source: Stern & Teljeur (2002)

151. Stern and Teljeur conducted their study in 2002 and this picture may have changed slightly. Since then, the South African economy has grown strongly and the demand for certain engineering service skills is rapidly outstripping supply capacity – a characteristic of past growth cycles, when such demand was met by imports.

152. The Covec example is instructive here and suggests that, notwithstanding whatever barriers may exist, South Africa's engineering services market is a relatively open and competitive one. In its objective of enhancing the competitiveness of engineering service sectors, the South African government has ensured statutory public participation on the governing bodies of the professional associations to avoid an unhealthy outcome of the council being controlled solely by the respective members of the profession.

Could the public policy objectives be met through less restrictive means?

153. In South Africa's case, the three mechanisms that could be regarded as restrictive include the visa requirements for individuals, professional accreditation for individuals and corporate accreditation systems. As outlined above, there are sound reasons for the existence of such system and the key is to ensure that they are structured fairly and operated efficiently.

154. Maximising the transparency of operation of these systems could contribute to reducing impediments related to any inefficiencies or maladministration in the implementation of such systems.

155. Finally, the negotiations on the SADC services protocol should be supported. There is a clear linkage between this OECD services trade initiative and the SADC protocol's stated work programme which is to commence with a more detailed documentation of regulatory processes affecting services trade.¹⁵

¹⁵ http://www.unido.org/file-storage/download/?file_id=60483

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