

Economic sustainability

►Indicator 5: Resilience to External Impacts: Energy Trade

Although South Africa relies on imported petroleum for 60-65% of liquid fuels supplies, it is a net exporter of energy, primarily because of coal exports. South Africa is the world's number 5 producer of hard coal, at 225 Mt in 2000, and number 2 exporter of hard coal, at 66 Mt, just behind Australia (IEA 2001). South African also exports significant volumes of refined petroleum products, including 2.8, 0.58, and 0.30 billion litres of diesel, petrol, and kerosene, respectively (DME 1999: 7)

According to the Trade and Industrial Policy Secretariat on-line trade database, total exports for South Africa for 2000 were 226 billion Rands (TIPS 2002). TIPS data for coal and petroleum exports for 2000 at 9.5 and 9.1 billion Rands, respectively. While the coal export data match data provided by the Department of Trade and Industry, the petroleum export data from TIPS is considerably lower than the DTI for earlier years (Wojciechowicz 2002). We have therefore use TIPS as the source for coal exports and total exports, while DTI for petroleum product exports. Electricity exports, which are almost 100% based on non-renewable energy, totalled 0.47 billion (Eskom 2000a). Total non-renewable energy export were therefore 19.1 billion, or 8.4% of the total.

For this indicator, the value for 1 on the vector is 100% non-renewable energy exports share of total national exports, while the value for 0 on the vector is 0%. The vector value for 2000 is therefore 0.084. Earlier years have not been reported here due to data problems (see discussion below).

Metric (actual data) for 1998: 0.084

Vector values for 1998: 0.084

Discussion:

The coal-mining industry has increased coal exports considerably until recent years, when the worldwide industry slump has hurt growth. It is also likely that petroleum product exports have grown – particularly because the relatively low diesel to petrol demand ratio in South Africa means that refineries must export excess diesel as demand for petrol grows. This is one of the reasons behind government's proposal to convert the nation's minibus taxi fleet from petrol to diesel.

As mentioned above, there is disagreement between different sources of data for energy trade. Coal exports as reported by the Chamber of Mines, for example, are 10-20% higher than those from TIPS and DTI, although this could be because trade within the South African Customs Union (i.e. Lesotho, Swaziland and Botswana) is not captured in international trade statistics.

Similarly, the amounts of liquid fuel exports reported by the DME in their statistical publications (which is from the South African Revenue Services) do not match the data in the national energy balance (DME 1999, 2000). Given that all data on the petroleum industry was classified until 1993, most of the trade data before then is likely to be suspect. More analysis is needed to understand whether these differences are due to classification categories, pricing and taxation, or other reasons.

Notes to SEW or next year's Observer-Reporter:

Because South Africa does import most of its petroleum, an analysis of resilience from the perspective of imports should be an important next step. This would show the share of South Africa's total primary energy supply that comes from imported non-renewable energy.

In addition, more effort should be put into developing trends over time for this indicator, and discrepancies between different data sources reconciled.

► Indicator 6: Burden of Energy Investments

The South African government has been heavily involved in energy sector development, as in many countries. The electricity industry is dominated by the state-owned utility, Eskom, while local authorities handle most urban electricity distribution. The state's Central Energy Fund owns PetroSA, which comprises the oil and gas exploration company Soekor and the gas-to-liquid fuels producer Mossgas. In addition the coal-to-liquid fuel supplier Sasol was originally a state company, although it is not private. State-owned Petronet runs the national liquid fuel pipeline system, while Portnet controls the ports used for import and export of fossil fuels. The nuclear industry was funded through the parastatal Nuclear Energy Corporation of South Africa (NECSA, formerly the Atomic Energy Corporation), which still absorbs more than 40% of the Ministry of Minerals and Energy's budget vote (down from almost 80% in the late 1980s) (DME 2001a). Many of these parastatal companies have received loans and subsidies of billions, or tens of billions, of Rands in the past several decades. The national government budget, therefore, only represents a small part of the state's involvement and financial burden of the sector (Trollip 1996). This does not, however, mean that all of these institutions are a drain on state resources. Eskom, in fact, is a very profitable enterprise, and, with the passage of the Eskom Conversion Bill, will start paying taxes and dividends to government. Whether government would receive more revenue from a privatised utility is highly doubtful, and depends on the value of the implicit subsidies government provides for Eskom, such a forward cover on exchange rates through the Reserve Bank.

Quantifying the level of state involvement, and tracking this on a regular basis, is challenging for several reasons. First, some enterprises such as NECSA, and even Eskom, have significant non-energy businesses. In fact, the NECSA (or the AEC) has arguably not made any contribution to electricity production in decades, since the actual nuclear power plant at Koeberg is owned and operated by Eskom and the fuel is imported (and when the fuel was produced in South Africa, it used so much energy that it may well have offset electricity production from Koeberg). Second, much of the investment and expenditure in the industry is only seen in changes in balance sheets, rather than as explicit investment. In 1994/95, for example, the Central Energy Fund increased its provision for non-repayment of loans made to Soekor by more than 110 million Rands – and this is, in essence, a state subsidy (Trollip 1996). Thirdly, it is difficult to distinguish between 'investment' by the state (ie procuring fixed assets) and 'expenditure' (ie operating expenses for government or parastatals) – and it would be misleading to call all of the operating expenses a 'burden', because the state companies may have revenue in excess of these expenses. This is certainly true for Eskom, which has posted healthy profits in recent years even after funding the majority of the electrification programme internally.

Eskom and Mossgas investment in 2000 totalled 4 596 million Rands (Eskom 2000a; Mossgas 2002). From this we have subtracted Eskom's investment in the Efficient Lighting Initiative and half of the estimate investment by the Eskom/Shell solar home system joint venture (see indicator 4). Total public non-renewable energy investment is therefore 4 573 million Rands. GDP in 2000 was 874 billion Rands (SARB 2001), so non-renewable energy public investments are 0.52% of GDP.

For this indicator, the value for 1 on the vector is non-renewable energy investment as 10% of GDP. This is taken as the benchmark for unsustainability. The value of 0 on the vector – the sustainability goal – is zero public investment in non-renewable energy. South Africa's vector for 2000 is therefore 0.052 (i.e. 0.0052/0.1).

Metric (actual data) for 2000: 0.52%

Vector values for 2000: 0.052

Discussion:

This estimate of public investment does not capture a range of other institutions – such as the local electricity distributors and the transport/pipeline companies – the investment by the subsidiary state oil companies, research and development in energy that is funded outside the DME (eg from Eskom and the National Research Foundation), or expenditures on infrastructure such as ports for coal handling.

Notes to SEW or next year’s Observer-Reporter:

The sources for this indicator should be followed up, and enquiries made to Soekor/Central Energy Fund regarding their investments. The Association of Municipal Electricity Undertakings (AMEU) and the National Electricity Regulator should also be contacted for investment by local authorities in electricity.