Briefing

Energy

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# Green jobs: access to clean energy can create employment in South Africa

Improving energy access through sustainable energy choices will create jobs, not emissions, in the South African economy. Greening the country's economy is far more likely to benefit than to slow development, as so many believe. One way of greening South Africa's economy is to reduce its dependence on high-polluting coal. Accessing available, clean resources such as wind and solar power and improving use of biomass (mainly wood fuel) will create additional sources of energy for industry and households alike, while building demand for new skills, jobs and enterprises. South Africa is in dire need of more energy and the poorest households tend to be the poorest in terms of energy access, too. The implementation of sustainable energy access projects in poor areas demonstrates that communities can make their own energy choices, attract investments and open up job and enterprise opportunities to support their energy choices. Current policy is found to be incoherent however and the country cannot rely on market forces alone to drive change.

## Policy pointers

**The opportunity cost of** not improving energy access for industries and households is high; another day without energy is another day without income and education.

**South Africa has a** sound policy base in renewable energy and energy development and access as well as a sophisticated suite of skills development, employment and industrial development policies; the need is for coherence and alignment.

**The predominantly** coal-dependent national grid is not the only solution available to problems of energy access: decentralised, renewable energy solutions can create more local livelihood opportunities for the poor.

**Communities need a** stronger voice in South Africa's energy choices so that energy decisions result in greater opportunities for job creation, better educational prospects and livelihood improvement.

Typically, energy-poor locations in South Africa are also job poor and those with no or low incomes cannot always afford monthly electricity bills. Energy poverty is due to limited access to the national electricity grid, an inability to pay, or both. The implementation of rural, sustainable energy access projects in the poorer regions of South Africa can create jobs, while also reducing carbon emissions — two key government targets.

Manufacturing can seldom be localised, but jobs can be created in installation, maintenance, sourcing resources and delivering spare parts. Solar water heaters, for example, require electrical and plumbing skills for installation and repair, and generally require annual maintenance.[1] The literature indicates that, at a theoretical level, local jobs can be created from decentralised energy projects.[2] But because South Africa's electricity supply is almost 100 per cent centralised, the experiential base does not exist.

## Diversifying energy generation

Diversifying South Africa's energy generation capacity to include on- and off-grid renewable or cleaner energy options will reduce the country's currently high contributions to global warming. There are domestic benefits too. The correlation between improved energy access and improvements in lives at a household level is well established. But a diversified energy base and improved energy access also have income-generating potential — including productive uses of energy for local businesses such as agricultural processing or hairdressing.

There are jobs to be had within the industry too.

## *South Africa needs new forms of energy*

An analysis of the long-term job potential created in South Africa through implementation of solar, wind and bioenergy for electricity and energy services compared job opportunities to the job creation potential in the conventional energy sectors (nuclear, coal and gas). The study found that if an additional 62 TWh was generated by new coal-fired plants, around 43,000 new jobs would be created. But if it were generated by the renewable energy technologies alone, around 57,000 new direct jobs would result.[3]

### The green economy challenge

Greening the economy is not a priority for South Africa, though it has introduced various environmental policies and climate change strategies. These include the Renewable Energy White Paper,[4] National Climate Change Strategy[5] and the Long Term Mitigation Scenarios. But these policies and others are being implemented in a country still addressing the effects of apartheid: continuing inequality, high poverty and unemployment rates and inequitable land ownership and use.

Despite significant achievements, the historical background of segregation, spatial constraints (densely populated peri-urban informal settlements and rural communities) and lack of skills, poverty and inequality, continue to provide significant challenges. These, coupled with the country's dependence on abundant, cheap coal for energy, have kept South Africa from focusing on low-carbon ('green') development pathways and green skills.

The challenge of steering the economy onto a low-carbon path is a formidable one and until recently developments have been almost exclusively driven by the market rather than policy.[1] Many people, mainly actors in government and the private sector, fear that pursuing a low-carbon economy will slow rather than increase development — not surprising given the significant economic and income losses suffered across the country during the 2008 energy crisis. At the time, the country's GDP forecast was revised to 3 per cent for 2008 from a previous 4.6 per cent to accommodate a loss in real terms of R19.76 billion caused by the power crisis.[6]

Although some renewable energy policy frameworks are in place and some work has been done to analyse the jobs, enterprises and skills needed to integrate renewables into the economy,[1,3,7] no formal policies exist that specifically and exclusively address green jobs and green skills. The reliance on market drivers is proving to be inadequate and if renewable energy options are going to help with growing energy demand then a more attentive approach to integrating this emerging industry into South Africa's social and political economies is what is needed.

### Box 1. Cleaner energy — new jobs

An obvious way of greening the country's economy is to include cleaner energy options in the current, coal-dominated energy mix. Including these on- and off-grid options has the added benefit of diversifying the country's skill sets and creating new jobs. These might be jobs in the solar, bioenergy and wind sectors and other forms of income generation options, such as components manufacture, import businesses (for example of wind turbines), primary manufacture (solar water heaters, small-scale biogas technologies) and installation and maintenance (solar water heaters and small scale biogas solutions in the domestic and tourism markets).[1,3]

### Sustainable energy for sustainable jobs

South Africa needs to change gear. The primary driver for greening the economy is international pressure and the need to do something about the fast-rising greenhouse gas emissions responsible for changing global weather patterns. But there are domestic drivers as well and these should be South Africa's foremost imperative. In addition to the growing signs of acceptance by politicians and decision makers that South Africa is facing economic growth in a carbon-constrained world, the country needs new forms of energy. It needs to diversify to decentralised models that reduce dependence on the over-burdened national grid and above all, it needs to create new jobs while finding ways of rechannelling skills from lagging industries.

References to green jobs have recently begun to emerge in policy. But the different policy frameworks are not well aligned, either between sectors and ministries or between national, provincial and local government policies and practices. It is very difficult, for example, to see the links between the Industrial Policy Action Plan 2, which is all about industrial development for job creation, and the Integrated Resource Plan 2, which in turn is about ensuring energy for development.

The Eastern Cape's Cabinet-approved Sustainable Energy Strategy, developed by their Department for Economic Affairs, Environment

and Tourism, recognises that improved energy access can result in socioeconomic benefits, including job creation. Many of these are the direct and indirect jobs associated with improved energy access and diversifying to cleaner, more localised energy resources and technologies. Based on the available literature and research conducted in South Africa, including by the Department of Trade and Industry, this strategy recognises the local components supply (wind energy) and the installation and maintenance small business and job opportunities available in local project markets to support biogas and solar water heating technologies.

But job creation doesn't just happen. South Africa's economic growth rates have slowed as some job intensive industries have matured (parts of the mining sector for example) and others have experienced cut backs (such as the construction sector). The energy sector is experiencing the stirrings of new developments, however, resulting from diversification of South Africa's energy base. These include natural gas development off the west coast, expansion of the solar water heater industry to meet policy and incentive-based demands, and the response of the wind energy sector to the Renewable Energy Independent Power Producers Programme. All of these developments have the potential to create jobs and enterprise development opportunities but coordination is needed to ensure that developers do not look further afield to fill perceived gaps.

## Realising local benefits

The wind farms are a case in point. Many of the current developments are in the Eastern Cape, a poor province that has little former or established industry to draw from outside of motor manufacturing (East London and Port Elizabeth) and scattered agri-businesses such as dairies and abattoirs. No formal skills development programme currently exists to ensure that the local communities can become an attractive supply base for new developments, and the local communities certainly do not have the means to make this happen without support. Also, the energy from these wind farms will feed into the national grid with little, if any, possibility of supplying local energy demands. In this situation, new wind farms locally become unexciting for communities that have little potential to realise any of the benefits and yet are among the country's neediest.

With solar industry developments and other off-grid options the benefits are potentially easier to realise locally. Community or larger scale installations require re-skilled plumbers and/or electricians, and installation and maintenance are more viable if locally supported.

## Box 2. Promoting opportunities in the Eastern Cape: a case study

The Eastern Cape is characterised by disproportionately high unemployment, severe energy poverty and few opportunities for economic diversification. The CHOICES project — Community and Household Options in Choosing Energy Services — was started up in the Eastern Cape's Blue Crane Route Municipality (BCRM) to help local communities make choices over their energy access options and to link them with potential investors, thus improving access to sustainable energy.

The BCRM comprises three communities where unemployment is as high as 67 per cent in some areas. Energy poverty also plagues these communities: 37 per cent of households have no access to grid electricity, relying heavily on wood fuel (biomass) instead, and this cannot switch the lights on in its popular form. Furthermore, municipalities are unable to assure local industry of secure energy supply meaning that new industries are not being established and existing industries cannot grow, forcing them to consider relocating to more energy secure environments.

Until now agro-based industries, services and the public sector provided the only options for employment. The communities have no way of absorbing associated job losses, as unemployment already exceeds national statistics. This, along with inadequate energy access, is also hampering education. Local industrial development, such as the dairy industry, has been slowed or is threatening to close because of unreliable energy supply. To give a real example, if the dairy industry relocates, around 800 jobs will be lost; at a rate of five dependents per income, this means that nearly 4,000 people will find themselves with reduced or no income.

Through CHOICES, these communities have recently been made aware of the energy options available to them and the associated benefits. Experience shows that, without exception, those energy options that create or keep jobs and improve access to education are the ones local communities value the most.

Opportunities in the BCRM include small-scale waste-to-energy options (such as biogas) and solar water heating, as well as larger scale developments such as the wind farms under development in the area. Other, longer-range opportunities for energy include industrial-scale waste to energy production (municipal solid waste combined with the local abattoir waste to generate a renewable energy source using anaerobic digester technology) and hydropower on a nearby site where a recent feasibility study illustrated the potential viability of this project. Many of these options are viable and currently under development and yet there is no formal programme for skilling and recruiting local employees into these projects.

But as things are today, manufacturers and suppliers are typically located in major centres such as Gauteng and the Western Cape, making the option less accessible or sustainable for rural communities. Moreover, the incentives have been cut back by the government and ESKOM, the country's utility, minimising the opportunities further.

## New jobs should be possible

Benefits for local industry have not yet materialised either. More jobs could be created from new energy industries, such as expanded solar water heating supply and installation,[1,3] as well as jobs that are being created in the government-incentivised wind energy projects (development, construction, operation).

More indirect jobs are possible too from existing industries that cannot grow because of unreliable energy supply. There are many examples, such as expansion of the dairy and abattoir facilities in the Eastern Cape, among industries that have direct experience of the 2008 electricity crisis. Some of these industries, notably the dairy facility in Cookhouse in the Eastern Cape, are even considering closing down for the same reason, and this means shedding jobs.

There are other examples where modern biomass developments (turning wood waste into a sustainable source of local fuel or electricity) have failed because the policy environment has not kept pace with market developments. At least four wood pellet production plants have been established and closed in South Africa's forestry areas in the past five years and a biomass to electricity plant was recently shut down primarily due to inadequate public sector support.[8] These represent lost energy generation and job creation opportunities in South Africa's poorer provinces.

The story does not end there. Using localised renewable energy resources that do not require the national grid, in addition to providing a direct source of energy, can also stimulate small business development primarily through installation and maintenance opportunities needed to support them, as discussed earlier. This could stimulate supply meeting demand in a way that allows for a critical mass or economies of scale to facilitate the sustainability of off-grid opportunities.

## Policy development is crucial

Unless attention is focused on skilling communities up to access the large and small-scale energy options available to them — directly or indirectly — these will be lost opportunities and unemployment figures will continue to rise. Policy alignment is critical to achieving this. Alignment between the Industrial Policy Action Plan and the Integrated Resource Plan and government job creation policies under South Africa's industrial policy is recommended. To take this further, support to small and medium enterprises and targeted community skills development could be stimulated through the Industrial Policy Action Plan. A further recommendation is securing local content in new industry developments. The emerging wind energy sector is one example where although there are goals for achieving a robust level of local content in installation, component manufacture and operation of wind farms, there are no specific targets nor are there accountable plans in place to achieve the currently broad objectives.

South Africa has yet to put together a cohesive action plan for transforming to a low carbon economy. Linking local energy options, including large-scale developments, such as the current wind farms planned in the Northern and Eastern Cape and small-scale developments such as solar water heater installations in rural and urban areas, with national skills development processes can provide new jobs and enterprise opportunities locally in areas that are most in need of such development opportunities.

### Belynda Petrie

Belynda Petrie is CEO of OneWorld, an African-based sustainable development organisation.

## Notes

[1] OneWorld Sustainable Investments. 2010. *Skills for Green Jobs in South Africa.* / [2] Rutovitz, J. 2010. *South African energy sector jobs to 2030.* Prepared for Greenpeace Africa by the Institute for Sustainable Futures, University of Technology, Sydney, Australia. / [3] Agama Energy. 2003. Employment Potential of Renewable Energy in South Africa. / [4] Department for Minerals and Energy. 2003. White Paper on Renewable Energy. / [5] Department of Environment and Tourism. 2004. A National Climate Change Response Strategy for South Africa. / [6] OECD report frankly assesses SA's problems. 15 July 2008. *Mail and Guardian.* See: www.mg.co.za/article/2008-07-15-oecd-report-frankly-assesses-sas-problems / [7] Overseas Development Institute. 2011. *South African Renewables Initiative* / [8] Petrie B., Macqueen, D. 2013. *South African biomass energy: little heeded but much needed.* IIED, London. See: http://pubs.iied.org/17165IIED

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**Contact**

belynda@oneworldgroup.co.za

emma.wilson@iied.org

IIED, 80–86 Gray's Inn Road, London, WC1X 8NH, UK
Tel: +44 (0)20 3463 7399
Fax: +44 (0)20 3514 9055

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