

Death and destruction: What's left out of energy planning



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The Department of Energy's released Integrated Resource Plan does not seriously factor in the pollution impact of its current and planned energy mix and appears to have distorted the data to favour coal and nuclear.

Pollution from Eskom's power plants result in 2,240 attributable deaths each year. And every day, some 11,000 people are physically restricted in what they can do while 2,700 lose the day's work. The economic impact is in the order of R33-billion a year according to an assessment of the epidemiological data by researcher Mike Holland.

These figures relate only to power plant emissions of sulphur dioxide, nitrogen oxides and particulates. They do not take account of the impact of coal mining – which include emissions from fires on mines and discard dumps as well as the thick clouds of dust thrown up by blasting. Nor do they take account of other industrial emissions which may compound the effects of power station pollution.

The results are also limited because some known health impacts are not yet understood well enough. Among other things, pollution results in reduced physical and mental development. Hence, as was shown in a health study in industrial south Durban, people who grow up exposed to pollution do not get used to it but are made even more vulnerable to it. And, since dirty industry is mostly located in poor areas, these impacts come on top of other factors such as poor nutrition and the high incidence of TB and HIV/Aids.

Beyond air pollution, the mines and power stations have a devastating impact on land and water. A large part of the Mpumalanga Highveld is quite simply ruined. In many places, the water is undrinkable but many people must drink it anyway because they don't have money for bottled water. Fertile land is left lifeless and food cannot grow on it.

Finally, Eskom's greenhouse gas emissions make it a climate villain. On the coal fields, the impacts of climate change are amplified by the vulnerability of people and their environment.

With the global temperature at over 1°C above normal, people are already feeling heat and the recent drought followed by flash floods gives but a taste of what is to come. The rate of warming is now increasing fast. All countries have agreed to limit global warming to 2°C but, without very steep reductions in carbon emissions, that mark will be exceeded in about 20 years. In South Africa, inland temperatures will then be 3 to 4°C above normal and people's survival will be at stake.

Little of this is seriously factored into South Africa's energy planning. Late last year, the Department of

Energy released the Integrated Resource Plan (IRP) 'base case' for the period 2020 to 2050 for public comment. It was met with widespread disbelief. Amongst other things, it exaggerated future demand, depressed the costs of coal and more spectacularly of nuclear, inflated the known costs of renewables and put an arbitrary limit on how much renewable energy can be added each year.

The IRP base case noted the "externality" costs associated with air pollution from power stations but it was not clear if these costs were actually integrated in the modelling. At any rate, the assumed externality costs amount to only 1% of system costs – about R2-billion in 2016. And it did not integrate climate costs but assumed a "moderate decline" in greenhouse gas emissions.

Most observers concluded that the DoE had distorted the data to favour coal and nuclear. The DoE has repeatedly said that this was not their intention. That claim will shortly be put to the test. Formal comment was due in at the end of March and the DoE is presumably preparing the next iteration of the plan.

That plan will be compared with comment submitted by the energy unit of the Council for Scientific and Industrial Research (CSIR) which, as energy analysts Roger Lilley and Chris Yelland observe, presents a comprehensive alternative IRP. The CSIR team used the same modelling programmes as the DoE and produced two main scenarios: "least cost" and "decarbonised".¹

Least cost is what technical energy planners argue should be the base case for any IRP process. To maintain comparability, the CSIR retained several of the DoE's assumptions including future demand and the

“moderate decline” in greenhouse gas emissions. It also kept the DoE’s cost figures for coal, gas and nuclear but it corrected the costs of wind and solar PV to reflect actual costs bid in the most recent round of the renewables procurement programme. And it removed the DoE’s limit on how much wind and PV can be added each year.

The result is that all new capacity is renewable, supplemented by storage and gas, and no new coal or nuclear plants are built. By 2050, this is R73-billion per year cheaper than the DoE base case, carbon emissions are at 86-million tonnes a year (Mt/y) compared with 187 Mt/y, and water consumption is 15 billion litres a year compared with 41 bl/y. Moreover, the least cost energy system employs more people: between 310,000 and 325,000 compared with 252,000 295,000. The figures include jobs in mining coal but not jobs in manufacturing renewables.¹

The CSIR’s “decarbonised” scenario reduces CO₂ emissions as fast as possible. It keeps the same assumptions on demand and technology costs as “least cost” but Eskom’s power stations are retired early and Kusile is not completed. In the early years, the model adds more gas to compensate but the rest of the expansion is renewables. By 2050, total system costs at R675/y are higher than “least cost” but still R25-billion less than the DoE base case. Carbon emissions are down to 10 Mt/y and water use down to 10 bl/y. And employment is up to 331,000.

The CSIR team conclude that South Africa can “decarbonise its electricity sector without pain” as “clean and cheap are no longer trade-offs”. They do this without challenging the DoE’s somewhat fantastical

assumptions on the costs of nuclear power. And they also refute the argument that a rapid shift to renewables will collapse the grid.

What they do not do is account for the benefits of clean electricity. Just as trashing the environment is termed an “externality”, so too the benefits of clean energy are external to the system. Taking the economic foot off the fossil fuel pedal would start a process of detoxing the world. For a start, the air would clean up fairly quickly and put thousands of people on the path to recovering their health.

Other things take time and work. Hundreds of old coal mines litter the landscape of the Highveld, the Vaal and northern KZN. Very few of them are properly rehabilitated and many are just abandoned. Mining does permanent damage but what can be done to restore the earth must be done. In particular, acid mine drainage must be stopped or contained so that the rivers can be revived. This is essential to survival as climate change intensifies. The work of restoring the old mine regions would employ thousands of mineworkers.

There is also a high potential for jobs in renewables manufacturing if a steady project pipeline creates the demand. And beyond that, thousands of jobs are needed in an expanded public transport system, in making a zero waste economy with high levels of recycling and the use of wet waste and sewage for biogas production, in non-toxic chemistry and many other fields.

This remaking of the economy requires a just transition that relates to workers and to the people as a whole. It is essentially about how people will live and is given particular relevance in the present context of high

unemployment and the vulnerabilities that go with it. It is also concerned with relations between men and women. The specific vulnerabilities of women are most often the result of their subordination with patriarchal relations.

A more equal society must be part of a just transition. It is essential for mitigation and adaptation. The economy created by capital, energy and carbon-intensive development is grossly unequal and has resulted in over 35% unemployment while 57% of the people live in poverty. A sustainable society that caters for everyone can only be founded on democratic economic relations. That requires confronting the power of corporate capital and initiating a major shift in economic priorities. Without this, climate response strategies are likely to entrench inequality and will ultimately prove counter-productive. **DM**

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