

# Burning coal causes deaths and illnesses

ANDYLE MAY

About 85% of energy generated in the world is produced from burning fossil fuels like coal, oil and natural gas.

In South Africa our household and industrial electricity is supplied mostly by Eskom, the state-owned public utility established in 1923 as the Electricity Supply Commission.

According to Eskom, South Africa's sources for electricity generation in 2015 were 83% coal, 5% nuclear, 4% independent power producers (IPPs), 4% imports, 3% gas turbine, and 1% other.

Electrical energy supply is measured in derived units called kilowatt-hours, abbreviated as kWh. On average, for every 1kWh of Eskom electricity generated, 1kg of carbon dioxide equivalent (CO<sub>2e</sub>) gas is produced and 1.4 litres of water is used.

In 2016 the average household in South Africa used 335kWh of electricity a month, which is around 250 billion kWh in total for the year. This means we emitted 250 billion kg of CO<sub>2e</sub> and other serious pollutants into our atmosphere and used 350 billion litres water just to bring power to our homes.

Why is burning fossil fuels a problem? A 2013 health impact assessment estimated that in South Africa air pollution from



burning coal could cause around 6000 deaths, 60 000 major illnesses and 3.5 million minor illnesses. Besides affecting the air we breathe, the pollutants also mix with moisture in the atmosphere to make acid rain, which causes environmental damage to forests and lakes.

South Africa is also a water-stressed country with annual rainfall almost half the world average. Indeed Cape Town is currently in the midst of a drought and experiencing significant water supply issues. Then does it really make sense for us to cause so much harm and use so much water when making our electricity?

South Africa has one nuclear power plant, Koeberg in the Western Cape, which is said to be a cleaner and more efficient way of producing electricity. Some people in our national government are pushing for more nuclear reactors to be installed around the country to meet our future energy needs, but worldwide, nuclear adoption is on the decline. This is partly due to the very high costs of building



Children in China living with the effects of air pollution.

PICTURE: SUPPLIED

nuclear power plants and also the safety concerns.

There have been quite a few nuclear disasters where nuclear reactors have leaked or exploded, such as at Chernobyl, Three Mile Island and more recently Fukushima in Japan, which spilled large amounts of radiation into the ocean in 2011 following an earthquake.

Nuclear power has been around since the 1960s and is a well-established and reliable source of energy that can be installed on a par with coal and oil. However, the provision of

the uranium fuel and the need to store or dispose of the high, medium and low-level radioactive waste does produce pollution and definitely increases costs.

The high level nuclear waste can remain radioactive for a million years and needs to be securely stored for that time. Given the dangers, there are also very high costs associated with decommissioning a nuclear plant. For example, it is estimated that just to decommission the Dounrae and Sellafield nuclear plants in the UK will cost around £150 billion, or nearly R2 trillion.

Given these concerns, all of us should be questioning whether nuclear really is the way forward.

Next week we'll look at some other clean energy generation technologies.

#### Questions:

1. Which of the following is not a

fossil fuel: coal, oil, liquid petroleum gas?

2. What does Eskom stand for?

3. What is an IPP?

4. True or False: in South Africa 83% of electricity is produced from burning coal.

5. Approximately how many litres of water are needed to produce 1kWh of electricity?

6. If your home used 750kWh of electricity per month, how much CO<sub>2</sub> will be emitted into the atmosphere (a) in a month and (b) in a year?

7. Where is the city of Fukushima and what happened there in 2011?

8. Why is exposure to nuclear radiation harmful?

9. Where is high level nuclear waste usually stored?

10. What does it mean to decommission a nuclear power plant?

Answers on page 7

## Looking for another Breakfast Show?



# #MagicBreakfast

with Guy McDonald

Music Radio | [www.magic828.co.za](http://www.magic828.co.za) | on **828 AM**



### Read of the Week

**Hello, Crochet**  
Cornel Strydom, Elsbeth Eksteen and Anisa Fielding  
**Crochet Tile Motifs With A Difference**  
Karen Adendorff  
**Human & Rousseau**  
Review: Lauren O'Connor-May

*Hello, Crochet* boasts having "fun and funky" crochet projects but I disagree. There is very little that is fresh about this book.

While browsing through it, I found only a few patterns I was tempted to try.

There are a lot of really modern, interesting and practical patterns that one could get online for free, so I felt the asking price of R310 was a bit much for a book full of patterns that are, for the most part, old-fashioned and basic.

One of the really nice things about crochet is its versatility but this book turns that on its head – bar a handful of patterns.

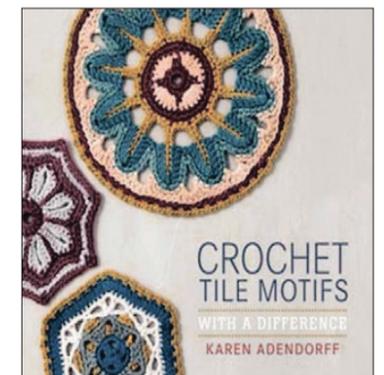
The exceptions are the Ivy Kimono, the Rose Hat, the Elmaire Top, a few of the doll patterns and a couple of others.

I also didn't like that a large number of patterns are made out of monochrome granny squares: granny square skirts, granny square shawls, granny square bags, granny square hats, granny square fingerless gloves, granny square dresses.

Perhaps I'm wrong, but my understanding of granny square is to use left-over bits of yarn to make colourful items.

If an item is styled to be in only one colour then the large variety of textured patterns would surely be the way to go.

Granny squares are enduringly popular because they are practical and I've seen many useful books or online patterns that have taken the idea up a notch to make interesting and complex variations of all manner of granny shapes and sizes. *Crochet Tile Motifs*, another book which landed on my desk, is one that does exactly this.



The book doesn't feature many patterns for clothing or household items but it does have a fiesta of granny shape upgrades.

The author also seems to have put a lot of planning into the designs because the styles are diverse and intricate – borrowing from Moroccan, Persian and Mediterranean cultures.

Ms Adendorff, who has written 10 other crochet books, innovatively uses layering to give texture and 3D finishes to what would have ordinarily been simple designs.