

# THE ENERGY ETHICS CURRENT



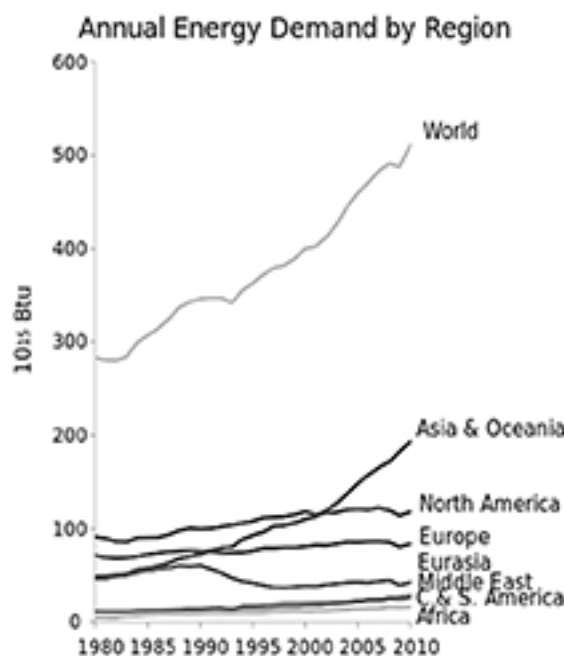
"Exploring Today's Power Dilemmas"

## BLACK AND WHITE THINKING DOESN'T WORK IN A GREY WORLD: Finding a sustainable energy future together

The global consumption of energy is rising at an astonishing rate – we demand an ever-increasing supply of energy to heat our homes, cook our food, and generate our electricity. We also require growing amounts of fuel to power our motor vehicles, such as cars, trains, ships, and planes. And we rely on a whole range of products that derive from petroleum including plastics, solvents, detergents, lubricants, adhesives and fertilisers. Given our lifestyles today, we have come to depend on a wide range of uses to which we put our energy sources. And this dependence is rising. Collectively, across the world, we are currently using more units of energy than we ever have in human history. Energy producers are now seeking increasingly innovative ways of harvesting energy from fossil fuels, nuclear and

renewable resources. With a growing demand across the world, energy producers, whether big corporations or individual people, are presented with an enormous task: How to produce the energy that we have come to expect? Which energy sources will we develop – and at what cost? This cost is not just financial and technical but also environmental, personal, and political. And as such, questions about energy production – what kinds of energy sources we will develop and how we will develop them – immediately and necessarily involve questions about energy consumption – how much energy do we actually need? And how much energy would we like to have at our disposal?

The supply and demand of energy are thus interrelated, but not in a simple, linear way. There are countless factors that come into play at various levels, locally, nationally, and internationally. New technical initiatives may be launched; different policy interventions may be applied. National security may have become a new political discourse; transnational wars may have erupted. Concerns about climate change may have intensified; global trade deals may have emerged. Questions about energy become much bigger questions about the world in which we currently live and the world in which we would like to live. What kind of future do we desire for ourselves and our others? Although this may sound esoteric and abstract, it is also practical and personal. It is about the kinds of values that we emphasise and attach importance to as we go about our lives. It is about our ethical sensibilities, about what we consider to be 'right' or 'good'. Questions about energy are not just for politicians and industry, for decision-makers at macro-levels, but for each and every one of us.



Note: World primary energy consumption in quadrillion Btu. Retrieved from U.S. Energy Information Administration. Copyright 2012.

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Some people have very strong views on how they use energy and where that energy should come from. And the case of hydraulic fracturing (also known as ‘fracking’) for oil and natural gas has given rise to particularly vociferous and polarised views. Requiring 4-15 million litres of water to complete each fracturing job, some people feel that the environmental costs are much too high for the energy that is produced. Others feel that investing in and perfecting techniques for the production of more fossil fuels is misplaced and ought to be put towards improved techniques for producing energy from renewable resources. Again others feel grateful for the lower energy prices that have been brought about partly due to hydraulic fracturing. And others dismiss the tendency towards scare-mongering by emphasising that hydraulic fracturing is not something new; it is a technique that has been used for over half a century to improve the flow of oil and natural gas from conventional reservoirs. Yet, what is new is that hydraulic fracturing is now used in horizontally drilled wells that require much more water and repeated application to release the desired amount of oil and natural gas.

Debates and viewpoints are often cast in terms of being ‘for’ or ‘against’. A very black and white oppositional representation that misses all the nuances in people’s conceptualisations of the world in which they live. And this is not just common in political rallies, but also in informal conversations, media representations, and academic debates. It so easily becomes a political field where ethics is devoid



Note: The crashing oil price (not adjusted for inflation). Retrieved from <http://www.moneyam.com/> Copyright 2016.

of the uncertainties, bewilderments, questions and conflicts that are part of the realities of daily life. While some people might feel confident in their convictions, many others might not feel the same. And rather than calling on people to find their faiths and certitudes, whatever those might be, bewilderments and questions are much more likely to facilitate not only our own personal reflections on the ethics of energy, but also the potential for the development of a constructive dialogue between us on this issue. If we hold really set views, it can be difficult to have the kind of conversation that can include stakeholders as varied as local interest groups, industry, government and environmental organisations.



Note: Ten-day moving average of prices of NYMEX Light Sweet Crude. Prices are nominal (not adjusted for inflation). Retrieved from New Mexico Institute of Mining and Technology. Copyright 2008.

So, with the aim of facilitating reflection and dialogue, social anthropologist Dr Mette M. High at the University of St Andrews leads a multi-year transdisciplinary project entitled Energy Ethics. This project seeks to open up a truly novel line of enquiry that focuses on us people and not just on the resources. Ethical sensibility is a capacity that is rooted in people; it is not a static property inherent in certain kinds of energy sources. By returning attention to human actors, this project positions people as not only central to, but also responsible for our larger energy predicament as we ask: How would we like to sustain human and other life?



# IN CONVERSATION:

## Views from the oil fields on oil, money and life

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### DEBBIE\*

Rancher in rural Colorado, July 2014 at the height of the hydraulic fracturing boom for oil and natural gas in Colorado:



This is buffalo country! My family has been ranchers for generations. When I grew up, I knew I was going to be a rancher like everyone else. But then, in 2008, everything suddenly changed. Oil and gas was on everyone's lips. We all talked about it because the companies suddenly couldn't get their wells fast enough in the ground.

The company men were doing their rounds, knocking on people's doors, sweet-talking them into leasing out their mineral rights to the companies. And one day, someone came knocking on our door. Someone from the oil and gas company. He told us that the company wanted to drill on our land and they could offer us good money in return. And they did! We suddenly received so much cash! And, do you know what? Yeah, it was noisy when they were drilling and fracking. Yeah, there were loads of haulers on our dirt roads. And yeah, I was worried about the earthquakes people talk about, and the chemicals and stuff.

But I think we were lucky. Because if we hadn't owned those minerals rights, someone else would. And that's what it's like for our neighbour - he doesn't own the

mineral rights to his own piece of land. He doesn't get anything. He only gets all the noise, traffic and worries..."

### DEAN

Oil executive in Denver, Colorado, November 2015 when hydraulic fracturing was no longer a profitable technology for the extraction of oil and natural gas in the US:



"It's tough. It's real tough. We in the oil industry know this. We have been here before - we are used to the cycles. Boom time, then suddenly bust. But this is a really bad bust. So many people are now getting laid off. So many contracts have to get terminated because we just can't afford drilling those wells right now. We are getting nothing for our oil. But when we stop drilling, our bottomline doesn't look so good....and many companies have already gone bankrupt, bought up by others, or merged. It's tough to survive these times.

This is the time when all the wildcatters stop and small companies give in to the Majors. Only the big companies can weather the storm. I see so many colleagues, great guys, getting fired right now. And they have gotten so used to living this lavish lifestyle, right? We all want big houses, big cars, big holidays. We have come to rely on the big bonuses. And then when it dips, we get nothing. I'm just lucky to still have a job."

\*Name(s) have been changed to ensure personal anonymity.



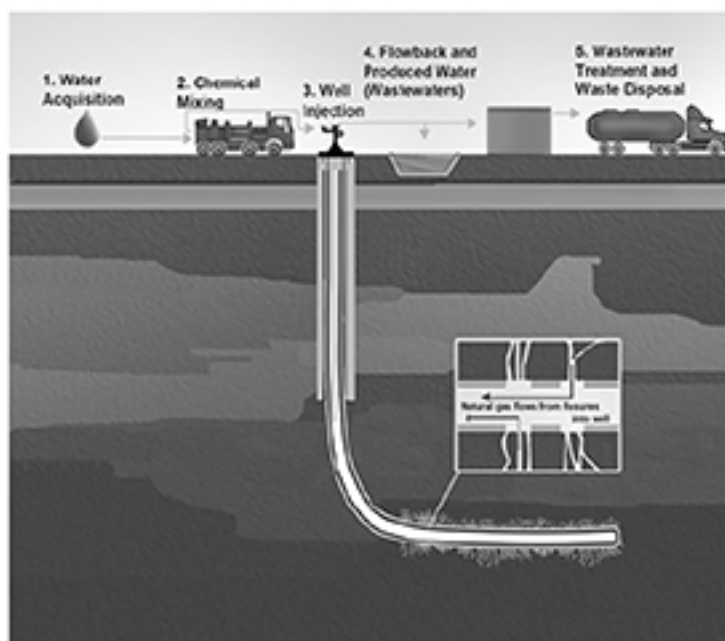
# MIKE

Retired driller in rural Colorado, November 2015 when hydraulic fracturing was no longer a profitable technology for the extraction of oil and natural gas in the US:



"I'm real proud of what I've done. For 30 odd years, I have worked on rigs, drilling wells and I know I was good at it. Actually, WE were good at it. This is an industry where people come together and work long gruelling shifts. And we want to get as much oil out of the ground as possible. It isn't just about the pay – well, it certainly is about the pay!

But it's also that we take pride in what we do. We become known as a great crew and get that kind of name. We'd go to the local diner and everyone would know about us. But it just isn't possible with these price dips. When the price suddenly drops, your closests get laid off. And I got laid off too pretty much every time it was going through a bust. I don't know what the future will be like. I don't think the new guys are as committed as we were. We stuck together through the hard times and that's why we were good. We knew each other, we really did. Today guys are keen when the times are good. When the times are bad, they just disappear, never to return. And with that attitude, you'll never be a good driller..."



Note: Illustration of hydraulic fracturing and related activities. Retrived from: [https://en.wikipedia.org/wiki/Environmental\\_impact\\_of\\_hydraulic\\_fracturing](https://en.wikipedia.org/wiki/Environmental_impact_of_hydraulic_fracturing)

# ROB

Subcontractor in rural Colorado, August 2015 when hydraulic fracturing was no longer a profitable technology for the extraction of oil and natural gas in the US:



"If you want to make a living, you got to be willing to roam. You got to be willing to go where the jobs are. Otherwise you get nothing. I'm originally from Upstate New York. I moved here, partly because I was in love, but also because there was oil. There were jobs here, there was money. I have worked at the wastewater treatment plant – the kind of ugly place where all the dirty water from the wells gets offloaded and we are there to try to get every last drop of oil out of it. It's a horrible job. When I come home, I have this beating headache.

And it isn't just me – all of us working at the plant get headaches. It's probably the fumes when we have to vent the tanks....but the worst really is the 'gel': the chemical fluid that they use when they frack. When it comes here, to us, it's like Vaseline. Thick, viscous and nasty! I'm kind of glad there isn't so much oil production right now. I saved up some money. Renovated my house. Bought a new motor-bike. I'd like to get a job doing something else...but it's good money".

## What is fracking?

Hydraulic fracturing, or fracking, is a method of forcing natural gas or oil from rock layer deep below the Earth's surface.

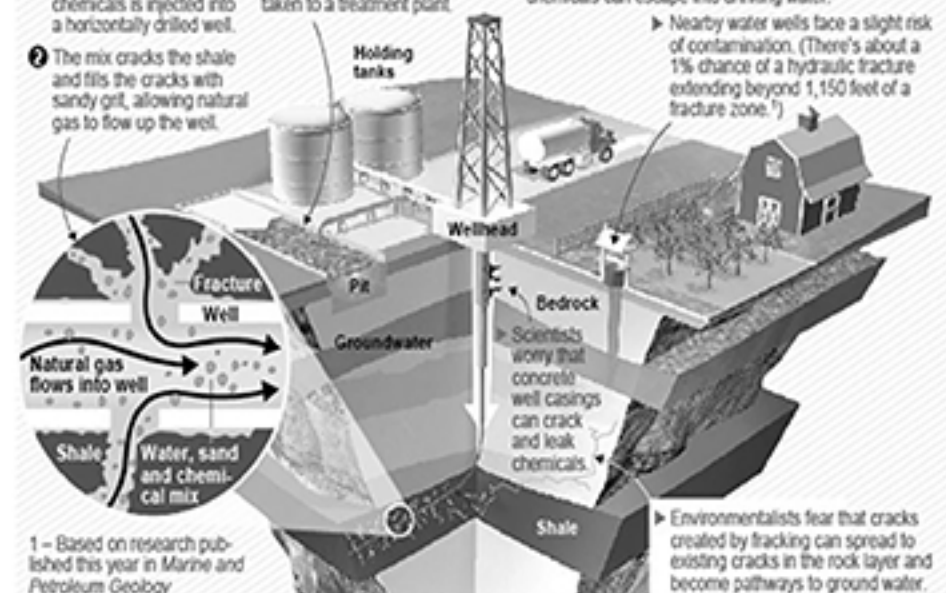
### How fracking works ...

- 1 A pressurized mixture of sand, water and chemicals is injected into a horizontally drilled well.
- 2 The mix cracks the shale and fills the cracks with sandy grit, allowing natural gas to flow up the well.
- 3 The recovered water is stored in lined pits or taken to a treatment plant.

### ... and why it's controversial

Much of the water used in fracking is collected from the well and processed, but some communities have raised concerns that potentially carcinogenic chemicals can escape into drinking water.

- Nearby water wells face a slight risk of contamination. (There's about a 1% chance of a hydraulic fracture extending beyond 1,150 feet of a fracture zone.)



1 – Based on research published this year in *Marine and Petroleum Geology*

Sources: Duke University; U.S. Energy Information Administration; National Research Council; *Marine and Petroleum Geology* By Dan Vergano and Karl Gelles, USA TODAY



# WANT TO KNOW MORE ABOUT ENERGY ISSUES?

## For the book lovers...

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*The Prize* by Daniel Yergin

Publisher: Simon & Schuster UK  
(19 Jan 2009)

Language: English

Literary Awards: Pulitzer Prize for General  
Non-Fiction; the Eccles Prize for the best  
book on economics for a general audience

**“A masterly written epic about oil - and the  
struggle for wealth and power that has  
always accompanied it”**

This book is often a reference point in conversations about oil. And that is undoubtedly because it has all the ingredients needed for a captivating and informative read. The author Daniel Yergin is the founder of a leading energy consulting firm and he has written several acclaimed books, the most well-known of which is 'The Prize': A number-one bestseller that has been adapted into a PBS/BBC eight-part mini-series seen by more than 20 million viewers. 'The Prize' is an impressive and eloquently written narrative history, full of incredible characters, fascinating stories, and driven along by fateful events like World War I and World War II, both of which played a decisive role in making oil the world's most demanded energy resource.

As each chapter, war and era unfold in Yergin's account, you will gain insights into the rise and development of our hydrocarbon-based society. It reveals how and why oil has become the largest industry in the world, transforming the destiny of people and nations. Its breadth is enormous – from the drilling of the first well in Pennsylvania through the world wars to the Iraqi invasion of Kuwait.



It also traces the failed attempts with renewable energy sources as far back as the turn of the 19th century. And it shows how many Western nations have failed repeatedly in making renewable fuel investments, even when those energy sources were in positions to have paid similar dividends. This book's cast encompasses the wildcatters, rogues and oil tycoons as well as the politicians and heads of state. Its vivid portrayal of these characters gives the reader a rare glimpse into the interweaving of national and corporate interests, the strategies and conflicts, the miscalculations and ironies that have led us to where we are today. It is thus at once a grand and not-so-grand narrative of us human beings. It is a chronicle of epic events that have touched and continue to touch all our lives.

## Covehithe by China Miéville

Publisher: The Guardian, online  
(22 Apr 2011)

URL: <http://www.guardian.co.uk/books/2011/apr/22/china-mierville-covehithe-short-story>

Language: English

Literary Awards: British Science Fiction Association (BSFA) Award Nominee for Best Short Fiction

**“An absolutely magical and strange story of animate oil platforms setting out from the depths of the ocean”**

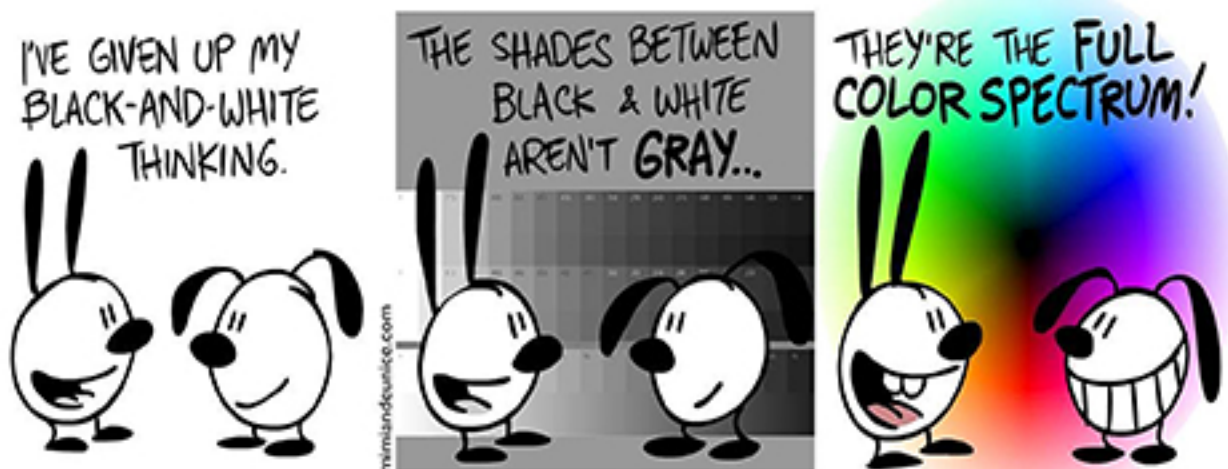
This is China Miéville’s contribution to The Guardian’s 2011 short fiction project entitled Oil Stories. The UK-based newspaper was keen to explore how issues of climate change, peak oil and pollution not only dominated our everyday lives, but also affected our imagination. It asked writers from around the world to “drill down through layers of cliché and cant to explore the hidden reservoirs which fuel our dreams and power our nightmares”. And the so-called Master of Weird, multiple award-winning, China Miéville has created a hauntingly beautiful story of petrochemical romance that so certainly delivers on its brief.

It is a story about a man and his daughter who have come to observe an oil platform emerging from the sea. The enormous structure rises to the surface in order to drill leathery oil sacks of riglet eggs into the forsaken shores of a crumbling and vaguely dystopian Sussex. But it isn’t just



Sussex that is visited by the animate oil platforms. The man-made industrial structures, so crude and massive in their infrastructural purpose of energy production, evolve in different parts of the world, memorised through accidents and disasters, and become something organic, vulnerable yet fearsome, and almost likeable.

Miéville delights in words, some of them heavy, some of them so simple. His writing is distinctive as is his remarkable imagination. The reader is drawn in, to ask questions rather than finding answers. And although it is a short story, covering only 11 pages, the questions, and the universe within which they emerge, are likely to stay with the reader for a long time as they unsettle both dreams and nightmares.





# GLOSSARY

## **Fossil fuels:**

There are three major forms of fossil fuels: coal, oil and natural gas. All three were formed many hundreds of millions of years ago, hence the name of 'fossil fuels'. They were formed in the Carboniferous Period, part of the Paleozoic Era. The word 'carboniferous' is derived from the word 'carbon', which is the basic element in fossil fuels.

## **Hydraulic fracturing** (also known as 'fracking'):

Hydraulic fracturing is the process of drilling and injecting fluid into the ground at a high pressure in order to fracture shale rocks to release the oil and natural gas that is contained inside. It is often combined with the process of horizontal drilling in which the well is turned horizontally often at great depth. For example, in the Bakken formation in North Dakota of the US, which is one of the most intensively developed areas in the US, wells are drilled to a vertical depth of 11,500 feet (3500 meters) and completed with up to 10,000 feet (3,000 meters) in horizontal direction.

## **Natural gas:**

Natural gas is mostly made up of a gas called methane, but also commonly includes some carbon dioxide, nitrogen, and hydrogen sulfide. Natural gas is usually found near petroleum underground. It is pumped from the underground through pipelines to storage areas or is flared.

## **Nuclear power:**

Nuclear power is generated from nuclear reactions that release energy to generate heat and electricity. Nuclear power is a low carbon power generation and has similar greenhouse gas emis-

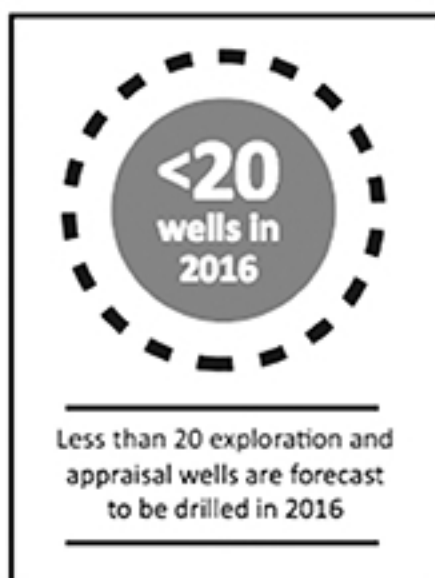
sion per unit of energy generated to renewable energy. Yet, there have been disastrous fission power reactor accidents, and high-level radioactive waste disposal remains an ongoing problem that is debated in governments around the world.

## **Petroleum:**

Petroleum (L. petroleum, from Medieval Latin: petra: "rock" + oleum: "oil") is a naturally occurring, yellow-to-black liquid found in geological formations beneath the Earth's surface, which is commonly refined into various types of fuels. Petroleum is formed when large quantities of dead organisms, usually zooplankton and algae, are buried underneath sedimentary rock and subjected to both intense heat and pressure. It is refined and separated, most easily by distillation, into a large number of consumer products from petrol and kerosene to asphalt and chemical components used to make plastics and pharmaceuticals. Petroleum, in one form or another, has been used since ancient times. The rise in importance was due to the invention of the internal combustion engine, the rise in commercial aviation, and the importance of petroleum to industrial organic chemistry, particularly the synthesis of plastics, fertilizers, solvents, adhesives and pesticides.

## **Renewable energy:**

Renewable energy is naturally replenished over a short time scale. It thus includes energy derived from sunlight, wind, rain, tides, waves and geothermal heat. Interest in renewable energy in the UK has increased in recent years partly due to new UK and EU targets for reductions in carbon emissions and the promotion of renewable electricity power generation and renewable heat.



Note: Images from Gas & Oil UK. Copyright 2016.

# QUIZ!

## How will you score on the ENERGY QUIZ?

1. True or false: Screen savers reduce a computer's energy use.
2. Where did the energy stored in fossil fuels originally come from?
  - a. Plants
  - b. Sunlight
  - c. Animals
3. True or false: Lighting is the main use of energy in an office
4. What did crude oil replace as lamp fuel in the 1860s?
  - a. Methane
  - b. Whale fat
  - c. Alcohol
5. True or false: Using a phone charger for 1 hour uses less energy than boiling a kettle for 2 minutes.
6. Which of the following is a non-renewable energy resource?
  - a. Wind power
  - b. Biomass
  - c. Natural gas
7. The world's largest oil refinery, with a production capacity of 1.24 million barrels per day, is where?
  - a. Ukraine
  - b. Bahrain
  - c. India
8. What percentage of the UK CO<sub>2</sub> emissions comes from residential homes?
  - a. 26%
  - b. 5%
  - c. 34%
9. The first oil well was drilled in 1859. Where?
  - a. Venezuela
  - b. Iraq
  - c. US
10. Which product is not made from petrochemicals derived from oil or natural gas?
  - a. Rubber
  - b. Aspirin
  - c. Lipstick
11. How much of the volume of cars produced today is comprised of advanced plastics made from oil and natural gas?
  - a. 10%
  - b. 30%
  - c. 50%
12. With the global economy expected to grow 130% from 2010 to 2040 and population expected to increase to 9 billion, how much MORE energy will be required?
  - a. 10%
  - b. 35%
  - c. 50%

Answers: 1. false (always remember to turn off your monitor when away from your computer), 2. a, 3. false (correct: heating), 4. b, 5. true, 6. c, 7. c, 8. a, 9. c, 10. a, 11. c, 12. b



Note: Retrieved from Children's University of Manchester. Copyright 2012.



The Leverhulme Trust



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mmh20@st-andrews.ac.uk / www.energyethics.org.uk

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chrissyhughes@gmail.com