

# Turn waste into wealth: Plan B for the fossil-fuel industry

Graeme Taylor, June 25, 2013

## *The odds against tomorrow*

Is there any future for the coal, oil and gas industries if they stop selling deadly pollutants? In *Global Warming's Terrifying New Math*, Bill McKibben argues:

We have five times as much oil and coal and gas on the books as climate scientists think is safe to burn. We'd have to keep 80% of those reserves locked away underground to avoid that fate. Before we knew those numbers, our fate had been likely. Now, barring some massive intervention, it seems certain.

Yes, this coal and gas and oil is still technically in the soil. But it's already economically aboveground—it's figured into share prices, companies are borrowing money against it, nations are basing their budgets on the presumed returns from their patrimony. It explains why the big fossil-fuel companies have fought so hard to prevent the regulation of carbon dioxide—those reserves are their primary asset, the holding that gives their companies their value....

If you told Exxon or Lukoil that, in order to avoid wrecking the climate, they couldn't pump out their reserves, the value of their companies would plummet... [A]t today's market value, those 2,795 gigatons of carbon emissions are worth about \$27 trillion. Which is to say, if you paid attention to the scientists and kept 80% of it underground, you'd be writing off \$20 trillion in assets. The numbers aren't exact, of course, but that carbon bubble makes the housing bubble look small by comparison. It won't necessarily burst—we might well burn all that carbon, in which case investors will do fine. But if we do, the planet will crater.

You can have a healthy fossil-fuel balance sheet, or a relatively healthy planet—but now that we know the numbers, it looks like you can't have both.

Because investors, corporations and governments will do everything possible to avoid bankruptcy, it is inevitable that efforts by environmentalists to shut down fossil fuel production will meet fierce resistance.

As a result it is hard to imagine any scenario in which preventative action will be taken in time to prevent rising temperatures and increasingly extreme weather from destroying harvests and killing rainforests, and stop oceans from becoming too acidic for most marine life to survive. But we must find solutions, or doom our children to living on a dying planet.

## *The need for a win-win strategy*

Businesses and environmentalists are currently locked in a zero-sum contest to either burn fossil fuels or or keep them in the ground. This approach fails to give the industry and its

investors any option other than to oppose environmental initiatives. Because time is of the essence, the kicker is that all of humanity is sure to lose if political action on climate change is postponed for decades while environmentalists battle for public opinion with the world's most powerful industry.

Instead the environmental movement needs to develop a strategy that reduces opposition and accelerates change. It should encourage constructive behaviour through combining a push—growing pressure to shut down polluting industries—with a pull: the promise of better and more profitable ways to do business.

The political and economic power of the fossil fuel industry comes from its essential role in maintaining the industrial economy: because poverty is not an acceptable option, almost everyone on the planet supports economic growth. For this reason it is not enough to talk only about stopping fossil fuel pollution: we also need to talk about how we can simultaneously create better methods of production and consumption—how we must and can completely transform our wasteful, polluting, unsustainable global economy into one based on radically more efficient, non-polluting, renewable and recyclable processes.

We are likely to be more successful if, instead of trying to force the energy industry to write off \$20 trillion, we propose alternative uses for their assets — ones that support the development of an environmentally, economically and socially viable global system.

### *Using both carrots and sticks*

Environmental organisations are applying pressure where fossil fuel producers and consumers are most vulnerable: their finances. They are pointing out that fossil fuels are sunset industries; that pressure to take action on climate change will only increase; that this will inevitably result in ever-increasing carbon taxes and regulatory restrictions; that the worst polluters—like the coal industry—will be hit first and hardest; and that the result is likely to be rising costs, collapsing markets, and stranded assets. Investors (e.g. pension fund managers) are advised to pull out of such high-risk gambles.

The other side of this equation also needs to be emphasized. Renewable energy will soon be cheaper than energy produced from fossil fuels. Because green technologies are sunrise industries with rapidly declining costs and rapidly expanding markets, the future of business lies in the development of disruptive, sustainable technologies.

In the coming decades humanity will have to come to grips with the finite ability of our planet to produce resources and absorb pollution: the threat of catastrophic climate change will force humanity to stop damaging our environment, and growing shortages of critical resources will force us to produce and use goods much more efficiently. However, at the same time we will need to meet the needs of the poor majority of the world's people for more commodities, including adequate housing, sanitation, transportation, education and health.

In order to sustainably produce a much larger quantity of goods, not only will we need to make most products recyclable, but we will have to find new ways to utilise the resources that are abundant—e.g. energy from renewable sources such as geothermal, solar and wind; and atmospheric and organic carbon.

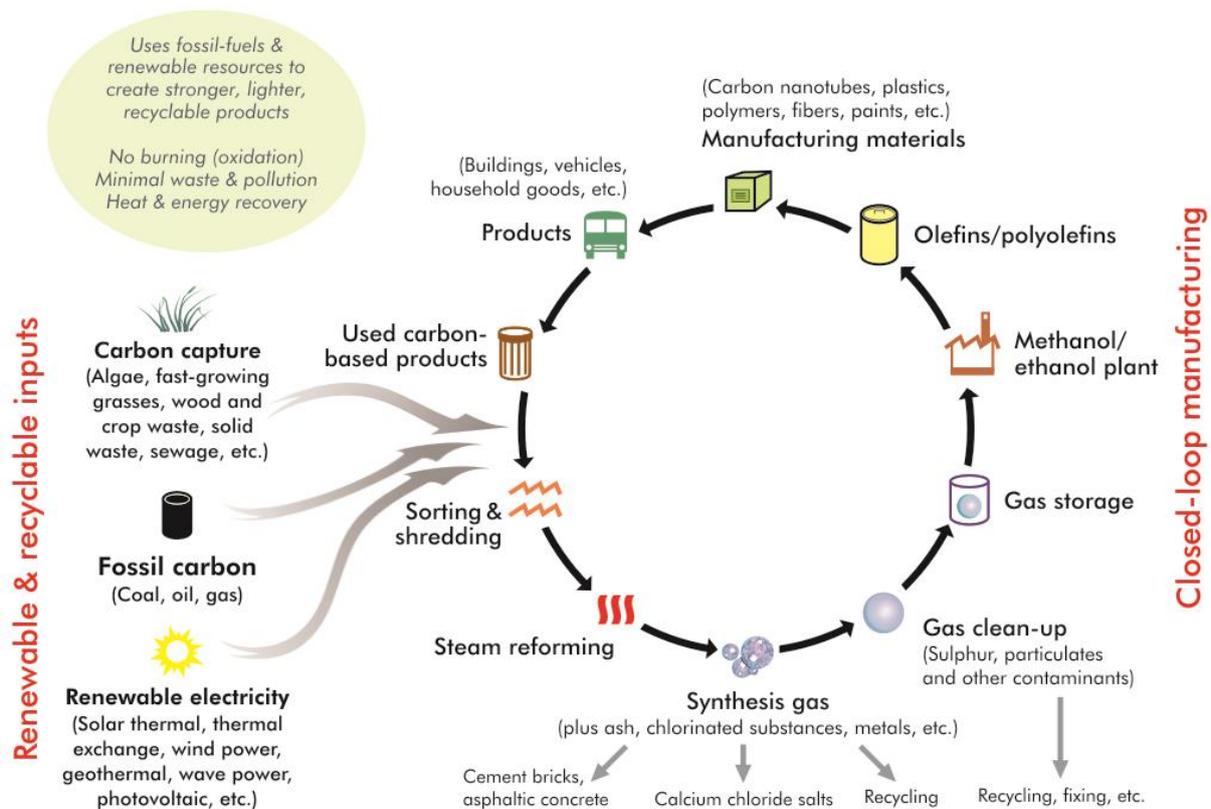
Fossil fuels are made up of complex hydrocarbons which are already used to make many products (e.g. plastics, paints, building materials). Rather than demand that businesses keep these resources in the ground, we should ask industry to stop burning them and instead create non-polluting processes that use these valuable materials to manufacture needed products.

### Creating a sustainable fossil-fuel industry

"Plan B for the fossil-fuel industry" is a win-win approach: it can prevent most industrial carbon pollution; it can meet the demand for sustainable economic growth; and it can draw down carbon dioxide from the atmosphere. Some key concepts are:

1. Technologies can be developed that use carbon to manufacture fully recyclable products in non-polluting (e.g. non-aerobic) processes.
2. Since both fossil carbons and carbon captured from the atmosphere can be used as feedstocks, this will greatly increase the resources available to produce industrial products as well as help reverse global warming.
3. Carbon based materials (e.g. plastics, fibres, carbon nanotubes) could then be used to manufacture a wide range of commodities and fabricate much of our built environment.

### Reversing global warming with industrial carbon sequestration



4. While these technologies already exist, they need to be improved and scaled up to commercially competitive levels. (These challenges are similar in complexity to those involved in developing smartphones.)
5. Non-polluting energy sources will also need to be reduced in cost and scaled up to power the new manufacturing processes. These could include large-scale renewable sources (e.g. geothermal, offshore wind or solar thermal), safe nuclear (e.g. thorium and/or Gen IV reactors), and fossil-fuel generation using carbon capture and storage.
6. Manufacturing products with fossil carbon will add value for resource owners:
  - instead of burning coal, oil and gas to produce energy, it will be more profitable to process them into finished products;
  - through creating recyclable products, the life of finite resources will be greatly extended;
  - the addition of new manufacturing capabilities and markets will greatly expand the business models and life-expectancies of fossil-fuel companies.
7. Fossil-fuel companies as well as governments should invest in the research and development of non-polluting carbon manufacturing technologies not only to mitigate risk, but also to ensure sustainable economic growth.
8. The world is undergoing a Third Industrial Revolution. Technological breakthroughs are being made every day: solar-generated electricity and transport fuels made from algae will be cheaper than energy from conventional sources within a few years. Although massive investments will be needed to completely transform our wasteful, polluting global economy into one based on renewable energies and non-polluting, recyclable manufacturing processes, these expenses pale in comparison to the catastrophic environmental, economic and social costs of allowing increasing pollution to trigger runaway climate change.
9. Because of the urgent need to avoid catastrophic climate change, humanity will need to take an emergency approach (similar to that of war mobilisation) to developing and scaling up the new technologies.
10. An international regime of subsidies and taxes should be put in place to encourage industries and consumers to stop producing and consuming polluting, non-reusable products and make a rapid transition to the manufacture and use of environmentally friendly, recyclable products.

The purpose of this proposal is to start a discussion on the need for a viable Plan B. Its final design may be substantially different.

We can find win-win solutions—if we look outside the box.

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