



The real lessons of Cuba and peak oil

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This is a guest post from [kiashu](#).

People looking at changing to a low fossil fuel use society, whether the change comes about due to necessity ([peak oil](#)) or by choice (reducing greenhouse gas emissions), often look about for historical and current examples of countries which had large fossil fuel use and then dropped it somewhat or completely. I touched on this issue with [Freezing Point](#), noting the experiences of the former Soviet bloc countries. However, those countries ran short and then had the tap turned back on for them by the West. But there are only two countries who had the tap kept off, or at least turned down - North Korea, and Cuba.

North Korea is not often brought up as an example of a post-peak oil country because violent tyranny, labour camps and famine killing millions are not a good example if you want to say we can get along without fossil fuels, or really a good example of anything much else pleasant - though their military looks like it might be fun, what with all the hot chicks, which perhaps explains the [North] Korean Friendship Association and their webpage, korea-dpr.com, especially the FAQ, "[can I join the Korean People's Army?](#)" Mind you, Communist midgets charging at you with bayonets fixed could be disturbing (due to two decades of malnutrition, the KPA has [reduced the height requirement](#) to 1.3m, or 4'3").



Cuba's much more often discussed by the most common type of environmentalist, the lefty middle-class pseudohippy, including in a documentary, [How Cuba Survived Peak Oil](#). For a discussion of it, see [this](#) youtube vid. It presents a picture of how "Cuba lost half their oil overnight", and of a friendly socialist government helping the people to get into "all-organic agriculture", and of how peak oil will create for us a happy friendly community. On the less-friendly to commies side, more recently there have been articles in the press saying that Cuba imports 70% of its food, or even 85%, mentioning that Cuba still has rationing.

Neither of these is a full or accurate picture of events. I've previously noted that we should [beware graphs](#), because they often tell the truth, but not the whole truth; this is even more so with articles and documentaries.

Background, Fidel and Nikita

Cuba from 1959 to 1992 had only collectivised state-owned agriculture. This treats a farm like a

factory - you go to work, get paid, but don't get the produce of the place directly. If you own it all yourself and produce more, you get to have more yourself; but if you're working for someone else on salary, you don't. Generally collectivisation will allow for bonuses for particularly productive workers, which works for things where individuals can produce more, like mines or old-style factories, but not so well for things where the work of individuals doesn't stand out, like farms and assembly lines. So all that motivated people to work harder and be more productive were their fellow workers, peer pressure. Thus the Soviet-era Russian saying, "we pretend to work, and they pretend to pay us."

Of course, many workplaces, whether state-owned or private, will have workers get together and conspire not to work too hard, to do the minimum to not get in trouble with the boss. Thus, the collectivised state-owned agriculture was not very productive. This has nothing to do with whether they had fossil fuel inputs or not, but all to do with how they arranged their workplaces in communism.

During Soviet days, Moscow tried to tie its empire together by trade. They worked with a capitalist concept, [Ricardo's "theory of comparative advantage"](#); that is, if Poland is good at growing wheat and Hungary is good at making steel, Poland shouldn't bother making steel or Hungary growing wheat, but each should specialise, and then just swap. The communists thus had the same aim as the modern "globalisation" crowd.

Castro and Krushchev got together for a chat, the bald [shoe-banging](#) buffoon said, "Look, comrade, you're a tropical country, you can grow sugar cane and tobacco really well, and wheat and corn not so well. Also you don't have enough space for a lot of cattle and sheep. So how about you just focus on growing sugar and tobacco, and we'll send you food in trade for it."

"Okay," said Castro, "But if we grow just one thing, it depletes the soil, and all these diseases and bugs pop up. Also we don't want to have to have the whole damn population working hacking away at sugar cane, we'd like to modernise and have some industry."

"Don't worry, dear Fidel Angelovich," said Krushchev, "we'll send you fertiliser to enrich the soil, pesticides and herbicides to kill the bugs, and oil and tractors."

"Done," said Castro, shaking Krushchev's hand and checking his cigar for CIA explosives before lighting it up to celebrate.

Fidel and... Fidel on his own

This worked very well... until the collapse of the Soviet Union, a collapse very unexpected in the communist bloc. Suddenly Cuba found itself with lots of sugar and tobacco, and no food or oil or fertiliser or any of that stuff. "That's alright," the Father of the Revolution said, "we'll just trade with someone else." The problem was, the US blocked Cuban trade with a good part of the world, and the only parts of the world that would trade with Cuba - places like Ghana - didn't have much food anyway. Cuba then entered what was called "the Special Period." I was homeless once - that was a special period, too.

Castro reacted to this by sending more people to the collectivised farms to help out. Of course this didn't work. People got hungry. So people started supplementing the insufficient government rations with growing their own in the yards, in parks and squares. "Private production and consumption? That's not very fraternally socialist of you, comrade. We'll confiscate that." Gardens were torn up. But pretty soon it became apparent that the people faced famine.

Graciously allow that which you cannot prevent

... Unless you're really mean and nasty. Now, any dictator has to do at least two things to stay in power: pay the army, and feed the people. They can do that and still be overthrown, but if they fail in one or both of those they're definitely out. North Korea decided to focus on paying the army only, [had a famine which killed a couple of million people](#), and apparently faced a [couple of coup attempts](#) in the 1990s, including armies planning to march on Pyongyang; these were put down bloodily, and nowadays North Korea feeds itself by bailing up the West with nuclear weapons. "Your money rice or your life!"



Castro wasn't ruthless enough to let a good chunk of his population just die, and judging from that whole Cuban Missile Crisis thing, nukes seemed an unwise choice. So between changing *government* and changing *government policy*, Castro quite naturally chose to change policy. Following the advice of Machiavelli, he decided to graciously allow that which he could not prevent. Private growing and selling were permitted. Many of the collectivised farms were broken up and leased privately. Food production rose. Nobody starved. Revolution was averted.

This is the thing that documentaries like to focus on, Cubans setting up local organic polycultures in the socialist paradise.

Still burnin'...

Interestingly, going by [EIA figures](#), their oil consumption didn't drop to nothing, or even "halve overnight" as the PowerOfCommunity site claims, but fell from 224,800bbl/day in 1989 to 180,000bbl/day in 1992, that is a drop of about 20%. It's now about 203,000bbl/day, thus a drop of only about 5%. But natural gas consumption went from just 1.1 billion cubic feet in 1989 to 26.4 in 1997 and is now 14.126 billion cubic feet annually. And coal consumption went from 254,000t in 1989 to 41,000t today.

Overall, total Cuban fossil fuel energy use went from a high of 0.51 quadrillion BTU in 1989 to 0.458 today, a drop of 10%. This is rather less than is commonly implied by groups promoting the success of Cuba's "solution to peak oil".

Note that Cuba does not appear to be planning to abandon fossil fuels; a [Cuban newspaper](#) tells us that the country has an electricity generation capacity of 3,500MW, 1,600MW of which were added in the last three years alone - all dependent on diesel and fuel oil, while [another article boasts](#) of the building of two new natural gas-burning plants of 35MW each, and that 3.45 billion cubic metres of natural gas a day are produced and consumed, about 10% for domestic cooking, and 90% for electricity generation. Doubling fossil fuel-derived electricity generation in three years is not really consistent with a plan to avoid future fossil fuel shortages; they obviously think peak oil is over for them and not coming back soon.

Overall, about 66% the oil Cuba uses is for electricity generation, the other 33% or so for transport. Much of the country was poorly-electrified or had occasional blackouts already, so they couldn't cut oil use there. They decided to cut it for transport, thus transport lost 20/33, or most of its oil. That's why you see on Cuban streets many horses and carts. So Cuba's experience of a drop in oil supply is that it's not cut evenly across the economy, but private transport misses out first.

Fossil fuels on the fields

However, their imports of fertilisers, herbicides and pesticides, which are all made from fossil

"In recent years, there has been a substantial decrease in the use of agricultural inputs in Cuba, with a consequent fall in the yields of most crops. [...]

Despite a reduction in the use of fertilizers, the yield level of the banana crop has been maintained due to improved management and the existence of soil nutrient reserves. The potato crop is given priority by the state; levels of fertilizer application on this crop have remained steady and yield levels have been maintained. The domestic production of rice is far from satisfying domestic demand. The domestic production of rice is far from satisfying domestic demand and there are substantial imports. Yields are well below their potential.

The urban and peri-urban cultivation of crops has been promoted in Cuba in order to alleviate food shortages.

Emphasis is placed on making optimum use of available organic materials and composting. Biofertilizers have been tried as an alternative source of nutrients but their use has declined, apart from Rhizobium." [my emphasis]

So they didn't actually *choose* to have organic polycultures - they just didn't have the other stuff to use, and as soon as they had the option to return to conventional fossil fuel intensive agriculture, they did, with the notable exception of the urban agriculture. Cuba experienced less the power of community, and more the power of necessity.

Cuba today

In the 1990s they grew virtually all of their own food, but a lot of people went hungry - they didn't starve, but it wasn't enough. From 2001 the US started selling Cuba food. Nowadays Cubans get about 22% their total nutrition from wheat, and 13% from rice, most of it imported from the US. They also import from the US soya meal and the like which they feed to their livestock to get milk and meat, and so the US food must get partial credit for their nutrition from that, too. But overall the Cubans provide more than half their own nutrition.

In recent years promotion of biofuels and a rising middle class in Asia wanting meat, both of which require large inputs of grain, have meant rising grain prices. At the same time record sugar crops around the world have dropped sugar prices. So this has meant that Cuba pays more for the food it imports than the cash crops it exports. Looking at it dollar terms is probably where the "Cuba imports 70% of its food!" claim comes from. But in terms of actual nutrition, over half is domestically-produced, and a bit under half imported. We have to consider things in terms of nutrition; if I eat a dozen rolls of bread with tomatoes for \$4 and a piece of brie for \$6, it's not really true to say that 60% of my food was brie.

They still have rationing for their food, but they had rationing in the "prosperous" Soviet times, too, as did most communist bloc countries, so this has more to do with unproductive socialism rather than unproductive non-fossil-fuel-using agriculture. But food produced by people locally is not rationed, and is bought and sold freely. Cubans overall have better health than in the 1980s, mostly due to a more varied diet and with more fresh fruit and vegetables. Essentially, the rations are imports and cover most of the staples, while the private growing is domestic and covers the

Most of the oil and natural gas used is still used only for generating electricity; it could thus in principle be replaced by electricity generation not using fossil fuel. They'd then only be left with a _____ bit of oil to use for their "camels".

The Cubans continue not to use large fossil fuel inputs in their food-producing agriculture, with the notable exception of potatoes, but they do use it for their cash crops. So it seems fair to say that **you don't need fossil fuel inputs to feed yourself, but you do need them to make a lot of cash**. With both their organic polycultures and their industrialised agriculture both, the Cuban government has used the best science it had to help productivity and sustainability; and Cuba does well in the biological sciences, being a significant contributor to medicine and pharmaceuticals in the Third World.

Cuba remains unfree and a communist country. As [reported by AP](#), only 3% of the working population is self-employed, or employed by someone else; the other 97% are employed by the government. In the 1990s Raul Castro persuaded Fidel to allow about 150 categories of work to be done privately, but now that Cuba's more prosperous again, the freedoms are being taken back - 40 categories have been withdrawn, no more self-employed clowns, stonemasons, and so on. The 1,000 privately-owned restaurants have dropped down to 100, reportedly because they were taking business away from the state-owned restaurants. Whether this will change with the rise of Raul Castro remains to be seen.

So Cuba still uses a lot of fossil fuels. On the other hand, Cuba is putting in a fair amount of renewable energy; but this is dwarfed by its new fossil fuel using electricity generation. For another view of it all, consider the October 2006 [Living Planet](#) report, which says that "sustainable development" must achieve an HDI ([Human Development Index](#)) of 0.80 or more while at the same time having its per capita [ecological footprint](#) not exceed 1.8 hectares, the average biocapacity available to each person on the planet. On their assessment, only Cuba achieved both criteria. However, it's worth bearing in mind that the ecological footprint is more about a "fair share" than genuine sustainability. What is a fair share of a scarce and depleting resource? What is a fair share of polluting?

Going from [this list](#), Cuban greenhouse gas emissions are about 4.0t CO₂e per capita absolutely, or 3.1t with land-use change - they have a decent forestation programme. This compares to 5.6/6.8t as the world average, or about twice the 2t per capita I settled on as [goal emissions](#). If the world lived like them, this would be $3.1/6.8 = 46\%$ of current emissions, basically a 50% reduction (allowing for uncertainty in the various figures). Not enough by far - but still much better than the entire Western world, and almost anyone likely to be reading this article.

Lessons learned

So far everyone looking at Cuba has looked at it with some kind of axe to grind, doomer, anti-doomer, friend or foe of socialism and sustainability. Those who say we can't do without fossil fuels quote the "imports 70%" line. Those who are by nature collaborators with tyrannical regimes say, "look, the power of community, look how everyone got together spontaneously to help each-other out!" Those who are keen on organic food say, "look, they feed themselves without fossil fuels." Each of those is in some ways the truth, but is not the *whole truth*.

The real lessons learned from the Cuban experience are,

1. having your country produce just a few things and importing everything else leaves it vulnerable to disruptions in global trade and supply
2. these disruptions can drop in for a surprise visit, they're not easy to foresee and prepare

against, if you wait until you hear the train coming before you get off the tracks you might get hit

3. people are naturally conservative, that is *reluctant to change*, but will change when it's necessary to their survival. If given the chance, they'll try to go back to the old way of doing things, mixed in somewhat with the new ways.
4. governments, insulated from day-to-day reality of common life, are more conservative still, but like the people will change when it's necessary to their survival. Governments will at first get in the way, later get out of the way, and finally help and then claim it was their idea all along, If given the chance, they'll try to go back entirely to the old way of doing things as soon as possible.
5. it is possible, though difficult (requiring greater labour and skill) to feed ourselves with very little or even no fossil fuel inputs
6. to get lots of money by exports requires large fossil fuel inputs

Thus an honest and balanced look at what actually happened in Cuba teaches us many useful things about peak fossil fuels and climate change, and the adaptations to them.

[All images courtesy of [The Power of Community](#) website, except for the commie tyrants, who they're sensible enough to omit from their website.]

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