



Today we are going to bust a myth: that Japan is eco-friendly.

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**Environmentally-friendly Japan?**

- Japan likes to present itself as “eco”: clean streets, lots of discussion of SDGs, “sho-ene”, “love of nature”, and other PR.
- Here’s a Japanese government website aimed at kids:
- [https://web-japan.org/kidsweb/cool/21/202112\\_help-the-environment\\_en.html](https://web-japan.org/kidsweb/cool/21/202112_help-the-environment_en.html)



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Japan loves to present itself as “eco”, or environmentally conscious. All over the place you can see and hear evidence of “green Japan”. The streets are clean; there is endless discussion about SDGs (or sustainable development goals); you need to put “sho-ene” or “low energy” on your product if you want to sell it; there is endless talk of beautiful nature, clean water and delicious food as reasons to visit a place. Take a look at this Japanese government website which gives a rosy picture of just how much Japan is doing. ...

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## Environmentally-friendly Japan?

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And now let me introduce the technical academic term for this sort of language: ...

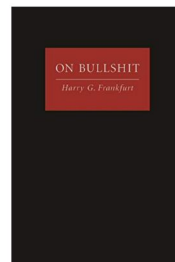
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## Bullshit

"Frankfurt proceeds by exploring how bullshit and the related concept of humbug are distinct from lying. He argues that bullshitters misrepresent themselves to their audience not as liars do, that is, by deliberately making false claims about what is true. In fact, bullshit need not be untrue at all.

Rather, bullshitters seek to convey a certain impression of themselves without being concerned about whether anything at all is true. They quietly change the rules governing their end of the conversation so that claims about truth and falsity are irrelevant."

(From the book blurb on amazon.com)



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... bullshit.

Yes, bullshit is recognized academic jargon. Here it is as the title of a book published by Princeton University Press and written by Harry G. Frankfurt, a professor of philosophy emeritus at Princeton University. The book blurb says the following: "..."

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## Environmentally-friendly Japan?

**Learning about the Environment in All Sorts of Ways**

Books about the environment are also popular. Huge numbers of them are being published, from picture books for young children to books explaining SDGs for middle- and high-school students. These motivate children to get thinking about environmental problems.




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So, let's take our Japanese government website as a classic example of bullshit. Here is one section. [...] There are no lies here. Yes, there are huge numbers of books being published explaining SDGs. But think about it ... that is actually evidence of a lot of environmentally-unfriendly resource use and consumption, which is the root of the environmental problem! And that final sentence about the books motivating children to get thinking about environmental problems is not backed by any evidence. The subtle implication is that all children receive the required message from the books. That is simply fantasy!

So, this is bullshit according Frankfurt's academic definition. It is clearly conveying a particular impression of Japan without worrying too much what the truth actually is. I don't think this is a nasty or harmful form of bullshit. Promotion of environmental consciousness, even if using bullshit, is surely a good thing. But it is bullshit nonetheless. Unfortunately, what begins as small bits of bullshit grows into massive piles of bullshit. Today we will discuss Japan's environmental record critically from the starting point of the evidence, and not the fluffy, green image that is being created.

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## Japan and the Environment

- Japan is rich
- Japan is capitalist
- Japan aims for growth
- Japan tames nature
- Japan loves concrete

- Cultures of consumption
- The plastic addiction
- Tourism policy
- The nuclear dilemma
- Natural disaster measures

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So, I will question Japan's eco-friendly credentials under the following 10 headings. Let me point out clearly at this stage that I am not trying to single out Japan for criticism, or go on a Japan-bashing rant. Other advanced industrialized countries share some or all of Japan's problems. These problems are not unique to Japan. Overall, Japan is probably around average for a rich nation. Ultimately, my point today is that Japan talks about being eco much better than it acts being eco. And this, I believe, is the problem. The eco-talk bullshit is not helpful for inspiring the action that Japan needs to take to play its role in protecting the global environment in the 21st century and beyond.

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## Japan is Rich



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Let's start with the simplest reason why Japan is not eco-friendly: it is rich. All the global data points to a simple fact. Wealth is the number one indicator of environmental destructiveness. It's obvious really. The more money you have, the more clothes you can buy, the more traveling you do, the bigger your house, the more unnecessary junk you buy for your big house, the more it costs to heat or cool your house, and the more you spend protecting your wealth, whether on personal or national security. Japan is rich, therefore Japan is way less eco than most countries on the planet. The family on the left has a tiny environmental impact compared to the lucky Tokyoites who can afford to live in that apartment on the right.

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## Japan is Rich

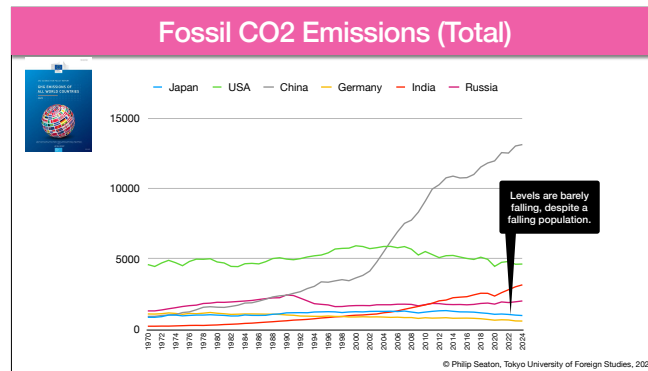


[https://edgar.jrc.ec.europa.eu/report\\_2025](https://edgar.jrc.ec.europa.eu/report_2025)

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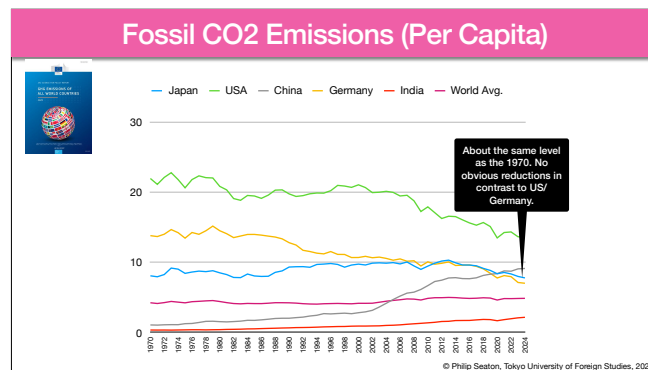
Let's substantiate this obvious point with European Union data on CO2 emissions.

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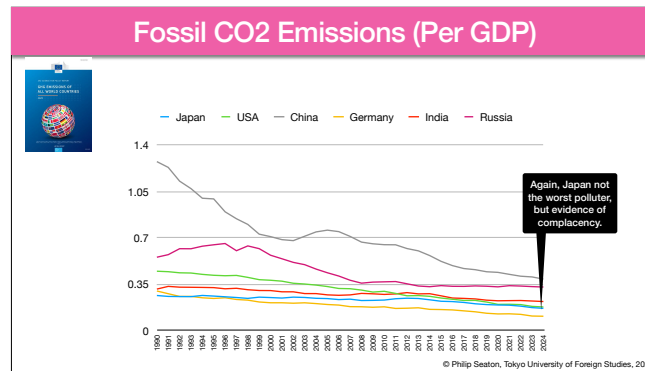
Here is the data for total fossil CO2 emissions in six major countries. Japan is second from bottom in this series. But where is the evidence of all that environmental consciousness? CO2 emission levels are barely dropping, despite the population now being in decline. Note how America in green and Germany in yellow are on clear downward trends. China and India are rising sharply, of course, because of their rapid economic development. Growing wealth, growing carbon emissions.

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This is a graph of Japanese complacency. There has been some progress in the last decade, but per capita CO2 emissions have only been dropping significantly in the last 10 years. They are now back to the same level they were in 1970, but all those decades of eco-talk from 1980 to 2013 took place against the background of rising per capita CO2! However, Japan now has lower per capita CO2 emissions than China.

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Here are emissions per GDP. Japan, like the other advanced industrialized nations, is falling. Overall, Japan's wealth is relatively clean compared to other nations. This is a plus point for Japan, relatively speaking. But notice how all the nations except Russia were falling faster than Japan. This is evidence of complacency, i.e. Japan is not acting as fast as others to go greener.

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### Japan is Capitalist

- **Dualism:** Humanity is separate from nature.
- Owning/controlling nature.
- Leads to capitalism and imperialism.
  
- **Animism:** Humans are an integral part of the earth's ecosystem.
- Coexisting with nature.
- Leads to environmentalism and collectivism.

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Reason number 2 why Japan is not eco-friendly: it is capitalist. This has a lot of overlap with Japan is rich, but here we are talking more about the mentality towards the environment. In his book *Less is More, How Degrowth Will Save the World*, Jason Hickel makes a strong argument that capitalism is the root of the environmental crisis. There are basically two approaches to human life on earth: dualism and animism (p. 31). Dualism has humans as fundamentally different to the rest of the living world. Humanity lords over nature. Nature is to be owned and controlled, and its resources extracted for profit. Animism, meanwhile, sees humans as an integral part of the earth's ecosystem. While dualism is about taking from nature, animism is about coexisting with nature and we must give back to nature in equal amounts as we take from it.

Dualism springs from humans' competitiveness in the struggle to survive. It has thrived since ancient times. But capitalism in its modern form emerged around 500 years ago according to Hickel (p. 40). Since the industrial revolution, and particularly in recent decades, under capitalism humans have extracted way too much from nature, especially fossil fuels. This is why we now have the environmental problem. Japan is solidly part of this capitalist system. Therefore, Japanese

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society, as it is now, is part of the problem, not part of the solution.

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Actually, Japanese history is an interesting juxtaposition of dualist and animist histories. The Ainu people of Hokkaido, like other indigenous peoples around the world, historically had animist life views and lifestyles. The Ainu in the pre-colonization era lived simply in co-existence with nature. However, the reason that they and other indigenous peoples around the world were colonized is because capitalism afforded great economic and military advantages. Japan was a highly organized military-mercantile society long before the Western powers forced Japan out of its Sakoku jidai in the mid-19th century. Then Japan turned to expansionist imperialism, part of which was the annexation of Ainu lands in the 19th century. Then came the Japanese Empire in the broader Asia Pacific region. Then came the postwar economic superpower. Japan's fundamental mentality in the last 500 years has been expansion and resource extraction. We can call it dualism, capitalism or imperialism, but is fundamentally about the control and ownership of land and natural resources by the most powerful humans.

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## Capitalism and Environmental Degradation



Ashio Copper Mine



The effects of Minamata Disease

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And if we look back over modern Japanese history we can see this resource extraction mentality causing huge environmental degradation. There is an open access book called *Industrial Pollution in Japan*, which you can read via the on demand materials page. It describes the Ashio copper mine pollution in the late 19th century through to Minamata disease and other pollution crises in the 20th century. These are the worst examples of Japanese industry's disregard for the environment. However, aside from these notorious examples, Japan's industrial might is built upon pollution and the human and environmental costs of it.

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## Japan Aims for Growth



2% growth = GDP doubles in 35 years

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The key feature of capitalism, like imperialism, is the never-ending need for growth. As described in an earlier lecture, Japanese politicians talk relentlessly about growth. The slide shows a screenshot of a government website from a few years back: "For future growth, for future generations, and for a future Japan". The rhetoric has not changed much with the current administration. Well let's assume that GDP grows at 2% per year. This is the sort of aim a standard politician has. Compound interest means that GDP doubles in about 35 years with 2% growth. Do you really think that doubling the size of the Japanese economy by 2050 is compatible with the Japanese government's stated target of net zero carbon emissions by 2050? People talk about clean energy making this possible, or new technology making this possible. This is just more bullshit.

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## CO2 Emissions (Total)

**Table 14.1**

**Breakdown of Carbon Dioxide Emissions** <sup>1) 2)</sup>

Category	(Million tons)					
	FY1990	FY2000	FY2010	FY2020	FY2022	FY2023
Total .....	1,160	1,264	1,214	1,039	1,031	989
Industrial sector .....	505	479	432	357	354	340
Transport sector .....	208	259	229	183	192	190
Commercial industry sector .....	131	190	200	180	176	165
Residential sector .....	126	152	176	168	158	147
Energy transformation sector ...	97	90	100	80	82	80
Industrial processes and product use .....	65	60	48	43	41	39
Waste (incineration, etc.) .....	21	29	26	26	27	26
Others .....	6	5	3	2	2	2

1) Volume of carbon dioxide after reallocation to the end-use sector. 2) Due to the revision of the Electricity Business Act (liberalization of electricity retail sales), the emission intensity of electricity used in each sector has changed since FY2016.

Source: Ministry of the Environment.

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Look again at the government's own data for CO2 emissions, this time from the Statistical Handbook. There is no evidence of a meaningful downward trend since 1990. Carbon emissions in 2023 are about 15% lower than in 1990. There is an interesting fall between 2022 and 2023, which might be something to do with Covid-19. I am not sure. However, we need to make drastic reductions in order to prevent global heating, and there is no evidence here of the level of decisive cuts in CO2 emissions needed, despite all the eco-talk. Why should it be any different for the next 35 years?

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## Carbon Capture




Tomakomai carbon, capture and storage (CCS) test site in Tomakomai, Hokkaido

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The standard capitalist response is that technological developments will solve our environmental problems. Alas, more bullshit. One of the biggest hopes for reducing CO2 is carbon capture technology. Japan has announced a road map for capturing 6-12 million tons of carbon per year by 2030. Sounds good, but where and how do you store that amount of carbon without building industrial scale facilities? And look at the photo of a carbon capture facility. To build and run that thing surely cost a whole load of carbon ...! Under the mentality of capitalism, carbon capture is primarily another way to make money from governments throwing money at this type of project.

This is why at the Cop28 summit in Dubai, climate experts called carbon capture technology a distraction from the real priority of reducing CO2 emissions. But we do need to focus on carbon capture, and we already have all the technology we need:

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Forest Areas				
 <p>Tama River, the Okutama area</p>				
<b>Table 5.5</b> <b>Forest Land Area and Forest Resources (2007)</b>				
Item	Total	National forest	Non-national forest	
Forest land area (1,000 ha) .....	25,097	7,089	2,800	14,315
Forest growing stock (million m <sup>3</sup> ) .....	4,432	1,878	484	2,064
Planted forests				
Land area (1,000 ha) .....	10,347	2,364	1,247	6,734
Growing stock (million m <sup>3</sup> ) .....	2,651	424	295	1,931
Natural forests				
Land area (1,000 ha) .....	13,381	4,691	1,449	7,217
Growing stock (million m <sup>3</sup> ) .....	1,779	654	190	933
Source: Ministry of Agriculture, Forestry and Fisheries.				
<b>Table 5.4</b> <b>Forest Land Area and Forest Resources (2022)</b>				
Item	Total	National forest	Non-national forest	
Forest land area (1,000 ha) .....	25,025	7,657	3,009	14,311
Forest growing stock (million m <sup>3</sup> ) .....	5,560	1,301	659	3,597
Planted forests				
Land area (1,000 ha) .....	10,093	2,347	1,314	6,500
Growing stock (million m <sup>3</sup> ) .....	3,345	354	428	2,562
Natural forests				
Land area (1,000 ha) .....	13,553	4,756	1,548	7,229
Growing stock (million m <sup>3</sup> ) .....	2,214	746	231	1,034
Source: Ministry of Agriculture, Forestry and Fisheries.				
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trees.

Japan has lots of trees. The mountainous topography makes vast areas unsuited to human habitation. And with depopulation, Japan could certainly convert some areas back into forests.

However, a major global problem is that we are cutting and burning trees down faster than they are growing. Look at the forestry data in Japan. Total forest land area in Japan was down in the period 2007 to 2022. It's only by about 0.2 per cent and there is none of the whole-scale deforestation of the Amazon and other rainforest areas. But Japan is still going in the wrong direction. And the language of “forest resources” tells you about the government’s fundamental mentality: forests are something to be used and managed by humans. This is the dualist mindset I mentioned earlier.

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Japan Aims for Growth		
	=	
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Put it all together and there is only one conclusion. Japan’s national strategy of growth is a direct path to greater global heating. I am not going to say Japan’s economic strategy is particularly destructive compared to others. But, Japanese capitalism is one part of the global environmental problem and not part of the global environmental solution.

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## The Results of Growth

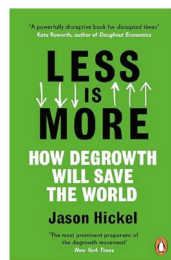


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Ultimately, this will all backfire. Let's just remind ourselves of what global heating means for Tokyo.

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## Degrowth



- The myth of “green growth”.

<https://foreignpolicy.com/2020/06/18/more-from-less-green-growth-environment-gdp/>

- But is “degrowth” really possible?
- Only with a revolution in the human mindset away from capitalism/dualism towards collectivism/animism.

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Which is why researchers such as Jason Hickel, or Kate Raworth (who we met in Week 2), talk about fundamentally rethinking the way we live our lives on this beautiful planet, our only viable home. They talk of “post-growth” or “degrowth”. There is another buzzword out there: “green growth”. The green growth argument is that technological improvements and efficiency savings mean our economies can still grow but in an environmentally sustainable way. I will let you read Hickel’s comprehensive rebuttal of that argument for yourself.

Put very simply, growth is the problem. The only way to stop the march to environmental breakdown is to completely change the way we think about the economy. We must turn away from capitalism and dualism, and towards collectivism and animism. This requires nothing short of a revolution of the mind.

But is it really possible to abandon capitalism or to achieve degrowth? You will discover the huge problems of achieving degrowth when you get jobs in a few years time. Your company bosses will be asking for increased sales and increased

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profits. Without profits, your company will go bust and you will lose your job. Arguing for the need for degrowth on a theoretical level is very easy. But on a practical, individual level it is very difficult to achieve without revolutionary social changes. Realistically, capitalism would have to be replaced with a managed economy where the focus is on sufficiency rather than surplus. However, experiments with managed economies in the past, particularly in the Soviet Union and China, ended very badly. Japan, and humanity as a whole, are stuck in a very difficult place. As we see at the Cop summits every year, humanity cannot agree on taking the necessary measures to prevent climate breakdown. It will happen. The question is “when”, not “if”. Ultimately I think capitalism, in Japan and elsewhere, will collapse rather than be dismantled. And capitalism will collapse when the environment collapses and there is no alternative. This could be in 10 years time or in 100 years time. Who knows? But we know for sure that it is coming.

### Japan and the Environment

<ul style="list-style-type: none"><li>• Japan is rich</li><li>• Japan is capitalist</li><li>• Japan aims for growth</li><li>• Japan tames nature</li><li>• Japan loves concrete</li></ul>	<ul style="list-style-type: none"><li>• Cultures of consumption</li><li>• The plastic addiction</li><li>• Tourism policy</li><li>• The nuclear dilemma</li><li>• Natural disaster measures</li></ul>
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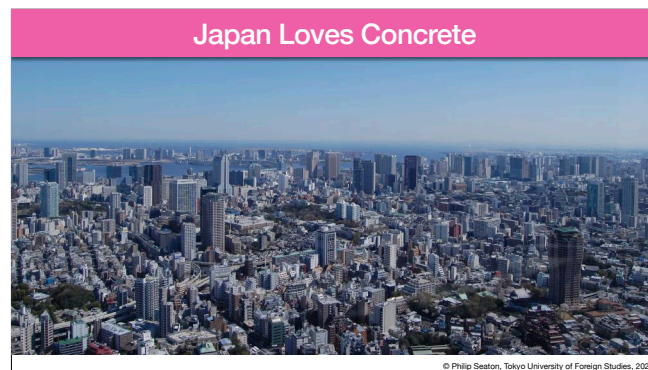
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I have spent a lot of time on the first three, but these have set the macro picture. Now let's move onto some specific examples.



Point four is about taming nature. In Japan you hear a lot about the love of nature, but actually the evidence of controlling nature is everywhere around you. The art of Bonsai is all about controlling how a tree grows. The middle photo is the landscaped Central Lawn of Hokkaido University, where I used to work. These first two are not necessarily incompatible with environmentalism and a love of nature. However, the picture on the right is controlling nature for a different reason. Massive earthworks or concrete riverbanks are ubiquitous in Japan. I understand completely that it is about flood prevention. But on a purely environmental level, it is problematic because it is a massive use of concrete.

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Concrete is one of the most environmentally destructive materials. Along with oil and cattle, concrete is one of the big three “materials” that we have to reduce consumption of dramatically if we are going to have any chance of preventing total environmental collapse. There is an article available via the website about just how destructive concrete is. Do read it. For now, I will just show you a small percentage of the concrete in Tokyo. To repeat the point I made earlier, the greatest indicator of carbon emissions is wealth. Tokyo’s concrete jungle is evidence of both Japan’s postwar wealth and environmental impact.

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## Japan Loves Concrete

White elephant = a useless and expensive project



"New technology" can lead to massive additional carbon emissions as well as emission cuts!

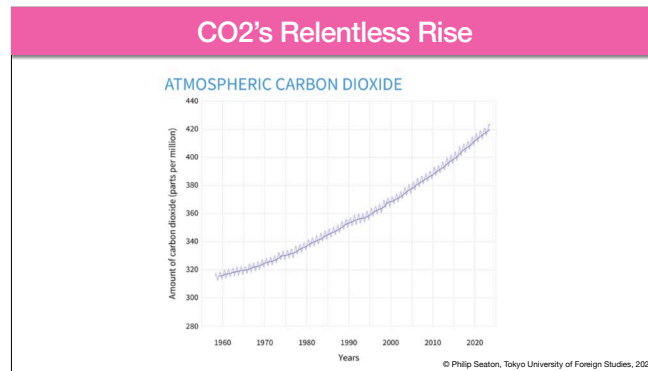
the elephant in the room = something that is completely obvious

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What is even worse in Japan's case is that so much of the concrete is for "white elephant" projects. White elephants are useless and expensive projects. Around Japan there are endless construction projects, such as roads and buildings, that are done more as a way of spending money than as something that is really necessary. We discussed this issue of pork-barrel politics in Week 4. Perhaps the biggest white elephant at the moment is the Chuo Shinkansen, or Maglev. At the moment there is a very fast and efficient train service between Tokyo and Nagoya. There is sufficient capacity on the line, especially given Japan's falling population. But in order to chop 40 minutes off your journey time, the Maglev line is being built. According to JR's website, "It will include 256.6 km of tunnels, 11.3 km of bridges, and 4.1 km of rail beds." Wow, how much money, how much concrete, and how much carbon are needed just so you can save 40 minutes?

Let's use this "white elephant" to point out "the elephant in the room". New technology can lead to massive additional carbon emissions as well as emission cuts. One of the reasons our carbon emissions have not gone down much since the 1990s, despite great progress on things such as renewable energy technology, is that now everyone has smartphones and

computers. We need massive infrastructure and energy levels to support that phone network and more generally the Internet. And think of all those massive data centres being built now for the AI revolution. This is going to send carbon emissions to new highs. The people who believe that new technology will reduce carbon emissions simply ignore this reality. And the people who try to tell you that new technology will reduce emissions are bullshitters. New technology means new environmental destruction. That is how it has been throughout history. That is how it will be in the future. The Maglev is just another example. Extensive new infrastructure for drones is surely coming soon, too.



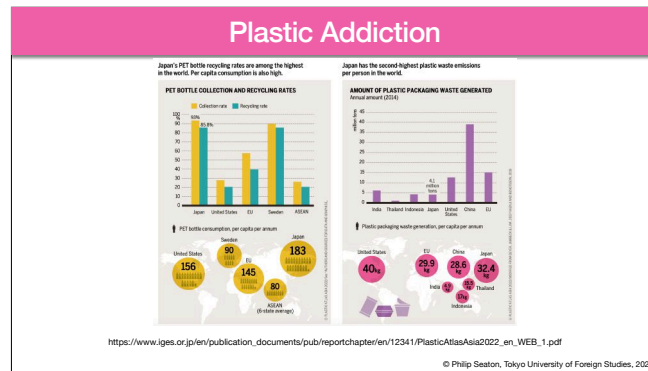
And here is the proof that people who say the march of technology inevitably leads to emissions reductions are simply talking bullshit. The clear lesson from the last 500 years, especially the last five decades is that increased technology means increased carbon emissions. That is why the levels of carbon in the atmosphere continue their relentless march upwards. Look at that graph. Will someone please tell me where the evidence is of clean technology making a decisive difference?

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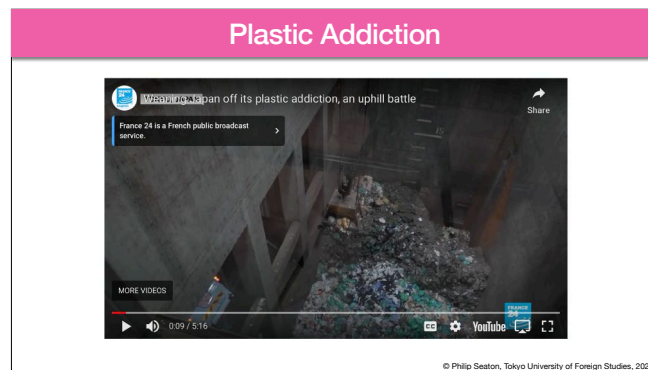


OK, let's change direction a little. Returning to the capitalism theme, Japan is a highly consumerist society. There are many examples I could give of environmentally-unfriendly consumerism, from the endless wrapping of gifts to fast fashion. But of the consumerist trends that we might identify as "very Japanese", perhaps the worst is gachapon. I'm sorry if you like these things, but to me they are rows of machines waiting to dispense a useless piece of crap in a solid plastic ball. Two minutes of fun for something that just gets thrown away. If we are looking for a place to start degrowth in Japan, this is my first suggestion. If Japan was truly environmentally conscious, there would be no market for this. Perhaps all those kids learning environmentalism from reading those books about SDGs that we heard about on the Japanese government website missed the page that said, "Do not buy gachapon".

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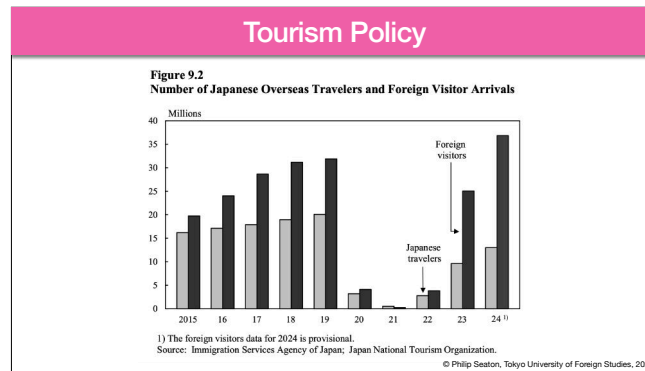
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At the end of the video, I'm afraid we have more bullshit. Islands built on plastic ... It sounds good, but that is not plastic that has been removed from the earth's ecosystem. It is plastic buried in the ecosystem. And what happens when sea levels rise, or a few super-typhoons batter the shores? How much of that buried plastic will eventually end up floating in the open oceans after the reclaimed land has been inundated, eroded, and scattered by the ocean currents?

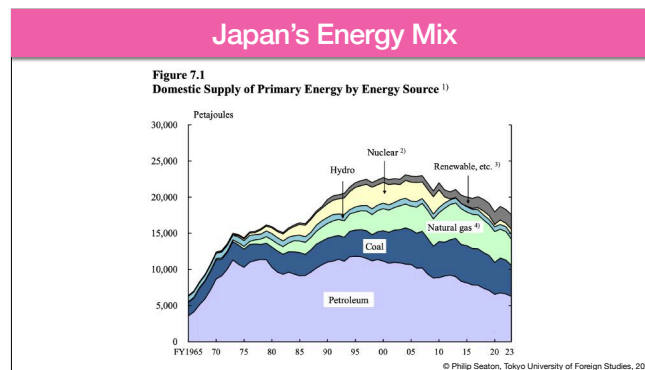
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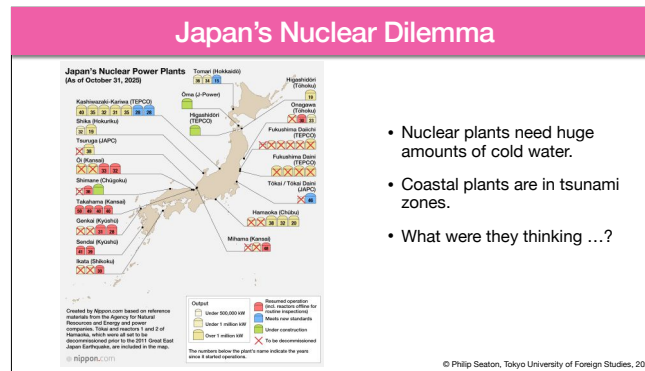
Another example of Japan greenwashing its image can be seen by looking at tourism policy. By the 2010s, the climate crisis was being widely discussed in international tourism circles. Flying was also known to be an environmentally unfriendly activity that needed to be reduced. But, what did the Japanese government do? It ran multiple campaigns to attract foreign tourists. The number of inbound tourists tripled from about 10 million in 2013 to over 30 million in 2019. There was a break for Covid-19, but in 2024 the previous record was smashed. And it will be smashed again this year. These tourists all fly into Japan or come by ship, two heavily polluting modes of transport. How can such an inbound tourism policy be consistent with plans to reduce CO2 emissions? The simple answer is that its not. The government's tourism policy is good for capitalism, not for the environment. This is a crystal clear indicator of where the government's priority lies.

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The next point is about a much bigger dilemma: Japan's nuclear power plants. But first we need to see the overall picture about Japan's energy mix. This table is from the Statistical Handbook of Japan. In 2022, 35.7 percent of energy supply was from petroleum, 24.4 percent from coal, and 20.6 percent in natural gas. In other words, over 80 percent is from fossil fuel. Japan's nuclear sector and renewables remain minor proportions, particularly after the 11 March disaster which shut down Japan's nuclear reactors. And according to the Handbook, 84.7 percent of the energy supply is imported, which means there is also the energy required to ship the oil, liquid natural gas, and so on to Japan. On the plus side, however, absolute levels of fossil fuel consumption are reducing. Renewables are increasing.

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- Nuclear plants need huge amounts of cold water.
- Coastal plants are in tsunami zones.
- What were they thinking ...?

However, the big dilemma within Japan's energy mix concerns its nuclear power plants. Just before the Fukushima disaster in 2011, nuclear power plants accounted for around 11.2 percent of Japanese energy supply. That all ended on 11 March 2011, when the Fukushima disaster occurred. As you can see from the graphic, many remain shut down.

Now, let me say clearly that I understand all the arguments about how nuclear can be a low carbon way of generating energy, and how it has a role to play within a carbon free future. However, in Japan's case there are two reasons why the nuclear strategy developed from the 1950s onwards is an environmental nightmare.

The first relates to the image on the slide from the website nippon.com

<https://www.nippon.com/en/japan-data/h02619/>

Look where the nuclear power plants are. They are by the ocean because they need vast amounts of cold water to cool the reactors. Furthermore, isolated rural areas are preferred over densely populated urban areas, for obvious reasons. But,

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given that the whole of Japan is an earthquake zone and a tsunami zone, coastal nuclear plants are a massive risk to say the least. We saw the results of that risk in 2011. We could have seen it in 2007, when a massive earthquake off Niigata could have triggered a tsunami at the Kashiwazaki plant, which is the largest in Japan. Or how about 1993, when an earthquake off Hokkaido narrowly avoided destruction of the Tomari plant.

Or how about 1 January 2024 and the Noto Peninsula earthquake. A tsunami caused terrible devastation then, although mercifully not to the Shika nuclear power plant there. But let me read for you a section from a report written by the anti-nuclear group Citizens' Nuclear Information Center: "The Suzu Nuclear Power Plant (NPP) was once scheduled to be built near what has now become the epicenter of the earthquake. In 2003, however, as a result of strong opposition by local residents, Kansai Electric Power and Chubu Electric Power Co. announced the freezing of the planned construction of the NPP, and there is thus no NPP there now. If the Suzu NPP had been built, it is highly likely that the plant would have been destroyed by the earthquake, leading to a catastrophic nuclear disaster."

Or how about last week, when that earthquake off Aomori triggered a tsunami and evacuation alert exactly where the Higashidori plant is. That is not producing electricity at the moment, so the risk was reduced, fortunately ...

In short, Japan plays Russian roulette every day with its nuclear power plants. Any day, another tsunami could repeat the disaster of Fukushima somewhere else in the archipelago. If anyone has a good explanation for this almost insane risk-taking, please tell me.

## Japan's Nuclear Dilemma



- Where to store Japan's nuclear waste?
- What were they thinking ...?

*Into Eternity trailer*

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The second dilemma involves spent nuclear fuel. Let's watch the trailer for the documentary film Into Eternity.

[...]

Spent nuclear fuel is toxic for 100,000 years. So, Japanese society has already committed itself to looking after the fuel from all those reactors on the previous slide for 100,000 years. The Finns are building Onkalo. I have watched the whole film. They found the most geologically solid place in the country. It is a place where the rock has not shifted significantly for hundreds of thousands of years. And they are building a storage facility for spent fuel. Onkalo could never be built in Japan. Everywhere is an active earthquake zone. There is a town called Suttsu in Hokkaido which is considering hosting Japan's equivalent of Onkalo, but it faces many problems and local opposition. Until such a facility is created, Japan's nuclear power plants keep their spent fuel in temporary facilities ... which is an interesting way of preparing for an environmental hazard that will still exist over 2000 generations into the future.

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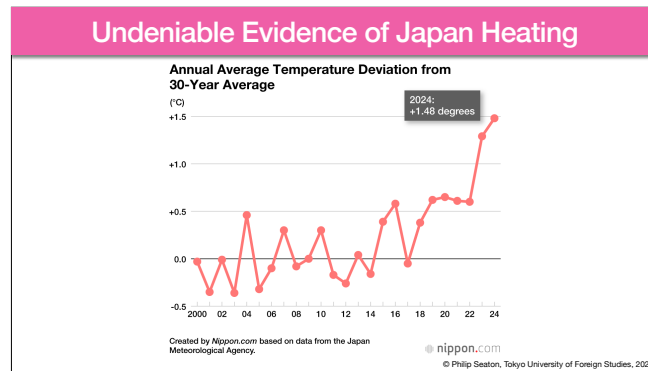


In the meantime, Japan is simply doing what it can to prevent another Fukushima. Indeed, much of the mindset in Japan revolves around disaster prevention. Earthquakes, floods, typhoons and other disasters regularly hit the archipelago. All those concrete river banks, sea walls, and other barriers trying to hold back the power of nature. And then there is the massive set of tunnels under Tokyo to store flood water. It is all an amazing feat of engineering, but look at all that concrete ... a contributing factor to the disaster it is trying to prevent.

Japan is stuck in this cycle. The world is stuck in this cycle. The hotter it gets, the more we need to use air conditioners, thereby making global heating worse. The more sea levels rise, the higher our flood defenses need to be. More concrete. The stronger the typhoons, the more we will have to rebuild shattered buildings. More materials.

Ultimately nature will win. Rising sea levels will require much of Tokyo, Osaka, Nagoya and other coastal cities have to be abandoned and retreat inland. It could be in your lifetime or your grandchildren's lifetime. But it will happen.

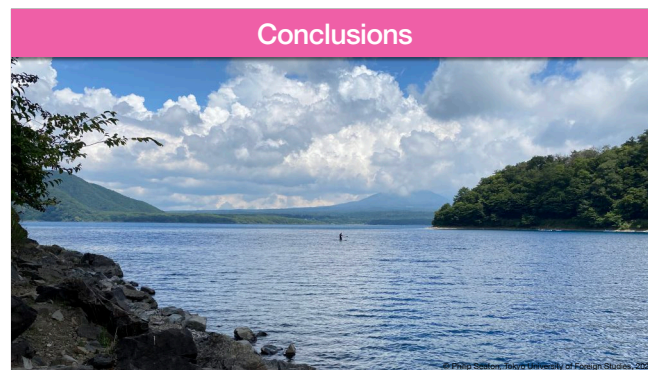
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In the meantime, we are now seeing Japan go onto a completely new level of heating. This is a graphic showing the annual average temperature deviation from the 30 year average. Look at that sharp upward rise. We are breaking heat records year after year. And this is 1.48 degrees above the 30 year average. Remember that the Paris Accord aimed to limit heating to 1.5 degrees above the pre-industrial average. Well, that target has gone. We are now trying to prevent 2.0 degrees above pre-industrial levels. When will human beings learn? And the chances of any decisive global action have been severely damaged by the fact we now have a climate change denier in the White House.

<https://www.nippon.com/en/japan-data/h02273/>

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So, what conclusions can I give? What I have tried to convey in this lecture is that you should be aware of the bullshit in a lot of eco-talk. Japan is certainly not the eco-heaven a lot of people try to make it out to be. I want to be hopeful. I want believe that we can coexist happily with our fellow living organisms in the earth's ecosystem. But, the more I read about the environmental issue, the more I believe that capitalism and our current ways of thinking about life can only lead to disaster. I try and think of what I can do, and including this lecture in this course is a core part of my efforts. We all must do our little part.

But ultimately we need a fundamental change in mindset. If we cannot start that conversation about changing our society in an education institution like this university, we might as well give up now. My conclusion is that the quickest way to save the planet is for our political leaders to act like there is an emergency and legislate accordingly. We saw how quickly they reacted to the coronavirus pandemic. Why not for the environmental issue? But, I fear politicians will only change when they have to listen to you, the voice of the future. So, raise your voices, with your politicians, your future bosses, and your

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friends. And vote with your consumption patterns. No gatchapon!

The environmental problem is not specifically about Japan. The problem is caused by any societies founded on dualism, imperialism and capitalism. Japan has been one of these countries. It is one of those countries. The eco-talk, therefore, is mostly bullshit and has led to a lot of complacency about environmental action in Japan. Of course, there are many conscientious environmentalists in Japan and ordinary people doing what they can. But the macro trends I have shown you show where the real problem is. And identifying the real root of the problem is the first step to solving it.