

Airline emissions and the case for a carbon tax on flight tickets

David Hodgkinson & Rebecca Johnston, TheConversation.com | APR 4, 2016



Would you pay an extra couple of dollars for the climate? Sorbis/shutterstock.com

After years of delay, the international aviation industry is inching its way towards bringing its greenhouse emissions under some form of regulation. Last month the United Nations' International Civil Aviation Organisation (ICAO) released a draft resolution that would, for the first time ever, regulate aviation emissions on a global basis.

This should be significant news. Aviation is the fastest-growing source of greenhouse emissions in the transport sector, it produces between 3% and 8% of the world's total emissions (more than the whole of South Korea), and air travel is growing at 4-5% per year. Yet these emissions have never been regulated on any meaningful scale.

It's not hard to see why. Jurisdictional issues have meant that aviation emissions are not dealt with by the UN's Framework Convention on Climate Change, which asks nations to do their fair share to cut emissions.

Say an aircraft is manufactured in country A, owned by a company in country B, leased to an airline in country C, takes off from country D, flies over country E, and lands at an airport in country F. Who is responsible for that aircraft's emissions?

Tricky problem

Previous attempts by states (or groups of states, such as the European Union) to regulate these international emissions have ended in tears. As a result of the EU's attempt to include non-EU airlines in its Emissions Trading Scheme, the United States passed legislation – the pointedly titled European Union Emissions Trading Scheme Prohibition Act of 2011 – prohibiting its airlines from complying.

There are also reasons to believe that the ICAO's latest effort is problematic too. It proposes carbon offsetting as the main mechanism through which aviation emissions should be regulated –

a proposal that sits uneasily with the Paris climate agreement struck late last year, which makes no mention of carbon offsetting.

There is, of course, another way to price carbon and thereby discourage emissions: a carbon tax. Adding such a tax to airline tickets might sound like a non-starter in terms of getting the industry to sign up, but it would actually be very similar to one that already exists.

The UNITAID solidarity levy is a supplementary charge on airline tickets, ranging from US\$1 for economy class, up to a maximum of US\$40 for business and first class. It is implemented by eight countries (with 15 states gearing up to implement it), the proceeds of which fund health initiatives in the developing world, including providing access to drugs for HIV/AIDS, malaria and tuberculosis.

This levy model would address the aviation emissions problem far more effectively than the proposed draft ICAO offsetting resolution.

The tax route

Taxes have several advantages over emissions trading schemes in addressing the emissions problem. Taxation is a proven instrument. Tax systems are mature and universally applied policy measures. Taxation is also more direct and more transparent than emissions trading, and captures revenue more easily with less regulatory cost.

The UNITAID air ticket levy is not strictly a tax and so avoids many of the problems (imagined and real) but bears all the (positive) characteristics of a tax.



A few dollars extra on a ticket could help curb emissions. Africa Studio/shutterstock.com

Most passengers who pay the UNITAID levy are typically charged US\$1 or US\$2, on outbound air tickets using existing airport tax systems. It is applied to all airlines, both domestic and international, and airlines collect and declare the levy. Passengers in transit are exempt and countries themselves can decide what rate to charge and which ticket classes they would like to include.

Because passengers, rather than airlines, are charged, a similar levy could be a useful “bottom-up” model for reducing aviation emissions.

Aviation nations

This is a particularly useful idea in the wake of the Paris climate agreement, which is significant for aviation because it largely does away with the previous principle that only developed states should take the lead in addressing the climate change problem.

Now all states, both rich and poor, have put forward “intended nationally determined contributions” to address the climate change problem.

Yet another problem with the ICAO draft resolution is that, unlike the Paris deal, it still maintains the distinction between developed and developing states. Draft clause 6 acknowledges the:

...special circumstances and respective capabilities of States, in particular developing States, in terms of vulnerability to the impacts of climate change, economic development levels, and contributions to international aviation emissions, while minimizing market distortion.

Applying a point-of-purchase carbon tax on airline tickets would level the playing field because everyone who flies would pay – both those passengers in developing countries, and the far more numerous ones in the developed world – with states setting the tax at a level appropriate to their (developed or developing) circumstances.

The problem with offsets

Contrast that with the ICAO’s proposed approach, which is to implement a “Global Market-based Measure” (its preferred term for its proposed offsetting scheme), alongside a range of other methods including improvements to aircraft technology and operations, alternative fuels, and other strategies.

The problem is that most countries have now either adopted emissions trading or carbon taxation as their preferred methods to drive down emissions.

In isolation, offsets have little effect. They are a diversion from legislated mitigation; it is collective action that matters.

What is needed is policy that motivates major industrial sectors to reduce emissions and use resources more efficiently – taxation, in other words.

**Copied 6/8/2017 from: <http://theconversation.com/airline-emissions-and-the-case-for-a-carbon-tax-on-flight-tickets-56598>
(Highlights, footnotes and minor edits may have been added, but only to add analysis & clarification)**

32 Comments

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John Newlands

Offsets are almost certainly a delusion based on studies

<http://www.csmonitor.com/Environment/2010/0420/Buying-carbon-offsets-may-ease-eco-guilt-but-not-global-warming>

However the point of revenue neutral carbon pricing is to move consumers to a less emissions intensive alternative. For travel in large continents that could be taking an electric train rather than flying. For speedy intercontinental travel not so much since there are currently no realistic alternatives to petroleum based jet fuel.

If I recall earlier estimates the Australian attendees at the Paris climate conference probably caused over 3 tonnes of CO2 each getting there then gave us a lecture on cutting back on fossil fuels. In Paris the power supply was about 75% nuclear but they told us renewables were the only way ahead.

I think Peak Oil will decimate the airline industry the question is when. My hunch is before 2030. Note the Qantas CEO got a large bonus not due to management skills but due to lower fuel prices. It would be nice to have a gradual switch to alternatives rather than a late-in-the-day panic. That doesn't seem to be the way things work however.

a year ago

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Mike Hansen

In reply to John Newlands

The Australian attendees at the Paris climate conference were representatives of the Turnbull government equipped with Tony Abbott's climate policies. I suspect you may have dreamed the "lecture on cutting back on fossil fuels"

a year ago

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John Saint-Smith

In reply to John Newlands

I can't for the life of me understand why you persist in commenting on matters associated with carbon pricing if you don't accept that there is an overwhelming obligation on all humans to do all in their power to reduce their emissions as quickly as possible. If you don't acknowledge that degree of critical emergency, your point of view is largely irrelevant.

Those of us who are fully committed to the struggle against suicidal economics will grasp at straws, as thin and as weak as a 'carbon conscience offset', knowing full well that the chances of making significant differences to the rate of increase of CO2e gases in the atmosphere is next to zero. But anything is better than nothing.

In short, then, we aren't particularly interested in the 'efficiency' of the method of emissions reduction, so much as we are desperate to raise the level of concern of the great mass of humanity from Watch and Act (but only if economically benign) to Emergency Warning!

a year ago

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Aden Date

In reply to John Newlands

“For speedy intercontinental travel not so much since there are currently no realistic alternatives to petroleum based jet fuel.”

Whilst you're correct there is no alternative if you need to travel, more expensive fees could get people thinking about what the outcomes of their travel are and finding better alternatives.

Better telecommunications infrastructure could see conferences replaced with teleconference.

A renewed localism could see consumer preferences shift from international travel to all the sights in our respective backyards.

a year ago

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Scott Grant

Wouldn't it much simpler to put the Carbon Tax on the aviation fuel? Then where the plane is owned, leased, used or lands is irrelevant.

a year ago

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John Newlands

In reply to Scott Grant

Actually I think that happened in 2012 the increase being about 6c per litre for planes fuelled in Australia. That seems consistent with the then carbon tax of 2.3c per kg CO₂ so presumably jet fuel burns about 2.6 kg CO₂ per litre. That is about the same as petrol's 2.5 kg CO₂/L. There was no c.t. on petrol back in 2012 as the thinking seemed to be the 38c excise was enough. The jet fuel levy was repealed in July 2014.

a year ago

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John Bentley

In reply to Scott Grant

Very true Scott, but how about we hit the polluters at the source. That is to say we tax those who dig the stuff up, any stuff, that is/may be polluting and whack a 10% consumptive tax on it or something similar. That way the user pays the same as the GST whether it be tourism by plane. ship (fuel oil is the most polluting fuel known to man!!) or whatever.

Mike also mentions “the very fast train” which has been slow to catch on. I don't think our current crop of spineless polities has the guts to put it on the board. Besides, they're probably looking at the wrong corridor. If we go straight up the guts we'll save time, money and a lot of fuel and it will benefit the nation as a whole rather than just part of it.

a year ago

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Sam Ryan

Personally, I am not a big traveler, so I have a radical plan as we are told that climate change is so serious. Just ban aviation tourism outright unless it is carbon neutral, real carbon neutral not this fake stuff with bogus overseas credits.

Aviation tourism is not an essential service by any means, it did not really exist 50 years ago and has absolutely exploded in the last 20. Business can be done by video conference, so ban that too.

This is what they call the low hanging fruit, an easy change with a big impact.

The problem is that the VERY people who scream loudest about wanting action on climate change are the VERY people who travel a lot. The hypocrisy from this group is astounding.

Also, every other program to reduce emissions leaves the rich completely unaffected. Of course they want action ! Raise power prices? No problem. Car taxes? No problem. Expensive changes for homes and appliances? No problem. Tariffs, surcharges, tradeable quotas, you name it they like it because they can afford it.

This will hit the vocal Dicaprio's, Gore's and the Bono's where it hurts.

The fact is you could shut almost the whole industry down, jobs would be lost but life would go on just like it did for 99.999 % of human history.

a year ago

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Sam Ryan

In reply to Sam Ryan

I left this out, "real carbon neutral" means the whole lifecycle of aviation, everything. Which means it could only be done when the whole of society is carbon neutral.

I think it is a good plan, brutal but good. Take that Leo!

a year ago

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Mike Hansen

In reply to Sam Ryan

So basically your plan is to frame climate aviation policy so that it hurts the people that you hate.

Would it not be easier if you simply went and sought the help of a therapist instead?

a year ago

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John Saint-Smith

In reply to Sam Ryan

Good to hurt the Gores, Bonos and Dicaprios (plural, not possessive 's') - who would just charter their own planes, and continue to fly with impunity. They could always put their travel down to 'business'. Meanwhile, you would destroy massive tourist industries in a hundred countries that employ millions of local people in less environmentally destructive industries than coal mining, forest clearing, and palm oil plantations.

I'm not rich and I'll scream as loud as you like. There are millions of people screaming about climate change today, they're not rich, they're poor farmers whose crops are being destroyed by intense storms, disease outbreaks, heat waves, droughts, depleted aquifers, pollution and political violence (The Syrian disaster is due in part to drought). They're screaming in pain, but their voices are being drowned out by self-indulgent do-nothings who love to blame people of conscience who have chosen to use their celebrity for the benefit of the voiceless.

Perhaps you should listen more closely to what they have to say and find out for yourself what is really going on. It's (note the apostrophe) not all about you.

a year ago

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Sam Ryan

In reply to John Saint-Smith

Good to hurt the Gores, Bonos and Dicaprios (plural, not possessive 's') - who would just charter their own planes, and continue to fly with impunity. They could always put their travel down to 'business'. The idea was just to make a point, by the way, it was not something I thought up all by myself. It has been seriously hypothesised by some.

Tourism aviation is clearly and purely a "want" it is not a "must" for society.

As for people like the Gores, Bonos and Dicaprios they really boil my blood with their activism. EVERYTHING they propose hurts the lower 75% of people by income but not them.

The Gores, Bonos and Dicaprios has so much wealth that any taxes, in any form, would not affect them. Of course they would be in favour on "action on climate change"

Anyway, seeing how frivolous the whole aviation industry really is, it should be one of the first industries to really clean up their act. So what if fares go up? Fares are cheaper now than they were 10, 20 or more years ago.

Aviation has never been more affordable and THAT is the problem.

PS Thanks for the grammar lesson, honest, I forgot.

a year ago

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Henry Verberne, asking questions

In reply to Sam Ryan

Have a look at this article from New Scientist. Quote:

"After years of procrastination, the aviation industry is set to agree to cap its emissions from 2020. Airlines will then either have to stabilise emissions through more efficient engines and conversion to biofuels, or offset those emissions by investing in reforestation projects – specifically those under the UN's REDD programme".

Should overcome most of your objections? Note shipping is included also.

<https://www.newscientist.com/article/2083134-aviation-and-shipping-firms-edge-towards-pledging-emissions-cuts/>

a year ago

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Dan Eyer

The idea of a carbon tax is to force a move to an alternate energy source. However, in the case of aviation there is no alternative energy source so the concept of this tax is to make flying unaffordable. This tax will result in a return to the 70s, where flying on an aircraft was the exclusive domain of the rich and only a distant dream for your average wage earner.

a year ago

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Mike Hansen

In reply to Dan Eyer

There are alternatives to flying.

Sydney-Melbourne is the third busiest flight corridor and Sydney-Brisbane is the tenth.

https://en.wikipedia.org/wiki/World%27s_busiest_passenger_air_routes

A fast train powered by renewable energy is quite feasible and with a aviation carbon tax, would start to look economically attractive and affordable for the average punter. "45% of Australian regional travel is contained within the proposed High Speed Rail network corridor."

<http://bze.org.au/zero-carbon-transport-high-speed-rail>

And Europe and Asia already have extensive fast train networks.

Web conferencing is already replacing the need for a lot of business travel. Expect the NBN to give that a push along in Australia.

a year ago

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Dorothy L Robinson

In reply to Dan Eyer

A tax can have the same function as offsets, if the revenue is used to fund other measures to reduce greenhouse gases, e.g. replace coal-fired power by wind, solar and wave power, or the package of 16 measures to reduce methane, black carbon and other short-lived climate pollutants, that was considered essential if by the UN Environment Program/World Meteorological Organization if we are to have a hope of keeping global warming below 2 degrees (more info: [woodsmoke .3sc .net/greenhouse](http://woodsmoke.3sc.net/greenhouse)).

One advantage of a tax (which doesn't have to make flying unaffordable, simply raise enough money to cover the cost of avoiding or absorbing an equivalent amount of emissions) is that it easily verified and the money could be used to fund promising research, rather than buying offsets from inadequately-regulated organizations. The fact that the UNFCCC does not cover airlines is one of several problems with current agreements. Another problem is that the Global Warming Potentials used in the calculations are out of date, especially for methane, and don't take account of the fact that current projections indicate that the 2 degree limit will be exceeded in less than 40 years, not the 100 years used in the UNFCCC calculations!

a year ago

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Sam Ryan

In reply to Mike Hansen

There are alternatives to flying

Web conferencing is already replacing the need for a lot of business travel.

Hey dude, you criticise my post about aviation being non essential and suggest I need to visit a therapist then you immediately "steal" and repurpose my key ideas in another form?

Really?

a year ago

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Mike Hansen

In reply to Sam Ryan

I did not say that aviation is non essential. As John notes above, there are many developing countries that are heavily reliant on tourism. Even in Australia, it is a large and increasingly important part of our economy.

I pointed to alternatives that become more realistic with a carbon price on aviation although I suspect it needs to be across the board to avoid distortions like more car and bus travel.

Stop the emotional trolling and I will be happy to engage with you about climate policy.
a year ago

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Sam Ryan

In reply to Mike Hansen

Stop the emotional trolling and I will be happy to engage with you about climate policy

You're the one who yesterday accused me of being a denier and worse because I mentioned a report but did not link it IMMEDIATELY. I linked the report after you asked for it yet no apology was forthcoming despite my request.

It is you who immediately goes for the jugular without justification. Today you said I needed to see a therapist. So rather than me "stop the emotional trolling" I suggest you turn it down a notch.

It is all well and good to want action but we need to see from you concrete solutions that mean a cracker. Fast trains and video conferencing are a start but unless people are very very heavily encouraged to use them they will just fly.

a year ago

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Mike Hansen

In reply to Sam Ryan

Fast trains and video conferencing are a start but unless people are very very heavily encouraged to use them they will just fly.

That is the idea behind a carbon tax. Providing a financial incentive for people to look for alternatives to flying. Although as I noted above, applying a tax to one form of transport without applying it to others like cars could backfire. On the other hand the carbon footprint of aviation is extremely high compared to other forms of transport.

The fact is there are no shortage of opportunities to decarbonise given that globally we have not yet made any significant start. The Pareto Principle aka the 80-20 rule will apply, the last 20% of emissions including aviation will be difficult to deal with although that is no reason not to make a start.

a year ago

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Sam Ryan

In reply to Mike Hansen

That is the idea behind a carbon tax

You and many advocates ignore or hide the fact that carbon taxes work in a different way to that portrayed.

It is all well and good to put a carbon tax on aviation fuel for example but unless it raises the cost of fossil fuels above the cost of "zero" or significantly lower carbon alternatives, it is doing little.

For example, if you put a 10% carbon tax on aviation fuel people will just pay it and continue as normal.

Carbon taxes, as portrayed are a lie, a blatant lie. Especially, especially when combined with talk of "immediate" action. Like you did yesterday.

As normally implemented, they work slowly.

a year ago

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Steve Sallans

Just where is it explained just how a tax will actually reduce emissions other than by reducing or closing down air travel and in that case it will have to be substantial.

Unfortunately an, unintended?, result may be a restriction on all the climate conferences, and what are Al Gore and Leonardo DiCaprio going to do with their private jets, or are climate warriors going to be exempt in this scheme as they seem to think they are now? And as we replace dirty coal mining with clean green tourism, oh wait, we wont have any aircraft will we? Maybe we will be saved by the likes Leonardo who will be able to afford the taxes. Yeah, this tax idea sounds betterer and betterer the more you think about it.

a year ago

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Stephen Ralph

Why not a carbon tax on motor vehicles, or coal mines, or anything that is an emitter of carbon.

An emission without omission.

a year ago

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Richard Rowe

interesting thought bubble.

But there are so many fish hooks and unintended consequences to this utopist argument.

For many this will involve rolling back their social system to the 1960s. The charge will likely be perverted into a revenue grab (I've just got my power bill, I'm paying more than last year while using half the power through a 'neutral' reorganisation of charges, and my PVs are exporting twice what I consume).

For some people high speed electric trains are an alternative (I like the ICE trains in Europe, and the Shinkansen). But the electricity comes from somewhere. And scale matters ... Cairns - Sydney will be a long journey anyway, even at 300kph and (say) 8 trains/day. The cost in time will be socially unacceptable in a market economy.

And the thought of sailing ships operating across the Pacific has little appeal ...

a year ago

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Andy Saunders

Hmmm, doubt it is thought through.

How to take account of the load factor (percent of seats filled)? What if two different (fuel-consumption) aircraft fly the same route (or get swapped just before takeoff)? How are first-class/business/economy ticket surcharges calculated?

Given the history of fuel surcharges (where it is possible for say the fuel surcharge applied to a Qantas FF ticket on a Jetstar-operated flight is greater than the entire Jetstar ticket price for the same flight), it is likely that it will degrade into a simple pricing segmentation scheme.

a year ago

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Roger Martin

In reply to Andy Saunders

Wikipedia includes World Bank study 2013 that calculated carbon footprint of buysiness class at 3 times and first class at 9 times an economy seat.https://en.wikipedia.org/wiki/Environmental_impact_of_aviation

a year ago

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John Nicol

I guess the centre of such a case for charging airline passengers should be a quite definitive demonstration that the emissins from the plane they are flyimh in will cause an increase in global warming. No such definitive proof has yet appeared in the literature, in spite of many claims to the contrary.

Applying a tax without justification is the problem faced by all governments around the world and either the airline industry as a whole or the individual lines - QANTAS, BA, United, Singapore etc are in a quasi-government situation in regard to their own emissions and to the public they serve.

Unfortunately, if all airlines agree to introduce the cost, as they may well do, there is no "Opposition" - thel apternative government if you like, to be "elected" by travellors in their stead.

a year ago

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John Nicol

In reply to John Nicol

Would shipping companies need to follow suite?

a year ago

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Roger Martin

Without peak oil impact fuel prices, any tax would have to be significant to impact on ticket sales.For example from Qantas latest half year report, average sales were around 12c per revenue passenger km (rpk, at 81% capacity) while fuel costs around 2.7c per rpk. Discount air tickets are around 6c per km. Depending on markup on fuel, doubling price only increases average ticket price by 25% which would reduce demand by maybe 10-20%. Qantas gives a non-fuel cost of 5c per available seat km (so 6c or so per rpk).

Wikipedia gives figures of CO2e emissions of 114g per km for very long distance flights up to 259g per km for short distance (<460km) flights. If you want to increase costs by 5c km that implies a CO2 price of 20c-40c a kg or \$200-\$400 a tonne of CO2.

a year ago

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Roger Martin

In reply to Roger Martin

Wikipedia figures per passenger km

a year ago

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Les Johnston

Why not also develop a carbon tax on cruise ships? Shipping is behind a huge amount of carbon emissions and should equally be included in the carbon reduction incentive scheme.

a year ago

Gregg Tavares

\$1 to \$40 per ticket? How is that going to have any effect whatsoever on fuel consumption, flight miles travelled, anything? I don't know if I'm for or against carbon tax but if you want to put a dent pollution from planes you'd need the tax to be more like \$1 per person per 10 miles so a flight from LA to NYC would cost an extra \$800+ unless you were somehow in a carbon neutral plane. Anything less is a rounding error for travellers. They're not going to notice a \$1-\$40 difference in price given the prices already fluctuate so much.

6 months ago