

Factsheet 11: Cutting CO2 emissions - challenges for the aviation sector

At the moment it is estimated that aviation accounts for only 3% of total global CO2 emissions. But the aviation industry has come under scrutiny because there will be larger problems in the future if nothing is done, for several reasons:

- Aviation is the second fastest growing source of transport emissions. (Only shipping is growing faster).
- Much of the aviation emissions are deposited high in the atmosphere, where they have a greater effect. There is controversy about how much greater, but a reasonable estimate would be twice the effect.
- Planes have a limited capacity to change their fuel source. Importantly, they cannot run on electricity. The main hope for deep cuts in CO2 emissions from transport is to use wind and solar power to make electricity to run buses, trains and small trucks. But this won't work with planes.

Even aviation employers, represented by IATA, have recognised that changes need to be made. IATA has been an influential voice at ICAO (the International Civil Aviation Organization) whose member governments have agreed principles for the stabilisation of aviation emissions by 2050.

Apart from the human and environmental cost, climate change will also have a very real impact on aviation workers through the inevitable changes that will take place in the whole aviation industry and in their individual workplaces. If workers and their unions can't engage in and influence this debate, they may end up bearing an unfair proportion of the cost of responding to climate change.

Solutions: making changes within the aviation industry

In order to tackle climate change we need to cut fuel use, and by doing so, reduce emissions. These are some of the ways that have been proposed to achieve this:

- Improve design
- Build with lighter materials
- Eliminate business class
- Direct flight plans
- Improve air traffic control systems to reduce time wasted in circling airports

- Reduce the number of flights to and from each airport

Some important measures will require government regulation. For instance, planes could fly at slower speeds. This would save fuel, and save the airlines money. Trips would take longer, so there could be more jobs for pilots and cabin crew. But the airlines' wage bill would increase and they may try to avoid this, giving rise to potential health and safety concerns. Passengers would also arrive later. So this will not happen unless governments and international regulations require that all planes slow down.

Another issue is that planes are built to last, but the new generation of aircraft now use much less fuel. It could take twenty years or more to replace the old planes. A solution would be regulations to insist that older aircraft are retired, and new planes introduced. This would create jobs in aircraft manufacture but could have negative impacts on maintenance workers.

Biofuels are also a possible alternative to conventional aviation fuel. Biofuels work in the same way as ordinary aviation fuel, but they are made from plants. At the moment the main biofuels are made from corn, sugar cane and palm oil, though other plants can be used. Unfortunately, there are serious problems with biofuels. The main one is that biofuels are grown on land which would otherwise be used to feed people. (See factsheet 16 on *biofuels*.) But if there is a case for biofuels anywhere, it is in aviation.

All of these measures taken together could reduce emissions from flights by at least a third, and possibly more. The input of workers and unions is critical in ensuring that such measures are effective and balanced, taking into account social as well as environmental and economic needs.

Solutions: switching modes of transport

A further prominent proposal for cutting emissions is for people to switch from planes to high speed trains for short haul flights. This switch could bring deep cuts in emissions. Short journeys make a large difference because much of the energy used in the average flight comes at take-off and landing. On a flight of 250 km,

take off and landing is about 50% of the fuel used. On a flight of 3,700 km, take off and landing is 7% of the total fuel. The very short flight uses about 40% of the fuel per kilometre of the long flight.

These short journeys could be made by rail instead. It does not have to be very high speed rail. At very high speeds, there is a lot of wind resistance and the train needs more energy. But trains averaging only 240 kph (150 mph) will, once the convenience offered is factored in (e.g. they go from city centre to city centre and boarding is quicker) provide acceptable alternatives to air travel in terms of total journey time and comfort.

Once a high speed line is built, the experience in different countries is that most people will switch from air if it takes three hours or less. In Spain, for instance, the new line from Madrid to Barcelona has largely replaced planes.

On slightly longer routes, some government regulation and rationing of flights may be needed to encourage people to switch. In any case, new rail lines will not be built without massive government funding. Globally, this could mean many millions of new jobs.

High speed rail run on ordinary electricity creates much lower emissions than air travel. But the real pay off would come with electricity made by renewable energy. At that point the emissions would go down to almost nothing. This would probably take more than ten years (see factsheet 6 for why).

So, assume that 25% of all passenger kilometres switch to rail, this would reduce CO2 emissions by about 40%. Further savings from design, new planes, slower speeds and different work routines are anticipated to bring the total cut in emissions up to at least 60%.

Lost jobs

So far, so good. But we cannot make cuts in aviation emissions on this level without cuts in the number of short haul flights. And that threatens jobs in aviation.

We cannot, and should not, hide this. But there are ways of coping. Let's say that 25% of kilometres are cut – all of them from short haul flights. That would also mean a significant cut in jobs.

It makes sense to phase in these cuts over 20 years, because it will take that long to build all the renewable energy to provide zero carbon electricity for high speed rail. If this approach is adopted, that means a cut of about 1.25 % a year in aviation staff. This is far below the number of people leaving the industry and retiring each year. It can, for example, be absorbed by government regulations restricting new hiring to make sure everyone already in the industry has a job.

Conclusion

Some people worry that these and other proposals to tackle climate change will discourage air travel and the negative impact that this will have on an already volatile industry with small profit margins. However, climate change will not go away, nor will the international community ignore the impact of aviation emissions for long. Initial research undertaken by the ITF suggests that even if steep reductions in emissions were to be made, there would still be an overall increase in employment in the industry as the projected growth rates for the 'business as usual' model were massive. Nevertheless, the increase in employment would be different regionally. The key is for unions to make their voices heard and to claim climate change as a union and employment issue - one that is interlinked with their struggle to improve terms and conditions and to raise social standards.

NOTE: Factsheet 14 on *carbon trading* includes a discussion of whether aviation fuel should be included in carbon trading schemes.

This is part of a series of factsheets on climate change produced by the ITF, www.itfclimatejustice.org