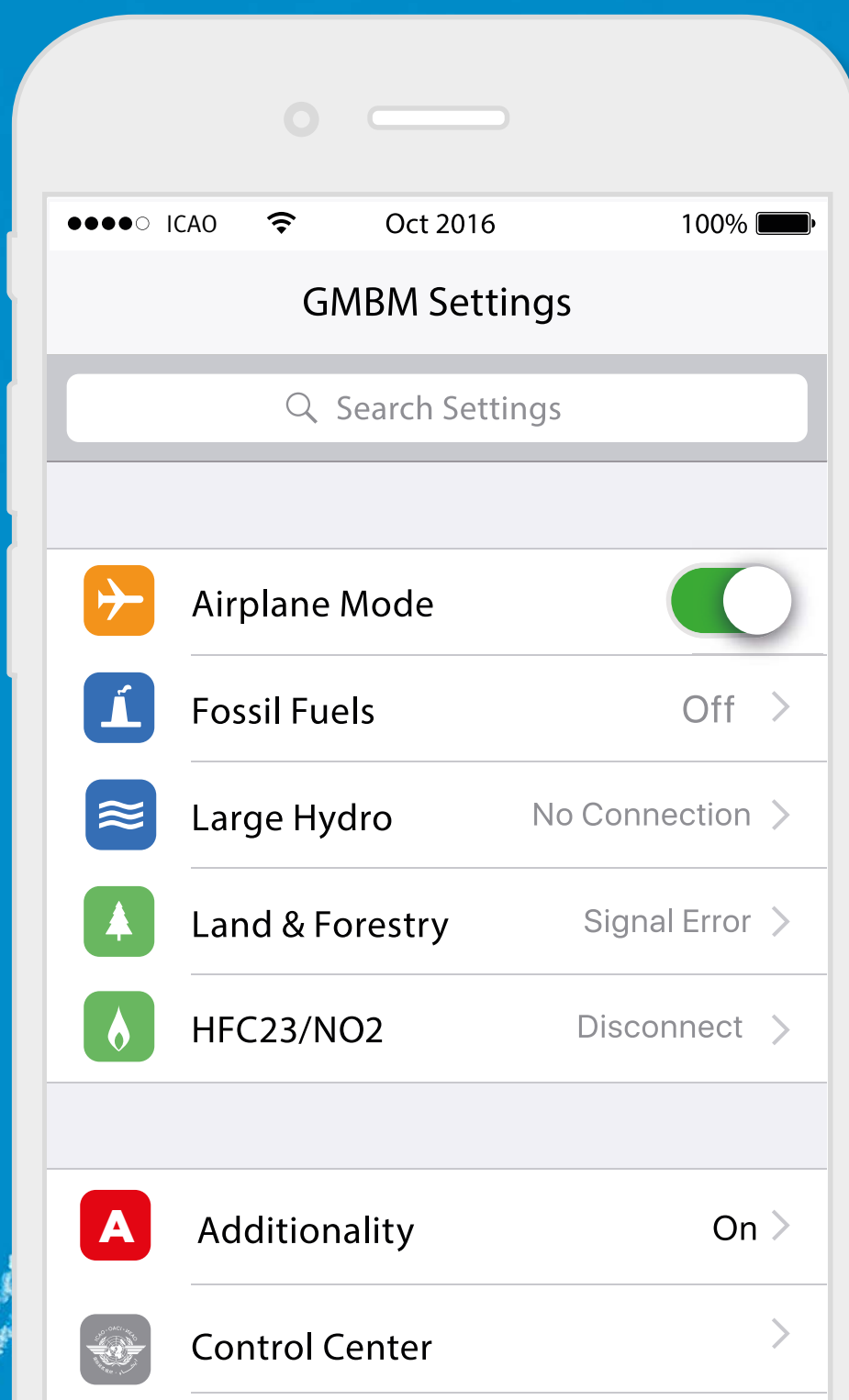


Aviation's Credibility on Environmental Integrity

The importance of making certain project types ineligible in ICAO's Global Market Based Mechanism

Carbon Market Watch Policy Briefing

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Executive Summary

ICAO is developing a Global Market Based Mechanism to achieve the goal of carbon neutral growth in the industry post-2020. Work is currently in progress to define which credits should be eligible to be used as offsets in this market. Ideally, ICAO would agree, then operationalize, core principles, like those agreed under the UNFCCC in Durban in 2011, that emissions credits should be:

1. Real
2. Permanent
3. Additional
4. Verified, avoid double counting of effort
5. Achieve a net decrease of greenhouse gas emissions

Additionally, they should contribute to sustainable development and do no social or environmental harm.

Most, if not all, existing carbon markets recognize this and have implemented so-called negative lists, that deem certain project types ineligible for compliance in that market. Experience with existing carbon markets, notably the largest, the Clean Development Mechanism, demonstrates that while principles are helpful, they have not prevented the implementation of project types that have proven unable to fulfill these criteria on the ground.

ICAO should also agree its own negative list, to provide a clear means of implementing the proposed quality criteria. The ICAO GMBM should not accept the following project types:

- fossil fuel power plants
- nuclear facilities
- hydroelectric power production project activities with a generating capacity exceeding 20MW
- projects in the land use, land-use change and forestry (LULUCF) sectors with the exception of peat land rewetting that is not exposed to the non-permanence risks of other LULUCF project types
- projects involving the destruction of trifluoromethane (HFC-23) and nitrous oxide (N₂O) from adipic acid production
- projects for geological CO₂ capture and sequestration
- projects that do not have sustainable development co-benefits or do harm

The International Civil Aviation Organization (ICAO) has agreed to develop a global market based mechanism (GMBM) to stabilize CO₂ emissions from aviation at 2020 levels through the use of offsets, whereby credits from emissions reductions achieved elsewhere are bought and counted against emissions from the sector.

ICAO has been working to develop recommendations that stipulate quality criteria for the offsets that could be allowed into its GMBM. This is to help ensure that the industry purchases real emissions reductions and also minimizes the reputational risk of buying offsets that are socially or environmentally damaging. One way to achieve this would be to agree and operationalized core principles, like those agreed under the UNFCCC in Durban in 2011, that emissions credits should be:

- Real
- Permanent
- Additional
- Verified, avoid double counting of effort
- Achieve a net decrease of greenhouse gas emissions
- Additionally, they should contribute to sustainable development and do no social or environmental harm.

One important means to achieve this end is to have project types that are automatically ineligible for inclusion in the GMBM. Having such clear exclusions would be a fast and consequently cost-effective and efficient means to implement these quality criteria across a number of projects types, leaving a smaller number of projects' eligibilities to be assessed for use in the GMBM.

Using exclusions at the project type level is a commonly used practice in numerous jurisdictions that have offset policies in place. Some examples of jurisdictions that apply such exclusions are:

- All 28 EU Member States have agreed to a list of offsets ineligible under the EU's Emissions Trading System (EU ETS), which is applied on the basis of project types, regional grounds and dates of project registration and credit issuance, e.g. it does not allow carbon credits from land use, land-use change and forestry (LULUCF), nuclear, HFC-23 and adipic acid destruction projects; and only allows offsetting projects registered after 2012 if they are hosted in a least developed country¹;
- Several EU Member States apply additional quality criteria for offset eligibility for sectors not covered under the EU ETS with many excluding large hydro and coal power projects from the list of eligible project types²;
- Carbon markets in New Zealand³, Australia⁴ (decision taken while still under discussion), Canada⁵, and California⁶ have announced that they will not allow the

use of HFC-23 and adipic acid destruction projects;

- Switzerland applies stringent quality criteria for offsets eligible under its carbon market, for example only offsets from programs attested by the United Nations Framework Convention on Climate Change (UNFCCC) are allowed and several project types are excluded, such as biological or geological carbon capture and storage (CCS), large-scale hydropower and projects not located in a least developed country. It also excludes carbon credits that were achieved in violation of human rights and under conditions that had significant negative social or ecological effects or would contravene Swiss foreign and development policy⁷.
- The United Nations Office for Project Services (UNOPS) has, as part of the UN Sustainable Public Procurement Initiative (SPPI), aimed to maximize the environmental, economic and social benefits of its procurements and this includes its carbon offset purchases. In September 2015, UNOPS released an Invitation to Bid for 350,000 Certified Emissions Reductions (CERs) from the Clean Development Mechanism. Within this procurement of CERs was an ineligibility list that excluded specific types of offsets, including: hydrofluorocarbons and other industrial gas destruction; large hydropower projects above 250MW capacity; coal-based projects; and credits generated prior to 2012. Furthermore, the procurement bid stipulated that the projects selling their CERs must have identifiable co-benefits for sustainable development, female empowerment and local development.⁸

These examples of existing project-type exclusions are based on years of experience implementing offsetting policies. Building on these important lessons and providing consistency with existing jurisdictions that will have to ultimately implement the ICAO GMBM will mean integrating exclusions of certain project types as an integral criterion of the ICAO GMBM and as an important means to ensure environmental integrity in civil aviation's objectives to halt climate change.

On the basis of existing project-types exclusions and bearing in mind additional reputational risks the aviation sector is exposed to, the ICAO GMBM should make ineligible, at a minimum, the following project types:

- fossil fuel power plants
- nuclear facilities
- hydroelectric power production project activities with a generating capacity exceeding 20MW
- projects in the land use, land-use change and forestry (LULUCF) sectors with the exception of peat land rewetting that is not exposed to the non-permanence risks of other LULUCF project types
- projects involving the destruction of

trifluoromethane (HFC-23) and nitrous oxide (N₂O) from adipic acid production

- projects for geological CO₂ capture and sequestration
- projects that do not have sustainable development co-benefits or do harm

While these project types recommended for the ICAO GMBM are largely drawn on experiences with the Clean Development Mechanism (CDM), it should be noted that this is because the CDM is by far the largest generator of offset credits. It is also because the CDM has oversight, transparency, and uniform standards that allow its projects to be better subjected to scrutiny than those generally found under voluntary markets.

A recent study by the Oeko Institut⁹ found that applying stringent standards to look at the availability of only high quality credits generated post-2020 from the existing CDM project pipeline (ie assuming no new projects would come on stream) found that there is sufficient supply of these credits to meet ICAO's projected demand to 2024. In the real world, project developers would respond to the new demand with new projects. In short, putting a negative list would not compromise ICAO's supply needs.

Overarching additionality concerns of large-scale power projects: fossil, nuclear and large hydro

Research confirms that large-scale power supply projects are highly unlikely to be additional. For example, [analysis](#) undertaken for the CDM Policy Dialogue¹⁰ finds that:

- Despite years of development, experience, and revision, the Clean Development Mechanism's method for assessing additionality remains controversial and contested. For some project types, additionality is relatively certain, but for large-scale power supply projects additionality is hard to demonstrate with high confidence.
- The value and integrity of the CDM may hinge on the net emissions impact of these large-scale power supply projects. If they are truly additional and operate well beyond the credit issuance period, they can lead to a decrease in global greenhouse gas emissions. If they are mostly non-additional, as research suggests, they could increase cumulative global greenhouse gas emissions by over a gigatonne of CO₂e through 2020.
- A transition away from such CDM projects could help to: address the over-supply of Certified Emission Reductions (CERs); support projects that truly depend on CERs; and improve the CDM's overall mitigation impact. However, such a transition would need to be carefully considered in respect of governance, legality, and the need for investor confidence.

These arguments apply for all large-scale power projects

including fossil fuel power plants, large hydro projects, and nuclear power. However, supplementing these general additionality concerns, there are also other reasons why these project types should not be eligible to generate offset credits for the ICAO GMBM:

Fossil Fuel Power Plants

Risks: Non-additional, not based on a realistic and credible baseline, severe social and environmental negative impacts

The use of fossil fuels results in greenhouse gas emissions both at the production and combustion stages and are inherently damaging to the climate. Despite this, the CDM allows credits from projects that increase the efficiency of coal power plants. In addition to diverting investment away from green energy projects, the projects that have come forward to date are all non-additional because super-critical technology is already business-as-usual and often required as standard by the host country. These projects will, therefore, generate carbon credits that do not represent real emission reductions.

In addition to the climate impacts and declining economic competitiveness of energy generation through fossil fuel usage there are a number of other negative social and environmental negative impacts associated with fossil fuels:

- Emissions of methane during extraction occur, releasing a greenhouse gas 27 times more potent than CO₂.
- Emissions of methane, which lead to production of other gaseous tropospheric pollutants, including ozone, in the presence of sunlight. This can impact human health and can negatively impact agricultural production.
- Emissions of mercury from the combustion of coal - a metal that the WHO considers one of the top ten chemicals or groups of chemicals of major public health concern - pose a serious threat to child development *in utero*. Furthermore, it has toxic effects on the nervous, digestive, and immune systems and on lungs, kidneys, skin and eyes.

The experience of some CDM projects demonstrates that coal projects, instead of creating benefits locally, can lead to chemical contamination resulting in impacts on health and food production. Human rights abuses have also occurred (see case studies below).

For this reason, any market aiming to have genuine climate benefits should automatically exclude fossil fuel power projects and avoid credits from socially and environmentally damaging projects.



**Case study:
Adani Mundra CDM project,
a 1320 MW super-critical
coal fired plant, India, CDM
registration number 2716**

Source: Gujarat Forum on CDM

To date, more than 1 million carbon credits have been issued for this project. However, a report, commissioned by a committee appointed by the Indian Ministry of Environment and Forest, highlights that the project violates national environmental legislation. The report reveals that the project was harming the local environment and failing to recognize fishing communities, salt-pan workers, and pastoralists as potentially affected stakeholders. The project also causes fugitive emissions in the form of fly ash. This does not only harm the fragile environment. The fly ash also has a negative impact on the health of the local population as it contaminates fish and makes it unsafe to consume. Local communities are influenced the most as mangroves have been destroyed and fishing routes blocked due to the construction needs of the coal power plant.

Local communities have also reported lethal incidents in the company occurring monthly. Force was reportedly used to close down a creek, endangering the livelihoods of several fishermen. The livelihoods of farmers have been endangered

as the grazing land of 14 villages was taken away. The project neither supports sustainable development nor promotes environmental integrity.



**Case study:
Sasan CDM project, a 3960 MW
ultra mega coal fired plant, India,
CDM registration number 3690**

Source: Carbon Market Watch field trip, April 2014

The Sasan project is a coal based generation facility located in the Singrauli District, State of Madhya Pradesh, India. Along with Adani, it is one the six coal power projects that are registered under the CDM. Projected to deliver more than 2 million tCO₂ equivalent per annum, Sasan's crediting period started at the end of 2011 and will run until 2021.

The Sasan project has had major impacts on the local population. Houses have been bulldozed and property destroyed before clearance and acquisition was completed. Without permission of the locals, personal belongings were demolished and affected people forcibly displaced to rehabilitation areas. Residents were not compensated or were compensated at levels below the legal requirement.

The rights of indigenous people were also ignored. There was no separate consultation with the Baiga tribe, and few of their people have received any compensation. Since most of the Baiga lived in areas allocated to the company for coal mine overburden, they have been forced to leave forests identified as government land.

Additionally, there were reported irregularities in worker time stamps, where workers were clocked in after their shifts, allowing injuries and deaths at the project to be recorded as having taken place outside of the site. Direct environmental contamination was also witnessed because of the fly ash generated by the project activity.

Fossil Fuel Production

Risks: severe negative social and environmental impacts

Emissions from fossil fuel production and transport, especially methane released from oil and gas wells, processing and transport of natural gas, and coal mines, account for significant quantities of greenhouse gas emissions. A recent study found that US methane emissions were 50% higher than expected when these emissions were taken fully into account. Despite this, the CDM allows credits from projects that reduce emissions from fossil fuel production, including from preventing flaring and from destroying methane in coal mines. This latter project type is problematic because it makes coal extraction financially and technically more attractive, and so acts as an effective subsidy to those polluting industries. Since fossil fuel production is an inevitable prerequisite for fossil fuel combustion, the activity cannot contribute to sustainable development. Instead, it lacks co-benefits and generates undesirable social and environmental impacts.

Nuclear

Risks: Non-additional, significant environmental and social harms

Nuclear projects are not allowed under the CDM because of additionality concerns because nuclear power tends to require strong political support from government and large subsidies for construction and operation of the plants. The need for such strong support makes the additionality of any nuclear power project highly questionable.

Nuclear power has severe environmental impacts: UNFCCC analysis listed “radioactive waste and other environmental impacts” as a concern when disallowing this type of project to go ahead¹¹. Few countries have found long-term and secure storage solutions for their high level radioactive waste. Radioisotopes bioaccumulate in marine organisms with the potential to cause various pathologies.

Exposure to radiation in humans is associated with leukemia, breast, bladder, colon, liver, lung, esophagus, ovarian, multiple myeloma, and stomach cancer. Furthermore, there is a possible association with a possible association between ionizing radiation exposure and prostate, nasal cavity/sinus, pharyngeal and laryngeal, and pancreatic cancers¹². A linear no-threshold (LNT) dose-response relationship is used to describe the relationship between radiation dose and the occurrence of cancer. This dose-response model suggests that any increase in dose, no matter how small, results in an incremental increase in risk. The U.S. Nuclear Regulatory Commission (NRC) accepts the LNT hypothesis as a conservative model for estimating radiation risk; adding to background radiation simply increases risks from radiation.

Large Hydro-Electric Power

Risks: Non-additional, not based on a credible baseline with high likelihood of other environmental and social harms

According to the World Commission on Dams, fifty thousand large dams had been built by the year 2000, disrupting more than 60% of the Earth’s rivers. While one of the major arguments for the current, unprecedented boom of dam construction around the world is that large hydro projects provide a “clean energy” solution, scientific evidence suggests otherwise. In addition to the general additionality concerns outlined above, key concerns are that large hydro dams:

- Emit greenhouse gases, including methane, especially in tropical regions;
- Demonstrate high vulnerability to extreme droughts and flooding that are increasingly common in a changing climate;
- Cause severe and irreparable environmental damage, especially to freshwater ecosystems and biodiversity, with consequences for vital ecosystem services at the local, regional, and global levels including regulation of the climate system;
- Frequently involve human rights violations, such as lack of free, prior and informed consultation and consent with indigenous peoples and other traditional communities, loss of territories and livelihoods (with especially negative impacts on women, children, elderly citizens and others in vulnerable situations) as well as exploitative labour conditions among dam construction workers;
- Incur cost overruns that average twice the initial budgets, causing major economic difficulties in developing countries, including diversion of scarce funds from investments that could be made in truly sustainable energy sources;
- Take a long time to become operational, including frequent schedule overruns, making them an inefficient solution to the urgent energy and climate crises that they are intended to tackle;
- Cause significant social, environmental and economic losses rarely considered in the projects’ official budgets, impoverishing local communities and gravely conflicting with their purported primary objectives of poverty alleviation and energy for the poor.

There are cleaner, more efficient, less costly, and faster alternatives to respond simultaneously to legitimate energy needs and the climate crisis.

The airline industry is vulnerable to reputational risk in case offset credits are related to social or environmental harm.



**Case Study:
Barro Blanco – Hydroelectric
Dam, Panama, CDM project
registration number 3237**

Source: Movimiento M-10, Panama

The Barro Blanco Hydroelectric Power Plant Project is a 28.84 MW hydroelectric CDM project on the river Tabasara River in the Chiriqui Province of Panama and was approved in June 2011 despite grave concerns about the violations of national laws related to the rights of the indigenous Ngöbe peoples that will be directly affected by the hydro dam. The water reservoir of the dam is expected to flood half a dozen indigenous villages. This will affect their homes, schools, and religious, archaeological, and cultural sites. According to the Ngöbe, consultation was not properly conducted and a majority of them stand against the project.

In February 2015, Panama’s environment agency ANAM suspended the construction of the dam, already advanced to 90%. The decision was taken because of breaches of the national environmental impact assessment requirements, including shortcomings in the agreement with the locally affected indigenous communities.

Following a dialogue roundtable between the government and the indigenous peoples, the State of Panama acknowledged “recurring administrative flaws and improper handling” by the company in charge, GENISA.

Following a complaint to the Independent Complaints Mechanism (ICM) of the FMO and DEG, an independent investigation concluded that “the lenders have not taken the resistance of the affected communities seriously enough” and that “lenders should have sought greater clarity on whether there was consent to the project from the appropriate indigenous authorities prior to project approval.”

Credits from large hydro dams should therefore be ineligible for compliance in the GMBM.

Land Use and Forestry

Risks: Non-permanence and carbon leakage, potential for other environmental and social harms

The CDM allows afforestation and reforestation (A&R) projects, but does not currently allow avoided deforestation. A&R projects involve the direct conversion of non-forested land to forested land and the main difference between them is the length of time the land was non-forested before re-planting began. Under the UNFCCC, the Subsidiary Body for Scientific and Technological Advice (SBSTA) is currently considering three additional groups that could be included as activities under the CDM (i) re-vegetation, including agroforestry and silvopastoral practices (ii) cropland management and grazing land management and (iii) wetland drainage and rewetting. Moreover, it is considering alternative approaches to addressing the risk of non-permanence. Any decision under the ICAO GMBM should not prejudice the technical work that is currently undertaken with regards to the suitability of land use carbon offsets.

However, there are a number of major concerns that led to the exclusion of carbon offsets from the land use and forestry sector. For example, the European Commission analyzed the possibility of allowing credits from certain types of land use, land-use change and forestry (LULUCF) projects which absorb carbon from the atmosphere. It concluded that doing so could undermine the environmental integrity of the EU ETS for the following reasons:

- LULUCF projects cannot physically deliver permanent emissions reductions. Insufficient solutions have been developed to deal with the uncertainties and non-permanence of carbon storage and potential emissions ‘leakage’ problems arising from such projects. The temporary and reversible nature of such activities would pose considerable risks in a company-based trading system and impose high liability risks on Member States.
- The inclusion of LULUCF projects in the ETS would require a quality of monitoring and reporting comparable to the monitoring and reporting of emissions from installations currently covered by the system. This is not available at present and is likely

to incur costs which would substantially reduce the attractiveness of including such projects.

- The simplicity, transparency and predictability of the ETS would be considerably reduced. Moreover, the sheer quantity of potential credits entering the system could undermine the functioning of the carbon market unless their roles were limited, in which case their potential benefits would become marginal.

Mitigation practices in LULUCF sector distinguish between emissions reductions that are considered permanent, and soil sequestration which is considered non-permanent and highly uncertain. Sequestration presents a constant risk that the carbon stored in terrestrial vegetation can be released back into atmosphere due to certain human activities (e.g. ploughing, additional fertilizer application) or natural events, causing non-permanence of carbon sinks. Various studies have found soil carbon sequestration to be technically and economically unfeasible, and point to a variety of evidence that it only contributes temporary benefits to climate mitigation. The existing approach for addressing the risk of non-permanence in LULUCF CDM projects is by issuing temporary credits (tCERs and ICERs), which expire at the end of the commitment period during which the CERs were issued. The temporary credits are unattractive to investors and difficult to trade thus they do not generate high demand on the market.

For these reasons, sequestration of carbon in land cannot compensate for continued fossil fuel emissions - fossil fuel emissions are permanent, whereas carbon sequestration in forests and soils is well documented in scientific research to be temporary and reversible.

One exception to permanence risks that should be highlighted is emissions reductions from peatland rewetting which do stand the test of permanence. Peatlands have disproportionately high emissions from concentrated areas of land, and soil activities are therefore more suitable to be treated as mitigation measures with several adaptation co-benefits such as water retention and avoidance of soil subsidence.

HFC-23, and N₂O from adipic acid destruction

Risks: Perverse incentives and risks for potential increase in emissions elsewhere

HFC-23 is produced as a by-product during the manufacture of a commonly used refrigerant, HCFC-22, and is 14,800 times more damaging to the climate than carbon dioxide (CO₂).

The destruction of HFC-23 in HCFC-22 plants in developing countries can be registered as a CDM project. As it is very cheap to install a destruction facility, HFC-23 CDM projects

have resulted in huge profits for HCFC-22 plants and created a perverse incentive to increase HCFC-22 production to earn money from destroying the resulting HFC-23. The resulting HFC-23 offset credits have not only undermined climate goals in jurisdictions where they were used. Continued demand for HFC-23 projects would also undermine the goals of the Montreal Protocol to phase out ozone depleting substances that is working on a permanent and global solution to address the potent greenhouse gases.

The case of N₂O (nitrous oxide) is slightly different: N₂O is a strong greenhouse gas (Global Warming Potential: 310) and an unwanted by-product in two different industrial processes. These are the production of adipic acid, usually turned into nylon and nitric acid, and then into fertiliser. However, the high profits from N₂O destruction projects at adipic acid facilities have led to carbon leakage: These projects had such high profit margins that a shift in production from non-CDM plants to CDM plants occurred.

This is why numerous jurisdictions, including all 28 EU Member States, Australia and New Zealand have excluded the use of offsets from HFC-23 and N₂O from adipic acid projects from their jurisdictions. The ICAO GMBM should exclude these project types.

CO₂ Capture and Sequestration

Concerns on permanence and lack of sustainable development co-benefits

Carbon capture and storage (CCS) projects, in which CO₂ is chemically captured and piped into depleted oil and gas beds, are allowed in the CDM. This is despite strong concerns about potential seepage of CO₂ from the reservoir and monitoring not being required over an adequately long period of time, with the IPCC special report on CCS stating that CO₂ seepage may occur “distant in time”¹³. There are important questions of permanence in this project type. Better understood is the large energy penalty associated with CCS: the additional energy used for the capture requires 15-40% more fuel to produce the same amount of electricity with CCS than without. More importantly, CCS projects perpetuate and incentivize the use of fossil fuels for energy while failing to address the environmental and human impacts associated with their extraction and use.

A majority of current CCS demonstration projects are Enhanced Oil Recovery (EOR) projects. In the case of EOR projects, pumping CO₂, nitrogen or water into depleting oil reservoirs to boost oil production is an established technology that's been around for decades, but it does not reduce overall emissions. This is because the technology is used to pump out previously inaccessible oil (likely in larger quantities than the CO₂ you pump in) and in doing so, extends the oil field's life by decades. Allowing CCS projects to generate carbon credits is a direct subsidy to the oil industry conducting business-as-usual work.

Implementing the ‘do no harm’ criterion

Integrating human rights - an international obligation - into the GMBM is necessary to ensure that projects deemed eligible under the GMBM benefit both planet and people as well as promote, rather than infringe, fundamental rights, in particular those of the most vulnerable.

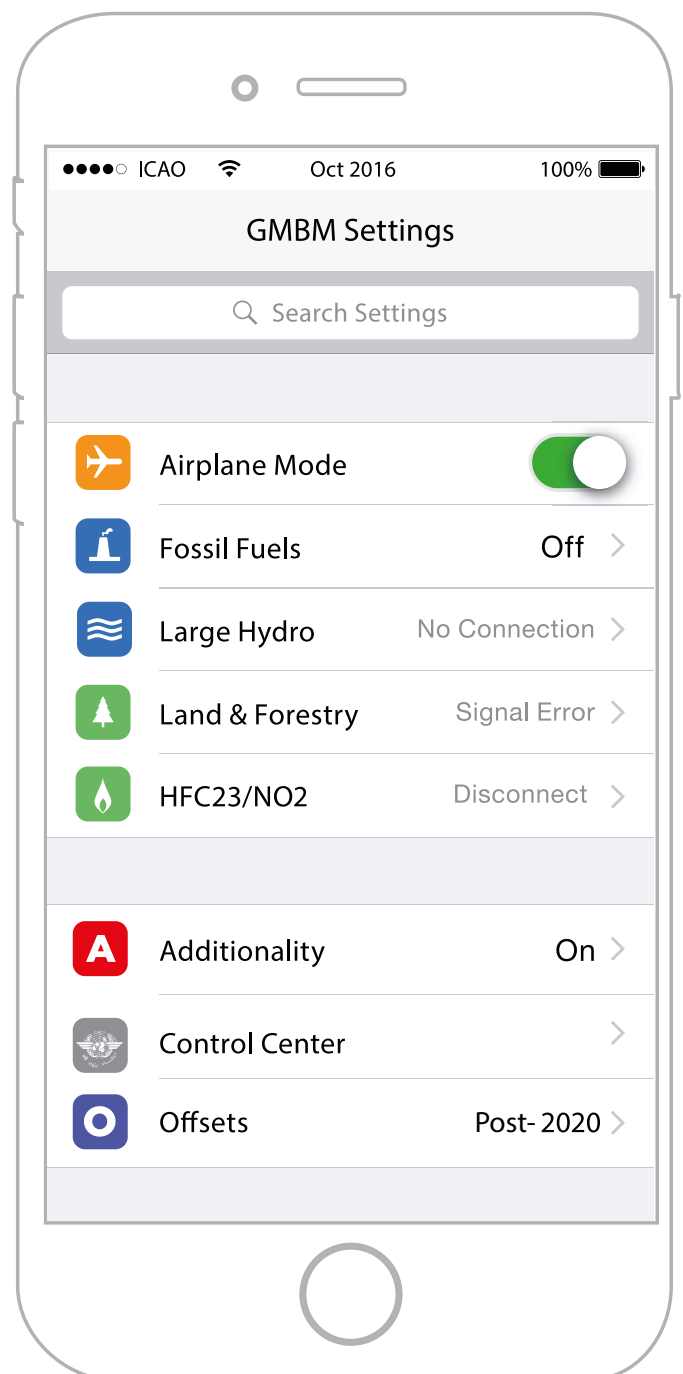
International human rights law establishes the duty to ensure that projects and policies do not infringe the human rights of local communities. Through human rights approaches, offset projects need to ensure that the rights of all, in particular those of marginalized groups and the most vulnerable, are respected while at the same time consider how projects and policies can deliver co-benefits for local communities. These approaches can contribute to increase public support for individual projects as well as improve the design of these measures, thus enhancing their effectiveness.

Several past and on-going projects implemented through the financial mechanisms established under the UNFCCC have however provided dramatic examples of the social and environmental risks that ill-designed activities could lead to when proper safeguards are not established, as has been shown in the case studies in this paper.

Corporate social responsibility (CSR) is an important principle for the airline industry. Choosing high quality offset programmes is one way of underpinning this important work. Numerous offsetting programmes have sustainable development objectives. Moreover, this year will see the adoption of the Sustainable Development Goals that will further advance the need to put sustainable development at the forefront of climate action.

Under the CDM for example, project developers are required to demonstrate in their Project Design Documents how their projects contribute to sustainable development. However, there is little guidance on how to monitor sustainable development co-benefits and how to ensure that offsetting projects avoid potential negative impacts. To remedy this issue the CDM Board developed, in 2014, a Sustainable Development Tool (SD Tool) that enables project developers to report on such co-benefits. This first sustainable development reporting tool established under the multilateral UNFCCC process could provide a good basis to develop a separate SD Tool for the ICAO GMBM that puts sustainable development at the forefront of its offsetting programmes. A SD Tool for the ICAO GMBM could also address the shortcomings of the current version of the CDM SD Tool, making it mandatory for eligible offsetting projects to use the tool, include third party verification of monitoring, include provisions to monitor and remedy negative impacts and provide opportunities for stakeholder engagement.

The ICAO GMBM should therefore exclude offsetting projects that do not monitor their sustainable development contributions and do not provide a safeguards system to prevent potential harm.



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