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Sharon Pearman Wright, General Counsel, Gulf Air

Legal news round-up

Significant global developments

Sanctions

How to identify and manage sanctions risk

Achieving Carbon Neutral

The Role of Drones in Sustainability



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Introduction

Welcome to a special Middle East edition of HFW Aero, our quarterly update of the legal, commercial and regulatory issues affecting the aviation industry.

This edition features a wide-ranging interview with Sharon Pearman Wright, the General Counsel of Gulf Air. Sharon discusses the airline's response to the significant operational challenges posed by the COVID-19 pandemic and provides her views on how the aviation industry should evolve. Sharon also explains how Gulf Air recently aided the evacuation of personnel from Afghanistan, making it the first commercial company in the world to bring evacuees to the USA.

HFW's Daniel Martin provides guidance on how the aviation industry should identify and manage sanctions risk following recent enforcement action against two aviation entities by the US Office of Foreign Assets Control ("OFAC").

We feature a fascinating article from the largest professional drone operator in the Middle East (FEDS Drone-powered Solutions) on how the use of drones promotes environmental sustainability.

In our global news round-up we explain the impact of new data protection legislation in Saudi Arabia and China, look at changes to Dubai based arbitrations and examine a number of notable recent court decisions in England and Belgium.

Finally, we announce the return of our extremely popular Middle East Aviation Conference, to be held in Dubai on 24 February 2022 – more details on this to follow.

Please do get in touch if you'd like to talk to us more about any of the topics or issues we have featured.

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In conversation with...

Sharon Pearman Wright

General Counsel, Gulf Air

Sharon has more than 25 years' experience in senior in-house roles within the aviation industry, and in September 2020 was appointed as General Counsel of Gulf Air, the national carrier of the Kingdom of Bahrain. Gulf Air is celebrating its 70th anniversary, and in April 2021 completed its first transcontinental flight using sustainable aviation fuel, with a Boeing 787-9 Dreamliner travelling from Helsinki to Bahrain.



The COVID-19 pandemic presented unprecedented difficulties for the aviation industry. How has Gulf Air responded to COVID-19 at an operational level, and what challenges has this presented for the legal team?

Gulf Air was one of the few airlines to keep flying throughout the COVID-19 pandemic. As a smaller, boutique airline, we were able to be more agile and to quickly adapt to the changing destination restrictions and evolving regulations. In the early days of the pandemic, we did repatriation flights to get Bahrainis and others back to the Kingdom, or onwards to their home destinations. We also brought in food supplies to Bahrain, made charter flights to ensure PPP and medical supplies, and increased our cargo business to meet changing demand.

Gulf Air was one of the first to trial the IATA travel pass in May 2021, introducing simplifications through technology to ease customers' travel experience during the pandemic, and at the same time introduced complimentary COVID-19 travel insurance coverage to all Gulf Air ticket holders to give peace of mind when travelling at a still uncertain time.

COVID-19 naturally presented huge challenges for all Gulf Air divisions: commercial, operations, technical and legal. We decided to use the COVID-19 challenge to create new

opportunities. We undertook a wholesale reorganisation, introduced new internal systems, and slimmed down our processes and clarified roles to increase legal team efficiency for our internal customers.

We have laid the foundations for future legal service, knowing that we needed to be ready for whatever comes next as we emerge from the pandemic. And we are recruiting the best legal and contract talent in the industry to support us.

Recent data suggests that the global aviation industry is starting to see some 'green shoots' of recovery. What lessons should the industry learn from the pandemic?

No one predicted how long the pandemic would last or how this would all play out. Businesses and lawyers alike have had to go back to basics and think out of the box to craft the way forwards.

As General Counsel, the pandemic has brought a number of risk management, legal and regulatory issues to the fore. In the nearly post-pandemic market of today, where the risk lies in aerospace business could merit a cross-industry review. Airlines carry an arguably disproportionately high portion of the aviation industry risk. Putting aside aviation insurance, we perhaps need now to look at who takes what slice of the risk across the aviation sector, to allow the industry to operate with

"We have laid the foundations for future legal service, knowing that we need to be ready for whatever comes next as we emerge from the pandemic."



increased efficiency and to support the recovery from the pandemic. We could revisit the aircraft financiers' and lessors' positioning in finance leases, giving more flexibility to airlines as they manage their fleets post-pandemic. We could also look at some of the issues around airport operations, as well as the supply chain with aircraft manufacturers and key suppliers.

As a lawyer, over the years my teams have too often been asked to look at complex "liability and indemnity" clauses, sometimes out of context, by business teams seeking rapid closure of a deal. Whilst the price and payment clauses are the heart of any deal, the ultimate risks lie deeper. To ensure business is sustainable and profitable, and that the deal you think you have done is the deal you will live with through the life of a contract, it is essential to ensure a holistic approach to the contract.

It was reported in August 2021 that Gulf Air operated a first-of-its-kind evacuation flight from Afghanistan to the United States. How has Gulf Air aided the evacuation of personnel from Afghanistan, and what challenges did this present?

Gulf Air is proud to have supported the US evacuations from Afghanistan. In August 2021, Gulf Air established the Afghan evacuation operations out of Sakhir Air Base in Bahrain, setting

up the operational requirements at the US Navy's Fifth Fleet home in record time, and making Gulf Air the first commercial company in the world to bring evacuees to the US. This was a tremendous operation, involving many parts of Gulf Air putting hands to the deck 24/7 to ensure success in such a short timeframe.

Gulf Air is not presently operating into the US, so the regulatory, documentary and administrative challenges were all the greater. The roles of the teams in Bahrain and the US to manage US entry requirements, allowing crew and passengers off the aircraft on arrival in Dulles Airport, for crew to take their rest and return for the next rotation, was exemplary. Everyone involved in the evacuations is deeply proud of this intense and successful operation.

There has been increasing focus in recent years on sustainability in the aviation sector. What is Gulf Air doing to promote sustainable air travel?

Sustainability is one of the key issues of our time, and the aviation sector has its part to play. At IATA's Annual General Meeting in 2021, a resolution was approved for the global air transport industry to achieve net-zero carbon emissions by 2050. As IATA's Director General, Willie Walsh, said at the AGM: "The world's airlines have taken a momentous decision to ensure that flying is sustainable."

Gulf Air supported this motion, and the key immediate enabler is the ICAO Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). This will stabilize international emissions at 2019 levels in the short-to-medium term. These quantum changes will require the support of all players across the aerospace sector, including airlines, infrastructure providers, manufacturers, energy suppliers, owners and financiers. The industry also needs to work with governments to ensure an appropriately supportive global policy framework with cost effective solutions.

The energy transition needed is a massive evolution, and will need to be managed alongside the nascent restart of post-pandemic global aviation. Whilst the carbon emissions focus is headline worthy, behind the scenes in the day-to-day business, sustainability also means survival for many airline industry players. Airlines have proved their adaptability over past decades, as Gulf Air has demonstrated over its 7 decades of historic service to the Gulf, its passengers and the aviation industry. Sustainability is the challenge of our era – let us take this challenge together and ensure the future of our industry.

www.gulfair.com



Legal news round-up

Etihad blazes a trail with ESG-linked loan

On 1 October Etihad announced that it had raised US\$1.2 billion by way of a loan linked to environmental, social and governance goals. Etihad CFO Adam Boukadida described the facility to Flight Global as “the first for global aviation and the first for the region that is fully ESG compliant”.

Lenders HSBC and First Abu Dhabi Bank (FAB) have offered some US\$5.5 million of incentives linked to performance metrics on ESG goals. As might be expected, the key environmental goal involves the reduction of carbon emissions and is aligned with Etihad’s pre-existing aspirations of zero net emissions by 2050. However, this sits alongside a social goal of improving gender diversity within the Etihad workforce and an externally-measured Integrity Score which will assess the overall

culture of integrity at the airline. All three of these key performance indicators will be reported annually.

Data Protection

Saudi Arabia has passed new Data Protection legislation which will take effect from March 2022. The new Personal Data Protection Law (PDPL) underpins the Kingdom’s Vision 2030 policy which aims to develop digital infrastructure and grow a digital economy. It shares many features with the EU GDPR and other data protection laws worldwide, but is notable for particularly tight controls around the transfer of personal data outside Saudi Arabia and extremely strict notification requirements in the event of a data breach. The right of parties affected by data breaches to claim compensation is expressly preserved and a number of offences under the new legislation are imprisonable. It will apply to any processing of personal data within

Saudi Arabia, as well as the processing of personal data of Saudi residents by entities outside the jurisdiction. However, non-Saudi organisations will benefit from a transition period of up to 5 years to put appropriate compliance measures in place.

Meanwhile, China’s trade partners have been gearing up for the imminent entry into force of the PRC’s new data protection law. The Personal Information Protection Law (PIPL) will take effect on 1 November. PIPL has extraterritorial scope, in that it applies to the processing of personal information carried out outside China, where the purpose is (i) to provide products or services to natural persons in China; or (ii) to analyse or assess the activities of natural persons in China. Fines for non-compliance can be as much as 5% of the offender’s previous year’s income or RMB 50 Million (around GBP5.7 million). Like the GDPR, PIPL is expressed in terms of high-level principles and it

remains to be seen how these will be interpreted and enforced in practice, balanced against China’s significant commercial interest in developing and selling data-driven technology.

Qatar to regulate drone operations

The Qatar Cabinet has approved a draft law which will introduce a new regulatory regime for drones. The law will seek to “maintain the security and safety of air navigation in the country, protect lives and property, ensure the optimal use of these aircraft, in accordance with the best international standards and practices, reduce risks arising from the operation of drones, and define the responsibilities of the concerned authorities in this regard, and the regulation of the use of drones by various authorities.” This follows a similar legislative initiative in the UAE last year.

Arbitration - two major Dubai Arbitration Centres abolished; Hong Kong confirms pro-arbitration stance

In a somewhat unexpected move, a decree was passed at the end of September abolishing the Emirates Maritime Arbitration Centre (EMAC) and the DIFC-LCIA Arbitration Centre and merging their activities into the Dubai International Arbitration Centre (DIAC) with immediate effect. This is a significant development for dispute resolution in the region and the full practical implications for arbitrations currently pending before these centres are not yet clear. The DIAC had not updated its rules since 2007 and was, as a consequence, considerably less popular than the more modern DIFC-LCIA Arbitration Centre. However, it is expected that the DIAC rules will soon be revised in order to consolidate its new monopoly. The decree does make clear that all EMAC and DIFC-LCIA Arbitration Centre arbitration agreements concluded on the day of putting the decision into effect will be

considered valid and binding and the Dubai International Arbitration Centre replaces these centres in considering and adjudicating disputes arising from those agreements, unless the parties agree otherwise.

On the theme of arbitration, the Hong Kong High Court has recently re-emphasised its pro-arbitration stance by staying proceedings in favour of arbitration in circumstances where one party tried to argue that the parties had agreed to abandon an arbitration agreement in favour of litigation. For more information see [our recent briefing](#).

Dispute between airline and travel agent results in landmark English Supreme Court decision

The commercial relationship between an airline and a travel agent provided the context for a welcome clarification of the English law of economic duress when the case of *Pakistan International Airline Corp v Times Travel (UK) Ltd* [2021] UKSC 40 came before four Supreme Court justices in August.

A small travel agent, Times Travel, had an agency agreement to sell tickets on Pakistan International Airlines (PIA). The agent made claims for unpaid commission, which PIA believed it did not owe. In the ensuing negotiation, PIA reduced the agent’s ticket allocation and threatened to end the relationship unless the agent waived its claims, which it eventually did in return for being permitted to enter into a new agency agreement.

The Supreme Court was asked to decide whether there had been “lawful act economic duress” at play. The existence of this concept had never previously been confirmed in law, because it was controversial - as explained by one of the judges: “*This is essentially because many contracts are entered into under some form of pressure exerted by the other party and, plainly, one would not wish to undermine all such contracts.*” They concluded that lawful act economic duress was indeed possible,



Towards a Sustainable Middle East

A number of Middle Eastern states announced significant sustainability initiatives in the run up to the COP26 UN Climate Change Conference. These initiatives include the following:

- **United Arab Emirates** – the UAE announced at Expo 2020 in Dubai that it is committed to achieving net zero carbon emissions by 2050 and will invest USD 163 billion in renewable energy projects over the same period.
- **Saudi Arabia** – Saudi Arabia has announced plans to achieve net zero carbon emissions by 2060, in line with the Kingdom’s sustainable development plans, including the Saudi Vision 2030, the Saudi Green Initiative and the Middle East Green Initiative.
- **Bahrain** – Bahrain has also announced plans to achieve net zero carbon emissions by 2060.



if three elements were satisfied: (i) there is a threat (or pressure exerted) by the defendant that is illegitimate, (ii) the illegitimate threat (or pressure) caused the claimant to enter into the contract and (iii) the claimant had no reasonable alternative to giving in to the threat (or pressure). By "illegitimate", the Court said that there had to be bad faith, which would have been the case if PIA had simply been bluffing and in fact knew all along that they were legally obliged to pay the commission. On the facts, however, the Supreme Court found that there was no bad faith on the part of PIA, who genuinely believed that the agent had no contractual right to the claimed commission and simply negotiated accordingly. The case is, however, a cautionary tale for those who may consider such tactics in future, in the aviation world and beyond.

Belgian Supreme Court holds that non-compliance with EU261 is a criminal offence

In a recent case brought by against Brussels Airlines, the Belgian Supreme Court (Cour de Cassation) has - against all expectations - concluded that an airline may be held criminally liable for non-timely compensation to a passenger under Regulation EC261/2004. The significance of framing the violation as a criminal offence is that this creates an exception to the Belgian one-year statute of limitations period and allows the passenger an extended limitation period of five years within which to bring a civil or criminal action.

The Belgian Supreme Court has pointed out that such offence and extended period only applies in the event of a proven and effective flight cancellation or delay as defined in Regulation EC261/2004, following which the airline has failed to act on a request for compensation made in time by the passenger (i.e. one year after the delayed or cancelled flight).

In this case, the action against Brussels Airlines ultimately failed because the initial request for compensation was

“The decision is of considerable practical importance. Many, if not most aircraft leases are under English law and jurisdiction.”



made more than one year after the delayed flight. However, the effects of the decision are far-reaching because other passenger claims advisors will from now on have at their disposal the threat of criminal proceedings against the airline or its executives as a new tool to recover EU261 compensation in Belgium, over a significantly longer period than was previously possible. Airlines will therefore need to react accordingly by adapting their internal policy regarding passenger compensation to reflect this new risk.

English Commercial Court blocks attempt to seize monies in IATA clearing system

A lessor obtained summary judgment of several million US dollars against an airline under an English law-governed lease but it found itself in difficulties when it came to enforcing the judgment because the airline had no presence in the UK and did not operate there.

However, in common with most airlines, the airline in question used clearing services provided by IATA to manage and repatriate funds deriving from worldwide ticket sales. IATA's clearing house is operated out of London. Therefore, the lessors sought a Third Party Debt Order (TPDO) against IATA, which would compel IATA to pay over to the lessors monies payable to the airline which were held in the IATA clearing system.

The debt must be located in England & Wales for the High Court to have jurisdiction. Normally that is dictated by the location of the relevant bank branch but, here, there was a separate agreement governing the debt, being the terms and conditions of the IATA Currency Clearing Service. That agreement has an exclusive jurisdiction clause by which the parties submit to the laws and jurisdiction of Quebec, Canada and the judge accepted that the debt was therefore situated in Quebec.

The judge also went on to apply a further test, which was whether there was a real and substantial risk that

the third party might be called upon to pay the debt twice over. In order to address the issue, both sides submitted extensive expert evidence as to whether, under Quebec law, unilaterally paying a creditor's own creditors can discharge a debtor. The Court found that there was indeed a risk of "double jeopardy".

The final TPDO was not granted.

The decision is of considerable practical importance. Many, if not most aircraft leases are under English law and jurisdiction. A judgment debt against a defaulting lessee is likely to be an English High Court judgment. It is therefore natural to try to enforce any claims in England and Wales. For foreign airlines not operating into the UK their largest asset in the jurisdiction is likely to be the monies owed to them by IATA. The judgment, although a High Court Decision, is based upon three Supreme Court judgments. It establishes that the major IATA fund in question is outside the reach of the English court.

HFW acted for the airline in this case.

Identifying and managing sanctions risk

The aviation sector has been identified by US sanctions authorities as a high risk industry, and last year the US Office of Foreign Assets Control (“OFAC”) took significant enforcement action against two companies operating in the sector.

A common factor in each case was the need (highlighted by OFAC) for companies operating in the aviation industry to implement effective, thorough and on-going risk-based compliance measures.

The importance of these measures is emphasised by the financial penalties: one of the companies agreed to pay around US\$ 8million to settle their potential civil liability for apparent sanctions violations.

But the consequences are not limited to financial penalties – businesses which are accused of violating sanctions risk severe reputational damage, as well as significant costs, in terms of wasted management time and legal expenses.

Identifying and managing sanctions risks should therefore be a priority for all international businesses, with buy in and oversight at board level.

This article offers guidance for aviation businesses seeking to understand what effective, thorough and on-going, risk-based compliance measures of the kind mandated by OFAC and other sanctions authorities look like, including lessons learned from the recent US enforcement against the sector.

Enforcement against SITA

The first enforcement action involves Société Internationale de Télécommunications Aéronautiques SCRL (“SITA”), a company which provides commercial telecommunications network and information technology services to the civilian air transportation industry.

The services include reservation-related services, flight planning and dispatch services, messaging services and ancillary services (e.g. baggage claim and movement software, cargo movement software and emissions tracking software).

SITA members (including Mahan Air, Syrian Arab Airlines, Caspian Air, Meraj Air and Al-Naser Airlines) became US sanctioned entities. While SITA terminated many services to these airlines when they became designated, certain services were not terminated.

SITA agreed to pay around US\$ 8 million to settle its potential civil liability relating to around 9,000 transactions which appeared to violate US anti-terror sanctions. The value of those transactions was less than US\$ 2.5 million but because the base level for US penalties is calculated by applying a fixed amount to each violation, SITA faced a potential penalty of almost US\$2.5 billion.

Enforcement against Apollo

The second case involves Apollo Aviation Group LLC (“Apollo”). The company leased three aircraft engines to an entity incorporated in the UAE which then subleased the engines to a Ukrainian airline, which then installed the engines on an aircraft which was wet leased to Sudan Airways (a US sanctioned entity).

It does not appear that Apollo carried out “live” monitoring of the engines and the violations were only discovered as the result of a post-lease review of the engine records.

Improved internal processes

Each of SITA and Apollo agreed, as part of the relevant settlements, to improve their internal processes in order to minimize the risk of recurrence of similar conduct in the future.

Businesses should analyse the remediation measures which SITA and Apollo adopted (and which are summarised below) in order to benchmark their own processes and determine whether improvements are needed.

The first key element is creating a specific senior role with overall responsibility for sanctions compliance. By tasking a particular individual or group of individuals with this it demonstrates a commitment on the part of the organisation and ensures that there is accountability for any acts or omissions.

The second key element is updating and creating new sanctions policies and guidelines targeted to address the specific risks which the business faces.

Businesses should carry out periodic reviews and assessments to understand the sanctions risks which they face. These will vary depending on their customers, suppliers, geographic location, or the products and services they offer, and they may also change over time. Once the risks are known, a proportionate response can be adopted.

A third element, and one which was emphasised in both the SITA and the Apollo enforcement, is the need for enhanced due diligence and

“Identifying and managing sanctions risks should therefore be a priority for all international businesses, with buy in and oversight at board level.”

monitoring of customers, suppliers, and other counterparties. Businesses need to know if any of the parties which they deal directly or indirectly with are included on any relevant sanctions list.

This will include identifying counterparties, as well as their shareholders and directors, and screening on a regular basis. An audit trail should be maintained, identifying when and how screening was carried out. Contracts should be reviewed to ensure that relationships can be suspended or terminated if any sanctions issue arises, and consideration should be given as to whether contracts should include audit rights or the right to require disclosure of shareholders and other corporate data.

The fourth element which is emphasised in both the SITA and Apollo enforcement is the need to ensure increased awareness of trade and sanctions laws within the business through education and training. It is not enough that this knowledge is vested in a small number of individuals within the legal or compliance function: the way to ensure effective sanctions compliance is to ensure that this is a priority for the whole organisation.

That includes knowledge across all physical locations (as opposed merely to the head office) and also across a range of roles, to ensure that the sales and operational teams are able to obtain the necessary information at an early stage, rather than waiting for legal or compliance to raise issues at the execution stage.

The fifth and final main element which is identified in the SITA and Apollo enforcement is the need for ongoing monitoring of the effectiveness of sanctions policies and procedures. The sanctions risk is constantly changing, with new measures adopted almost daily, and the policies and procedures need to be sufficiently dynamic to meet this change.

Likewise the business will change over time, and a change in sanctions risk may be triggered by a change in customers, suppliers, geographic location, or the products and services which are offered.

Finally, the policy should evolve in response to particular scenarios and challenges which the business has faced.

A further element which is not mentioned in the SITA or Apollo enforcement, but which is nonetheless very important, is the attitude of banks and insurers. The organisation needs to understand what approach its banks and insurers take to sanctions risks, as well as covenants and other terms which are imposed in the loans, insurance policies and other contracts, in order to ensure that the businesses’ activities do not give rise to contract issues, as well as any sanctions issues.

Summary

Businesses which operate in the aviation sector need to be aware that the US and other sanctions authorities perceive the sector to be high risk, and are looking closely at the activities not

only of airlines, but also of aircraft and equipment lessors (such as Apollo) and service providers (such as SITA).

They need to be aware that penalties for sanctions can be very significant indeed, and they need to be vigilant to identify and manage sanctions risks.

Based on the enforcement action in SITA and Apollo, they need to consider the following measures:

1. creating a specific senior role with overall responsibility for sanctions compliance;
2. updating and creating new sanctions policies and guidelines targeted to address the specific risks which the business faces;
3. conduct enhanced due diligence and monitoring of customers, suppliers, and other counterparties;
4. ensure increased awareness of trade and sanctions laws within the business through education and training; and
5. ensure there is ongoing monitoring of the effectiveness of sanctions policies and procedures.

In addition, they should review their contracts with customers and suppliers, as well as analysing the covenants and others terms in their arrangements with banks and insurers.



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Achieving Carbon Neutral

The Role of Drones in Sustainability

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In the last decade there has been a greater appreciation that the Earth's natural resources are limited and a consequent push towards sustainability and reducing carbon emissions to net-zero. Private organisations and nations alike have set ambitious targets. For example, the UAE and Saudi Arabia aims to have net-zero carbon emissions by 2050 and 2060 respectively, whilst Qatar Airways, British Airways and many more airlines have committed to achieving net-zero carbon emissions within a similar period.

“The concept of sustainability recognises the fact that natural resources are finite.”

Drones now play an integral role in sustainability and present industries with an opportunity to move to more environmentally friendly business models. This article explores how drones are helping organisations achieve carbon neutral status.

Need for Sustainability

The concept of sustainability recognises the fact that natural resources are finite. Therefore, the environment and its resources should be used sensibly and be protected for the sake of the Earth, humanity, and all living things.

Since the industrial revolution, humans have emitted or released approximately 375 billion tonnes of carbon dioxide into the atmosphere and the consequences are now being felt through a rise in global temperatures, wildfires, flooding and other natural disasters. The good news is that this process is not irreversible. Going carbon neutral is the first step. The ultimate goal is to become carbon negative, which involves taking away or offsetting more carbon than the amount released. By staying carbon negative long enough, it is hoped that the damage sustained to our environment can be repaired. Achieving carbon negativity is now a focus for businesses – as an example Microsoft recently announced that they would be carbon negative by 2030, and by 2050 they would have offset all CO₂ released by the organisation since its formation in 1975.

The Role of Drones in promoting sustainability

Counting and Analysing

Environmental monitoring and impact assessment are integral tools that help enact sustainable development, ecosystem conservation and the pursuit of environmental protection. Gaining access to data and statistics

is critically important but gathering this data was previously a substantial undertaking. Collecting samples by foot is slow and arduous and is further complicated by challenging environments such as rainforests or on-shore/off-shore remote fields. Aircraft or helicopters have previously been used to access remote locations or survey large parcels of land. However, unless sustainable aviation fuel is used, this too has added to the problem.

Drones remove the physically demanding aspect of this task while returning better data. Drones make it possible for us to get to otherwise inaccessible and environmentally challenging areas. As an example aerial mapping of forested areas for conservation or the detection of illegal logging can be made easier with drones. Other off-shore and on-shore remote areas hold the same potential.

Drones can be equipped with some of the most accurate sensors available, allowing for the collection of more accurate, richer data. There is also the added benefit of being able to collect multifaceted data - simply swap the appropriate thermal, multispectral, or even UV payload to collect data without having to invest in highly specialised equipment.

Reducing

Once the data is available it can be used to enact changes in favour of sustainable practices. It takes resources to manufacture, transport, and dispose of products. In some industries the upkeep of products in terms of maintenance or inspection can significantly contribute to unsustainable practices. Reduction aims to minimise the use of new resources and is a pillar of any sustainability initiative.

Agriculture is among the most significant contributors to global emissions and there is little prospect of this changing as the global population continues to increase. The Food and Agriculture Organisation (FAO) states that food production must be increased by 50% by 2050 to feed a projected population of 9 billion. The question is, how do we increase production by 50% sustainably in an already overburdened industry?

Unsustainable agriculture is caused by the overuse of land, pesticides, and fertilisers which leech away the soil's natural nutrients. One sustainable solution is practicing Precision Agriculture, where accurate data is used to determine the exact needs of the fields and then dispense only the required resources. However, gathering the required data and acting on it has proved challenging.





First, when dealing with crops, normal RGB cameras are not sufficient. Instead, multispectral sensors are needed – these can shed light on the health and vitality of the crops. This type of surveillance cannot be conducted by satellite and it would be wasteful to undertake using manned aircraft or helicopters. Traditionally, these types of agricultural surveys have been carried out using vehicle-mounted or handheld sensors - this has severely decreased the efficiency of surveying and exposed humans to environmental hazards and potentially harmful chemicals. Even with the benefit of GPS-driven tractors and other farm equipment, surveying crops has traditionally been an imprecise and expensive exercise.

Drones address these challenges effortlessly. Firstly, drones are swift and efficient at gathering geo-referenced multispectral data. For example, you could cover a large farm of 4-5 sqkm in size in just one flight (90mins) with a fixed-wing drone. A full day of surveying is reduced to a few short hours. Once this initial data has been collected spraying drones equipped with special release systems that dispense seeds, pesticides and even fertilisers can be deployed. Instead of blanket spraying an entire farm, it is now possible to use resources conservatively and deploy them with precision.

On a macro scale, drones can conduct large-scale surveys to identify the natural resources available. For example, when the UAE's Ministry of Climate Change and Environment (MoCCaE) wanted to use detailed agricultural data to better direct farmers' efforts, increase resource efficiency and preserve the already scarce natural resources, they used drones to collect data. FEDS Drone Powered Solutions mapped the entire 1,100 sqkm area in 64 working days to provide detailed agricultural reports.

Offsetting

As we work towards becoming carbon neutral, one of our tools is to take away pollutants that have been released into the atmosphere or offset emissions by planting trees, setting up renewable energy production, etc. Offsetting will become increasingly important in the transition from carbon neutral to carbon negative. Drones help offset emissions in three ways: reforestation or planting trees, sustainable logistics, and detecting methane in landfills.

Landfills are no longer just containment sites; the more advanced landfills also function as energy production plants. As the moisture and air mixes with the refuse, gases escape from the landfill. Traditionally, these gases would pollute

the atmosphere. Almost 50% of the gas released at landfills is methane gas, and unfortunately, methane is 25 times more potent than carbon dioxide when it comes to trapping heat. By capturing and then processing the methane from landfills, gas is prevented from contributing to global warming. However, monitoring landfills to find pockets of escaping methane gas is challenging. Traditionally, surveyors with handheld equipment walk around the landfill to take readings. This is a hazardous, slow, and inefficient process. One of the innovative applications of drones is equipping them with a Tunable Diode Laser that can detect escaping methane gas. Once identified, the landfill can then capture and process the methane gas to generate clean energy.

Delivery drones are being investigated by distribution companies and service providers as a way to improve sustainability. The use of drones in the 'last mile' and long-distance delivery can save money and resources. In some cases, delivery drones may even outperform a traditional fleet of delivery trucks. As drone technology advances and is adopted more widely, prices will come down, making them even more cost-effective. By far the most significant benefit of using drones to make deliveries is eliminating CO2 emissions.

Reforestation is a key tenant of sustainability- trees don't just produce oxygen by consuming carbon dioxide, they also act as carbon sinks and hold in CO2 as they grow. One of the adverse side effects of global warming is desertification. Due to human activities, namely global warming and pollution, fertile areas become increasingly arid and eventually develop into deserts. For example, the Sahara desert is growing larger by the year and is now 10% larger than nearly a century ago. The solution proposed is an 8,000 km long barrier of trees grown with the intent to hold the desert back. But how do you seed a corridor 8,000 km long?

Drones can be equipped with specialized payloads to disperse seeds efficiently. In the UAE FEDS Drone Powered Solutions distributed around 6 million Ghaf and Acacia seeds across 25 areas. The benefit of using drones is not just speed or efficiency but adjusting the spread rate according to the tree's temperaments. For example, some plants require more room to themselves or end up competing for resources, which ultimately reduces growth rate; drones can be programmed to disperse speeds at a set rate, ensuring a uniform and appropriate spread across the area.

Drones for Sustainability

As we move towards a more sustainable future, advancements in technology become our greatest ally in the fight against climate change. From understanding our current impact to finding new and intuitive ways to combat unsustainable practices, drones can help us achieve carbon neutrality. At FEDS, one of our core values is sustainability. We're constantly looking to find ways to optimise our operations, reduce emissions and give back to the environment. Drones are bound to be at the centre of sustainability, empowering industries to make better choices, and we aim to be leading that movement.



HFW Middle East Aviation Conference

24 FEBRUARY 2022 | DUBAI

We are delighted to announce the return of our Middle East Aviation Conference, to be held in Dubai on Thursday 24 February 2022 (with a pre-conference dinner on 23 February). The event is now recognised as the leading aviation legal and insurance conference in the MENA region and attracts speakers and delegates from across the globe.

The conference provides a unique opportunity for our clients to participate in discussions with industry experts and network in a relaxed setting.

Past key note speakers have included His Excellency Sheikh Fahim Al Qasimi, His Excellency Jamal Al Hai, Paul Griffiths (CEO of Dubai Airports) and Adel Ali (CEO of Air Arabia).

Venue details and the conference programme will be announced in due course.

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