Drone Governance

A Scan of Policies, Laws and Regulations Governing the Use of Unmanned Aerial Vehicles (UAVs) in 79 ACP Countries

Series: ICTs for agriculture

Drone Governance: A Scan of Policies, Laws and Regulations Governing the Use of Unmanned Aerial Vehicles (UAVs) in 79 ACP Countries

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The Technical Centre for Agricultural and Rural Cooperation (CTA) is a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the European Union (EU). Its mission is to advance food security, resilience and inclusive economic growth in Africa, the Caribbean and the Pacific through innovations in sustainable agriculture.

CTA operates under the framework of the Cotonou Agreement and is funded by the EU.

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List of acronyms

ACP   African, Caribbean and Pacific

CAA   Civil Aviation Authority of New Zealand

CARs   Civil aviation regulations

CTA   Technical Centre for Agricultural and Rural Cooperation ACP-EU

FAA   US Federal Aviation Authority

ICAO   International Civil Aviation Organization

NCAA   National civil aviation authority

RPAS   Remotely-piloted aircraft systems

RotA   Rules of the air

SARPS   Standards and Recommended Practices

UAS   Unmanned aircraft system

UAV   Unmanned aerial vehicle

Aim of the study

Background

Unmanned aerial vehicles (UAVs) or drones open up a new technological frontier and offer a range of exciting opportunities for the management of crops, livestock, fisheries, forests and other natural resource-based activities. UAVs also offer opportunities, at the grassroots' level, for communities to monitor use of and access to the resources that their livelihoods depend upon.

The use of UAVs in agriculture is a recent development and poses a number of challenges to interested users and national aviation authorities – including those linked to the use of UAVs within their airspace. A repository of current and forthcoming policies, laws and regulations governing UAV use that these bodies can refer to, would be very useful but does not exist at present.

The Technical Centre for Agricultural and Rural Cooperation ACP-EU (CTA) wishes to facilitate the responsible use of small UAVs and related software applications to improve the management of crops, fishing grounds and other resource-based activities. To that end, this study aimed to provide a comprehensive and up-to-date overview of the current UAV-related regulations in African, Caribbean and Pacific (ACP) countries.

Research results are now online at www.droneregulations.info.

Objectives

This study has the following objectives:

- for each ACP country, identify the authority or authorities that regulate and facilitate the ownership and operations of UAVs
- for each ACP country, describe the current regulatory landscape governing the ownership and operations of UAVs: existing rules, policy dialogue, regulatory void, enforcement, and other relevant issues
- for each ACP country, compile the rules into an easy-to-read fact sheet describing the processes and best practices for UAV owners and operators
- for each ACP country, find and annotate cases of UAV deployment in resource-based activities.

Methodology

The study is based on desk research. The starting points being the Google search engine and the search function of the national civil aviation authorities' (NCAA) websites.

Keywords associated with UAV technology and with civil aviation terminology in English, French, Portuguese, Spanish and Dutch were used to search specific websites and (country) domains. Most UAV-related regulations that are available online are compiled into PDF files, with the vast majority of these files allowing text search. Some PDFs were scanned images of the regulations and thus much harder to search. The table below shows the keywords used.

Table 1. Keywords used in the search (UAV and civil aviation terminology)

Language	Keywords[1]	Region
English	**Remotely**-piloted aircraft systems (RPAS); **UAV**; unmanned aerial aircraft system (UAS); **drone**; **unmanned** aircraft; pilotless aircraft; unmanned aerial vehicle	Africa, Caribbean, Pacific
French	aéronefs **sans pilote** (pre-2013); aéronefs **télépilotés**; **drones**	Africa
Portuguese	drones; veículos aéreos **não tripulados** manuseados **remotamente**; sistemas de aeronaves **remotamente pilotadas**; aeronaves não tripuladas	Africa
Spanish	sistemas de aeronaves no tripuladas; **drones**; aeronave **pilotada a distancia**; Vehículos Aéreos **no Tripulados**; aeronave **no tripulada**; aeronaves **tripuladas remotamente**	Caribbean
Dutch	bestuurde onbemande vliegtuigjes; drones; onbemande vliegtuigjes	Caribbean
Search algorithms		
'Keyword' and ['site:*http://...*' or 'site:*.countrydomain*'] and 'daterange:*startdate-enddate*'[2]		

For the top 20 search results, web pages were visited and relevant documents were perused – either in their live version or in their cached version.[3]

Four broad types of sources were distinguished and further researched: online newspapers for current, country-specific, news on UAVs; civil aviation authorities and government portals for legislative documents and relevant legal/policy discussions; businesses engaged in sales of UAV-related equipment and training UAV operators; and project websites (research programmes and initiatives by NGOs). Sources were explored in the following order: first, we looked for stand-alone UAV rules and guidelines, mainly on NCAA websites; if none were found, we checked the country's civil aviation regulations (CARs) for references to drones; if none were found, we searched online national newspapers for any articles on the use of drones or on pending government actions relevant to the technology in that country; finally, we looked at project websites on drone-related activities in that country.[4] These activities enabled us to feed the following categories of information into a database: rules and regulations, civic and political dialogue, business and training, and examples of deployment in resource management.

Government actions related to drone use and permissions is evolving fast. Every day, official announcements are made and relayed by media.

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[1] Words in bold were used to sort and simplify search results.

[2] The *daterange* function uses the Julian calendar (https://goo.gl/diXRv). It is also possible to use the '&as_qdr=d*x*' query at the end of the search URL where *x* is the number of days since the current date.

[3] Text searches on cached version of pages and PDF documents were done directly from the browser, thus saving time.

[4] This order in the search for information means that as soon as we found, for example, dedicated national drone rules, we did not review individual CARs for additional rules and specific drone-related legal amendments – but jumped straight to searching for examples of deployment.

This document is a snapshot of the UAV regulation landscape in ACP countries as of April 2016. The results of the study in terms of national rules and regulations have been uploaded on a wiki hosted at www.droneregulations.info .

Research results

Existing data repositories

- **UAV Laws, & Regulations Database**

  http://bit.ly/UAVrules

  This Wiki was launched and initiated by UAViators in 2014. In 2015, it was enhanced thanks to funding provided by DG ECHO in collaboration with FSD, CartONG and Zoi.

  Further significant contributions were made in 2016 by the Technical Centre for Agricultural and Rural Cooperation ACP-EU (CTA) through the results of this study.

- **Wikipedia – regulation of unmanned aerial vehicles**

  https://en.wikipedia.org/wiki/Regulation_of_unmanned_aerial_vehicles

  Not comprehensive and not up-to-date

- **Blyenburg & Co – RPAS regulations**

  http://rpas-regulations.com/

  Based on a 2014 survey, the site requires registration; regulations available free of charge. Indicates where countries stand in terms of regulating drone operations, but no actual information on the rules themselves.

- **RPAS portal – country-specific guidance and regulations**

  https://www.rpasportal.com/

  Not reliable and not up-to-date.

- **The Drone Info – the current state of global drone regulations**

  http://thedroneinfo.com/the-current-state-of-global-drone-regulations/

  Not reliable and not up-to-date.

- **UAV Systems International – drone laws by country**

  https://uavsystemsinternational.com/drone-laws-by-country/

  Not comprehensive and not up-to-date.

- **New America World of Drones**

  http://drones.newamerica.org/#regulations

  Map based, however map application programme interface is offline.

- **The Network for UAV Professionals (sUAS) Global – regulations by country**

  http://www.suas-global.com/industry-regulations/regulations-by-country

  Not complete.

- **International Civil Aviation Organization (ICAO) RPAS iKit**

  http://www.icao.int/Meetings/RPAS/Pages/RPAS-iKit.aspx

  "The iKit provides access to standards and guidance material developed by ICAO as well as documentation with links to websites on RPAS developed by States, international organizations, manufacturers, services providers and other stakeholders."

Notes: The iKit is an online Flash application that is not editable. In October 2015, information from 11 countries and from five international organisations (North Atlantic Treaty Organization [NATO]; (International Federations of Air Line Pilots' Associations [IFALPA]; International Air Transport Association [IATA]; Civil Air Navigation Services Organisation [CANSO] and ICAO) was included in the kit. There is not specific data on ACP countries.

ACP overview

As expected, not every country in the ACP region has legislation or rules in place to control drone use (Figure 1).

Out of 79 countries, 15 countries (19%) have rules or regulations specific to UAV operation; six other countries (7%) have announced soon-to-be-drafted legislation on drone use over their territory; and the other 58 countries (73%) have neither dedicated rules nor pending legislative action regarding UAVs. Only 12 countries (15%) in the ACP region have amended their national CARs with some or all RPAS-related[5] updates issued by the ICAO of the United Nations.[6] The amended national CARs do not automatically translate into hands-on rules for drone users, and there no correlation between updated CARs and available rules.

The established drone rules of the 16 countries vary in content, documentation and formats: since there is no international standard yet, the countries have their own way of controlling and managing drone operations and enforcing the rules. Rules and regulation governing drones are incorporated into CARs, displayed and documented online on dedicated websites, and/or spelled out in pamphlets. Thus, when rules do exist, it is not always easy to

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[5] RPAS: remotely-piloted aircraft system. This terminology is used by the ICAO of the United Nations. The official denomination includes all the possible types of drones, UAVs, UAS, etc.

[6] An NCAA can update/amend its CARs (under the parts called 'Rules of the Air [RotA]', 'Aircraft Nationality and Registration Marks' and 'Aircraft Accident and Incident Investigation') to include ICAO's recommended RPAS-related updates. See p. 16 for more information.

find them and/or to understand them. This situation may well change in the near future when sustained demand from drone operators will push the authorities to better present and spell out the rules. However, all these countries have named their civil aviation authority as the facilitating agency, which acts as the information source on drone-related matters. Some countries are also involving local police departments or their ministry of Defence as additional facilitating agencies.
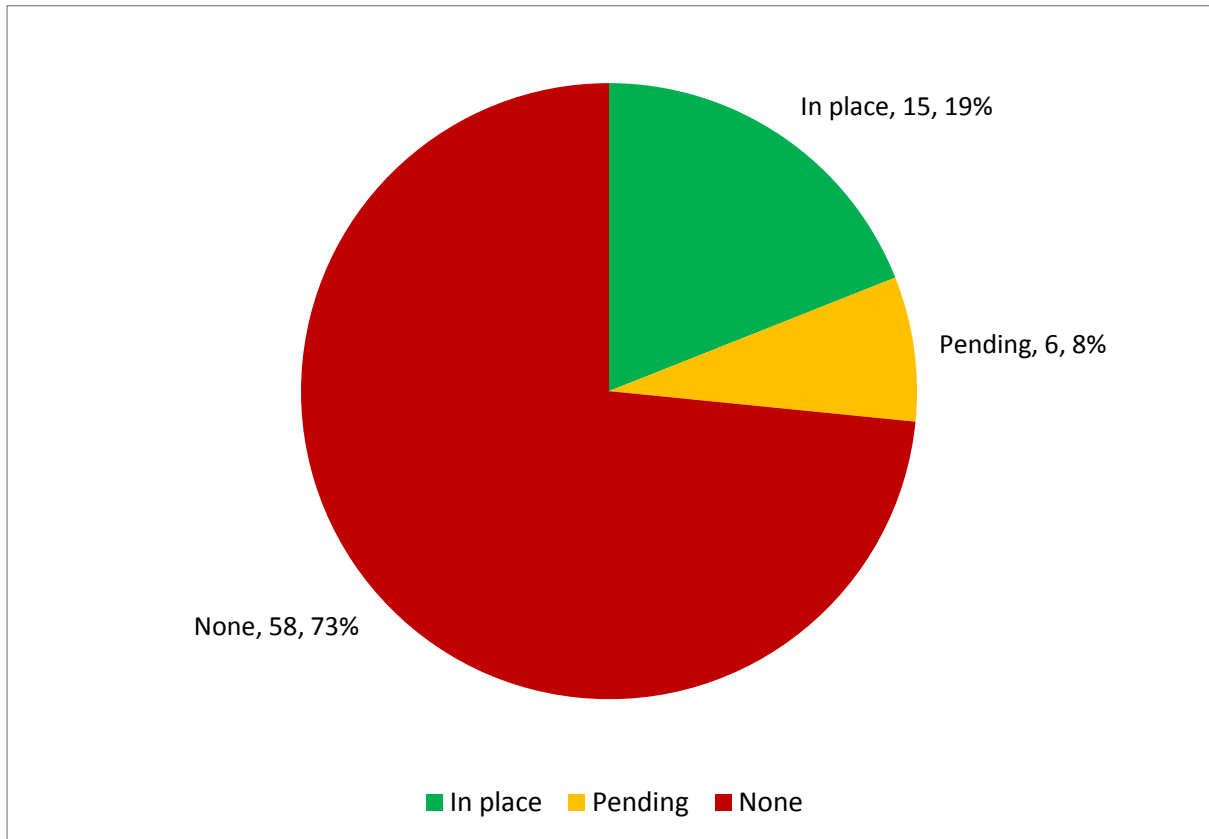

Figure 1. Status of UAV rules & regulations in the ACP region (79 countries), as of April 2016

The most common points addressed by the rules are:

- aircraft registration
- permission to fly
- no-fly zones
- flying rules: maximum height, distance from operator, etc.
- respecting privacy and property
- aircraft categories by weight
- aircraft documentation
- permission to conduct aerial work
- remote pilot certification.

The majority of the rules, best practices and guidelines in these countries apply to recreational users and less so to professional drone operators – who are currently required to contact relevant NCAAs to obtain necessary permits or authorisations. One reason for this differentiation is that aerial works are regulated by a separate chapter of a country's CARs – which any aviation professional, including a professional drone operator, must follow. Drones

are a special type of aircraft and present CARs related to aerial work do not adequately address this new technology. We believe, however, that the current rules that do not explicitly include drone-based aerial works will eventually do so.

Africa overview

In Africa, out of 48 countries being part of the ACP group of states, seven (15%) have developed a comprehensive set of rules or have clearly stated their position on drone use over their territory. Government officials in four countries (8%) have declared soon-to-be-drafted (pending) rules on drone operation. The vast majority, 37 countries (77%), have not prepared any specific rules on drone use. We found that 11 countries (23%) have amended their CARs to include some provisions for RPAS, though it does not directly translate into clear instructions from the countries' civil aviation authorities.

Two countries, Senegal and Uganda, have banned the importation and use of drone-attached cameras. Senegal has updated its CARs to include rules on drone identification and on drone operation as per ICAO's recommended amendments, and Uganda has also amended its aviation rules on drone identification requirements. Another country, Côte d'Ivoire has declared a ban on all civil drone use (drones are exclusively for the military) and modified its CARs to include that ban. Because Côte d'Ivoire incorporated the ban into its laws, we assumed that the country has drone rules in place (it is thus part of the seven countries that have rules in place).
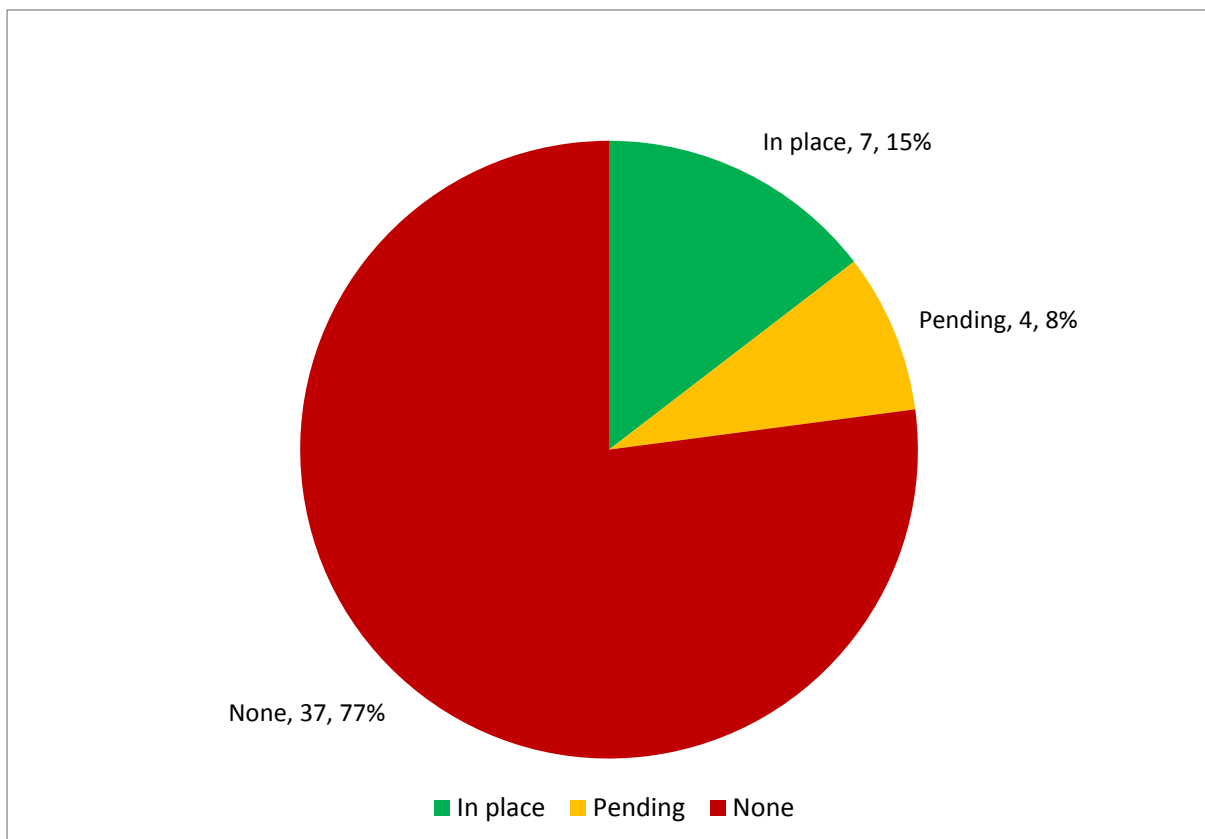

In place, 7, 15%

Pending, 4, 8%

None, 37, 77%

■ In place ■ Pending ■ None

Figure 2. Status of UAV rules and regulations in Africa (48 ACP countries), as of April 2016

Botswana, Côte d'Ivoire (with its ban), Kenya, Madagascar, Nigeria, Rwanda and South Africa are the seven countries with drone rules in place. Officials in Namibia, Zambia and Zimbabwe have declared that drone rules are in preparation (pending). **Table 2** below shows the status for each African country in the ACP group.

Table 2. Status of UAV rules and regulations in African countries, as of April 2016

Status	Countries
In place	Botswana, Côte d'Ivoire, Kenya, Madagascar, Nigeria, Rwanda, South Africa
Pending	Mauritius, Namibia, Zambia, Zimbabwe
None	Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Dem. Rep.), Congo (Rep.), Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Lesotho, Liberia, Malawi, Mali, Mauritania, Mozambique, Niger, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Togo, Uganda

Table 3 summarises in some detail the status of UAV regulations in African countries, as of April 2016.

Table 3. Status of UAV rules and regulations by country in Africa, as of April 2016

Country	Status of UAV regulations
Angola	No regulations. Drones being discussed at government level.
Benin	No regulations.
Botswana	Regulations in place.
Burkina Faso	No regulations.
Burundi	No regulations.
Cameroon	No regulations.
Cape Verde	No regulations.
Central African Republic	No regulations.
Chad	No regulations. CARs (Rules of the Air [RotA]) amended. See page 14.
Comoros	No regulations.
Congo, Dem. Rep.	No regulations.
Congo, Repub. of the	No regulations. CARs (RotA) amended. See page 14.
Côte d'Ivoire	Regulations in place. Civil drones are banned. CARs (RotA) amended. See page 14.
Djibouti	No regulations.
Equatorial Guinea	No regulations.
Eritrea	No regulations.
Ethiopia	No regulations.
Gabon	No regulations. CARs (RotA) amended. See page 14.

Country	Status of UAV regulations
Gambia, The	No regulations.
Ghana	No regulations. Legal liability for civil drone operators.
Guinea	No regulations.
Guinea-Bissau	No regulations.
Kenya	Regulations in place. Require permission from both Ministry of Defence and the Kenya Civil Aviation Authority.
Lesotho	No regulations.
Liberia	No regulations.
Madagascar	Regulations in place.
Malawi	No regulations.
Mali	No regulations. CARs (Registration Marks, Accidents) amended. See page 14.
Mauritania	No regulations. CARs (Registration Marks, RotA) amended. See page 14.
Mauritius	Regulations pending. Discussion at cabinet level.
Mozambique	No regulations. House arrest for drone users imposed by police.
Namibia	Regulations pending. Application form for RPAS operation (not available online, probably based on FSS-AIR-FORM-004 dated 2011)
Niger	No regulations.
Nigeria	Regulations in place. CARs updated to provide for RPAS operations (including aerial work).
Rwanda	Regulations in place. CARs updated to provide for RPAS operations (including aerial work).
Sao Tome and Principe	No regulations.
Senegal	No regulations. Use of drone cameras is banned CARs (Registration Marks, RotA) amended. See page 14.
Seychelles	No regulations. CARs (Registration Marks) amended.
Sierra Leone	No regulations.
Somalia	No regulations.
South Africa	Regulations in place. CARs updated to provide for RPAS operations (including aerial work).
Sudan	No regulations.
Swaziland	No regulations. CARs dated 2009 require all people wanting to fly an aircraft to obtain a licence from the Swaziland Civil Aviation Authority.
Tanzania	No regulations.

Country	Status of UAV regulations
Togo	No regulations. CARs (Registration Marks, RotA) amended. See page 14.
Uganda	No regulations. Import of drone cameras is banned CARs (Registration Marks) amended. See page 14. Customs and revenue agency is involved.
Zambia	Regulations pending. Drone regulations on the list of 2016 parliamentary work.
Zimbabwe	Regulations pending. Drone operators need to register with the Civil Aviation Authority of Zimbabwe.

Caribbean overview

Out of 16 countries in the Caribbean, seven countries (44%) have developed a comprehensive set of rules or have clearly stated their position on drone use over their territory. Government officials in three countries (19%) have declared soon-to-be-drafted (pending) rules on drone operation. Six countries (39%) have no specific rules on drone use. We were not able to find any Caribbean CARs with the recommended ICAO amendments on RPAS.

The seven Caribbean countries that did create rules to govern drone use did so without updating their CARs, showing that drone regulation can be put in place rapidly. Two countries have banned the importation or use of drones, Barbados (import ban) and Cuba (outright use and import ban).

Barbados, Belize, Cuba, Dominican Republic, Guyana, Jamaica and Trinidad have a clear set of rules to govern drones. The Bahamas, Grenada and Suriname have pending legislation.

Table 4 shows the status for each Caribbean country of the ACP group.

Table 4. Status of UAV rules and regulations in Caribbean countries, as of April 2016

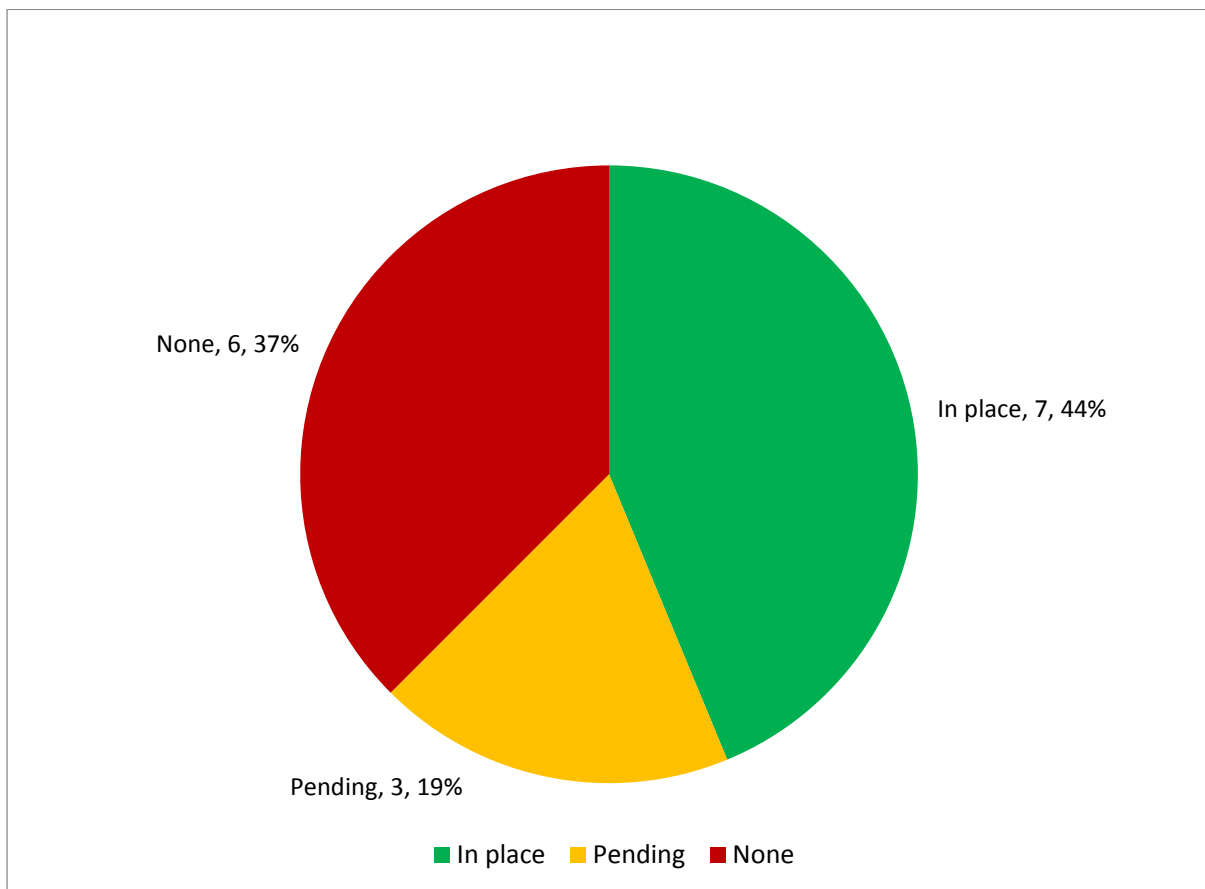| Status	Countries
In place	Barbados, Belize, Cuba, Dominican Republic, Guyana, Jamaica, Trinidad
Pending	The Bahamas, Grenada and Suriname
None	Antigua and Barbuda, Dominica, Haiti, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines

Figure 3. Status of UAV rules and regulations in the Caribbean (16 countries), as of April 2016

Table 5 summarises in some detail the status of the UAV regulations in Caribbean countries as of April 2016.

Table 5. Status of UAV regulations by country in the Caribbean, as of April 2016

Country	Status of UAV regulations
Antigua and Barbuda	No regulations.
The Bahamas	Regulations pending. Rules should come into effect in February 2016. No documents available online as of April 2016.
Barbados	Regulations in place. Temporary twelve months' ban on drone importation in place. Permission to fly has to be obtained at the Ministry of Defence. Flying limited to four pre-defined areas on the island.
Belize	Regulations in place. Letter and documents to be sent to Belize Department of Civil Aviation.
Cuba	Regulations in place. Importation and use of drones is illegal and banned. CARs (Accidents) amended. See page 14.
Dominica	No regulations.
Dominican Republic	Regulations in place.
Grenada	Regulations pending. Permission to fly to be obtained at the police.
Guyana	Regulations in place. More formal, comprehensive rules are in preparation. Currently, there is an advisory on drone operation to be followed.
Haiti	No regulations.
Jamaica	Regulations in place. Provisions for commercial RPAS operations (including aerial work).
Saint Kitts and Nevis	No regulations.
Saint Lucia	No regulations.
Saint Vincent and the Grenadines	No regulations.
Suriname	Regulations pending. Early 2016, the Civil Aviation Safety Authority Suriname should have prepared draft rules. Exemption to fly to be obtained at the Ministry of Transport.
Trinidad and Tobago	Regulations in place. Contact Trinidad and Tobago Civil Aviation Authority for permission and registration if drone is heavier than 750g.

Pacific overview

Out of 15 countries, one country (Fiji), has published a set of rules and made forms available on the website of the Fiji Civil Aviation Authority. Official reports indicate that the rules were not followed by drone users, thus prompting the authority to enforce the rules more diligently. It is possible that if due diligence is encouraged, rules will be better adhered to in the near future.
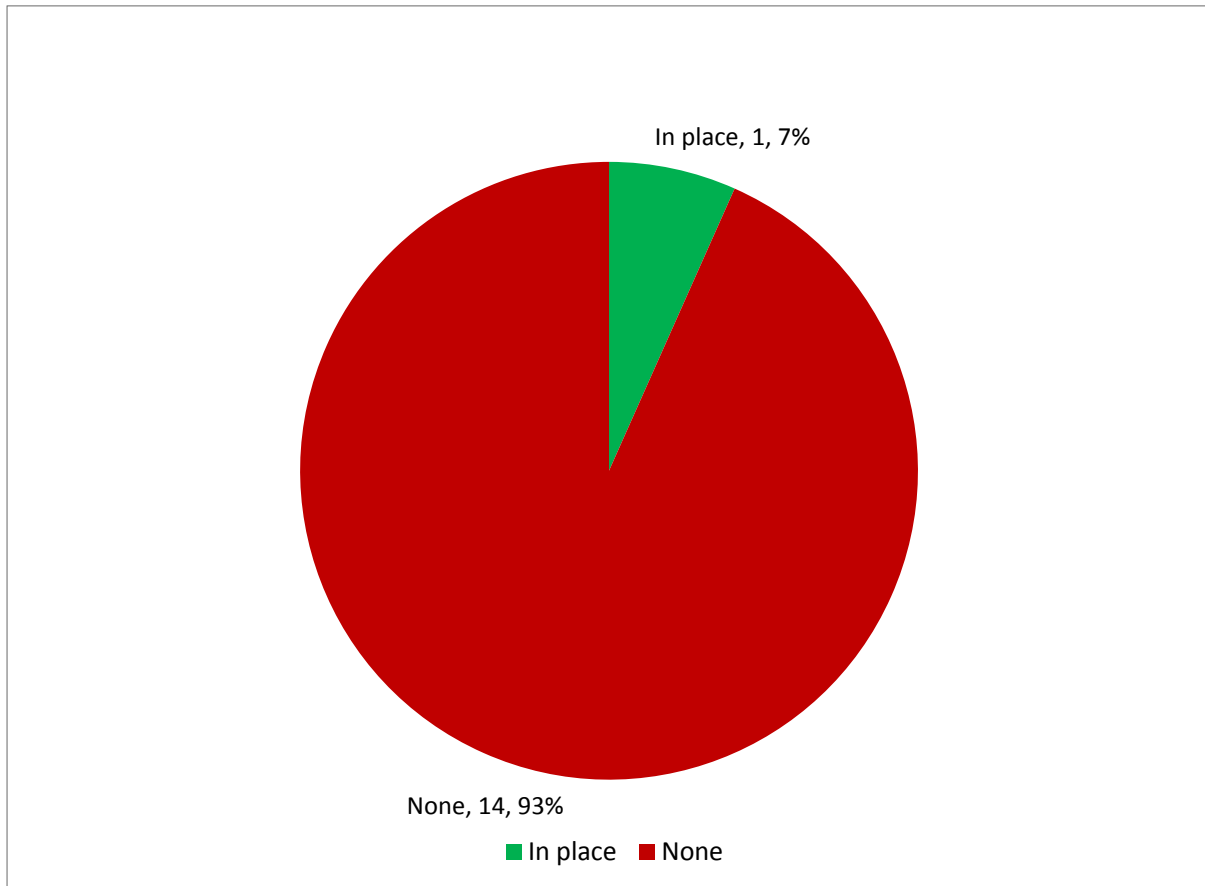

In place, 1, 7%

None, 14, 93%

■ In place ■ None

Figure 4. Status of UAV rules and regulations in the Pacific (15 ACP countries), as of April 2016

While 14 countries which are part of the ACP group of states have no explicit rules governing drone operation, the wiki maintained by the organisation UAViators states that five out these 14 countries (Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu) follow the Civil Aviation Authority of New Zealand's (CAA's) RPAS rules. Niue does not have an aviation authority of its own, relying on CAA for air transport services and regulations. It is probable that drone use on Niue will refer to New Zealand's RPAS rules. In all, there are six countries that are likely following New Zealand's RPAS rules.

Table 6. Status of UAV rules and regulations in Pacific countries, as of April 2016

Status	Countries
In place	Fiji
Pending	None
None	Cook Islands, Kiribati, Marshall Islands, Micronesia, Fed. St., Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor Leste (East Timor), Tonga, Tuvalu, Vanuatu

Two countries, the Marshall Islands and Palau, have close links to the US Federal Aviation Authority (FAA), which makes it realistic to believe that drone rules are following the FAA's rules. In the case of Palau, it is even possible that rules of Singapore's civil aviation authority are relevant, because of the close relationship both CAAs are currently maintaining in terms of training, capacity and institutional development.

Papua New Guinea has civil aviation regulations on unmanned aircrafts' weight and no-fly zones, though these rules are not directly linked to ICAO's recent push for national CARs updates on RPAS.

Table 7. Status of UAV rules and regulations by country in the Pacific, as of April 2016

Country	Status of UAV regulations
Cook Islands	No regulations.
Fiji	Regulations in place.
Kiribati	No regulations.
Marshall Islands	No regulations. Perhaps would follow US rules.
Micronesia, Fed. St.	No regulations.
Nauru	No regulations.
Niue	No regulations.
Palau	No regulations. Perhaps would follow Singapore or US rules.
Papua New Guinea	No regulations. Perhaps would follow New Zealand rules.
Samoa	No regulations. Perhaps would follow New Zealand rules.
Solomon Islands	No regulations. Perhaps would follow New Zealand rules.
Timor Leste (East Timor)	No regulations.
Tonga	No regulations. Perhaps would follow New Zealand rules.
Tuvalu	No regulations.
Vanuatu	No regulations. Perhaps would follow New Zealand rules.

ICAO's support to Member States in formulating UAV-ready civil aviation regulations

In March 2011, ICAO published guidance material to assist regulators on issues related to RPAS and unmanned aircraft systems, in the form of a circular: Unmanned Aircraft Systems (UAS), (Cir 328).[7]

In April 2012, ICAO's Air Navigation Commission approved a draft report to the ICAO Council containing recommendations for new Standards and Recommended Practices (SARPS) to be included in Annex 2 – *Rules of the Air* and Annex 7 – *Aircraft Nationality and Registration Marks*. In 2010, an amendment to Annex 13 – *Aircraft Accident and Incident Investigation was submitted to Member States*, and included provisions for the management of accidents involving unmanned aircrafts. These were submitted to Member States, for further integration into their national civil aviation regulations. The States were asked to respond to ICAO specifying how these SARPS were integrated into existing laws and notifying any disapproval, differences and compliance or non-compliance.

Table 8. ICAO RPAS-related amendments to national civil aviation regulations

ICAO Amendment 43 to Annex 2 '*Rules of the Air*' (2012): https://goo.gl/26jpAA
ICAO Amendment 6 to Annex 7 '*Aircraft Nationality and Registration Mark*s' (2012): https://goo.gl/YeHjRx
ICAO Amendment to Annex 13 '*Aircraft Accident and Incident Investigation*' (2010), see Annex 13 10th edition which has integrated amendment 13: https://goo.gl/Lj0O9q

RPAS is a primary safety concern[8] for ICAO as stated during the Second High-Level Safety Conference 2015. During the Conference, ICAO recognised the complexities in safely integrating RPAS into national air navigation systems; and called upon States to refer to ICAO guidance when developing or amending RPAS regulations, and establish a formal means to educate users on the risks associated with their operation. It is looking to expedite the development of provisions to enable a harmonised approach to the regulation of RPAS and provide a forum for States to share their experiences and best practices.[9]

In our research results, we found that a number of countries had adopted ICAO's RPAS-related SARPS and included them in their civil aviation regulations. While ICAO's Annex 2, Annex 7 and/or Annex 13 were integrated into existing regulations by some countries, it is still unclear how this new legal framework related to RPAS is being enforced without any other rules or guidance material for drone users to follow. The legal technicalities and language of these amendments, as well as their very difficult-to-find online location, renders them almost useless. Most countries' civil aviation authorities, which have developed RPAS-related rules and guidance material for recreational or professional UAV users have actually not amended their CARs, but prepared a standalone set of documents and forms readily available on their NCAA website.

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[7] ICAO Circular 328 (2011); can be opened with any PDF reader: https://goo.gl/H1m69q
[8] ICAO study of legal issues relating to remotely-piloted aircraft (2015): https://goo.gl/BGRUXV
[9] ICAO Manual on Remotely Piloted Aircraft Systems (RPAS) (2015): https://goo.gl/W0s3SO

Drones for agriculture

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CTA

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