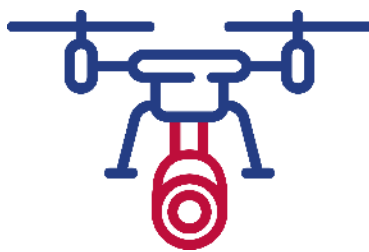




European Drones for Inspection & Security



To join the PRESTIGIOUS dynamic!
Fill in this online survey



<https://forms.gle/nEnztXmAeUX2NQie6>



SUMMARY

ABOUT PRESTIGIOUS	4
VALUE CHAIN	5
Data on drone actors in Europe #1	6
Global Fact Sheet on Fact-finding Missions	9
1. Overview of the international markets	9
a. Choice of the target countries	9
b. Economic environment data.....	10
c. Contribution to GDP of following sectors (in billion USD)	10
2. Key findings for the international markets	11
a. Canada	11
b. Chile.....	13
c. Senegal.....	15
d. Nigeria.....	17
3. Main regulations items in the international markets	18
a. Canada	18
b. Chile.....	20
c. Senegal.....	21
d. Nigeria.....	23
4. Conclusions	24
a. Potential of specific markets.....	24
b. High-level recommendations	25
Partners	26

ABOUT PRESTIGIOUS

PRESTIGIOUS is an European project co-funded by the Cosme program of the European Union to

STRENGTHEN THE COMPETITIVENESS AND SUSTAINABILITY OF "DRONES" SMES IN EUROPE



In 2 markets

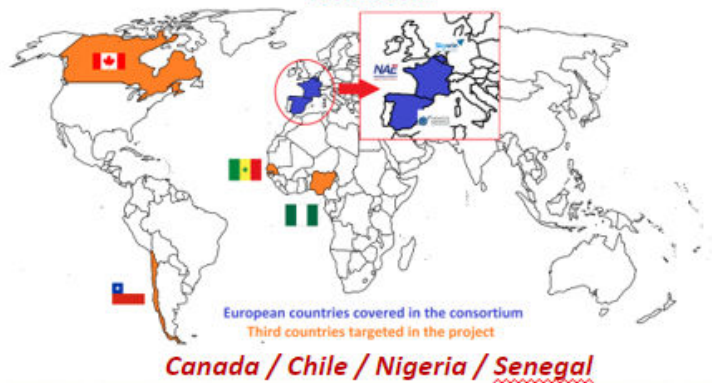


Inspection



Security

for 4 non-European countries

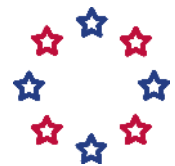


with 3 partners



4 MAIN ACTIONS :

- **Assessment of the value chain for drones in Europe**
 - *Identify the strengths of European SMEs*
- **Organization of 3 missions to non-European countries**
 - *Identify potential end users outside Europe*
 - **North America** (Canada)
 - **Central Africa** (Nigeria, Senegal)
 - **South America** (Chile)
- **Supply of individual support for European SMEs**
 - *Organization of training seminars for the transfer of information*
- **Preparation of a joint internationalization strategy**
 - *Roadmap to establish an European strategy for drones*



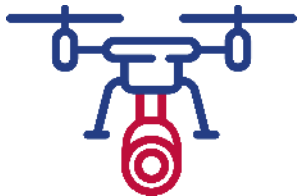
VALUE CHAIN

Prestigious project formalized the value chain of two high potential drone market :



Security relative to Civil or State security

Security market

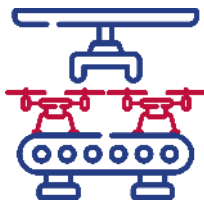


Inspection relative to any other market application that is using drones :

- **Industry,**
- **Mines, Quarries, Construction sites,**
- **Agriculture,**
- ...

Inspection market

STRUCTURE OF THE VALUE CHAIN :



OEM manufacturer



OEM supplier



Software editor



Data analysis



Maintenance center



Training



Pilot / operating company



Certification company



Testing center



Consulting

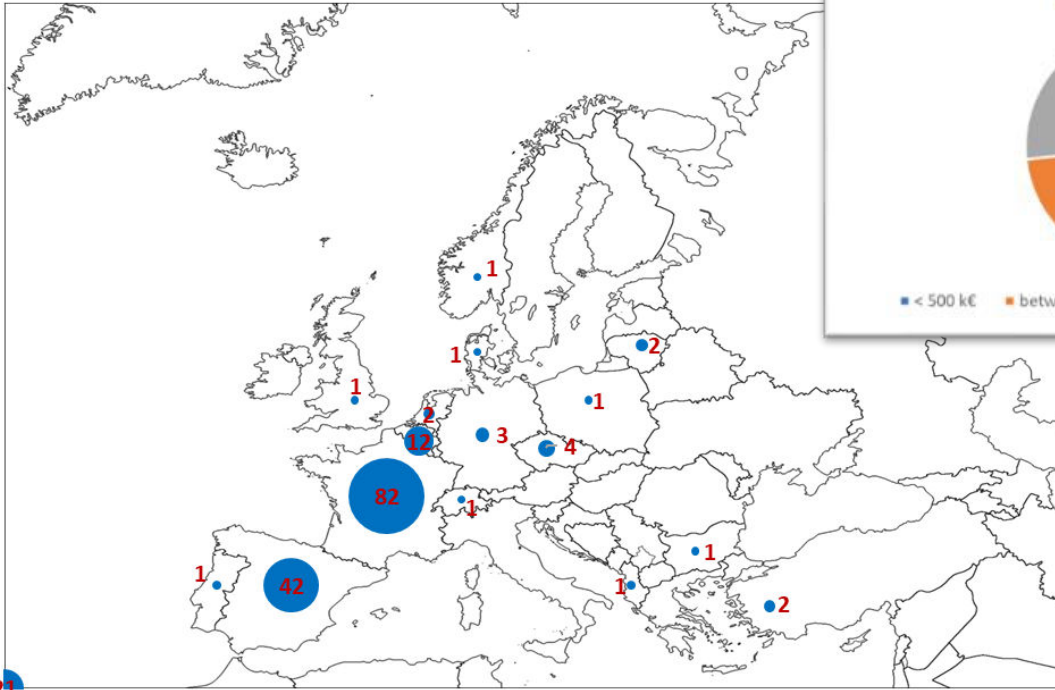


R&D / Innovation

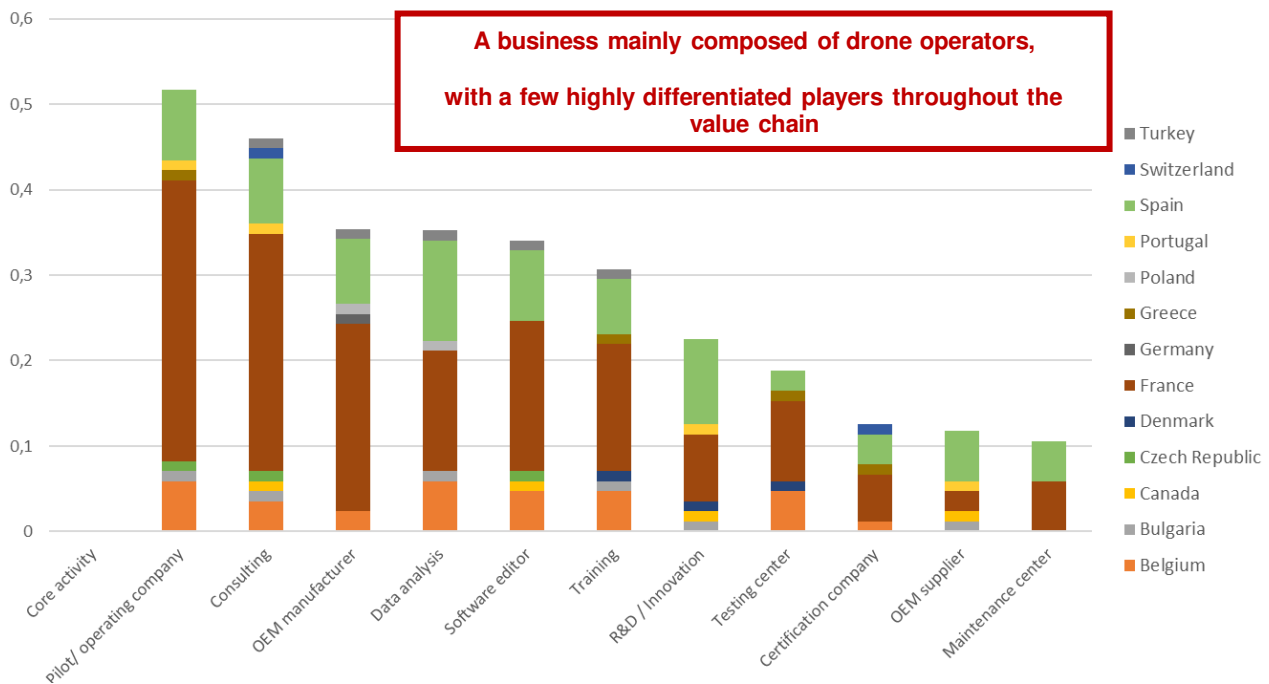
Data on drone actors in Europe #1

analyses - December 2022

SME localisation x157



Value Chain by Country



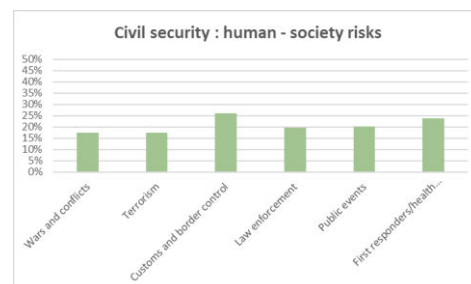
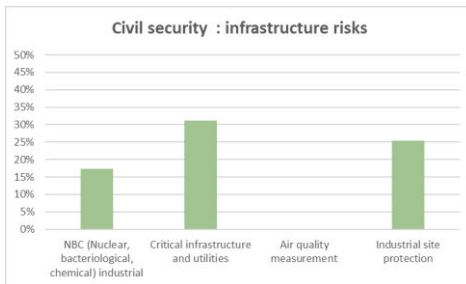
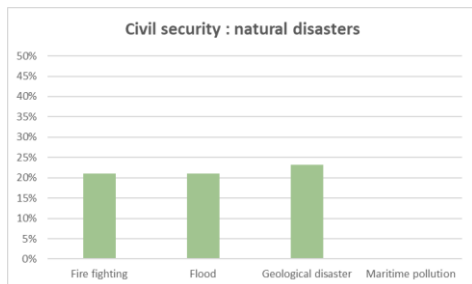
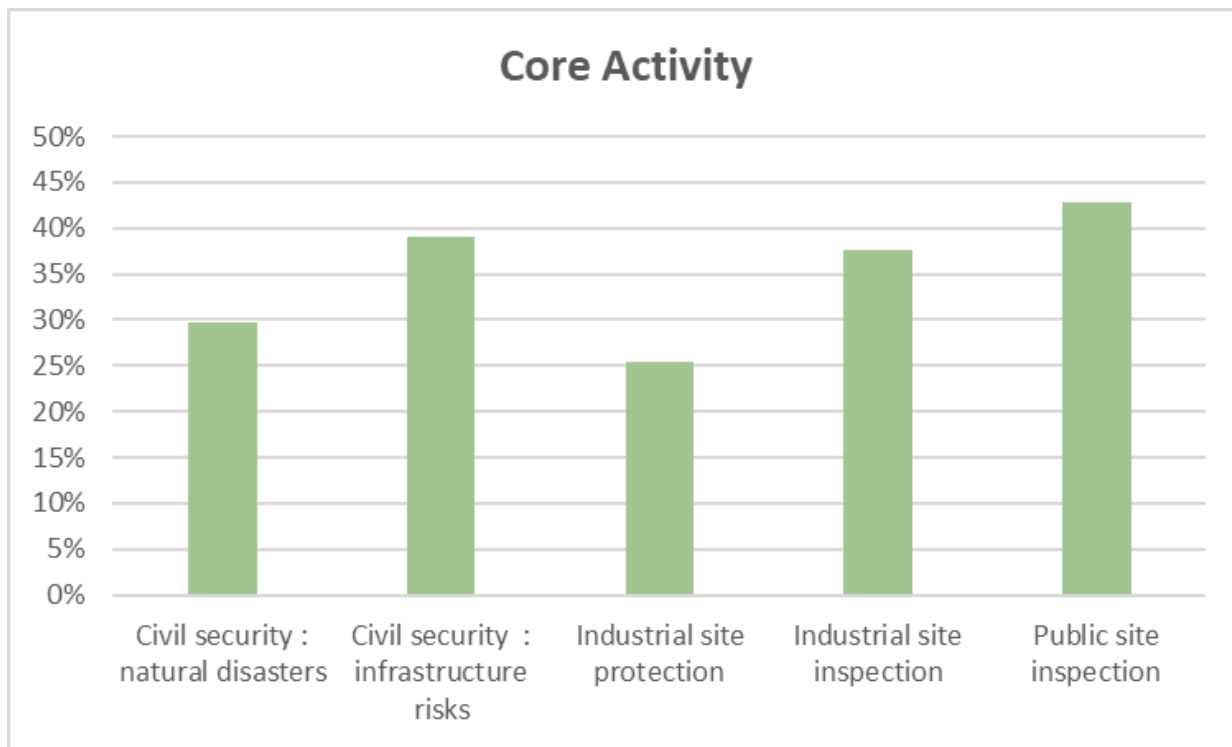
The content of this report represents the views of the author only and is his/her sole responsibility; it cannot be considered to reflect the views of the European Commission and/or the Executive Agency for Small and Medium-sized Enterprises (EASME) or any other body of the European Union. The European Commission and the Agency do not accept any responsibility for use that may be made of the information it contains.



Co-funded by the COSME programme of the European Union

DATA on drone actors in Europe #1

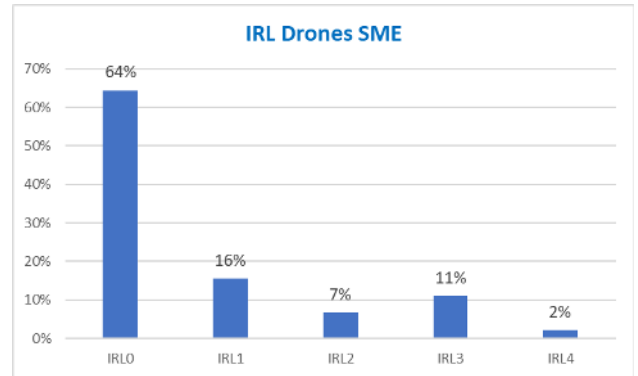
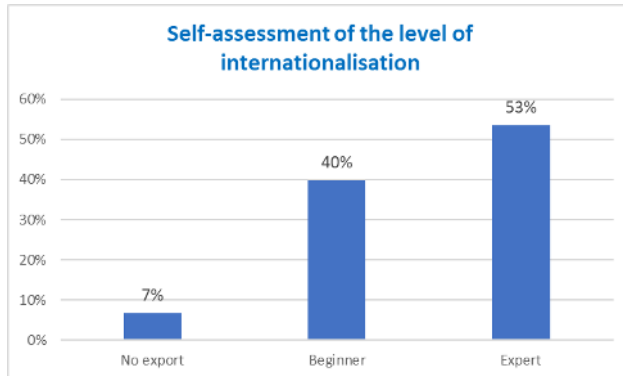
analyses - December 2022



DATA on drone actors in Europe #1

analyses - December 2022

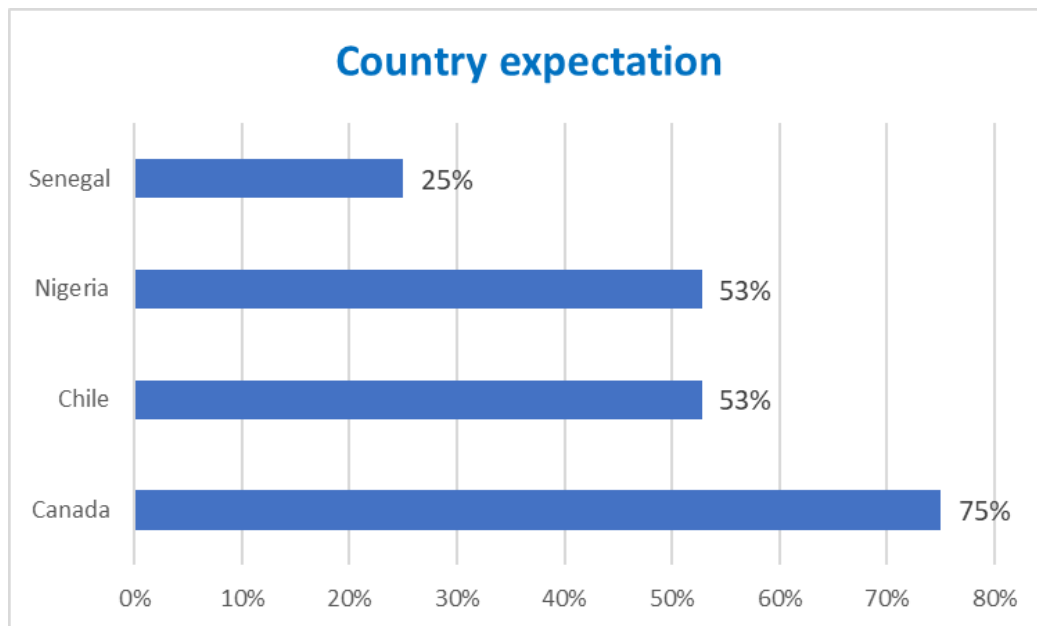
International Readiness Level



Based on the analysis of different criteria, the SMEs will be classified according to 5 levels, and the level and type of personalised support will be adapted accordingly:

- IRL0: Neither international activity;
- IRL1: Wish to go international but without a roadmap;
- IRL2: Beginning international activity with a roadmap;
- IRL3: International activity;
- IRL4: Structured organisation and activity for international

Country expectation



Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

1. Overview of the international markets

a. Choice of the target countries

The consortium selected the following countries based on the range of known or anticipated innovation maturity, the convergence of low-population areas and the development of the mining, agriculture, forestry or energy transport sectors as a hypothesis for potential drone activity, and historic connections with the consortium partners.

The countries visited in the scope of the international Fact-Finding Mission were :

- Canada (Fact finding mission to Montréal, Québec on location– 5 to 9 september 2023)
- Chile (Fact finding mission Santiago de Chile on location– 10 to 14 october 2023)
- Senegal (Fact finding mission in remote – 1 to 28 september 2023)
- Nigeria (Fact finding mission in remote – 12 september to 26 october 2023)

The political situation of Nigeria, and of Senegal to a lesser extent, did not allow for a trip with guaranteed safety for the members of the consortium. Contacts were taken with the respective local stakeholders and authorities with the support and expertise of the local branch of the French economic agency.

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

b. Economic environment data

	Canada	Chile	Nigeria	Senegal
<i>Population (Millions)</i>	39	19,8	206,1	17
<i>GDP (bn USD)</i>	1991	353	432	25
<i>GDP by inhabitant (USD)</i>	51051	17828	2096	1471
<i>Balance of trade (% GDP)</i>	0,16	2,16	0,39	-15,5
<i>Employment (%)</i>	60,3	54,9	66,7	56,1
<i>Unemployment rate (%)</i>	5,2	8	33	22
<i>Life expectancy</i>	81,7	80.3	68.2	55.0

Although Canada is 5 times less populated than Nigeria, its GDP is 25 times greater. We will see below how these ratios impact/reflect government organization, market maturity, R&D, business opportunities.

c. Contribution to GDP of following sectors (in billion USD)

	Canada	Chile	Nigeria	Senegal
<i>Services</i>	1150	165	223	12
<i>Mining</i>	122	46	31	0,6
<i>Manufacturing</i>	170	25	51	3,5
<i>Agriculture, forest, fish</i>	47	10,4	103	4,2

GDP values by sector are indicators of business potential for drones in that industry.

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

2. Key findings for the international markets

a. Canada

Canada has a good record of innovation and manufacturing of Aeronautics and Space sectors, and the country's administration is efficient and well organized. Hence it is no surprise that the industry of UAVs has been growing there for several years, and that the solutions it brings are already being deployed on the market it addresses.

Accordingly, European SMEs can expect that local operators are already active in providing readily commercially available solutions, in uses-cases where the limitations of the regulations are not prohibitive for business.

However, the targeted industries are still growing aware of the availability of UAV solutions, so it is expected that the potential market size will grow, allowing for new-comers providing innovation and increased value for money.

Well trained pilots are available on the local market, some of them with plane-piloting experience, and can be reached through the UAV pilot associations, the training schools or testing facilities.

BVLOS is a priority of Transport Canada's "Drone Strategy 2025", and [CED ALMA](#) (Québec) and [Foremost UAS test range](#) (Alberta) provide large accredited BVLOS test ranges. CED Alma – which also hosts the drone cluster ('Créneau Drone') for Québec- has shown interest to be a player in connecting local pilots to European solution providers and can be considered to organize demonstrations for benchmark to prospects in Québec.

It has been stated that French-speaking Québec and the English-speaking part of Canada should to be considered as a different markets, both for cultural and commercial considerations. Foremost may be considered as well for access to the English-speaking part of the country.

Canada is a vast country providing many natural resources. UAVs are already in use in agriculture, forestry, wildlife monitoring, mining (open pit and underground), telecom towers and pipelines monitoring, wastewater treatment, photogrammetry and mapping. A specific focus is announced on weather resilient equipment for Arctic and cold weather operations.

As mentioned above, Canada has a long tradition of research and innovation. Canadian companies, universities and research centers can provide state-of-the-art science and technology for aircrafts and payload. As an example, [HydroQuebec](#), the main electricity supplier in Quebec, has its own R&D lab providing robotics and UAVs inspection and maintenance solutions for their transmission lines.

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

They are experienced in participating in local and international collaborative projects. The Canadian government provides funding with regularly updated calls for projects, some with focus on collaboration with European countries. CRIAQ is the main interface for these matters in Quebec and organizes its yearly “RDV/Forum for Aerospace Innovation” in February 2023, with a specific [focus on RPAS/BVLOS](#).

Synergies may be found in simulation, advanced materials, embedded electronics for payload and navigation, sensor, AI for data edge/post-processing and navigation, power management, U-Space ...

Drone regulation in Canada is quite mature and similar to the European one, with addition of the emerging potential for BVLOS flight. The regulation authorities – [JARUS](#), [Transport Canada](#) and [Nav Canada](#) – provide well documented and up to date information, requirements and processes, all available on the web. In addition, the [NAV DRONE](#) web and smartphone application is made available as an online one-stop-shop to facilitate the activities of drone operators. In addition, the [Canadian Drone Advisory Committee](#) gathers 35 UAV stakeholders to collaborate to adapt regulation and define priorities, including for BVLOS flights.

Even if obtaining flight authorizations seems straightforward, initial contacts with local experienced pilots or the [Drone Pilots Association](#) is recommended to ensure that the latest information is known.

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

b. Chile

Chile's geography is atypical as it stretches more than 4000 km north to south, with an average distance of 180 km between the coastline and the Andes mountains range. About half of the population of 19 million is located near the area of the capital Santiago.

After several wars with the neighboring countries in the XIX century, the political relations are still tense due to historic nationalistic resentment, which is still actual through a minor territorial dispute and popular rivalry with Argentina, and more so in the Chile-Peru-Bolivia border area.

Internally, major civil protests have occurred in 2019 and 2020, although with decreasing recent aftermath. Immigration from Latin America countries is also a political issue, necessitating active border patrol.

The shape of the country and the tense political relations with the neighboring countries contribute to explain why Chile has been a pioneer in aeronautics (civil and air force), with a developed commercial helicopter industry, and currently shows much interest in the potential of UAVs.

RPAS/drones regulations are quite mature and similar to the European one. They are driven by the commercial aviation regulation body, showing a defensive and administrative approach. Main government bodies are the [Dirección General de Aeronáutica Civil - DGAC](#) (which certifies the drones) and the [Junta de Aeronautica Civil - JAC](#) (managing the mandatory insurance). Due to the DGAC internal organization, it may prove difficult to obtain flight authorizations.

The UAV community in Chile is emerging. The [APANT](#) pilots' association is gathering traction with over 100 members. We have not identified any dedicated drone cluster or industrial federation as such.

From our discussions with the drone actors in Chile, we have identified 3 main areas of cooperation:

- Possible development in the following markets:
 - o Security (borders, infrastructures and agriculture),
 - o Inspection (electric power lines),
 - o Agriculture (vegetation monitoring and spraying),
 - o Photogrammetry, mapping (including for mining),
 - o Environmental monitoring: wildfire.
- Areas of collaboration or synergy identified:
 - o High technologies development regarding data processing, imaging software,
 - o Imaging software for counting (forest, tree count in open air nursery),
 - o High technologies solutions to be integrated (payload),
 - o Long life batteries for operations in high wind conditions.

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

Several actors expressed the wish to strengthen links with European players through better knowledge of expertise, and are open to participate in individual meetings, through participation in the B2B activity of the PRESTIGIOUS training session, or visibility in the PRESTIGIOUS Drones Book.

If they wish to open a business in Chile, it seems preferable that EU companies favor a collaboration with a local actor to legitimize the development of European actors in these territories, rather than trying to reproduce the European business model and operation.

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

c. Senegal

Senegal is a small country relative to the African continent, although its size and population are equivalent to twice that of Portugal. It is one of the most vibrant economies of sub-saharan Africa.

Agriculture and livestock farming account for nearly 17% of GDP officially and generate income for about 60% of the rural population.

Although the use of drones has increased in recent years in Africa, the lack of professionals in this sector remains a major concern. According to the African Union, the need for drone pilots in Africa and training programs in the field are one of the weaknesses of the dynamism of agriculture.

The use of drones is growing in several other areas including health, security, the fight against poaching. Additional potential target sectors are transport infrastructure, (renewable) energy, engineering, water and sanitation.

The development of the Grand Tortue Ahmeyin (gas, shared with Mauritania - 2023), Sangomar (oil) and Sambangalou hydroelectric dam (2025) projects will make the energy sector a major recipient of public and private investment. Another large infrastructure project is the deep-water port of Ndayane.

Although an integral part of Senegal's economic and digital landscape and whose use is gradually being deployed in various fields of application, knowledge about the potential of drone technology remains scarce and is still a niche market.

Since 2014, a ministerial decree forbids « the use in public of drone cameras for either personal or professional purpose ». However, in 2018, Senegal adopted a law that regulates their use : telepilots must be certified according to standards approved by the civil aviation of Senegal as well as receive a derogation from the ministry of interior.

The drone regulation from [ANACIM](#) promotes the supervision of the use of drones by claiming transparent and accessible application procedures with the regulatory authority. However, the difficulty of obtaining flight authorizations, mainly from the Ministry of the Interior should not be underestimated.

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

Outside of training centers, the *Association des Professionnels et Amateurs de drone* ([APAD](#)) is the only domain related association that we could find. It is advised to meet them if a EU company would wish to know the latest regulations details, business practices and connections in Senegal.

R&D capacity and funding are limited in Senegal. However, the Senegalese Institute of Agricultural Research ([ISRA](#)) can be contacted for use cases and local knowledge about agriculture and animal health.

We could identify 4 main areas of cooperation with Senegal which, in view of the interviews, could be duplicated throughout West Africa, as Senegal is member of the Economic Community of West African States (ECOWAS) grouping 15 countries and 400 million people :

- Possible development in the following markets :
 - o Inspection (oil pipeline, flare, gas leak) mainly with the new oil program to come,
 - o Agriculture, vegetation monitoring,
 - o Photogrammetry, mapping,
 - o Security, forest traffic,
 - o Drone detection,
 - o Environmental monitoring: wildfire, flooding.

- The areas of collaboration or synergy identified are :
 - o Drone autonomy,
 - o Flight controllers,
 - o Data post-processing,
 - o Solutions to facilitate product maintenance (training, equipment, etc.),
 - o Import of drone equipment and solutions.

There is an opportunity to capitalize on the experience of PRESTIGIOUS to disseminate the EU value chain and support Senegal drone players and institutions in mapping their actors. This axis will facilitate links with European players and on our side to better identify players and potential synergies.

If they wish to open a business in Senegal, it seems preferable that EU companies favor a collaboration with a local actor to legitimize the development of European actors in these territories, rather than trying to reproduce the European business model and operation.

A final point raised by a majority of local stakeholders is the availability of documentation and continued discussions with French-speaking stakeholders.

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

d. Nigeria

Nigeria is the largest African economy. Together with Senegal, Nigeria is member of the Economic Community of West African States (ECOWAS) grouping 15 countries and 400 million people – half of which are Nigerians.

The main concern with Nigeria is the high political instability and lack of a strong and organized state leading to lack of infrastructure, bureaucracy, difficulty to find technical resources, systemic corruption and even violence, especially in the North.

It is recommended for newcomers to want establish themselves in Nigeria to start in the capital Lagos and that it is necessary to have dedicated staff to be present locally.

Development opportunities in Nigeria focus on the following markets:

- Pipeline (oil & gas) and power line inspection
- Agriculture
- Training
- Mapping in the mining and agriculture sector for large installations (vegetation monitoring inspection, irrigation level...)
- Border surveillance
- Sales of commercial products

However, this study could not provide an overall view of the market and opportunities.

Indeed, due to the insecurity in the country, the remote interviews closed many doors and therefore did not allow us to obtain all the information we wanted.

This revealed that in order to develop in the country, European SMEs will have to invest a lot of time and money in order to create strong local links with the Nigerien eco-system.

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

3. Main regulations items in the international markets

a. Canada

Transport Canada published Part IX of the Canadian Aviation Regulations (CARs) in January 2019, which outlines rules for flying drones in Canada.

The new regulations came into force on June 1st, 2019 and apply to drones that weigh between 250 g and 25 kg operated in visual line of sight. The rules introduce two categories of drones operations: basic and advanced.

If all 5 of the following conditions are met, **basic operation** is conducted. If any one of these 5 conditions is not met, **advanced operation** is conducted :

- Fly the drone in uncontrolled airspace
- Fly the drone more than 30 meters horizontally from bystanders
- Never fly the drone it over bystanders
- Fly the drone more than 3 nautical miles from a certified airport or a military aerodrome
- Fly the drone more than 1 nautical mile from a certified heliport

Each one has a different set of rules drone pilots must follow. To operate their drone in either category, pilots must **register** their drone online and **mark** their drone with their registration number. They must also obtain a pilot **certificate** by completing an (online) Basic Exam. Pilots who wish to conduct advanced operations must also successfully pass a flight review. Detailed and up-to-date information is provided online by the regulator Transport Canada.

<https://tc.canada.ca/en/aviation/drone-safety/learn-rules-you-fly-your-drone/flying-your-drone-safely-legally>

Regardless of operating category, a drone pilot must ensure they fly their drone within their visual line-of-sight (VLOS), away from emergency operations and advertised events, and far away from other aircraft.

Drones that weigh less than 250 g, also known as microdrones, are not required to be registered and pilots are not required to have a pilot certificate in order to operate. Regardless of size, however, all drones must be flown in a way that does not pose a risk to aviation or people on the ground.

It is the responsibility of drone pilots to remain clear of areas within which traditional aircraft operate, and to keep their drone in control and in sight so that when another aircraft is detected they're able to take immediate action to give way.

The *NAV DRONE* smartphone application of Nav Canada will help drone pilots and operators safely and legally fly their RPAS in Canadian airspace, review important guidelines, discover where they can fly, schedule and manage flights, and request permission to fly in airspace controlled by Nav Canada.

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

The NAV Drone web application is a complement to the smartphone application that will allow pilots to enter a pilot certificate, which is required to plan Advanced operations, associate a registration number to a drone, upload documents, which may be required to access NAV CANADA controlled airspace, visualize the flight zones of active drone operations on a map, edit a published operation and copy an existing operation and acknowledge a rescinded permission request.

<https://www.navcanada.ca/en/flight-planning/drone-flight-planning.aspx>

Here is a simplified version of the two operating environments and some of the associated rules:

	Basic Environment	Advanced Environment
Altitude	under 400 ft AGL	as approved by air traffic control (if within controlled airspace; otherwise under 400 ft AGL)
Airspace	outside of controlled airspace	within controlled airspace
Proximity to people	More than 30 m away	More than 5 m away
Over people	no	yes
Proximity to airports	more than 3 NM	at or near airports
Proximity to heliports	more than 1 NM	at or near heliports
Proximity to uncertified aerodromes	at or near uncertified aerodromes	at or near uncertified aerodromes
Night operations	with appropriate lighting	with appropriate lighting

In summary, before flying an UAV in Canada, it is required that

1. The pilot understands the [legal requirements when flying drones](#)
2. The pilot understands the difference between [basic](#) and [advanced](#) operations ([find the category of drone operation](#))
3. The pilot gets the necessary [knowledge requirements](#)
4. The pilot gets a [drone pilot certificate](#)
5. [Choose the right drone](#) if you want to perform advanced operations
6. The drone is [registered](#)
7. The pilot [surveys the area](#) where he/she will fly
8. For Advanced operations only - to operate in controlled airspace (Classes C, D or E) you need to ask NAV CANADA for an [RPAS Flight Authorization](#) and gets RPAS Safety Assurance

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

b. Chile

UAV regulation is directed by the General Directorate of Civil Aeronautics (DGAC). Before raising a UAV, the provisions of the AERONAUTICAL CODE AND THE AERONAUTICAL REGULATIONS must be complied with.

The steps to be allowed to fly a commercial drone are as follows:

- Register the RPAS/DRONE with the DGAC. In the following link: <https://www.dgac.gob.cl/actualizacion-registro-provisorio-de-rpas-o-drones/>
- Obtain the RPAS/DRONE operator credential from the DGAC. <https://sipa.dgac.gob.cl/usuarioSolicitudLicencia/obtenerLicenciaNew>
- Get commercial aviation insurance from the Civil Aeronautics Board (JAC) via the "Insurance approval request for rpa flights (drones)" document : <http://seguros.jac.gob.cl/index-en.html>

Any entity or person who performs aerial work for commercial purposes must obtain their Air Operator Certificate (AOC), in accordance with the provisions of Aeronautical Standard DAN 119 "Norma para la Obtención de un Certificado de Operador Aéreo", Cap. "D" https://www.dgac.gob.cl/wp-content/uploads/2021/03/DAN_119-1.pdf and DAN 137 "Trabajos Aéreos".

<https://www.dgac.gob.cl/wp-content/uploads/2019/11/DAN-137-1.pdf>

For operations with their own and non-commercial purposes, they must obtain a Special Certificate of Operation : https://www.dgac.gob.cl/wp-content/uploads/2020/12/DAR_06.pdf

Recreational or private flights do not require authorization from the DGAC, as long as:

- The RPAS is made of expanded polyethylene.
- Weight up to 750 grams.
- Only in private places with the authorization of the owner.
- That it does not operate at more than 50 meters high.
- The operator must respond to any damage caused to third parties.

https://www.dgac.gob.cl/wp-content/uploads/2021/04/DAN_91.pdf

For RPAS operations defined as Public Interest and to be developed in populated areas, comply with Aeronautical Standard DAN 151.

https://www.dgac.gob.cl/wp-content/uploads/2020/04/DAN_151-1.pdf

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

c. Senegal

The National Agency for Civil Aviation and Meteorology (ANACIM) is the Senegal agency responsible for drone safety. ANACIM ensures the development of a technical regulation of civil aviation in accordance with the standards of the International Civil Aviation Organization (ICAO).

The [reference text](#) is "Annex 5 to the Aeronautical Regulations of Senegal N°06 relating to remotely piloted aircraft systems", adopted on 5 November 2018.

RPAS are divided into three classes:

1. Class 1: RPAS with a mass of 5 kg or less, including any load carried by RPAS.
2. Class 2: RPAS with mass greater than 5 kg but less than or equal to 25 kg, including any load transported; and
3. Class 3 RPAS with a mass greater than 25 kg, including any load carried.

RPAS are divided into three categories

1. Category A: RPAS used for leisure and/or private purposes by individuals (people, physical);
2. Category B RPAS used for sports and model aircraft within the framework of aeromodelling associations certified by the Authority.
3. Category C: RPAS used for professional purposes by private and public bodies.

	Category A: Leisure/Private	Category B: Sport/Model Aircraft	Category C: Professional Use	Document Type and Authority
Class 1: Mass 5kg or less	1A	1B	1C	Limited authorization
Class 2: Mass >5kg to 25 kg	Not authorized	2B	2C	Limited authorization
Class 3: Mass >25kg	Not authorized	Not authorized	3C	Permit Required

Senegal Summary Table of Drone Classes and Categories

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

Note:

- The basic mass corresponds to the empty mass without battery and load.
- Permit : PER (Permis d'Exploitation de RPAS) – see §2.5 of Guide of Authorization for use a RPAS www.anacim.sn/IMG/pdf/sn-all-dsv-guid-05-c-guide_d_autorisation_d_exploiter_un_rpas.pdf
- Application document for the use of a RPAS: https://www.anacim.sn/IMG/pdf/sn-all-dsv-form-16-f-formulaire_de_demande_d_autorisation_rpas.pdf

A mandate, a legal contract with a registered in Senegal or in UEMOA or with a public entity of the State of Senegal will be required for the introduction by a foreigner candidate of request for Authorization to operate a RPAS

The Authority must identify the RPAS and issue an identification number to its owner, legal representative, or operator before the RPAS can be operated in Senegal. Identification markings must be displayed on the remotely piloted aircraft and legible.

The machine must not fly at night, that is to say from 15 minutes after sunset until 15 minutes before sunrise. Category A and B drones must not exceed 100 meters above the ground (300 feet). For those in category C, the ANACIM determines the authorized altitude.

Extensive information about obligations can be found here, in english : <https://drone-laws.com/drone-laws-in-senegal/>

BVLOS OPERATIONS

The operator of a remotely piloted aircraft must carry out a safety study accepted by the Authority before the start of any BVLOS operation. The safety study contains without limitation, when applicable, the following elements:

- 1) a description of the security systems;
- 2) an exhaustive analysis of the potentially dangerous events, their effects as well as the means of mitigating these events;
- 3) identification of preventive measures to be taken

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

d. Nigeria

Flying a drone is legal in Nigeria but the drone regulation needs to be followed (extract):

- The NCAA requires the registration of drones weighing more than 250 grams (0.55 pounds).
- Drone pilots need to obtain a Remote Piloted Aircraft Systems Certificate prior to flying a drone
- Flight plan must be submitted to the NCAA for approval,
- Drones must be operated within daylight time only fly in good weather conditions
- Drones must not be operated over people or large crowds
- Respect other's privacy when flying your drone, and stay away from airport and aircrafts
- Do not fly from or into another state without proper authorization from Air Traffic Control.
- Do not operate over the high seas.

The Five Phase Process Certification for [Remotely Piloted Aircraft Operator Certificate](#) (ROC) :
Reference to Regulations NCAA- GAD-AC-004 Feb, 2017 Page 2 1.0 REFERENCES Nig. CARs 2015
Part 8.8.1.33 & IS 8.8,1,33, 2.0

Phase 1: pre-application phase

Phase 2: formal application

Phase 3: document evaluation phase

Phase 4: demonstration and inspection phase

Phase 5: certification phase

This Advisory Circular (AC) is issued to provide general information and guidance to applicants for the certification and approval of organizations and operators of RPAs in compliance with the Civil Aviation Regulations. This document also provides guidance to NCAA staff on the processing of operators certificate and approvals. While this document prescribes a means of compliance with legislation, alternate procedures demonstrating an equivalent or greater level of safety may be considered on a case-by-case basis.

[Assessment Methodology For BVLOS Operations For RPAS](#) : the AC [NCAA-GAD-AC-06](#) provides an overview of the Authority's' assessment methodology for Beyond Visual Line of Sight (BVLOS) operations for Remotely Piloted Aircraft (RPA) in Nigeria. BVLOS operations may be approved as part of the grant of a Remotely Piloted Aircraft Operator Certificate (ROC).

More information :

- [NCAA](#), guidelines for the operations of RPAS/UAV in Nigeria
- Advisory Circular Nigerian Civil Aviation Authority – NCAA-GAD-AC-002 second edition (ncaa.gov.ng)
- Drone Laws in Nigeria, <https://drone-laws.com/>

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

4. Conclusions

a. Potential of specific markets

Although each market is different in size and maturity (both technological and regulatory), the information gathered during the respective fact finding missions allows us to draw the following matrix:

	Canada	Chile	Senegal	Nigeria
Long range Inspection (power- & pipe-lines)	x	x	x	x
Inspection of towers (telecom)	x			
Security (borders, infrastructures and agriculture)		x	x	x
Agriculture, vegetation monitoring	x	x	x	x
Environmental monitoring	x	x	x	
Mining	x	x		x
Arctic and cold weather operations	x			
Photogrammetry & mapping	x	x	x	
Training			x	x
Material (aircrafts, payloads)			x	x
Drone detection	x		x	
R&D (any topic)	x			

Long range inspection is a common need, with ponderation in the respective areas of development and interest. All markets eagerly wait for loosened regulations on BVLOS flights.

The security aspect was less covered in Canada, as it is already historically implemented in several aerial and defense related solutions, contributing to the demonstration of the maturity of the market.

Regarding the “Drone detection” category, it may be noted that need expressed in Senegal was about the straightforward counter-UAV solutions regarding invading drones, while Canada’s approach was expressed in the frame of R&D regarding integrated airspace management.

“Cold operations” need is obviously a “hot” topic in Canada. It may however be extended to Chile in the technological context of optimized and augmented power management, as some actors in Chile mentioned some interest in improved performance in windy conditions.

The lower maturity level of the drone markets in Senegal and Nigeria are more favorable to off-the-shelf solutions, although it is still recommended to find a local partner for business development and operations.

Global Fact Sheet on Fact-finding Missions

Deliverables 3.4

b. High-level recommendations

Our general high-level recommendations regarding a first approach on these specific markets :

- **Canada :**

- Seek R&D partners in any high-tech area
- BVLOS, U-Space and 'cold condition flight' development
- For existing solutions : use test ranges to benchmark EU vs existing local solutions (incl BVLOS)

- **Chile :**

- Favor operations outside of the populated areas, where regulation is less strict
- Agro-forestry monitoring (growth, counting and intrusion detection) is in demand
- The needs in the mining industry is wide : site monitoring (safety and production volume), equipment maintenance (fixed and moving), exploration for new resources.

- **Senegal and Nigeria :**

- As the markets and access to business and drone-operation authorizations are still sometimes unguaranteed, explore these markets if strong local contact exists and business case (including regulatory) is demonstrated.
- Economically robust EU organizations may find an opportunity to sow the seeds and help the local institutions define a favorable UAV roadmap. Advice and support from your country's/regions's local economic/business agency is highly recommended.

Partners

NAE



- Created in 1998 (more than 160 members)
- Network for air, space, defense and security businesses in Normandy
- Cover all aspects of the drone industry (training, R&D, drone fleets, Artificial Intelligence, test and pilot centers)

Contact : Samuel CUTULLIC – samuel.cutullic@nae.fr

Andalucia Aerospace



- Created in 2018 (60 members – 40 SMEs)
- Cover several sectors for the use of drones (indoor inspection, inspection of coastal areas, agriculture, safety, etc.)

Contact : Mélanie DURTH - mdurth@andaluciaaerospace.com

SKYWIN



- Created in 2007 (158 members – 111 SMEs)
- Focus on development of applications, sensors, control systems, ...

Contact : Anthony BIEVELEZ – Anthony.BIEVELEZ@skywin.be

FOLLOW US ON

