Migration Flows in the EU and Remote Sensing

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Abstract

Over the first two months of 2015, the number of refugees in Europe increased by approximately 43% with respect to the same period in 2014. This gives food for thought about migration flows in Europe, the potential threat posed by terrorist groups, and the measures that European countries can take to prevent and counteract such new foe without sacrificing the rights granted within the EU.

These new migration flows mainly consist of refugees or people in need of international protection: women, children, and men from war-torn countries, such as Syria, Iraq, Eritrea, Sub-Saharan Africa and Libya. They flee conflicts, persecution and – of course – extreme poverty, and must therefore be welcomed, under the Geneva Convention and the Dublin Regulation.

The Dublin III Regulation (No. 604/2013) is a European Union law that determines the EU Member State responsible for examining an application for asylum or refugee status under the Geneva Convention, which is usually the State through which the asylum seeker first entered the EU. Several EU countries are involved: first reception countries, such as Italy and Greece for what concerns Mediterranean migration, and other countries that grant asylum, such as Germany, followed by the UK, France, Italy and Spain.

Monitoring migration flows is the most pressing issue, especially in first reception countries. A possible solution could be remote sensing of borders in migrant countries of origin, carried out by companies from destination countries. An example is the Treaty signed between Libya and Italy in 2008. A costly mechanism that, however, does not involve the use of police forces. The cost will be split between the destination country and the EU, based on existing agreements.

Satellite monitoring could help save lives, enhance safety operations, counteract illegal migration, and prevent terrorists from entering the EU. All rescue and recovery operations now rely on satellite technology, and information on piracy and border control is provided in real time. Data is processed in Lisbon at the European Maritime Safety Agency, and all vessel traffic in European waters is traced by EMSA.

Since the phenomenon involves Europe as a whole, and considering existing EU-ESA joint space initiatives, it would be advisable to entrust the European Space Agency with the tasks of satellite monitoring and remote sensing. The Sentinel-3 satellite – carrying sophisticated radar and optical instruments and currently used for the Copernicus environmental and security monitoring program – could also be used to locate and identify migrant vessels.

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1. The Evolution of Migration to Europe

UNHCR figures show that the number of migrants crossing the Mediterranean into Europe in 2015 (from Eritrea, Somalia, Nigeria, Sub-Saharan Africa, Syria, Iraq, and recently also Libya) exceeded one million, while the death toll reached 3,700.

The ongoing "refugee crisis" – the worst since WWII – has displaced a record 60 million people from their homes. It is crucial to address the root causes of this phenomenon: instability, conflicts, terrorism and, specifically, the civil war in Syria.

The current scenario is characterized by a change in migration flows, now mainly consisting of refugees or people in need of international protection. This change in scenario results from two key factors, which are linked together: the ongoing financial crisis, which is drastically changing the composition of migration flows, and the war in the Middle East and North Africa region, that is forcing millions of people to flee their homes and seek refuge in neighboring countries.[1]

The European Commission has taken decisive action to develop a coordinated European response on the migration front and to strengthen Europe's asylum and migration policy: overall, more than €10 billion of the EU budget for the years 2015 and 2016 has been allocated to address the refugee crisis within the EU and help the most affected countries. The Commission also presented a number of measures to respond to the crisis: a new solidarity mechanism and an emergency relocation proposal for asylum seekers; a new coordination and cooperation framework for Western Balkan countries; a new partnership with Turkey; tripling the presence at sea, and an ambitious proposal for a new European Border and Coast Guard; lastly, implementing the priority actions set out in the declaration of intent.

Moreover, new rules have been issued to regulate specific aspects of immigration, such as family reunification, the status of third-country nationals who are long-term residents, and the conditions of entry and residence of third-country nationals for the purposes of highly qualified employment.[2]

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1 For an international bibliography, see: VINDITTO, CARUSO, Migration flows: immigration in Europe, Analysis of the legislation, Munich 2009; ROBERTI DI CESARE, Bibliography: the contribution of Italian studies. IRPPS working paper, no. 29, Roma Istituto di ricerche sulle popolazioni e le politiche sociali, 2010; VAN CRIEKINGE, European Migration Policy, last modified, 25 Oct. 2012.

2 Council Directive 2003/86/EC on the Right to Family Reunification; Council Directive 2003/109/EC of 25 November 2003 concerning the status of third-country nationals who are long-term residents; Council Directive 2004/114/EC of 13 December 2004 on the conditions of admission of third-country nationals for the purposes of studies; Council Directive 2005/71/EC of 12 October 2005 on a specific procedure for admitting third-country nationals for the purposes of scientific research; Directive 2008/115/EC on Common standards and procedures for returning

The European Commission also presented reports on the relocation scheme in Italy and Greece and on the measures taken to implement the commitments set out in the Statement agreed at the Western Balkans Route Leaders Meeting held in October 2015. It proposed the temporary suspension of the relocation of 30% of applicants allocated to Austria. Lastly, a number of recommendations based on the Schengen Borders Code have been discussed with respect to Greece.

The *relocation mechanism*, under the Dublin Regulation – that will be discussed later on – allows for a fairer distribution of asylum seekers across the EU, thereby helping to better manage the flows of migrants. However, the mechanism envisages a certain level of flexibility in cases where Member States are confronted with sharp shifts in migration flows and are overwhelmed by a sudden influx of third-country nationals. As regards Austria, for instance, the Commission proposed a one-year temporary suspension of the relocation of 30% of asylum seekers allocated to this country. The current situation in Austria is characterized by a sudden inflow of third-country nationals resulting from secondary movements across Europe and leading to a sharp increase in the number of applicants for international protection. In December, the Commission had already proposed that the obligations of Sweden concerning relocation should be temporarily suspended for one year.

The *Stockholm Program*, adopted by EU leaders in December 2009, provides a framework for EU action on the issues of justice and home affairs for the years 2010-2014, also focusing on migration-related topics. In 2010 the European Commission adopted the Action Plan Implementing the Stockholm Program, aimed at delivering an area of freedom, security and justice for Europe's citizens.[3]

On May 13, 2015, the European Commission presented a European Agenda on Migration outlining the immediate measures that will be taken in order to respond to the crisis situation in the Mediterranean, as well as the steps to be taken in the coming years to better manage migration in all its aspects.

The European Migration Network's Annual Report on Immigration and Asylum 2014,[4] which was published in June 2015, provides an overview of the main political and legal developments in the area of migration and asylum taking place at the EU level and within participating countries. It is a comprehensive document that covers all aspects of the migration and asylum policy.[5]

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illegal immigrants; Council Directive 2009/50/EC of 25 May 2009 on the conditions of entry and residence of third-country nationals for the purposes of highly qualified employment.

3 See COM(2010) 171 final.

4 See http://eur-lex.europa.eu/legal-content/IT/ALL/?uri=CELEX:52010DC017.

5 See Council Regulation (EC) No. 343/2003 of 18 February 2003 establishing the criteria and mechanisms for determining the Member State responsible for examining

2. Dublin Regulation

Council Regulation (EC) No. 343/2003 of 18 February 2003 – the so-called Dublin II Regulation – establishes the criteria and mechanisms for determining the Member State responsible for examining an asylum application lodged in one of the Member States by a third-country national.[6]
It is based on the principle that only one Member State shall be responsible for examining an application. The objective is to avoid asylum seekers from being sent from one country to another, as well as to prevent abuse of the system through the submission of multiple applications by a single individual.
The criteria for determining the Member State responsible for examining each asylum application are set out in hierarchical order.
The Member State responsible in accordance with the criteria shall be determined on the basis of the existing situation when the asylum seeker first lodged his application with a Member State, based on the following principles:

- *Principle of family unity*. Where the asylum seeker has a family member residing as a refugee in a Member State, that Member State shall be responsible for examining the application for asylum.
- *Illegal entry or presence in a Member State*. Where an asylum seeker has irregularly crossed the border into a Member State, the Member State thus entered shall be responsible for examining the application for asylum.
- *Application made in an international transit area of an airport*. Where the application for asylum is made in an international transit area of an airport of a Member State by a third-country national, that Member State shall be responsible for examining the application.
  Where no Member State responsible for examining the application for asylum can be designated on the basis of the abovementioned criteria, the first Member State with which the application for asylum was lodged shall be responsible for examining it.
  Any Member State, even where it is not responsible but at the request of another Member State, may examine an application for asylum on humanitarian grounds based in particular on family or cultural considerations (provided that the persons concerned consent).
- *Obligation to take charge of an asylum seeker*. The Member State responsible for examining an application for asylum is obliged to take charge of the asylum seeker and complete the examination of the application.

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an asylum application lodged in one of the Member States by a third-country national, OJ L50of 25.2.2003.

6 See http://ec.europa.eu/dgs/home-affairs/what-we-do/networks/european_migration_network/index_en.htm.

The Dublin III Regulation was adopted in 2013[7]. Article 13 sets out the key principle of the Regulation: "Where it is established (...) that an applicant has irregularly crossed the border into a Member State by land, sea or air having come from a third country, the Member State thus entered shall be responsible for examining the application for international protection". The State responsible for examining the application of asylum and for granting refugee status under the Geneva Convention is the country where the refugee first landed.[8]

Currently, refugees may not file an asylum application in their country of origin or in a country of transit, so they are forced to put their lives in the hands of smugglers, pay huge smuggling fees and face life-threatening journeys to cross the Mediterranean and reach Europe, where they can finally appeal to a fundamental human right.

The countries that serve as the main gateway into Europe for migrants from Africa, but also from the Middle East, are Greece and Italy (while Spain controls the enclaves of Ceuta and Melilla in Morocco).

The Dublin Regulation should be amended and refugees should be allowed to file an application in a transit country, seeking asylum in any country of their choice. Although it is unfeasible to apply this principle in Libya today, it could be made possible in Algeria, Tunisia and Morocco with the cooperation of the respective governments, perhaps by setting up UNHCR-run reception facilities.[9]

Irregular migration undoubtedly remains the most pressing issue, as it is linked to criminal phenomena like human smuggling and trafficking. The humanitarian, social and public order-related challenges posed by this issue call for the adoption of a common policy at the national, European and international level to prevent and combat human trafficking and smuggling of migrants who, especially those in an irregular situation, are amongst the most vulnerable groups.[10]

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7 See http://www.meltingpot.org/Asilo-Ecco-il-nuovo-Regolamento-Dublino-III.html#.V21YslSLS01.

8 The Dublin III Regulation introduced a number of key innovations, by:
- Changing the definition of family members;
- Introducing the automatic suspension effect for appeals against a decision to transfer the applicant to another Member State;
- Setting the procedures for take back requests;
- Establishing that detention is only permissible if the person poses a significant risk of absconding;
- Introducing the principle of exchange of information and health data before a transfer.

9 See http://www.stranieriinitalia.it/content/lintervento/lintervento/rifugiati-il-nuovo-volto-dei-flussi-migratori-in-italia-ed-europa.html.

10 BENVENUTI, Flussi migratori e fruizione di diritti fondamentali, 2008; the author delves into three topics: managing economic immigration; combating associated

Monitoring, through all possible means, migration flows to Europe is key to tackling the problem.

3. Remote Sensing as a Means of Monitoring Migration in Europe

As the refugee crisis worsens, it becomes crucial to assess all the earth observation systems available, both at the EU level, for a comprehensive overview of the problem, and at the national level, especially in frontline countries – e.g. Greece, Italy and Spain – where measures must be taken to protect the coastline and borders, provide first reception to migrants and relocate them to other countries.

Currently, Europe's Earth Observation System focuses on ESA's Sentinel fleet of satellites, designed to deliver remote sensing data. The first Sentinel-1A radar satellite was successfully launched on 3 April 2014 by an Arianespace Soyuz from the Guyana Space Center.[11] Thanks to frequent observations from Sentinel-1A and to the use of the Interferometric Synthetic Aperture Radar, or InSAR, technique, scientists are improving the remote sensing technique to map ground deformation, opening new doors for earthquake and volcano monitoring.

Sentinel-1A data is currently employed to monitor land deformation around Italy's Bay of Naples, where three main volcanic complexes – Mount Vesuvius, the Phlegraean Fields and Ischia island – are located.

With the launch of Sentinel-1A's sister satellite – Sentinel-1B – surface deformation mapping has been further improved. The two-satellite system shortened the revisit time to six days, enhancing the quality of the interferometric products.

The objective of Sentinel-2 is land monitoring, and the mission is composed of two polar-orbiting satellites providing high-resolution optical imagery. Vegetation, soil and coastal areas are among the monitoring objectives. Sentinel-2 also supports emergency management services in relation to different types of disasters. The first Sentinel-2 satellite was launched on June 23, 2015.

The third ESA-developed satellite carrying four Earth-observing instruments was launched on February 16, 2016, ready to provide a 'bigger picture' for Europe's Copernicus environment program.[12] Copernicus relies on Sentinel

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criminal phenomena, and safeguarding fundamental rights of regular or irregular migrants (Palermo Convention against Transnational Organized Crime, 2000).

11 The previous European satellite Envisat carried an ambitious and innovative payload that ensured the continuity of the data measurements from the ERS satellites. The archive of data received from the satellite supported Earth science research and aided in the long-term monitoring of environmental and climactic changes. Contact with Envisat was lost on 08 April 2012, and the mission was officially ended on 09 May 2012.

12 The 1150 kg Sentinel-3A satellite was carried into orbit on a Rockot launcher from Plesetsk, Russia, at 17:57 GMT (18:57 CET; 20:57 local time) on 16 February. See:

satellite and Contributing Missions to collect data for environmental and security monitoring purposes. Sentinel data is made available to users worldwide for free.
Satellite data has recently been used for *emergency response* purposes. Over the past few years, search and rescue teams have been under growing pressure due to the ever-increasing number of migrants making the perilous journey across the Mediterranean on overloaded boats. Whenever a "mayday" call is received, time is of the essence. Moreover, the Coast Guard needs timely and accurate information to promptly locate persons and vessels in distress and save lives at sea. All rescue and recovery operations rely on satellite technology. Distress calls are usually made via satellite phones by the migrants themselves when their vessel is approximately 10, 20 or 30 miles off the Libyan coastline. Thanks to the use of satellite technology, ships and fishing boats in the area are detected and the closest ones to the distress call may be called upon. All types of satellites are involved in maritime security operations. Some of them, such as Europe's Sentinel satellites, carry radars and optical instruments, while other, such as Canada's exactEarth constellation, receive AIS (automatic identification system) messages.

4. European External Border and Maritime Management Agencies

a. FRONTEX

An area in which internal border checks have largely been abolished – the Schengen Area – requires a common policy on external border management. The Union therefore set out to establish common standards with regard to controls at its external borders and to gradually put in place an integrated system for the management of those borders.
The first step towards a common external border management policy was taken on June 14, 1985 when five of the then ten Member States of the European Economic Community signed the Schengen Agreement. The Schengen Area, the borderless zone created by the Schengen acquis (as the agreements and rules are collectively known), currently comprises 26 European countries.
The central pillar of external border management is the Schengen Borders Code, which lays down rules on external border crossings and conditions governing the temporary reintroduction of internal border checks. As not all Member States have external borders to control and not all are equally affected by border traffic flows, the EU uses its funds to attempt to offset some of the costs for Member States at the external borders. For the 2007-2013 period, this financial burden-sharing mechanism came in the form of

http://www.esa.int/ita/esa_in_your_country/italy/lanciato_il_terzo_satellite_sentinel_per_il_programma_europeo_copernicus/.

the External Borders Fund. For the 2014-2020 period this has been replaced by the Internal Security Fund – Borders and Visa.
Border security has also evolved progressively, from nationally focused systems to greater EU operational cooperation at the external borders. One of the key milestones in this process was the creation of Frontex, the European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union.
Although day-to-day responsibility for external border control and surveillance continues to lie largely with the Member States, national border security systems are being increasingly complemented by a set of Europe-wide tools to manage potential risks at the external borders.
Frontex became operational on October 3, 2005 on the basis of Council Regulation (EC) No. 2007/2004. After successive resource increases, it is currently staffed by just over 300 officials and around 80 seconded national experts. It is headquartered in Warsaw.[13]
Frontex promotes an integrated approach to border management. It conducts risk analysis, draws up training curricula for border guards, and carries out research. It also plays a more active role in operational cooperation by coordinating joint border management operations and organizing return operations. Under its revamped mandate, laid down in Regulation No. 1168/2011 of the European Parliament and of the Council of 25 October 2011, Frontex has seen its operational capabilities reinforced. It has also scaled up its surveillance capabilities, through the use of EUROSUR, an information exchange system designed to enable near real-time sharing of border data between Frontex and Schengen Member States.[14] EUROSUR is a multi-purpose system to prevent illegal immigration and cross-border crime at the external borders. It provides a mechanism allowing border surveillance agencies to rapidly exchange information and work together, enabling national and EU agencies to better understand what is happening at external borders and to respond faster to new routes and methods used by criminal networks.
Since the creation of Frontex, several practical steps have been taken towards a more integrated external border management, including the deployment of specific teams for joint operations and rapid border interventions.
These teams bring together the European Asylum Support Office, Europol and Frontex – in partnership with national authorities and other agencies – to identify, screen and register migrants on entry into the EU, and to organize return operations for those who have no right to stay.
In December 2015, the Commission came forward with proposals to strengthen Frontex's mandate, in particular by enabling the agency to purchase equipment directly, by significantly increasing its human and

13 See http://www.europarl.europa.eu/portal/it.
14 See Regulation (EU) No. 1052/2013 of 22 October 2014 establishing the European Border Surveillance System (EUROSUR).

financial resources, and by strengthening its role in return operations. Perhaps the most eye-catching aspect of the Commission's proposals was the creation of a European Border and Coast Guard with the proposed "right to intervene» where a Member State is unable to cope with migratory pressure and is thus jeopardizing the Schengen Area.

b. EMSA

EMSA, the European Maritime Safety Agency, is charged with reducing the risk of maritime accidents, marine pollution from ships and the loss of human lives at sea by helping to enforce the relevant EU legislation. It is headquartered in Lisbon.[15] EMSA was founded in 2002, after the EU adopted substantial packages of legislation relating to maritime security in the wake of major shipping disasters in European waters, such as those involving the ferry Estonia and the oil tankers Erika and Prestige. It was felt that a specialized technical agency was necessary to overview the enforcement of this legislation, using all possible means, including Earth observation satellites.

5. Cooperation: A Win-Win Policy

When the EU realized that it was not productive for single Member States to individually tackle large-scale phenomena, such as mass migration, which is often illegal and associated with criminal activities that pose serious threats to public order and security – e.g. terrorism, smuggling and human trafficking – it decided to veer toward cooperation. Cooperation brings better results, thanks to the use of common tools, data sharing, synergy between law enforcement agencies, and the creation of international entities (e.g. the International Coast Guard).

Two examples of cooperation are provided below: an international one and another related to three countries limiting the EU's external borders.

a. EUCISE2020 European Program

The Commission's initiative to integrate maritime surveillance brings together relevant Member States' authorities across all maritime sectors to allow for the exchange of maritime surveillance data.

Integrated Maritime Surveillance is about providing *authorities interested or active in maritime surveillance with ways to exchange information and data*. Sharing data, through the use of modern technologies, will make surveillance cheaper and more effective.

The Common Information Sharing Environment (CISE) aims to integrate existing surveillance systems and networks and give all concerned authorities

15 See http://eur-lex.europa.eu/legal-content/IT/TXT/HTML/?uri=URISERV:l24245&from=IT.

access to the information they need for their missions at sea.[16] In 2013, the Commission assessed the financial resources needed for the implementation of CISE.

The Program focuses on the following relevant sectors:

1) Maritime Security (including search and rescue and prevention of pollution caused by ships);
2) Defense (exercising national sovereignty at sea; combating terrorism and other hostile activities outside the EU; other common security and defense policy tasks, as defined in articles 42 and 43 TEU);
3) Marine pollution preparedness and response (marine environment);
4) Customs;
5) Border Control;
6) Fisheries Control;
7) Monitoring of illegal migration.

The program also envisages the exchange of information via EUROPOL and EUROSUR.

Providing access to data to all user communities should be among the program's main objectives. EUCISE2020 comprises partners from 15 different European countries.[17] The project coordinator is the Italian Space Agency (ASI).

Italy participates in the program through the following agencies: Ministry of Defense, Ministry of Economy and Finance, Ministry of Infrastructure and Transport, Ministry of Economic Development, ASI, the National Institute of Geophysics and Volcanology, the Euro-Mediterranean Center on Climate Change (CMCC), and Link Campus University.

b. CLOSEYE Project

Article 67(3) of the Treaty on the Functioning of the European Union (TFEU) sets out that the Union shall endeavor to ensure a high level of security within an area of freedom, security and justice.

16 See EUCISE 2020 Integrating Maritime Surveillance Communication from the Commission to the Council and the European Parliament on a Draft Roadmap towards establishing the Common Information Sharing Environment for the surveillance of the EU maritime domain, COM(2010) 584 final.
European Commission, Integrating Maritime Surveillance – Common Information Sharing Environment (CISE) Luxembourg: Publications Office of the European Union 2010 – 24 pp. – 21 × 29.7 cm, ISBN 978-92-79-17050-8.

17 Belgium, Bulgaria, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Norway, United Kingdom, Romania, Spain, Sweden. Italy participates in the program through the following agencies: Ministry of Defense, Ministry of Economy and Finance, Ministry of Infrastructure and Transport, Ministry of Economic Development, the National Institute of Geophysics and Volcanology, the Euro-Mediterranean Center on Climate Change (CMCC), and Link Campus University.

To achieve this objective, the Union needs to adopt a more coherent approach to the internal and external aspects of migration, and to establish a correlation between the fight against illegal immigration and the improvement of EU external border security. It also needs to strengthen cooperation and dialogue with third countries for the purposes of dealing with illegal immigration and promoting legal migration.
The Internal Security Strategy constitutes a shared agenda for tackling these common security challenges. To promote its implementation and to ensure that it becomes an operational reality, an Internal Security Fund was set up (ISF Borders and Visa).
In May 2015, the European Commission adopted the European Agenda on Migration (EAM), which includes a series of measures for the short and medium term to respond to current challenges in the area of migration and crises at the EU external borders.[18]
The following regulations constitute the legal basis of the program:

– Regulation (EU) No. 515/2014 of the European Parliament and of the Council of 16 April 2014 establishing, as part of the Internal Security Fund, the instrument for financial support for external borders and visa (OJ L 150 of 20 May 2014);
– Regulation (EU) No. 514/2014 of the European Parliament and of the Council of 16 April 2014 laying down general provisions on Asylum, Migration and Integration.

On December 15, 2015, the European Commission adopted an important set of measures to manage the EU's external borders and protect the border-free Schengen area, still safeguarding the principle of free movement of persons. The Commission proposed to amend the Schengen Border Code in order to set up a European Border and Coast Guard and introduce, at the external borders of the EU, systematic checks against relevant databases for all people entering or exiting the Schengen area.
To achieve these objectives and ensure the participation of Member States, especially those limiting the EU's external maritime borders, the Commission issued a work program.[19] Topic SEC-2012.3.1-2 of the program invites at least three independent public authorities in charge of border surveillance, each established in a different Member State, to respond to the call for proposals by submitting projects.
Projects will be funded under the Seventh Framework Programme for Research and Technical Development.[20]

18 See: http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/securing-eu-borders/index_en.htm.
19 See work program: http://ec.europa.eu/research/participants/data/ref/fp7/89497/k-wp-201201_en.pdf.
20 See http://ec.europa.eu/research/participants/data/ref/fp7/0448/fp7ec_en.pdf.

The CLOSEYE project (Collaborative evaLuation Of border Surveillance technologies) was presented by public agencies from three different Member States – Italy, Spain and Portugal – with the aim of improving the reaction capability of authorities surveying the external borders of the EU. The initiative also comes in response to the urgent challenge of managing the migratory pressure from the North African coast. CLOSEYE is a program integrating surveillance systems to address complex security missions, focusing on criminal activities and irregular trafficking. The program focuses on two scenarios of interest: the Alboran Sea and the Central Mediterranean Area.

CLOSEYE is the only project that was presented in response to the Topic of the Security Research Call 5 (FP7-SEC-2012-1). CLOSEYE was deemed worthy of co-funding based on the assessment procedures of the 7th Framework Program. Funds shall go directly to the agencies submitting the proposal (beneficiaries) and not to States. The maximum budget available is 4,533,656€.[21]

CLOSEYE received funding under grant agreement No. 313184.[22]

The Consortium comprises:

– *Public authorities responsible for maritime surveillance:*
  Guardia Civil, Guardia Nacional Republicana, Marina Militare Italiana (Italian Navy)
– *Research Agencies:*
  Italian Space Agency (ASI)
  Italian Aerospace Research Centre (CIRA)
– *Technical Support and Common Validation Entities:*
  Isdefe (Ingenieria de Sistemas para la Defensa de España) is a state-owned consulting and engineering company, in-house technical services provider of the Spanish General Administration serving domestic and international public organizations. With its team of over 1500 committed professionals, it has proven to be the perfect ally for the Spanish public organizations and entities and for civil and military agencies.
– European Institutions:
  European Union Satellite Centre (EUSC)
  FRONTEX (the EU Border Agency) as an *External Entity*.

Other stakeholders may participate in the project, if their participation is well justified and adds value to the action (especially if they represent an authority

21 See http://ec.europa.eu/dgs/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-borders/calls/2016/esur/docs/call_for_proposals_2015_isfb_esur_en.doc.pdf.

22 Grant agreement No. 313184. See http://cordis.europa.eu/project/rcn/108227_it.html.

or a regulatory body with responsibility in certain areas affected by the use of particular technology, such as space technology).[23]

6. Italian Partners of the CLOSEYE Project

Participating in the CLOSEYE project is key to Italian agencies in charge of maritime border surveillance (e.g. ASI, Italian Navy, Ministry of Internal Affairs, State Police, Directorate General of Immigration, and Guardia di Finanza), but also to domestic companies, which can participate as partners or observers. Frontex, the European Agency for the Management of External Borders, which funds national maritime surveillance operations and infrastructure, is involved in the project as an external entity.[24]

CLOSEYE aims to identify and experiment innovative solutions, to enhance national competencies and skills regarding maritime surveillance – e.g. with the use of unmanned vehicles – and encourage national space and aviation companies to take part in the project.

Coastal surveillance also relies on the use of satellite technology, such as the COSMO-SkyMed constellation of satellites (currently comprising four). The latter is part of a joint French-Italian project aimed at developing an Earth observation capability using optical and radar sensors to develop a dual-use system.[25]

Satellites – e.g. Athena Fidus[26] – also play an important role in monitoring North African ports and beaches identified as departure points for migrants. Thanks to its broadband connection, the French-Italian dual-use telecom satellite Athena Fidus allows for constant communication, sending optical images, radar scans and other information. All data – radar scans, optical imagery and SAR (Search and Rescue) from airplanes – is sent directly to the Operations Center of the Italian Navy. Sharing of strategic data with the authorities in charge of coastal surveillance is one of the satellite's key functions.[27]

As part of CLOSEYE, testing is currently underway in Italy between the Pantelleria Island and the Operations Center of the Italian Navy (Cincnav).

However, as the high-resolution images provided by satellites are often considered too intrusive, *drones* have increasingly been used for Earth

23 For a comprehensive overview of the Closeye project, see: SALIERI (European Commission), CLOSEYE an (innovative) EU cooperative R&D project related to (Maritime) Border Security, presented at the "CLOSEYE VIP DAY" Conference organized by ASI in Rome on 28/06/2016.

24 See: http://www.asi.it/it/eventi/workshop/meeting-progetto-closeye.

25 For further information on COSMO-SkyMed, see CATALANO SGROSSO, Inter national Space Law, 2011, LoGisma ed., ISBN 978-88-97530-08-4, p. 80 ff.

26 Athena-Fidus is a broadband telecommunications dual-use satellite developed by ASI and CNES (used for civil and military purposes). See www.asi.it > News > Home.

27 See MANNONI, Centauro Europa, l'Unione Europea tra mercato e civitas, 2016.

observation purposes, especially when monitoring parts of a territory under the jurisdiction of a State.

A drone, also known as an unmanned aerial vehicle (UAV) or an unmanned aircraft system (UAS), is an aircraft without a human pilot aboard. Its flight is operated either by onboard computers or under remote control by a human operator or pilot on the ground or aboard another aircraft. Drones originated mostly in military applications, although their use is now expanding in civil applications.[28] In 2004, the Italian Army bought the system FQM 151 A Pointer (Small class) and then moved on to the Raven RQ models 1A and 1B, while the Italian Air Force opted for RQ – 1 Predator, built by General Atomics. Subsequently, the Army purchased the system Shadow 200 from the company AAI Corp. of Hunt Valley, Maryland. This system has totaled more than 500,000 flying hours over Iraqi skies with the U.S. Armed Forces and is one of the most experienced in the world.

In February 2015, the International Civil Aviation Organization (ICAO) released the first edition of the "Manual on Remotely Piloted Aircraft Systems" regarding the international use of drones for civil applications.[29] The basic idea is that the drone has the status of "aircraft". As such, UAVs must comply with the aviation rules imposed for aircraft, pilots and operators, thereby meeting the relevant requirements in terms of responsibility and certifications (e.g. registration and airworthiness certificates, pilot and operator licenses). The ICAO Manual focuses on the role of the "pilot", stating that a person flying a drone from the ground is a "remote" pilot, but still executing the tasks and being accountable as a pilot. The Manual also draws attention to the central role of the "operator", i.e. the entity taking responsibility for the entire cycle of operations: maintenance, qualification of the remote pilot, procedures, authorizations, insurance, privacy and data protection, etc. The operator has to apply to the civil aviation authority to obtain permits to fly, even for commercial purposes.

On July 17, 2015, ENAC, the Italian Civil Aviation Authority, issued new Rules on Remotely Piloted Arial Vehicles, introducing several innovations with respect to the previous regulations.[30]

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28 See BRIAN FUNG, Why drone makers have declared war on the word 'drone', in The Washington Post, 16 August 2013.

29 ICAO Manual on Remotely Piloted Aircraft Systems (RPAS), ed. by the International Civil Aviation Organisation first ed. 2015. See http://www4.icao.int/demo/pdf/rpas/10019_cons_en%20-%20Secured.pdf.

30 ENAC issued the second edition of the regulation on drones. See: recensionidroni.com. (URL consulted 17 July, 2015); https://www.enac.gov.it/repository/ContentManagement/information/N122671512/Reg_APR_Ed2_Em1.pdf
For a comprehensive overview of all ENAC regulations on drones, see:
- Circolare LIC-15 del 9 giugno 2016 – Mezzi Aerei a Pilotaggio Remoto – Centri di Addestramento e Attestati Pilota

Originally designed for military purposes, UAVs come in many different types and sizes, ranging from larger models to small next-generation vehicles equipped with advanced technologies and miniature sensors. They are piloted by extremely skilled aviators who no longer need to be physically sitting in the airplane, allowing for the mission to be operated under remote control rather than risking human lives in dangerous areas.

The potential of UAVs for civil use has long been evident and is now beginning to be realized. Thanks to their versatility, UAVs are now deployed in the aerial surveillance of crops, aerial photogrammetry, aerial filming and photography, search and rescue operations, power and pipeline inspection, as well as wildlife monitoring. They have also increasingly been used to monitor drug trafficking and find smuggling routes: all the information gathered is promptly forwarded to the relevant authorities.[31]

Tech giants Google and Facebook are planning to use drones to bridge the digital divide, and deliver internet to the world. Over the next few years, solar-powered UAVs – which can basically fly indefinitely – will deliver web access to underdeveloped countries, reaching almost 3 billion people.

UAVs are especially useful in dangerous situations that entail hazard for the pilot of a manned aircraft, or in missions in inaccessible or remote regions. Typical monitoring and surveillance tasks include natural disaster monitoring (e.g. earthquakes, flooding, but also car accidents etc.)[32] as well as monitoring of life-threatening situations, such as the search and rescue operations to save migrants trying to cross the Mediterranean into Europe.

Like any other activity that falls within the scope of general aviation, monitoring activities carried out with drones require the necessary authorizations, such as permits to fly, which in Italy are issued by ENAC.

- LG 2016/003-NAV – Ed. n. 1 del 1° giugno 2016 – Aeromobili a pilotaggio remoto con caratteristiche di inoffensività
- Disposizione 32/DG del 31 maggio 2016 – Regolamento "Mezzi aerei a pilotaggio remoto" – Dilazione termini di applicazione delle norme transitorie
- Regolamento "Mezzi Aerei a Pilotaggio Remoto", Edizione 2, Emendamento 1 del 21 dicembre 2015
- Disposizione 29/DG del 1° aprile 2016 – Regolamento "Mezzi aerei a pilotaggio remoto" – Dilazione termini di applicazione delle norme transitorie – Courtesy translation – Remotely Piloted Aerial Vehicles Regulation – Issue No. 2 dated 16 July 2015, Revision 1 dated 21 December 2015
- Lettera 136156/CRT del 29 dicembre 2015 – Regolamento "Mezzi aerei a pilotaggio remoto" – Chiarimenti.

31 UAVs fly at an altitude of around 18,000 meters, so they are practically invisible from the ground, and can survey up to 100,000 square kilometers of terrain in a single day.

32 An example of the use of drones for natural disaster monitoring is the recent Tōhoku earthquake and tsunami that struck Japan in March 2011, causing the Fukushima Dai-ichi nuclear power plant catastrophe; after the explosions, Global Hawk drones flew over the damaged reactors to monitor radiation and collect data and imagery.

Failure to comply with such requirements renders any activity illegal and a potential threat to public security.

7. Conclusions

This paper aims to show how important it is for Europe to adopt a global approach to migration, by strengthening cooperation, coherence and synergies, in compliance with the EU development policy and other external policies.

The European Commission realized that immediate measures had to be taken in order to respond to the crisis situation in the Mediterranean, and that further steps will be needed in the coming years to better manage migration in all its aspects.

In response to the migrant crisis, several entities and systems have been established, serving as a reference point for implementing the relevant EU policy as well as for data collection and dissemination practices, such as: Frontex, the European Border Agency; EUROSUR, The European Border Surveillance System; and EMSA, the European Maritime Safety Agency.

Currently, EU and national authorities responsible for different aspects of surveillance (e.g. border control, safety and security, fisheries control, customs, environment, defense, etc.) collect data separately and often do not share them. As a result, the same data may be collected more than once, which entails a waste of time and money. To resolve the problem, a number of European programs and initiatives have been implemented with the participation of many EU countries, such as CISE, the Common Information Sharing Environment. Moreover, the EU has funded projects presented by only a few first reception countries, such as CLOSEYE, a program integrating surveillance systems to address complex security missions, focusing on criminal activities and irregular trafficking.

The Earth observation instruments used for migration management and maritime surveillance purposes vary based on the target of interest and the width of the area covered, ranging from drones to aerial photography aircraft to remote sensing satellites.

In conclusion, this paper aims to point out that frontline Member States cannot be left alone to cope with the challenges posed by large-scale phenomena – such as mass migration, which is often associated with criminal activities – but it is necessary to embrace cooperation, exploit synergies and make joint efforts.