**ANNEX**

of the Commission Implementing Decision on the ENI East Regional Action Programme 2020 Part 1, to be financed from the general budget of the European Union

# Action Document for the Extension of EGNOS (the European Geostationary Navigation Overlay Service) to the Eastern European Neighbourhood

**ANNUAL PROGRAMME**

This document constitutes the annual work programme in the sense of Article 110(2) of the Financial Regulation and action programme/measure in the sense of Articles 2 and 3 of Regulation N° 236/2014.

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|---|---|
| **1. Title/basic act/ CRIS number** | The extension of EGNOS (the European Geostationary Navigation Overlay Service) to the Eastern European Neighbourhood.<br>CRIS number: Not applicable (co-delegation to DG DEFIS)<br>financed under the European Neighbourhood Instrument |
| **2. Zone benefiting from the action/location** | Eastern Partnership countries: Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine<br>The action shall be carried out in the six ENP East countries. |
| **3. Programming document** | European Neighbourhood Instrument (ENI) Multiannual Indicative Programme 2017-2020 (MIP)[1] |
| **4. SDGs** | SDG 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation<br>SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable<br>SDG 13: Take urgent action to combat climate change and its impacts<br>SDG 2: Zero Hunger<br>SDG 12: Responsible consumption and production |

[1] Decision C(2017)5408 of 4.8.2017

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|---|---|---|
| **5. Sector of intervention/ thematic area** | Improve the investment and business cycle<br>Extend the transport networks | DEV. Assistance: NO |
| **6. Amounts concerned** | Total estimated cost: EUR 7 950 000<br>Total amount of EU contribution EUR 7 950 000 | |
| **7. Aid modality(ies) and implementation modality(ies)** | Project Modality:<br>**Indirect management with an entrusted entity,** i.e. the GSA (the European Global Navigation Satellite Systems Agency). | |
| **8 a) DAC code(s)** | DAC Code 210: Transport (Air, Road, Rail, Water, Maritime)<br>DAC Code 310: Agriculture, Forestry, Fisheries<br>DAC Code 320: Industry Mining, Construction | |
| **b) Main Delivery Channel** | NA | |

**9. Markers (from CRIS DAC form)**

| **General policy objective** | **Not targeted** | **Significant objective** | **Principal objective** |
|---|---|---|---|
| Participation development/good governance | ☐ | | X |
| Aid to environment | ☐ | X | ☐ |
| Gender equality and Women's and Girl's Empowerment | ☐ | X | ☐ |
| Trade Development | ☐ | X | ☐ |
| Reproductive, Maternal, New born and child health | X | ☐ | ☐ |
| **RIO Convention markers** | **Not targeted** | **Significant objective** | **Principal objective** |
| Biological diversity | X | ☐ | ☐ |
| Combat desertification | X | ☐ | ☐ |
| Climate change mitigation | ☐ | X | ☐ |
| Climate change adaptation | X | ☐ | ☐ |

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|---|---|
| **10. Global Public Goods and Challenges (GPGC) thematic flagships** | N/A |

**SUMMARY:**

The European Geostationary Navigation Overlay Service ("EGNOS") is Europe's regional satellite-based augmentation system ("SBAS") that is used to improve the performance of global navigation satellite systems ("GNSSs"), such as GPS and Galileo. EGNOS provides safety of life navigation services for aviation and soon for maritime, as well as an open service for land-based users covering the majority of Europe.

EGNOS is essential for applications where accuracy and integrity are critical. For example, in the aviation sector GNSS alone does not satisfy the strict operational requirements set by the International Civil Aviation Organisation (ICAO) for use in critical flight stages as final approaches to airports. However, with the addition of EGNOS, which has been certified for civil aviation since 2011, systems such as GPS – and in the future Galileo -can satisfy ICAO standards.

As an example, with an EGNOS receiver on board an aircraft and an airport certified to use EGNOS, you can safely land and take off without the airport having to invest in and maintain expensive ILS (Instrument Landing Systems) on each runway end.

Beyond the aviation sector, EGNOS improves and extends the scope of GNSS applications to precision farming, on-road vehicle management and navigating ships through narrow channels – to name a few.

The goal of this measure is to enable the extension of the EGNOS coverage to the six ENP East countries by deploying two EGNOS ground stations (called RIMS, Ranging and Integrity Monitoring Stations) in Ukraine and Azerbaijan, in addition to a RIMS in Kyiv that is procured separately.

The deployment of the stations will start in 2020 and EGNOS is planned to be fully operational in ENP East in 2025.

In Ukraine, the State Space Agency of Ukraine will be the primary contact for the EGNOS extension.

The space agency Azercosmos will be in the lead for the RIMS in Azerbaijan.

Since EGNOS will be used for aviation in Ukraine, which requires a safety of life service, a number of aspects (such as liability) must be laid down in an international cooperation agreement between the EU and Ukraine. Both sides have obtained negotiation directives and negotiations started on 12 March 2020.

# 1 CONTEXT ANALYSIS

## 1.1 Context Description

EGNOS, in particular its safety of life service, is an important enabler for the modernisation of Air Traffic Management (ATM) in Europe and the implementation of the Single European Sky. The EGNOS coverage of ENP East will contribute to the defragmentation of aviation navigation services across the continent and to the creation of a Single European Transport Area covering 1 billion people in the EU and its neighbouring countries.

As members of EUROCONTROL Ukraine, Georgia, Armenia and Moldova are participating in the evolution of the ATM infrastructure and services. In addition, Ukraine is in the process of adopting the Single European Sky legislation on ATM. To

finalise the process it must sign and conclude a "Common Aviation Area" Agreement with the EU. Such agreement has already been signed with Armenia, Georgia and Moldova and is being negotiated with Azerbaijan.

EGNOS can be used for applications in many other sectors such as precision agriculture, road, rail, inland waterways and maritime transport, forestry, mapping, mining, etc. This is relevant within the regional policy framework of the EU including the Eastern Partnership and the Black Sea Synergy.

## 1.2 Policy Framework (EU, Regional, Global).

Article 2 of **Regulation (EU) 1285/2013 on the implementation and exploitation of European satellite navigation** systems provides in Article 2 that *'the geographical coverage of the EGNOS system may be extended to other regions of the world, in particular to the territories of candidate countries, of third countries associated with the Single European Sky and of **countries in the European Neighbourhood Policy**, subject to technical feasibility and on the basis of international agreements.'*

Overall, the **Association Agreements/Deep and Comprehensive Free Trade Agreements**, concluded in 2014, have deepened the relations between the EU and Georgia, Moldova and Ukraine. The Association Agreements address the cooperation in the use of space systems like EGNOS in dedicated articles (Article 371 in the Agreement with Ukraine, Article 81 with Moldova, Article 293 with Georgia). At the 2018 meeting between the Government of Georgia and the College of Commissioners, cooperation in GNSS was identified as one of the areas of mutual interest. In addition, Armenia has signed a comprehensive and enhanced partnership agreement (CEPA) with the EU in 2017, with article 73 calling for a similar cooperation in the use of space systems.

The **Satellite Navigation Cooperation Agreement** of 2013 between the EU and Ukraine stipulates in Article 11: *'As a precursor, the Parties envisage **the extension of EGNOS** in Ukraine region **through a ground infrastructure** involving Ukrainian Ranging and Integrity Monitoring Stations.'*

Moreover, the European Commission has received an expression of interest from Azerbaijan to host a RIMS in Baku and to use EGNOS in the future.

In 2014, DG DEVCO already signed a **Financing Agreement** entitled 'Framework Programme in Support of EU-Ukraine Agreements' with the Ukrainian Minister for Economic Development and Trade, for the amount of EUR 21 million from the European Neighbourhood and Partnership Instrument (CRIS Decision Number ENPI/2013/024-446), which included the funding for the EGNOS extension to Ukraine.

The EGNOS part of the Financing Agreement was put on hold, mainly in the absence of a negotiating mandate for an international cooperation agreement laying down the details of the EGNOS extension and because it was technically premature to extend

EGNOS. Both obstacles have now been overcome: the new generation of EGNOS technology fully takes on board the extension to Neighbourhood countries; both the EU and Ukraine now hold mandates for negotiating the relevant international agreement.

This action clearly contributes to the objectives of the aforementioned policy documents. Since Regulation (EU) 1285/2013 does not allow to use money from the EGNOS programme to fund activities outside the EU, ENI remains the sole source of financing for the EGNOS extension.

## 1.3 The EGNOS extension, analysis of the partner country/region

EGNOS RIMS stations will only be deployed in Ukraine and Azerbaijan. Once operational, EGNOS will cover the six ENP East countries. In addition to the capacity building and cooperation activities ongoing with Ukraine and Azerbaijan, the Commission is in the process of organising meetings with the rest of the ENP East countries to promote the use of EGNOS. This is particularly relevant for the development of the bridging role of the Black Sea basin in terms of connectivity.

**Twinning projects with Ukraine**

From 2008 to 2011 the Twinning Project, entitled 'Boosting Ukrainian Space Cooperation with the European Union', was implemented with the Ukrainian Space Agency. The overall objective of this Project was to accelerate the approximation between Ukraine and the EU in the area of space. This Twinning Project concluded by recommending among other things the extension of EGNOS to Ukraine2 .

A second Space-related Twinning Project ran from October 2013 to November 2015 and is entitled “Institutional Capacity Strengthening of the Ukrainian Space Agency regarding Realisation of the European Space Programmes in the Area of Satellite Navigation (EGNOS/ Galileo) and Remote Sensing of the Earth (GMES)”. The conclusions highlighted the new applications that an EGNOS extension to Ukraine would generate.

**‘UKRAINE’, a Horizon 2020 Research Project**

One of the objectives of the UKRAINE project (Jan 2015- Oct 2016) was to strengthen the cooperation between the EU and Ukraine in the field of satellite navigation (EGNOS and Galileo).

Key components of the project were the preparation of the Ukrainian aviation market for the extension of EGNOS, the identification of legislative options to support the uptake of European GNSS in Ukraine and the development of solutions for multimodal logistics and dangerous goods transport.

[2] Final Report of the Twinning Project (N°UA/06/PCA/OT/05) 'Boosting Ukrainian Space Cooperation with the European Union', pages 20, 66 and 77.

**Ukraine's draft law on satellite navigation**

A new draft Law on 'State Regulation in the Sphere of Satellite Navigation' is in circulation among ministries and ministerial cabinets for approval. This law supports and regulates the uptake of satellite navigation in Ukraine, including EGNOS and Galileo.

**Negotiating directives for an EU-Ukraine international agreement on EGNOS**

In March 2019, Ukraine announced that it has approved negotiating directives for an international agreement with the EU to extend EGNOS to Ukraine. The EU from its side adopted negotiating directives in 2018. Negotiations started on 12 March 2020.

In 2011 a **study** (see information under point 1.4), entitled 'Assessment on a possible extension of the EGNOS coverage to Ukraine' was conducted in cooperation with the Ukrainian authorities and industry to map the industrial sectors that are interested to use EGNOS and to calculate the potential financial benefits from the EGNOS use. The Ukrainian partners supported the idea to extend EGNOS

The involvement of Ukraine in the twinning projects, the 'UKRAINE' H2020 research project, the 2011 study and the preparation of the negotiating directives for an international agreement and of the draft law on satellite navigation clearly demonstrate Ukraine's interest in extending EGNOS to Ukraine. It also shows the willingness of Ukraine to use EGNOS as a tool that will support a number of SDGs, including SDGs 9, 11 and 13.

**Azerbaijan**

In April 2019, the European Commission and the European GNSS Agency participated in a stakeholder consultation with the Azeri advisory group on EGNOS applications. The group, coordinated by Azercosmos, comprised representatives of 15 Ministries and Services, including the Cabinet of Ministers, Ministry of Defence, Economy, Foreign Affairs, Energy, Emergency Situations, Agriculture, Telecommunications, the state oil and gas company SOCAR, the State Committee on Property Issues, the State Security Service, the State Border Service and the Special State Protection Service. The lively stakeholder exchange indicated high interest in and awareness of EGNOS services by the Azeri stakeholders. This led to a formal confirmation by Azercosmos of their readiness to host a RIMS at their premises near Baku. Technical surveys for the RIMS installation are foreseen for Q3-4 of 2020.

## 1.4 Stakeholder analysis

Ukraine and Azerbaijan are the two countries that have so far confirmed interest in EGNOS services.

By installing one additional EGNOS RIMS in Ukraine and one RIMS in Azerbaijan (Baku), together with the RIMS that is under deployment in Kyiv, the six ENP East countries will be covered by the EGNOS signals.

With regard to **Ukraine**, in 2011[3] and 2017[4] two independent studies funded by the European Commission concluded that the EGNOS extension to Ukraine alone will yield expected revenues reaching EUR 3.1 billion Euros for the period 2015-2035 for the sole areas of aviation, agriculture and navigation on inland waterways. The revenues for all EGNOS applications covering the entire Eastern neighbourhood (six countries) will be higher.

In these studies, the conclusions for the different application areas for EGNOS in Ukraine were the following:

## 1. Aviation

Today's ground infrastructure for landing procedures of the majority of the Ukrainian airports (especially the smaller, non-strategic ones) should be renewed, therefore it is important to invest in a technology that would increase service and efficiency level while, at the same time, reduce costs.

There is a good commitment of the Ukrainian aviation authorities to follow the European development path and they are proposing an optimisation and restructuring plan for airport infrastructure in Ukraine.

In the aviation field EGNOS could represent a cheaper and safe alternative to traditional infrastructure, where the need for CAT II and III landing is not crucial.

Medium regional airports – the medium potential category- are the targets which could receive the major benefits from EGNOS deployment, increasing their service level and giving a new impulse to the aviation sector in Ukraine.

## 2. Agriculture

The agricultural industry is one of the strongest and most solid sectors in Ukraine, expanding even in the current economic downturn. Production output is constantly growing and there is still a vast unexpressed potential.

For future years a substantial flow of investments is foreseeable in the agricultural sector in Ukraine, depending on the Land Code reform (more international investors) and to the challenging target set for the Ukrainian agricultural sector. Mainly these investments will be allocated to extensive (extending land owning) and intensive (efficiency gains) agricultural techniques.

[3] *Assessment on possible extension of EGNOS coverage to Ukraine,* Complete Final Report, 2011, VVA Consulting

[4] *Support to the extension of EGNOS Services in ENP- East (Ukraine),* Info note, 2017, VVA Economics&Policy

The investments in intensive agriculture will directly influence the installed machinery base and therefore the purchase of new technological, potentially GNSS, solutions (from service to receiver and machine).

EGNOS has a good potential in terms of prospective user base, addressing as an entry level technology the small-medium enterprises and becoming a valid integrating technology for big agroholdings. Moreover EGNOS only current viable competitor, OmniStar, is considered expensive by the majority of Ukrainian operators.

The EGNOS related tangible benefits in the short term would be:

More working time for the farms (higher machine working hours and night time shifts)

More productivity (less overlapping in field operations)

Less input costs (savings on fuel and fertilising)

Reduce initial investment and free of charge service

### 3. Inland waterways and maritime

A potential use of EGNOS is rising in port approach and navigation, where accuracy and integrity can become a critical factor for Vessel Traffic Services.

Inland waterways are of a strategic importance for the economic development of the production sectors in Ukraine. Rivers transport is cheaper than road or railways modality for several kinds of transportation such as construction materials, fertilisers, ore, cars and agricultural products. Big agroholdings are already investing in their own private network of inland waterways infrastructure, in absence of national investments, due to the relevance that transportation plays in the sector.

EGNOS is an efficient alternative for conventional local DGPS stations, which has been reduced for cost reasons on both the Danube and Dnepr rivers. In addition EGNOS with the direct reception of the signal in shipboard transponders will make the transport guidance simpler and less expensive.

### 4. Road

Possible road applications include the deployment of the emergency eCall system, tracking of dangerous goods and, based on the experience in the EU, road tolling systems for cars and trucks.

**With regard to potential EGNOS use in Azerbaijan**, an independent study[5] funded by the European Commission in 2019 has mapped the potential uptake of EGNOS in priority areas and has identified the relevant stakeholders.

[5] Azerbaijan – Background Information on GNSS Adoption, SUCCESS 2_SC6_FDC_D2.1.1_V1.0, 18 March 2019

In an effort to diversify the country's economy and to make it less dependent on oil and gas, the government of Azerbaijan is seeking to develop three further sectors in priority, notably agriculture, transport and tourism.

**The oil and gas sector** is driving Azerbaijan economy accounting for about 45% of GDP. Moreover the country possesses a substantial offshore potential that has not yet been exploited. The offshore energy industry can benefit from EGNOS-based solutions for various activities ranging from the initial surveying and offshore construction phase to drilling and the dynamic positioning of vessels near the platform and construction sites.

Azerbaijan has a strong potential in **agriculture**: half of the country's total surface consists of cultivable land and its nine climatic zones allow the cultivation of a large variety of crops throughout the year. There are some impediments to the full growth of the sector such as small land plots. GNSS-enabled solutions are already used in the Azerbaijan. The country's agriculture sector would further benefit from EGNOS for precision agriculture applications such as farm machinery guidance, harvest and yield monitoring; biomass monitoring, livestock tracking and geo-traceability.

Azerbaijan's geographical location on both the East-West New Silk Road and the North-South Corridor offers potential to capture both transit trade, and to import and export volumes. The country is positioning itself as a **transportation** hub through major infrastructure investments and the establishments of intermodal and multimodal logistics infrastructure in the country. The country has invested in improving its transport infrastructure (road, port and rail) over the past few years. The construction sector can further benefit from EGNOS-enabled machine control applications, topographic surveys and the use of drones for activities such as mapping and inspection of construction sites.

*Road* is by far the most used means of transportation. In 2012 Baku launched an intelligent transportation system based on GNSS and comprising three services: traffic management, traffic signal control and bus service management. The city is currently seeking to upgrade the system. Potential use of EGNOS include smart mobility applications, road user charging and cooperative intelligent transport systems.

*Rail* is the second mode of transport by number of freight and passengers transported. The most significant transportation project is the Baku-Tbilisi-Kars (BTK) railway, In 2016 Azerbaijan Railways CJSC announced it would install GNSS navigation systems on all its trains. The most relevant EGNOS application in the rail sector would be asset management.

In *maritime* Azerbaijan could benefit from intermodality (maritime/rail and maritime/road) transhipments applications to increase efficiency of freight flow using a combination of IT tools and EGNOS applications (E-custom).

The **aviation sector** is of strategic importance for Azerbaijan. Tourism and transportation have been identified by the government of Azerbaijan as two of the priority sectors for diversifying its economy. Azerbaijan's tourism sector emphasizes event tourism, such as hosting business conferences and international sporting events. The country is nonetheless also seeking to develop family tourism.

In the aviation field EGNOS could represent a cheaper and safe alternative to traditional infrastructure. Medium regional airports – the medium potential category- are the targets

which could receive the major benefits from EGNOS deployment, increasing their service level and giving a new impulse to the aviation sector. The provision of EGNOS Safety of Life service for aviation would, however, be subject to an international agreement.

## 1.5 Problem analysis/priority areas for support

Ukraine and Azerbaijan are the two countries that have so far confirmed interest in EGNOS services. For the time being Ukraine is the only one willing to use the EGNOS Safety of Life service for aviation and will negotiate and international agreement with the EU to that end (negotiation mandates in place for both sides).

The remaining ENP East countries would be able to benefit from the EGNOS open service, once the RIMS in Ukraine and Azerbaijan are in place and are connected to the EGNOS system. Georgia has already expressed an interest to cooperate on satellite navigation matters. An awareness-rising campaign and economic diplomacy actions are planned with Georgia, as well as Armenia, Belarus and Moldova in 2020-2022 in anticipation of the EGNOS service extension, with funding from the Foreign Policy Instrument (a stand-alone action on economic diplomacy for the European Global Satellite Navigation System is in its final stages of approval).

The provision of the EGNOS open service to the ENP East countries is a win-win both economically and politically. For the European space industry it opens new markets for EGNOS technology and applications. For the businesses on both sides, the EGNOS extension creates opportunities for joint ventures and innovation, for mutually beneficial transfer of know-how and cutting-edge technology.

The EGNOS extension is the best political option to deploy a satellite based augmentation system in the ENP East. Extending EGNOS is also a matter of strategic influence for the EU. It will contribute to creating a pan-European transport area via an EU technology.

It is the best option because, by connecting three EGNOS RIMS (Kyiv, the 2$^{nd}$ Ukrainian RIMS, Baku) to the EU EGNOS network of 30 RIMS it would create one single European EGNOS area (to which the complete ENP South is planned to be connected as well).

There are other solutions less than optimal for ENP East countries and the EU:

- ENP East countries using solely the Russian satellite based augmentation system (SDCM), which is less transparent in terms of governance and not yet certified for aviation safety; Ukraine is not in favour of this solution. EGNOS will instead become available to ENP East countries in parallel to the existing Russian system. The excellent performance and leading technology of EGNOS, together with its user-oriented governance, will create appetite for further adoption by ENP East countries. As confidence builds, the open use of EGNOS will pave the way for formalised international agreements for the EGNOS Safety of Life service.

- Development by ENP East countries of own national or regional satellite augmentation system(s). This could be based on the export of EGNOS technology or on indigenously developed technology. However, such approach would not lead to a single European

transport area. Considering the required investment, no single ENP country has expressed an interest of an independent system thus far.

## 2 RISKS AND ASSUMPTIONS

| **Risks** | **Risk level (H/M/L)** | **Mitigating measures** |
|---|---|---|
| 1. Time delays in deploying the EGNOS ground stations (RIMS - Ranging and Integrity Monitoring Stations) and in rolling out the EGNOS services in Ukraine. | M | 1. This is a risk linked to the whole EGNOS programme, not only outside but also within the EU.<br>The main mitigation measure is to well plan and coordinate the EGNOS extension among the different actors, including the GSA (European GNSS Agency), the State Space Agency of Ukraine, the State satellite operator of Azerbaijan (Azercosmos), ESA (European Space Agency), EU and Ukrainian and Azeri industry and the ESSP (European Satellite Service Provider). |
| 2. The political and security situation in the region deteriorates (e.g. in the South Caucasus or in Ukraine) | M | 2. EGNOS RIMS will not be installed in conflict zones. In addition RIMS can be switched off from a distance in case of a physical or cyber-attack.<br>Cooperation on EGNOS should be considered as a technical, non-political and consensual matter, aimed at contributing to economic growth and at protecting human lives. |
| 3. Lack of financial commitment from the hosting entities or countries to the operational expenditures for EGNOS in those countries. | L | 3. The operational expenditures are only a small part of the total costs of an EGNOS RIMS. The hosting agreements for the EGNOS RIMS will lay down the financial commitments. |
| **Assumptions** | | |
| It is assumed that: | | |

- partner countries are interested to extend EGNOS over their territory and use it for different applications.

- partner countries have a strong enough political commitment under the Eastern Partnership to continue effective cooperation between themselves and the EU;

- hosting agreement with the respective authority in Ukraine for the hosting of the Kyiv RIMS will be signed;

- hosting agreements with Ukrainian and Azeri entities will be signed to host the 2 EGNOS RIMS funded by this project;

- an international agreement with Ukraine for the use of EGNOS Safety of Life service inter alia for aviation will be negotiated. The negotiations of an international agreement with Ukraine started on 12 March 2020.

# 3 LESSONS LEARNT AND COMPLEMENTARITY

## 3.1 Lessons learnt

A number of important lessons learnt are outlined earlier in points 1.3 and 1.4. The two independent studies[6] and the 'UKRAINE' research project under H2020 provide evidence about the positive effects of an EGNOS extension for Ukraine and the other ENP East countries.

In addition, Ukraine has, on various occasions, expressed the wish to receive EGNOS coverage, the last time on the occasion of the 3rd EU-Ukraine High Level Industrial and Regulatory Dialogue (Brussels, 13 March 2019).

Azerbaijan have also expressed interest in hosting an EGNOS RIMS and using the EGNOS open service.

The key lesson learnt is that preparing the EGNOS extension with each of the ENP East countries has a different dynamic and intensity. Each partner country has its own internal approval procedures and timeframes, and may face political or security challenges throughout the process. In the case of Ukraine, the preparation of the technical and organisational aspects started already in 2011. With Azerbaijan, first contact was made in late 2018, and technical preparations were already underway in the autumn of 2019. The timetable for EGNOS services adoption will differ for each ENP East country.

[6] *Assessment on possible extension of EGNOS coverage to Ukraine*, Complete Final Report, 2011, VVA Consulting; *Support to the extension of EGNOS Services in ENP- East (Ukraine)*, Info note, 2017, VVA Economics&Policy

## 3.2 Complementarity, synergy and donor coordination

No other similar projects have been funded. No additional financial sources for the EGNOS extension have been requested through other programmes.

# 4 DESCRIPTION OF THE ACTION

## 4.1 Overall objective, specific objective(s), expected outputs and indicative activities

**The general objective** is to extend EGNOS to the Eastern Neighbourhood with the aim to use it in a number of applications such as aviation (in particular, landing and take-off of aircraft), precision agriculture, inland water transport,road and maritime transport (e.g. dangerous goods).

**The specific objective is to:**

To deploy EGNOS ground infrastructure (RIMS Ranging and Integrity Monitoring Stations) in Ukraine and Azerbaijan (Baku).

**Expected outputs:**

*Related to specific objective 1:*

Complete the RIMS infrastructure, which requires kick-starting technical preparations in 2020. Upon the infrastructure completion, the RIMS will be deployed. EGNOS service provision will begin upon RIMS integration into the EGNOS system, from 2025 onwards.

## 4.2 Intervention Logic

It is assumed that the outcome of the project will fulfil the specific objectives.

The GSA will manage the EGNOS extension and the authorities in Ukraine and Azerbaijan have clearly expressed their support to the project.

With the deployment of the RIMS in Kyiv and through the ‘UKRAINE’ H2020 research project (see point 1.3) first steps have been taken to use EGNOS for aviation. Once EGNOS is available, it can be used for other applications.

### 4.3 Mainstreaming

**Environmental sustainability**: The use of EGNOS reduces fuel consumption of aircraft because landing and take-off are less time consuming. In agriculture EGNOS reduces the use of fuel, fertilisers, pesticides and water.

There are many other examples how EGNOS contributes to environmental protection, including through more efficient road and maritime transport.

### 4.4 Contribution to SDGs

This intervention is relevant for the 2030 Agenda. It contributes to the progressive achievement of a number of SDGs, such as:

SDG 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation

As an example EGNOS contributes to resilient transport infrastructure.

SDG 11 - Make cities and human settlements inclusive, safe, resilient and sustainable

EGNOS e.g. contributes to safer, more resilient and sustainable cities

SDG 13: Take urgent action to combat climate change and its impacts

EGNOS e.g. reduces the energy and carbon footprint.

## 5 IMPLEMENTATION

### 5.1 Financing agreement

In order to implement this action, it is not foreseen to conclude a financing agreement with the partner countries.

### 5.2 Indicative implementation period

The indicative operational implementation period of this action, during which the activities described in section 4 will be carried out and the corresponding contracts and agreements implemented, is 80 months from the date of adoption by the Commission of this Financing Decision.

Extensions of the implementation period may be agreed by the Commission's responsible authorising officer by amending this Decision and the relevant contracts and agreements.

## 5.3 Implementation modalities

The Commission will ensure that the EU appropriate rules and procedures for providing financing to third parties are respected, including review procedures, where appropriate, and compliance of the action with EU restrictive measures[7].

The programme will be co-delegated by DG NEAR to DG DEFIS.

### 5.3.1 *Indirect management with an entrusted entity: EU specialised (traditional/regulatory) agency*

This action will be implemented in indirect management with the GSA (the European Global Navigation Satellite Systems Agency), a specialised EU agency.

This implementation entails management of the EGNOS extension in close cooperation with the European Space Agency, the European Industry, the Ukrainian State Space Agency, the Azerbaijan Space Agency (Azercosmos) and the Ukrainian industry. The GSA will manage the EGNOS extension from the start of the preparatory works for the deployment of the EGNOS RIMS until the end of the works. Thereafter the GSA will continue to follow-up the service provision of EGNOS in the ENP East countries on a continuous basis.

The GSA has been selected using the following criteria:

- The GSA is responsible to design and enable the EGNOS services to fully respond to user needs;

- The GSA is responsible to continuously improve the EGNOS infrastructure;

- The GSA is responsible to manage the provision of EGNOS quality services that ensure user satisfaction in the most cost-efficient manner.

The implementation must be subject to all conditions laid down in the Commission Delegated Regulation (EU) 2019/715. The contribution agreement to be concluded between DG DEFIS and GSA must be subject to an ISC before being formally signed, allowing the decentralised agencies' parent DG's and DG BUDG to review the agreements and their potential impact on the agencies.

## 5.4 Indicative budget

5.4.1. Indicative budget by contribution

| Type | EU Contribution (amount in EUR) | Indicative third party contribution, in currency identified |
|---|---|---|
| indirect management – cf section 5.3.1 | 7 950 000 | EUR |

[7] www.sanctionsmap.eu Please note that the sanctions map is an IT tool for identifying the sanctions regimes. The source of the sanctions stems from legal acts published in the Official Journal (OJ). In case of discrepancy between the published legal acts and the updates on the website it is the OJ version that prevails.

| | | |
|---|---|---|
| **Evaluation** (cf. section 5.9)<br>**Audit/ Expenditure verification** (cf. section 5.10) | 0 | N.A. |
| **Communication and visibility** (cf. section 5.11) | 0 | N.A. |
| **Total** | 7 950 000 | EUR |

5.4.2. Provisional breakdown of costs

| **Objective:** To deploy two EGNOS RIMS (Ranging and Integrity Monitoring Stations) in Ukraine and Azerbaijan with a view to provide EGNOS services on the territory of the six Eastern European Neighbourhood countries. | | | | |
|---|---|---|---|---|
| **Type** | **Activity** | | **EU Contribution in k€** | **Assumptions** |
| CAPEX (Phase C/D Options) | EV3 extension coverage | Two RIMS envisaged | 5.344 | - Price of EGNOS V3 contract extension option |
| CAPEX (additional activities) | V3 Site Surveys | | 360 | - Based on the EGNOS V3 site survey framework contract still active<br>- Based on FUP from V3 site survey contract for non-EU sites |
| | Site preparation implementation | Civil Works | 1370 | - Assuming no existing infrastructure is present on-site<br>- Based on experience with baseline V3 RIMS sites |
| | | Hosting Entity support for Security requirements implementation | 130 | - Provision for support from the Hosting Entity to implement security |

| | | | | |
|---|---|---|---|---|
| | | | | requirements from the Site Interface Requirements Document and to support security on-site visits |
| | | Hosting Initial Services | 520 | - Initial Hosting Services provided for a max duration of 2 years<br>- Based on experience on EGNOS V2 Hosting Services and integrating security aspects |
| | Contingency for RIMS HW repatriation | until OPEX commitment | 226 | - cost estimation in case repatriation of HW is required if OPEX is not commitment |
| | | | | |
| **TOTAL CAPEX** | | | **7.950** | |

## 5.5 Organisational set-up and responsibilities

The action will be implemented by the GSA (European GNSS Agency) under supervision of the Commission (co-delegation granted by DG NEAR to DG DEFIS). It will involve the ESA and its contractors as well as the State Space Agency of Ukraine and AZERCOSMOS and any relevant contractors. The GSA and Commission (DEFIS) will supervise the activities in close liaison with the EU Delegations in Ukraine and Azerbaijan.

A Steering Committee will be established with the participation of the relevant Commission services as well as representatives from the GSA, the State Space Agency of Ukraine and AZERCOSMOS. The Steering Committee will be co-chaired by DG DEFIS and DG NEAR.

The EU Delegations in the ENP East countries will receive regular updates on the progress of the project and will have the opportunity to provide comments and input.

### 5.6 Performance and Results monitoring and reporting

The technical and financial monitoring of the implementation of this action will be a continuous process, and part of the implementing partners' responsibilities. To this aim the implementing partners will elaborate regular progress reports (not less than annual) and a final report.

Besides the regular follow up by the EU Delegations, the Commission will undertake additional project monitoring visits both with its own staff and through the GSA.

### 5.7 Evaluation

Having regard to the nature of the action, a final evaluation will not be carried out for this action.

An evaluation will however be performed by GSA as part of the contribution agreement, as they are the most relevant entity to perform it. In particular, the functioning of the EGNOS RIMS should be demonstrated, as well as their readiness for integrating the EGNOS system for service provision in the ENP East countries.

The evaluation reports shall be shared with the partner country and other key stakeholders, with the exception of any information that could pertain to the security of the EGNOS system and operation. The implementing partner and the Commission shall analyse the conclusions and recommendations of the evaluations and, where appropriate, in agreement with the partner country, jointly decide on the follow-up actions to be taken and any adjustments necessary, including, if indicated, the reorientation of the project.

### 5.8 Audit

Without prejudice to the obligations applicable to contracts concluded for the implementation of this action, the Commission may, on the basis of a risk assessment, contract independent audits or expenditure verification assignments for one or several contracts or agreements.

In case of audit, the financing of the audit shall be covered by another measure constituting a financing decision.

### 5.9 Communication and visibility

Communication and visibility of the EU is a legal obligation for all external actions funded by the EU.

This action shall contain communication and visibility measures which shall be based on a specific Communication and Visibility Plan of the Action, to be elaborated at the start of implementation.

In terms of legal obligations on communication and visibility, the measures shall be implemented by the Commission, the partner country (for instance, concerning the reforms supported through budget support), contractors, grant beneficiaries and/or entrusted entities. Appropriate contractual obligations shall be included in,

respectively, the financing agreement, procurement and grant contracts, and delegation agreements.

The Communication and Visibility Requirements for European Union External Action (or any succeeding document) shall be used to establish the Communication and Visibility Plan of the Action and the appropriate contractual obligations.

Communication on EGNOS and its extensions is and will continue to be carried out by the GSA and by the Commission, in line with a communication plan and communication objectives.

The conclusion of international agreements, e.g. the EU-Ukraine EGNOS extension agreement, as well as the deployment of EGNOS ground stations, will be subject to communication , e.g. via press releases.

Communication and EU visibility is also supported in the frame of the EU Space Programme of which EGNOS is a part.

Commission services are already communicating on EGNOS extensions in conferences and multilateral meetings on international satellite navigation in Europe, Africa, Asia and the Americas.

Finally, EGNOS will continue to be discussed in international meetings with the ENP East countries, with the support of DG NEAR.

## APPENDIX - INDICATIVE LOGFRAME MATRIX (FOR PROJECT MODALITY)

| | Results chain:<br>Main expected results (maximum 10) | Indicators<br>(at least one indicator per expected result) | Baselines<br>(2018) | Targets by the end of the programme<br>(2024) | Sources of data | Assumptions |
|---|---|---|---|---|---|---|
| **Impact (Overall Objective)** | Extension of the use of EGNOS to the ENP East countries | Start of operations of EGNOS in ENP East countries. | Not currently | Partially in place, start of operations foreseen from 2025 | Report by the European GNSS Agency (GSA) | *Not applicable* |
| **Outcome(s) (Specific Objective(s))** | A. Preparation of the two EGNOS RIMS in Ukraine and Azerbaijan.<br><br>B. Deployment of the two EGNOS RIMS in Ukraine and Azerbaijan | A.1. Completion of infrastructure of Ukraine RIMS<br><br>A.2 Completion of infrastructure of Azerbaijan RIMS<br><br>B.1 Ukraine RIMS ready for connection and integration into the EGNOS system<br><br>B.2 Azerbaijan RIMS ready for connection and integration into the EGNOS system | Not currently<br><br>Not currently<br><br>Not currently<br><br>Not currently | 2023<br><br>2023<br><br>2024<br><br>2024 | A.1 Site Acceptance report for Ukraine RIMS by GSA<br><br>A.2 Site Acceptance report for Azerbaijan RIMS by GSA<br><br>B.1 Report by the GSA<br><br>B.2 Report by the GSA | - Partner countries are willing to reach a higher degree of co-operation within the region, intra region and with EU<br>- Political stability within countries<br>- Absence of major tensions between countries<br>- Political will to cooperate in the field of EGNOS in the countries' development strategies<br>- Willingness at all levels to share information. |

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| **Outputs** | | | | | | |