European Economic and Social Committee

INT/837
Mid-term review/Copernicus (2014-2020)

OPINION

European Economic and Social Committee

Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Mid-term evaluation of the Copernicus programme (2014-2020)
[COM(2017) 617 final]

Rapporteur: **Mindaugas MACIULEVIČIUS**

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Section responsible	Single Market, Production and Consumption
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1. Conclusions and recommendations

1.1 The European Economic and Social Committee (EESC) welcomes the results achieved so far by the Copernicus programme as notified by the Commission. Very precise satellites are already operational and sending global high quality Earth monitoring data on a daily basis.

1.2 The EESC emphasises that when assessing the achievements of the Copernicus programme, social and environmental aspects should be considered, in addition to the economic aspect. The EU has committed itself to sustainable development goals and is one of the global leaders in combating climate change, with its clear and very ambitious commitment to COP21, and the Copernicus programme is the most important system in terms of providing clear metrics and tools for measuring performance and achievements, and not only at EU level, but globally.

1.3 Copernicus is at the heart of climate change, food security, public health, disaster management, human trafficking, maritime safety, etc. The EU is the leader in monitoring and providing precise data on changes in climate, emissions of different gases, the state of agricultural and forest lands and the maritime situation. Without this data, it would be impossible for the scientific community to understand these issues and suggest ways to successfully tackle climate change, sustainably produce food, etc.

1.4 There is no real sense of ownership or pride in the Copernicus programme among European citizens. European citizens are not aware of Copernicus and its benefits just as they are often unaware of European space programmes in general. The programme and its activities should be more visible to mass media, and open to civil society and to active citizens. The EESC considers the participation of civil society in the definition of spatial strategies and programmes indispensable.

1.5 The possible Copernicus forum should be open to representatives of businesses, consumers and civil society organisations. It is necessary to "open the club" to society and establish a real **European Space Community**. The EESC declares its interest and willingness to play an active role directly and with the national organisations represented in it, which constitute huge potential to fill in the "missing links" identified in the EESC project *Space and Society*.

1.6 The effectiveness of the Copernicus programme should not be evaluated on economic performance only. Its greatest value comes from its environmental and social aspects. It is a tool that is a must have in order to fight climate change, sustainably feed the global population, save lives at sea, etc. It is a service that cannot be bought from third parties because of national security issues, and the current lack of similar quality services elsewhere. This represents our answer to these global challenges and our willingness as a mature global society to address them.

1.7 The involvement of SMEs and micro companies, start-ups and independent researchers is of the highest importance for making successful use of the Copernicus data. New ideas, and new fields of usage are coming from this sector. It is vital to promote the development of different initiatives and develop the tools for end users, which generate added value. Horizon 2020 has played and should continue to play an important role. Access to finance via the European

Investment Bank (EIB) and the European Fund for Strategic Investments (EFSI) is of the highest importance.

1.8 The EESC calls for more ambitious promotion of consistency and coherence with regard to Copernicus, and of awareness of it and the use of its tools for public service purposes by the various directorates-general at European level, and by national and regional authorities at Member State level. Copernicus data should be established as the independent and national standard at European level. Eurostat should be involved more in measuring progress here and the benefits provided by Copernicus.

1.9 Local small agencies on a national basis could be a good solution for disseminating the data and Copernicus as a tool at national government level. Setting up local user communities involving local SMEs, micro companies, start-ups and independent researchers, together with regional governments, civil society representatives, educational institutions and independent and public advisory services, parts of society directly working with Copernicus like farmers, foresters and environmentalists, could help to further increase usage of the Copernicus data, and enhance its performance adapted to national specificities.

1.10 Education on Copernicus is of the highest importance. The EESC welcomes specially designated Masters programmes, supporting some European university students studying for a Masters degree on Copernicus. The EESC calls for a dedicated, more ambitious programme, including all relevant technical support for dedicated Copernicus departments to be set up in all relevant European universities, professional training schools and advisory service providers. As a separate topic, the potential use of Copernicus should be introduced in all related study fields, including agriculture and forest science, engineering, the environment, marine studies, etc. The training needs of existing professionals, including end users should be taken into account; special programmes here could be provided by national independent and public advisory services.

1.11 The availability of fast and simple data access will soon be ensured by the upcoming entry into operation of the Copernicus Data and Information Access Services (DIAS). This will obviate some critical issues that have emerged concerning the time needed to download Copernicus data. The EESC also calls for the harmonisation and full availability of in situ data, regulated by national legislation, to be speeded up. Standardisation and interoperability are prerequisites for the full success of the Copernicus programme.

1.12 The training of qualified engineers and technicians, the creation of new jobs and new professional skills linked to the development of the applications are a priority commitment of the EU for a sustainable and socially useful economy.

1.13 With a view to the important results and their quality, the EESC hopes that priority will be given to European launchers. Successful launches, accuracy in implementing the programmes and respecting deadlines, and the flexibility of use with the new Ariane 6 and Vega C, should reward European excellence with long-term contracts. The EESC does not share protectionist policies, but at the same time believes that European industry must be protected against unfair practices through the principle of reciprocity.

1.14 Particular attention should be paid to disseminating the opportunities opened up here to agriculture, forestry and fisheries, through targeted awareness and information programmes aimed at operators in the sector. Energy savings and savings on fertilisers and pesticides can significantly increase and improve agricultural production and water conservation. The Global Monitoring for Environment and Security (GMES) for Africa programme, which has already delivered excellent results, should in the EESC's view be strengthened and disseminated also in other developing areas.

1.15 The EESC welcomes the governance model adopted for the Copernicus programme, in particular the creation of the user forum, which should be open to representatives of operators, researchers and civil society. The next Copernicus regulation should confirm the current model of division of responsibility by skills, distinguishing the technical responsibility for the space component, entrusted to the European Space Agency (ESA), from responsibility for the services, entrusted to the "entrusted entities".

1.16 In parallel with improving access and data quality, the full deployment of broadband across Europe needs to be intensified, particularly in rural and peripheral areas, often overlooked by private operators. The effective implementation of the "Digital Single Market" strategy is essential in order to maximise the opportunities offered by the Copernicus programme. The EESC fully supports this initiative of the European Commission and urges the Parliament and the Council to speed up the negotiations for the final approval of the measures still under discussion.

1.17 Data protection from increasingly frequent attacks, along with the risks posed by debris to space infrastructure, are a priority. The EESC recommends strengthening security safeguards and speeding up programmes aimed at cleaning up debris and satellites that are no longer operational[1]. The European Commission should intensify its efforts to reach a major international agreement.

1.18 The EESC advocates greater involvement of the financial system and investors in space activities, which could involve the general public by issuing special "space bonds". Particular attention should be paid to the financing of small and medium-sized enterprises and start-ups for the creation of services and innovative applications. The recent agreements on the mitigation of global warming open up the possibility of new economic activities relating to monitoring emissions.

1.19 The EESC also recommends keeping and possibly reinforcing funding for the Copernicus programme, which not only generates growth and development, but also guarantees European autonomy and independence in the management of its territory and its own security, and fosters innovation, research and sustainable development.

1 OJ C 327, 12.11.2013, p. 38.

2. The Commission communication

2.1 The space component of the programme for the April 2014 - April 2017 period is basically in line with forecasts, except for a delay of some 10 months in launching Sentinel 2 B due to problems that emerged with the Russian Rockot launcher. In order to minimise delays, Sentinel 2 B was put into orbit by the Vega launcher developed by the ASI (Italian Space Agency) in cooperation with the ESA.

2.2 The data sent by the five orbiting satellites as of March 2017 had reached a total of 12 TB daily, far outstripping expectations, as do the registered users of the free data distribution site, which have risen to 85 000 rather than the expected 50 000[2].

2.3 Sentinel 5P was successfully launched on 13 October 2017 with the aim of supplying data every day on the composition of our atmosphere, monitoring greenhouse gases, the ozone layer, sulphur dioxide and formaldehyde as well as volcanic ash and carbon monoxide.

2.4 From the outset, Copernicus has benefited from cooperation with other "contributing missions", which are vital for the highest definition data that Copernicus cannot guarantee. These missions enabled the project to start before the first Sentinel satellite had been launched. In addition to data from "parallel" missions, data from the ground-, sea- or air-borne in-situ sensors are used and compared. The universally recognised accuracy of Copernicus data hinges precisely on the validation of data that are cross-checked with those recorded by the in-situ sensors.

2.5 Copernicus was designed from the outset as a user-driven service, based on their needs. This approach, in tandem with the open and free use of data, underpins its growing success among service users and operators.

2.6 Copernicus governance is conducted on the basis of competences.

2.6.1 Coordination and implementation for the space component has been delegated to the European Space Agency (ESA) and partially to the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).

2.6.2 Services are delegated to the Joint Research Centre (JRC), the European Environment Agency (EEA), the European Centre for Medium-Range Weather Forecasting (ECMWF), Mercator Océan, the European Border and Coast Guard Agency (FRONTEX), the European Maritime Safety Agency (EMSA) and the EU Satellite Centre. Copernicus conformity with the INSPIRE geospatial data programme standards ensures efficient use of all available data resources.

2.7 The Commission gives a positive evaluation of the results achieved so far, compliance with budget estimates, the growth of user demand, and cooperation with institutions and bodies contributing to services management.

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2 On 17 January 2018, there was 118 000 registered users.

2.8 The Copernicus Committee, made up of representatives of the Member States, and the User Forum cooperate with the Commission in the overall management of the programme.

2.9 Outstanding results have been achieved in the area of communication and the dissemination of the opportunities provided by Copernicus, with specific programmes such as Copernicus Relays and Copernicus Academy, charged with boosting awareness and providing local helpdesks.

2.10 The Commission, joining forces with the ESA, has organised the Copernicus Masters, an annual competition aimed at stimulating innovation. The Copernicus start-up programme also includes the Copernicus Accelerator, which provides coaching for start-ups, the forthcoming Copernicus Hackathons (with 40 hackathons over two years), and the Copernicus Incubation programme, financially supporting 60 start-ups over a three-year period.

2.11 The Commission's future priorities are to:

- unlock the economic potential of Copernicus by turning the data provided into innovative products and services;
- ensure the future stability of the programme and free, full and open access to data;
- fully implement the space strategy for Europe in order to address the challenges of climate change and sustainable development, and monitor CO_2 and other greenhouse gas emissions, land use and forestry, and changes in the Arctic;
- strengthen the security that Copernicus can guarantee through border controls and maritime surveillance.

3. General comments

3.1 The EESC welcomes the results achieved so far by the Copernicus programme as notified by the Commission. The EESC has constantly supported European space policy as a whole, and in particular the two major programmes Galileo and Copernicus: its previous opinions on the question[3] are widely reflected in the Commission's communication.

3.2 The EESC considers the main objectives of the programme to have been achieved and in some areas surpassed.

3.3 The quantity and quality of the data gathered daily by the satellites make Copernicus one of the world's leading data producers, ensuring the European Union's independence in monitoring its territory and, at the same time, providing others parts of the world with accurate and free data. Its unexpected success has created some data flow management difficulties. The EESC recommends that the open public hubs be rapidly and effectively bolstered and the call for high-speed megadata downloads be met.

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3 Proposal for a Regulation of the European Parliament and of the Council establishing an infrastructure for spatial information in the Community (Inspire), OJ C 221, 8.9.2005, p. 33; Earth Observation Programme (GMES), OJ C 339, 14.12.2010, p. 14; Space component of GMES, OJ C 44, 11.2.2011, p. 153; European Earth monitoring programme (GMES), OJ C 299, 04.10.2012, p. 72; Copernicus programme, OJ C 67, 6.3.2014, p. 88; Space strategy for Europe, OJ C 209, 30.6.2017, p. 15.

3.4 The upcoming entry into operation of the DIAS system should ensure ease of access and, in combination with the CORDA (Copernicus Reference Access Data) system, deliver to users a clear improvement in the quantity and quality of data available. The data itself should also be assessed on the cloudiness factor, as big part of the existing data could not be successfully used because of cloud cover. This would dramatically reduce the running and depreciation costs of DIAS facilities.

3.5 The EESC emphasises that when assessing the achievements of the Copernicus programme, social and environmental aspects should be considered, in addition to the economic aspects. The EU has committed itself to sustainable development goals and is one of the global leaders in combating climate change, with its clear and very ambitious commitment to COP21, and the Copernicus programme is the most important system in terms of providing clear metrics and tools for measuring performance and achievements, and not only at EU level, but globally.

3.6 In spite of laudable initiatives by the Commission and the delegated service agencies, there is no adequate, coordinated public communication policy on the benefits stemming from the information supplied by Copernicus, therefore. "Hundreds of millions of European citizens are unaware of the benefits of space". The EESC has repeatedly called for a major space portal to be set up, dedicated to European space policies as a whole. This should be the first step towards the creation of the European Space Community, retracing the positive experiences of the European Coal and Steel Community, and its model of governance, which gave rise to the European Community.

3.7 One of the priorities of the European space strategy is to stimulate work and sustainable growth. Having access to the experience and market knowledge of economic operators, innovative start-ups and experts in processing data and creating new applications can contribute to the rapid development in the use of the data produced every day, with huge potential for positive economic, environmental and social effects.

3.8 The governance of the Copernicus programme has been positive, with clear responsibilities given to the Commission and the agencies involved. The next Copernicus regulation should maintain this good balance, continuing to entrust responsibility for coordinating the space component to the ESA and for managing the services to the "entrusted entities".

3.9 The development of space services is crucial to the development of digital services for individuals and businesses. Copernicus services also have numerous practical everyday applications: for example, farms in Austria have boosted their yields by 26 % thanks to satellite monitoring of their fields; in the Netherlands the same system has slashed spending on hydrocarbons drilling, transport and logistics; and several European cities have increased the accuracy of their air pollution measurements by 60 %, while also reducing costs[4].

3.10 The EESC calls for the roll-out of broadband across Europe to be stepped up, particularly in rural and peripheral areas, as was approved in the Digital Single Market strategy.

4 Socio-economic impact of Copernicus in the EU by sector.

3.11 The EESC calls on the Commission to make a particularly strong commitment to disseminating skills and new jobs. The creation of vocational training courses should be supported by European programmes. The spread of precision agriculture will generate better yields by saving on water, fertilisers and pesticides. Agriculture 4.0 will benefit a great deal from the possibility of using land observation data, and combining them with those of geolocation and with other technologies already available today. New professions will be created, such as territorial analyst, cyber-agronomist and developer of applications aimed at climate change mitigation.

3.12 A major problem for the rapid development of the opportunities opened by European space programmes is the issue of financing, in particular for SMEs and start-ups.

3.13 Another major problem concerns cyber security, privacy and security of space infrastructure. Daily life depends more and more on the applications of data coming from space. The EESC recommends strengthening security safeguards and speeding up programmes aimed at cleaning up debris and satellites that are no longer operational[5]. For infrastructure security, the EU should promote a major international agreement.

3.14 "Open the club" should be the new rallying cry to public authorities and the private sector in order to make the participation of civil society effective. The fragmentation of information between various public and private operators deters SMEs in particular from becoming seriously involved in developing possible uses for the system.

3.15 The EESC welcomes the conclusions of the European Council of 1 December 2017, which closely match the points long highlighted by the Committee: the involvement of private stakeholders and a commitment to full information, a long-term vision with sufficient financial resources, development of and support for innovative businesses, greater independence for the Union and its leadership in the area of space policies, currently challenged by traditional and emerging competitors, a user-driven approach, under the non-military Copernicus control and governance, and the continuation of a free, open and accessible system.

3.16 In a recent study, the Commission evaluates the benefits deriving from Copernicus in the period 2017-2035 as between EUR 67 and 131 billion. The continuation of the programme after 2021 will generate profits with factors of between 11 and 21 and will contribute to the creation of 4 000 highly skilled jobs per year.

3.17 The EESC highlights the importance of the GMES for Africa programme and the success of the recent cooperation agreements between the EU and the African Union Commission. The transfer of very useful Copernicus based data and technologies for land management, the identification and maintenance of water resources, and the improvement of agricultural yields should be a key feature of the EU's growing commitment towards Africa and developing countries.

5 OJ C 327, 12.11.2013, p. 38.

4. **Specific Comments**

4.1 The EESC confirms its willingness to take part in support and dissemination initiatives to inform civil society of the socio-economic potential and benefits generated by the Copernicus system, as done with the Space & Society project, which it intends to continue to carry out. Bringing authorities, the agencies, public and private service supply companies and civil society together is key to the outstanding success that is expected for applications stemming from strategic projects such as Galileo and, most of all, Copernicus.

4.2 The EESC shares the Commission's concerns regarding the poor involvement of "non-space" users, an aspect that requires far greater attention than has so far been forthcoming. The positive experience of the European GNSS Agency (GSA) could be repeated for Copernicus by entrusting a single body with the responsibility for information and the opportunities provided by the various Copernicus services. A new agency could be a solution.

4.3 The EESC believes that one of Copernicus' greatest successes is based on its origin as a user-driven programme, and particularly appreciates its inclusive governance model. For the first time in a strategic Union programme, the user community is involved alongside the Member States in strategic choices, by means of the User Forum. The EESC recommends that private users, chosen by their European associations, also be included on a permanent basis in the Forum, together with those appointed by the Member States. The EESC declares its willingness to participate in the forum. At national level too, user forums should be open to the broadest possible participation of civil society.

4.4 One of the problems that should be quickly solved is the standardisation and interoperability of in situ data. These issues derive from the different applications of the INSPIRE[6] directive and inconsistent legislation at national level. The EESC recommends that the Commission and Member States commit to quickly ensuring the essential harmonisation of the languages and procedures for the complete effective and free use of the data.

4.5 The EESC considers the involvement of private investors, the European and international financial system and investment funds as essential. The creation of "space bonds" secured by guarantees that could be provided by European banking institutions such as the EIB or international institutions such as the International Bank for Reconstruction and Development (IBRD), for different space related projects, including projects in developing countries, could be a good solution.

4.6 The EESC believes that the principle of reciprocity with third countries should be applied, particularly as regards the use of launchers. A preference should be given to European launchers, which are bolstering supply with the forthcoming launch of the Ariane 6 and Vega C launchers, the result of European cooperation. These are flexible carriers, which complete the range of options available. Ariane 5, active since 1996, with a record of 82 successful launches, will operate until 2023 and was chosen as the carrier of the James Webb telescope, heir to Hubble. The international market is extremely competitive and some companies in competing

6 INSPIRE Directive.

countries, with protectionist policies, are proposing dumped prices to get orders in the coming years.

4.7 In addition to the economic and social activities, the EESC considers extremely important the contribution to the fight against people trafficking, saving migrants in extreme danger, and securing the EU's own borders with effective measures to combat terrorism originating in particular from the war-torn regions of the Middle East. Security and defence of the territory respond to a growing demand from European citizens.

Brussels, 14 March 2018

Georges DASSIS
President of the European Economic and Social Committee