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REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

on the Interim Evaluation of the European Earth Monitoring Programme (GMES) and its Initial Operations (2011-2013)

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1. INTRODUCTION

This report sets out the main findings and recommendations of the interim evaluation of the GMES Initial Operations Programme (hereinafter "the Programme"), presents the Commission's response to the evaluation and lists the measures to be taken in light of the findings.

The Commission complies with Article 14(2) of the Regulation on the European Earth monitoring programme (GMES) and its initial operations (2011-2013)[1] to communicate an interim evaluation to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions. Being the report of an interim nature, it does not deliver the complete information requested by a full ex-post evaluation, which, in accordance with the GIO Regulation, will be addressed by the end of 2015. For this reason the report has mainly adopted a qualitative approach to the evaluation and just proposed a set of possible indicators for future evaluations.

The delay in dealing with this action was due to the overwhelming drain on resources due to the urgent drafting of the Copernicus Regulation for the operational phase of the Programme and also the Delegated Act to define the Copernicus data policy. This was considered a priority to ensure the maximum continuity and stability of the regulatory framework for the users' to take-up. The full interim evaluation report has been published on Copernicus website[2] and it is always available there to ensure the information source for deepening the issues summarised hereafter.

2. BACKGROUND

2.1. From GMES to Copernicus

Following the 1998 Baveno Manifesto, the EU made a strategic decision to develop an independent European space-based Earth Observation capacity at the 2000 Gothenburg Council to deliver services in the environmental and security fields through GMES (Global Monitoring for Environment and Security). The intention was that this capacity would be firmly built on, and strengthened by existing research capacities in the Earth Observation field led by the European Space Agency (ESA), EUMETSAT and individual Member States. From 1998 to 2013, the EU and ESA funded the initial development of GMES, i.e. investing in the development of pre-operational services, in GMES Initial Operations and in the space component.

[1] Regulation (EU) No 911/2010 of the European Parliament and of the Council of 22 September 2010 on the European Earth monitoring programme (GMES) and its initial operations (2011-2013). OJ L. 276, 20.10.2010, p.1.

[2] http://www.copernicus.eu/pages-principales/library/study-reports/

In July 2013, the European Commission adopted the Proposal for a Regulation on establishing the European Earth Observation Programme, Copernicus[3]. The name change to Copernicus marked the transition from the research and pre-operational phase to fully operational.

The primary aim of the programme is to provide, under the Union's control, a set of autonomous services which give access to accurate environmental and security data and information and which are tailored to the needs of users, primarily those in charge of making, implementing and monitoring policy in the EU and its Member States. The EU investment aims at filling observation gaps, providing access to existing assets and developing operational services. Copernicus also has a key role in delivering the Europe 2020 strategy for smart, sustainable and inclusive growth.

Copernicus has six operational services: Marine Monitoring, Atmosphere Monitoring, Land Monitoring, and Climate Change Monitoring as well as providing Emergency Management and Security support. A combination of data from satellites and in-situ sensors (such as buoys, balloons and air sensors) provide timely and reliable added-value information and forecasts to support, for example, agriculture and fisheries, land use, urban planning disaster response, maritime transport and air pollution monitoring.

2.2. GMES Initial Operations

The Programme was set up as an interim instrument to bridge the transition from GMES pre-operational services developed during the 'build up' phase financed through FP7 Space funds, to the full exploitation of GMES post-2013. , The GIO Programme officially started on 1st January 2011, and the first GMES operational services commenced in April 2012.The two services which have reached a fully operational status are the Emergency Management Service (EMS) and the Land Monitoring service. The Programme focuses on the full service chain for emergency response and land monitoring: infrastructure operations, data access and product development. The rationale for providing funding to these areas was to: (i) ensure continuity with the GMES Preparatory Actions[4], (ii) address the urgent need for emergency maps and services and (iii) recognise that private service providers would cease their activities without continuity.

2.3. The Programme Interim Evaluation

The interim evaluation was commissioned by the Commission and undertaken by the Centre for Strategy and Evaluation Services, which drew on data collected through research and interviews carried out in 2012.

The aim was to provide an assessment of the implementation of the Programme to date and in particular to:

- Assess the relevance (and coherence), efficiency, effectiveness (and impacts), added value and sustainability of the Programme implementation.
- Assess the progress made with respect to the specific aims of GMES-related policies: data and information policy, security policy, the GMES User Forum, GMES Committee and the Security Board, etc.
- Provide information in preparation for the GMES programme beyond 2013.

[3] COM(2013) 312 final/2 of 12 July 2013.

[4] The GMES Preparatory Actions were allocated a budget of EUR 10.2 million during the 2008-2010 period. Three annual calls for tenders of 3 years duration were supported which led to the award of five preparatory projects.

At the time of the evaluation services were at an early stage and therefore, the focus has also been on assessing progress more broadly, e.g. the extent to which the Commission has played an effective overall coordination role, and to what degree the newly established GMES User Forum has achieved its aims.

3. MAIN FINDINGS OF THE EVALUATION

The present report builds on the structure of the external interim evaluation report. The main focus of the latter has been on the operational aspects of the Programme, namely the Emergency Management Service and the Land Monitoring Service. The remaining services were either pre-operational, i.e. based on research projects financed under FP7 funds, or in the design phase. This is the case of the MyOcean2 and MACCII FP7 projects for the Marine and Atmosphere components respectively. The Security Service and the Climate Change Service do not have a single reference project but can build on the results of a panoply of research projects and national initiatives. The space component has been analysed in the report just from the point of view of data buy from contributing missions, based on requirements expressed through the Data Warehouse (DWH) mechanism agreed with ESA (since the dedicated Sentinel satellites were still under construction).

3.1. The operational services

3.1.1. Emergency Management Service (EMS)

The EMS-Mapping Service, launched in April 2012, is highly important to the needs of national civil protection agencies and wider users. Therefore, users' needs were taken into account in the design, testing and validation phases of EMS.

Lessons learned through the linkER[5] service under the GMES Preparatory Action and SAFER[6] pre-operational project were highlighted in deliverables submitted to the Commission. The service has been effective in incorporating the cumulative practical experience and knowledge built up over several years about user needs in the emergency response field through dedicated thematic workshops, working groups and user meetings organised through previous projects. Data products developed through EMS-Mapping indicate strong continuity with those developed through the pre-operational FP7 SAFER project, although some changes have been made, which are linked to the specifications for the new operational service.

An important achievement of EMS-Mapping is the availability of a fully operational service capable of delivering data products in both rush and non-rush modes from the outset of the service's launch. However, since the non-rush mode had not yet been activated at the time of the evaluation, it seemed likely that the rush mode service would have a greater impact on assisting the user community particularly in the civil protection field. There were high levels of satisfaction among service users with final image products. However, some civil protection users of EMS-Mapping data products stated that they would like to have access to primary datasets through ESA's Data Warehouse (DWH) – providing access to contributing mission satellite data – to be able to integrate these into operational workflows. The EMS-Mapping Service could be made more effective, if the space component were to be supplemented, where appropriate, in rush mode with very high resolution in-situ data for specific types of emergencies (e.g. airborne remote sensing data for earthquakes). Continuous efforts are

[5] linkER is the Preparatory Action intended to support the operational use of GMES Emergency Management service products across the whole European Union.

[6] The SAFER project aims at implementing preoperational versions of the Emergency Management service.

needed within EMS-Mapping (rush mode) to improve the timeliness of EMS data availability following service activation.

The network of National Focal Points (NFPs) set up through the linkER Preparatory Action and coordinated by DG ECHO's Monitoring and Information Centre has played a core role in disseminating EMS-Mapping data products to relevant players at regional and sub-regional levels. These actions have proved to be very important to structure the user community response, but in some Member States more work is required in this area.

3.1.2. Land Monitoring service

The data products of the pan-European component of the Land Monitoring service are highly relevant to the identified needs of European and national environmental policy makers and public authorities responsible for environmental monitoring and reporting. The products envisaged under the global component of the Land Monitoring service are also extremely relevant since it is important to be able to monitor vegetation and various other bio-parameters on a frequent basis so as to inform EU policy areas such as agriculture and international development, where the EU has global commitments, and to be able to provide input to global spatial information sharing initiatives, such as the Global Earth Observation System of Systems (GEOSS).

The streamlining phase in the development of specific products has been essential in ensuring that the outputs are as homogeneous as possible. However, it is important for full operation that detailed product specifications are published very early on in the lifetime of the service contracts. In this regard the evaluation underlines the need for a more accurate specification of observational requirements (e.g. through the specification of the vegetation seasonal issues in the Data Warehouse for satellite data requirements).

Although the future Copernicus Sentinels will produce mid-resolution data, there was evidence of a growing need within the services for higher volumes of high resolution data. The data procurement scheme based upon the Data Warehouse requirements which is currently in place under ESA coordination will be maintained and improved in the future for this type of data.

The Land Monitoring service had a longer than expected definition phase for the development of thematic products and the streamlining process required aligning outputs produced by the different service contractors across different geographic domains. Issues remain regarding the timeliness of pan-European land data products availability

The global land component of the service has the potential to support evidence-based policy making, especially for external EU policies in domains such as agriculture, food security, environment, desertification, drought monitoring and tackling climate change at the international level. The service should also help the EU to meet its existing European commitments under international treaties and conventions by contributing to GEOSS, thereby fulfilling the EU's international commitments regarding Earth observational systems. Initiatives such as the EEA's Corine Land Cover User Application Database are a good example of the different ways in which Copernicus core products are being used further downstream.

3.2. User involvement, downstream development and data access

The Programme was found to be of paramount importance to the needs of users, especially at European and national level. Pan-European data products are needed for evidence-based policy making through space-based observation, monitoring and reporting activities in critical areas such as meeting key European environmental targets and monitoring the impact of climate change.

There was general consensus that the Programme delivers added value because it provides European level data products that are consistent and comparable, albeit GMES could still be improved in certain areas (e.g. clear data policy, easier access to data),There is the need to ensure appropriate engagement with local and regional authorities, who are not as clear (especially in some new Member States) on how GMES products could be applied to meet their needs in developing localised services for citizens. A generally positive picture has emerged in the evaluation with regard to users' involvement: they seem to be very interested in the outcomes and in obtaining data products from the two operational services funded through the Programme.

Despite short term challenges, there is potential for Copernicus to create employment and to support economic growth through the development of Earth Observation services, over the medium and long-term There is also a need to harness this potential more effectively by using feedback on the potential use of data received from public authorities (especially at local and regional level). In addition, there is a need for further customisation of data (and the incorporation of additional thematic datasets) before the products can be said to meet user needs at local and regional level. Arguably, this development stage can be undertaken by new players entering the data provision value-chain and developing value-added downstream services.

A potential for the development of the downstream market has been recognised, together with the recommendation of ensuring continuity in the programme development and in the services provision. Figures from the EEA suggest that making data products which integrate GMES data with data from other sources (e.g. Corine Land Cover Image 2006[7] and the Urban Atlas[8]) freely available online has already stimulated the development of downstream services by the public sector. The availability of quality and timely reference data and in situ data has been identified as critical to the success. Progress has been made through the framework of INSPIRE[9] to remove outstanding technical barriers to the harmonisation of national reference data, but work still remains to be done.

Obstacles to downstream development have been identified as: a lack of knowledge and awareness among SMEs on accessing data, uncertainty regarding the potential size and scope of public markets for services using data, routes to market and whether there is sufficient demand (and ability to pay) to generate economies of scale. What were identified as risky funding uncertainties have now been removed despite the fact that the Copernicus budget approved in the MFF is lower than the Commission's original proposal, the new Copernicus Regulation and future management of the Programme are being designed to adapt to this situation and to ensure the continuity necessary for stakeholder investment in Copernicus data exploitation.

3.3. Overall results of the evaluation

In general, the evaluation confirmed the relevance, effectiveness and efficiency of the Programme. It is clear that the objective of establishing the first operational services has already been achieved.

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7 In 1985 the Corine programme was initiated in the European Union. Corine means 'Coordination of Information on the Environment'. It was a prototype project working on many different environmental issues. The Corine databases and several of its programmes have been taken over by the EEA.

8 The Urban Atlas is providing pan-European comparable land use and land cover data for Large Urban Zones with more than 100.000 inhabitants as defined by the Urban Audit. The Geographic Information Systems data can be downloaded together with a map for each urban area covered and a report with the metadata.

9 Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community.

With regard to coherence, although the Programme Regulation was adopted before the Europe 2020 strategy the programme is coherent with the strategy's aims of promoting smart, sustainable and inclusive growth, for instance, through the development of downstream services, which will contribute to growth and jobs. However there are barriers to maximising potential due to a lack of awareness among enterprises and a there is also a demand for higher resolution data.

Overall, although it may be premature to provide a full assessment, the two main operational services developed through the Programme are expected to deliver good value for money; other impacts will need to be assessed at the ex-post evaluation, which will take place in 2015.

Stakeholders were very satisfied with the overall management and implementation arrangements within the Programme. Among the results of the interviews, it is worth noticing that most users declared to be interested both in already operational Services and in the transversal products to come from the full set of operational Services. The evaluation showed the existence of alternatives to GMES for a part of the users: those may be at a national level, losing the European perspective of the Programme under scrutiny, or not for free as the products from the Services and the data from the Sentinels will be. The users were satisfied with the delegation of specific functions to the JRC, the EEA and DG ECHO's Monitoring and Information Centre relating to the development of two GMES services. For instance, appropriate technical expertise has been made available by the JRC and the EEA to steer the development of the EMS-Mapping and land services, and to ensure adequate coordination in defining data and imagery needs to ESA. However, further cooperation is needed to ensure that the Data Warehouse managed by ESA procures data that is 'fit for purpose'.

The work of the responsible Commission Unit has been positively evaluated and the existence of continuity between research projects and pre-operational services has been recognised. Nonetheless, the need for better prioritisation was underlined. Overall, the Programme has been judged as an effective mechanism for developing fully operational services. Due to budgetary limitations only two services out of the intended possible six could be developed at this early stage; this choice was considered appropriate since it provided the scope to continue funding other services in a pre-operational environment.

The European added value of the Programme was clearly identified as addressing users' cross-border Earth Observation monitoring needs in the emergency management and land sectors. Many Earth Observation needs for policy makers and public users are inherently cross-border in nature due to Member States having shared responsibility for monitoring border areas and the inter-connectedness of various regions. Different countries also share similar environmental or urban characteristics, e.g. bio-diversity monitoring in riparian zones, urban planning challenges between cities of a similar size.

Over time, through a 'phase in, phase out' approach, European datasets could incorporate contributions from National Mapping, Land Registry and Cadastral Agencies. This is however dependent on resolving outstanding problems related to insufficient data harmonisation In the interim period, both types of dataset need to co-exist, with proper linkages and interoperability between the two, also thanks to the INSPIRE process.

4. MAIN RECOMMENDATIONS AND PLANNED FOLLOW-UP ACTIONS

The Commission has learned valuable lessons from the evaluation. It endeavours to continuously improve its implementation of the Programme and take into account the recommendations in the design and implementation of the fully operational phase. The evaluation has also provided important practical guidance for the preparation of the Proposal

for the new Copernicus Regulation (COM(2013) 312 final/2 of 12 July 2013) for data policy development and for data requirements identification (i.e. Data Warehouse).

To answer the need to a better data buy scheme, both for the Emergency Management and the Land Monitoring Services, a new version of the Data Warehouse is currently under discussion between the European Commission and the European Space Agency. The need to improve timeliness, resolutions and acquisition windows has been clearly outlined in the document. Moreover, as far as the timeliness of EMS service, meetings are held between the Service provider, ESA and the EC, to understand responsibilities and narrow possible bottlenecks, improving the overall performance.

Questions arose in the evaluation regarding the future role of the User Forum which must be separated from that of the GMES Committee, so as not to undermine the User Forum's role in providing the link in governance arrangements between the Commission, Member States and 'real' end-users. The User Forum is not mentioned in the current proposal for the Copernicus Regulation, because it does not follow standard comitology rules; however regular stakeholders' involvement will be maintained[10], in particular at the service level and with more specialised user groups.

With regard to administrative and reporting burdens on stakeholders, there did not appear to be particularly arduous requirements. The service operators did not raise any specific issues on the amount of information required during the implementation of service contracts. However, the monitoring framework and indicator set for GMES had not been fully agreed and implemented when the evaluation took place. A review of indicators to measure the future contribution of the Programme in achieving Copernicus-related policy objectives has been carried out by the evaluator; this will prove important in measuring the performance of a fully operational programme such as Copernicus and will be included in future service agreements.

As services and data are already being used across a diverse range of policy areas, the evaluation results are of interest to wider Commission services, especially the following DGs: AGRI, CLIMA, EEAS, ECHO, ENV, MARE and REGIO. In addition, the European Environment Agency (EEA) and the JRC may draw on the evaluation findings in their present capacity as technical coordinators for the GMES Emergency Management Service and the Land Monitoring service.

Following the recommendation, services development has been designed to exploit synergies and avoid duplications. In the evaluator's view, up to now there has been a tendency to focus more on the space component to the detriment of the in-situ and services components. Greater policy attention was considered crucial in ensuring services are sufficiently well resourced and in closing data gaps, since these components are critical to the ultimate success of the programme. At the Commission there has recently been a re-organisation to ensure that both the infrastructure component and services get due attention: there are now two Units, each one dealing with one Copernicus area. Moreover, the draft Copernicus Regulation responds to the recommendation by foreseeing a considerable increase in the funding for services.

The evaluator stressed the need to finalise the data and information policy. Copernicus stakeholders and in particular the private sector, who are less well informed, need clarity on how the concept of 'full and open data access' will operate in practice. The Commission has recently adopted the Delegated Regulation[11] on data policy which clarifies these issues.

[10] COM(2013) 312 final/2 of 12 July 2013, Art 2(2), Art 2(3).

[11] Commission Delegated Regulation of 12 July 2013, Document C(2013)4311 final.