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COMMISSION STAFF WORKING DOCUMENT

EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT

Accompanying the document

Proposal for a Regulation of the European Parliament and of the Council

establishing the Copernicus Programme and repealing Regulation (EU) No 911/2010

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PRELIMINARY REMARK

In February 2013 a new version of Copernicus Impact Assessment (IA), updating the version previously submitted to accompany the document on the *Future of the European Earth monitoring programme (GMES)*, was submitted to the Impact Assessment Board (IAB). This re-submission took into account the recent Council decision on the MFF and hence focused on the optimum way to use the budget allocated to Copernicus. It built on previous Cost-Benefit Analyses, incorporated the results of new studies performed in 2012 and 2013 and considered policy options illustrated by the relative merits of varying the apportionment of the given proposed budget to the space, *in situ* and services components. The document that is now circulating reflects the adjustments to the Impact Assessment that follow the additional comments received by the IAB.

UNDERLYING PROBLEM TO BE ADDRESSED BY GMES/COPERNICUS

– *Insufficient existing earth observation services*

In the last 30 years, substantial R&D efforts in the field of Earth Observation have been made by the EU, the European Space Agency (ESA) and their respective Member States, with a view to developing infrastructure and pre-operational Earth Observation services. However, many of the existing Earth Observation services in Europe are inadequate due to infrastructure gaps and lack of guarantees on their availability in the long term. Copernicus is conceived to address this weakness.

Economic investments at risk

To date, **the total investment made by the EU, ESA and its Member States accounts for more than € 3.000 Mio**. This massive investment demands that Copernicus be sustained for the long term, otherwise almost all past investments would be lost, with the additional risk to disrupt national capacities to maintain their investment in space earth observation activities as the EU dimension would no longer provide a political and programmatic framework. It is thus very likely that the situation would go back to fragmented and uncoordinated space activities with remaining gaps, unsolved redundancies, and lack of economies of scale, as they existed before the creation of GMES.

This risk of discontinuity represents a major concern not only for end-users like public authorities, but also for downstream service providers, as they are unlikely to invest significantly in non-mature, risky markets and will face additional difficulties in raising capital. The GIO (GMES Initial Operation) Regulation will be valid until the end of 2013. In the meantime a new budget has been proposed by the European Council for GMES, which is entering its operational phase from the start of 2014 under the new name of Copernicus. These changes require a new Regulation which will propose decisions on, among other topics, the issues of programme governance, of ownership of the infrastructure and of budget

apportionment between the different components. In addition, a Delegated Act on Copernicus Data and Information Policy, to be applicable to the operational phase, has been prepared and enshrines the general principle of full, open and free-of-charge access to data and information produced by the Copernicus programme. It is crucial that this 'upgrade' of the programme results in a smooth transition to the new operational phase, especially from the perspective of existing and potential users, with the highest level of continuity and the efficient apportionment of the budget, as well as efficient governance choices. The following paragraphs underline the reasons for which these choices are especially significant, sensitive or urgent.

Innovation potential

It is a cornerstone of EU policy that EU-funded Research & Development initiatives are translated into innovation. Therefore the potential to unleash the innovation capacity linked to Copernicus, which is mainly a service related innovation, is absolutely vital for the pull-through of R&D investments into tangible benefits such as the very real potential for significant economic growth and jobs, as illustrated by the Impact Analysis model described below.

Autonomy

Copernicus gives the EU an autonomous capacity without which it would have to rely on uncoordinated sources from its Member States and on non-European (e.g. US) satellites and sources of information, for the implementation of its policies.

Employment

Satellite applications systems are the main source of income for the European space industry with Earth Observation being one of the two most significant segments in terms of income, currently accounting for around 30% of the total income for the European space industry. Recent studies have analysed the impact of Copernicus data availability on downstream markets development and have added the figures of downstream sector employment to the figures of jobs development in the space related (upstream) sectors.

Who are the most affected groups?

The Copernicus **user community** is large and diverse, spanning from international stakeholders to European citizens. The most affected groups include:

– At European level, **Commission services. Many** DGs are already using or are planning to use Copernicus products (ECHO, ENV, AGRI, MOVE, MARE, REGIO and CLIMA). **EU agencies** are also important users and actors (EEA, EMSA, FRONTEX, EUSC), as well as the European External Action Service (EEAS), intergovernmental European agencies (ECMWF, EUMETSAT, EDA, ESA), and European programmes, associations and networks (EMEP, EUMETNET, Eurogeographic, Eurogeosurvey, OSPAR, HELCOM).

– At **international** level, Copernicus is developing relationships with GEO partners, UN agencies and international research programmes;

– **National Authorities** such as Ministries of Environment, Transport, Interior, Agriculture, Energy, Fisheries, Land Management, Maritime Affairs, and Public Local Authorities, but also specific entities such as Civil Protection Authorities and Risk Control Agencies.

– A wide range of users in the **industry** framework (space manufacturing sector and related operations, service provision, data production and dissemination sector, development of value added services in the downstream sector), and ultimately European **citizens** who will use the final products.

OBJECTIVES

General objectives

The over-arching objectives of defining, financing, establishing and operating a Copernicus, long-term operational programme of activities as described in the proposed Regulation on establishing the European Earth Observation Programme (Copernicus) are to actively address the problems described above.

- The Copernicus services aim to enable public policy makers in particular to:
- prepare national, European, and international legislation, for instance in the field of environmental matters, including climate change,
- monitor the implementation of this legislation
- access comprehensive and accurate information concerning safety and security matters (e.g. for border surveillance, civil protection activities, etc).

Operational policy objectives

The shifting from a research phase to an operational phase requires the definition of the budget apportionment and the re-thinking of the governance structure in the most cost-effective way. The reasons are manifold: research projects are smaller in terms of budget and objectives, limited in duration and conceived as prototypes of what the whole Copernicus structure could look like; moreover they are often been managed jointly by different services of the Commission and by the specific endorsed partners. The chosen budget apportionment follows the cost-benefits analyses summarised in the IA; the governance framework has to ensure a good project management and implementation, facing the limited size of the Copernicus Unit and exploiting non-EC already existing capacities.

Relevance to other EU policies

Copernicus will deliver information to policy makers, public authorities, businesses and European citizens. Hence Copernicus has the potential to support all relevant Union policies, instruments and actions, where understanding the way environmental changes affect our planet is paramount. Many examples exist of the Copernicus contribution to EU policies in such areas as (detailed in the IA Report): International cooperation policies, Transport policy, Environmental policies, Humanitarian aid, Energy, Regional policy, Climate change policy, Internal affairs and security, Agriculture and Marine related policies.

POLICY OPTIONS

The Impact Assessment analyses two different sets of options: options on ***budget apportionment*** and options on ***governance***.

A. Options on budget apportionment

Given the amount of funding decided by the European Council for the Copernicus programme, the three scenarios (options) described in this section examine the effects of varying the amount apportioned to the three main components: space infrastructure, contribution to the *in situ* infrastructure and the financing of the Services. The analysis emphasises the trade-off between investments in space infrastructure and services, while keeping the expenditure on the *in situ* stable, given the inherent nature of this component (primarily reliant on national investments). In order to make the analysis comparable with previous studies the impacts are accumulated until 2030 with a notional assumption (consistent with those studies) for a funding level beyond the 2014-2020 MFF.

A.1 Methodology

The main analysis performed in 2013 in support of this Impact Assessment builds on two previous studies (referenced and summarised in the IA). In order to refine the previous analyses, the 2013 study examined the extent to which benefits scale in relation to the level of apportionment of funds between the Space and Service components. This allows a comparison of multiple scenarios that all share the same budgetary envelope.

A.2 Description of options

The Impact Analysis considered three options/scenarios as follows.

I - Service Delivery Pull in which a relatively large share of the available budget is used to finance the provision of services whilst still allowing for a level of funding for the Space component in line with previous studies. This scenario tries to combine the minimum investment in space infrastructure with the maximum possible and practical allocation to services.

II – Intermediate in which the investment in the Space component is increased, while the Services component is reduced proportionally.

III - Technology Driven which foresees the highest possible investment in the Space component while the Services component would be reduced to the bare minimum.

A.3 Analysis of impacts

The budgetary apportionment assumptions, the financial impacts and the impact on employment, for each scenario, are presented in the tables below:

		I - Service Delivery Pull			II - Intermediate			III - Technology Driven			Total
		Space	***In Situ***	**Services**	**Space**	***In Situ***	**Services**	**Space**	***In Situ***	**Services**	€ M
TOTAL (2014-2030)	€ Mio	**400**	**22**	**119**	**422**	**22**	**97**	**438**	**22**	**81**	**541**
	%	74%	4%	22%	78%	4%	18%	81%	4%	15%	

Budgetary apportionment by scenario (Annual Averages 2014 -2030)

			I - Service Delivery Pull	II - Intermediate	III - Technology Driven
2014-2020	Cumulative Benefits	€ Bn	6,3	6,1	5,9
2021-2030	Cumulative Benefits		23,0	22,1	20,8
TOTAL (2014-2030)	**Cumulative Benefits**		29,4	28,2	26,7
	Downstream Impact in 2030		1,03	0,98	0,95
	Integrated contribution to European GDP	%	**0,164%**	**0,157%**	**0,149%**
	Integrated BCR	:	**3,30**	**3,17**	**3,01**

Integrated Impact Simulation By Scenario (Undiscounted)

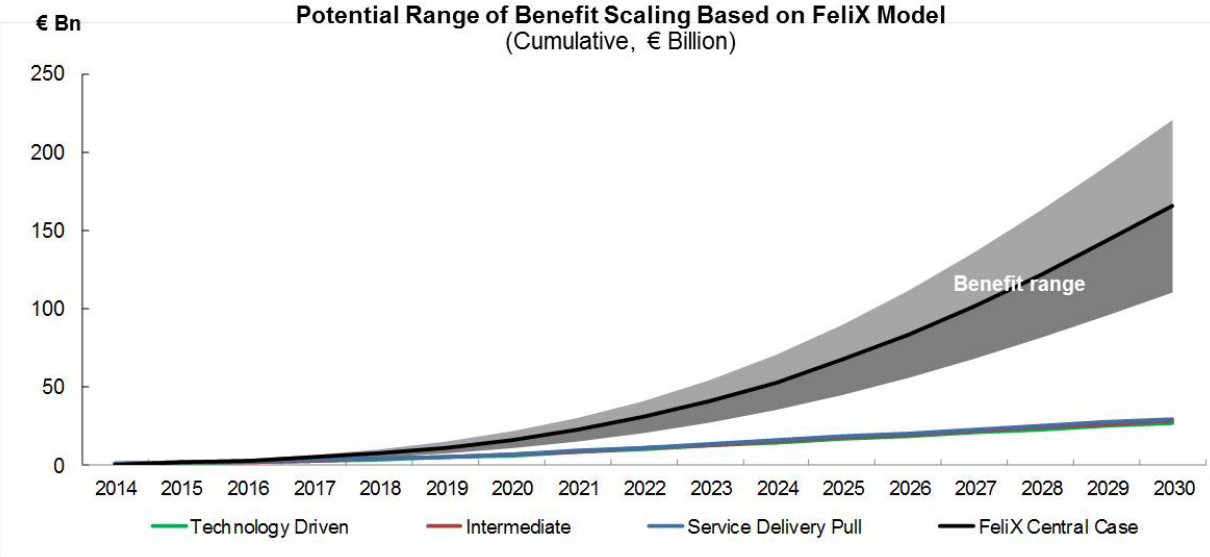
		I - Service Delivery Pull			II - Intermediate			III - Technology Driven		
		DE	**IE**	**T**	**DE**	**IE**	**T**	**DE**	**IE**	**T**
		Number of jobs created / maintained by 2030								
TOTAL (2014-2030)	**US**	2.030	5.270	**7.300**	2.140	5.550	**7.690**	2.220	5.770	**7.980**
	MS	710	1.830	**2.540**	680	1.750	**2.420**	650	1.690	**2.340**
	DS	9.170	29.340	**38.510**	8.710	27.850	**36.550**	8.460	27.070	**35.530**
	T	**11.900**	**36.440**	**48.330**	**11.510**	**35.150**	**46.650**	**11.330**	**34.520**	**45.840**

Employment Impact by Scenario (Number of jobs created / maintained by 2030)

(US=Upstream, MS=Midstream, DS=Downstream, DE=Direct Employment, IE=Indirect Employment)

A.4 Potential for dynamic increase on impacts

In order to complement the above analysis, the so-called FeliX model, a system dynamics model and benefit simulator, which takes into account the complex relationships between natural and socio-economic systems has been developed. The model forecasts substantially higher benefits (~8 times, in the long term) than the 'static' benefit projections of the present study. This is due to the enlarged scope of the FeliX approach and its broad assumptions of underlying infrastructure (namely GEOSS, to which Copernicus is expected to constitute the EU's major contribution). The comparison with the FeliX output serves to highlight the strong potential for higher-order magnitudes of benefits when Copernicus is viewed as part of a broader system of systems.



Source: EuroGEOSS FeliX, Booz and Co., STP analysis

A.5 Conclusion

The above Cost-Benefit Analysis shows that within the budget foreseen by the European Council, **Scenario I (Service Delivery Pull) would have the highest benefits and therefore would be most cost-effective scenario**.

B. Options on governance

- The objective for governance is to assure that all aspects ranging from policy supervision to technical implementation are clearly fulfilled by appropriately mandated organisations:

– The *policy supervision and overall coordination* consists in defining the policy objectives, the high level orientations and content of the programme, the associated budget requirements, the main organisational and architecture principles, and the overall guidelines for programme implementation.

– *Management*: the managing authority follows the political guidelines and is in charge of the management of budgets for the implementation of tasks. It prepares and implements the work programmes and supervises their implementation. It is responsible for the preparation of administrative arrangements to the entities who will be in charge of the technical implementation of the tasks;

– *Technical coordination*: is usually carried out by the management authority, but in some cases, same tasks may be delegated to another body, e.g. preparation of contracts and SLAs, monitoring of implementation, consolidation of user and service requirements.

– The *technical implementation* is conducted by the operating entities in charge of specific tasks (construction of satellites, delivery of services).

- For all possible options the European Commission should remain politically responsible. The responsibility for the technical implementation of the services must, on the one hand, take into account the invaluable experiences gained during the GMES Initial Operations (and earlier) phases while, on the other hand, pay due respect to the **principles of open competition**. The latter concern, which will probably be addressed via a competitive process, should nevertheless take account of the open competition that underpinned the awarding of FP7 funded pre-cursor services as well as ensuring that principles of open competition are embraced by the coordinating entities of the services through the selection of partners.

The following table summarises the analysis of some **programme governance options**.

Option	**Description**	**Comments**
Commission in charge of overall coordination and management	The Commission would remain in charge of the political supervision and the overall coordination of the programme, including the management of tasks and budget. The technical coordination of space infrastructure would be outsourced to competent bodies as will the responsibility for the technical implementation of the services.	This option would preserve the current set up. With the outsourcing of tasks, the impact on the EU resources would be limited. The Commission would remain involved in the direct management of the programme, including the budget implementation, while concentrating on its core business, namely the political supervision of the programme.
Delegation of the management to an existing European Agency	The Commission would remain in charge of the overall coordination and political supervision of the programme but not of its management. Activities, such as the budget implementation, would be delegated to an external Agency. The Commission would remain in charge of relationships with partners and users and would play a political role of supervision and coordination. The daily management would be entrusted to an Agency more suited to this role with more specialized staff, under the control of the Commission.	This option is in full respect with the separation principle between supervision and management. Moreover, operational efficiencies could be created if synergies with other programmes can be realised. The delegating tasks to an Agency would still have an impact on EU resources.
Delegation of the coordination and management to the European Space Agency	The Commission would no longer be in charge of the programme. The overall coordination, including budget management and implementation of tasks, would be delegated to ESA, subject to the appropriate amendment of the constituent acts or to functional arrangements. The Commission would no longer be in charge of the political supervision of the programme and of relationships with partners and users.	The Commission's political control over the programme would diminish as would its influence in defining the objectives and requirements. The implementation of and access to Copernicus infrastructure and services may be reduced to a few MS willing to continue their investments. It would risk becoming a technology-driven programme rather than a user-driven one. It could require amendment to the ESA Convention, which would be difficult and lengthy. It could risk that the services and *in situ*

		components may receive a lower level of focus.
Delegation of the management to a new Agency	A new Agency would be set up for the programme management of GMES/Copernicus and the implementation of the corresponding budget. This Agency could be an EU Agency or an international one. The Commission would play a political role of supervision/coordination. The daily management would be entrusted to the Agency but under the control of the Commission.	This option is likely to make the institutional landscape more complex. Synergies would not be maximised, with potential risks for the implementation of the programme. Creating a new entity could prove complex and long winded.

MONITORING AND EVALUATION

Ex-post evaluation of GMES Preparatory Action and Interim evaluation of GMES Initial Operations have already taken place. Their results are reported in the IA document and have been taken into account to guide the new policy initiative. On-going monitoring of Copernicus will take place through the User Forum. Future evaluations will focus on the achievement of the operational objectives and the impact of operational services on the Earth observation industry in Europe as well as on the user take-up and downstream exploitation. A table showing possible indicators is included in the Impact Assessment document.