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European Space Policy

SUMMARY OF THE IMPACT ASSESSMENT

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1. LEGAL AND POLITICAL CONTEXT

This impact assessment accompanies the Commission's Communication on the European Space Policy, which has been elaborated under the following legal and political circumstances.

The aim of the cooperation established by the Framework Agreement between the European Community (EC) and the European Space Agency (ESA) is "The coherent and progressive development of an overall European Space Policy ... to link demand for services and applications using space systems in support of the Community policies with the supply of space systems and infrastructure necessary to meet that demand."

The European Space Policy is presented in parallel by the Director General of the ESA to the ESA Council. The Competitiveness Council of the EU and the Ministerial Council of the ESA, meeting under the Framework Agreement as the 'Space Council' in June 2005 set out guidance on the content and nature of the European Space Policy and the European Space Programme. They are part of a continuing process which has already influenced programmatic decisions in the EU, following on from the earlier Green and White Papers and a Commission Communication 'European Space Policy - Preliminary Elements'.

The Policy sets the framework for future developments and does not entail specific expenditure or regulatory measures. This impact assessment is proportionate to the nature of the policy.

The impact assessment has been supported by a parallel factual study¹ led by consultants Risk & Policy Analysts Limited (RPA). This draws on existing studies, where possible and analyses possible future market scenarios and governance scenarios for the institutional framework, including their effect on each other.

Stakeholder consultations have been extensive. The views received included:

- the EU to address space policy at the highest political level and increase its involvement, including a competence in the Constitutional Treaty;
- an increased institutional market to allow industry to compete successfully in commercial markets;
- independent access to space is of strategic importance;
- a coordinated approach is needed between national and European programmes to secure operational funding for Global Monitoring for Environment and Security (GMES); satellites have the capacity to bridge the digital divide;
- international cooperation in space is important and need not undermine European autonomy;

¹ RPA February 2007: Impact assessment relating to the Economic and Governance Evolution of Space in Europe, RPA February 2007, prepared for EC DG Enterprise & Industry

- new EU Member States are keen for early involvement in space-related activities;
- the Policy should cover satellite operator interests.

The Policy and the associated European Space Programme have been compiled in consultation with key government stakeholders in the High-level Space Policy Group (HSPG). The Group has emphasised that industrial efficiency should not lead to the neglect of political and strategic motivations for investment. Any decisions on closer association of the ESA in the EU framework would be taken only on the basis of thorough analysis.

2. PROBLEM DEFINITION

Space is a high risk, high innovation sector needing sustained technology investment. From concept validation to actual implementation and qualification in orbit may take 10 years. Left to itself, it is unlikely that the private sector would be able to bear the technological and financial risks.

Space is a strategic sector relying on public investment across the globe. Space systems are strategic assets, as well as commercial infrastructures on which the economy depends. Governments compensate for the market failure which would lead to underinvestment in new technologies, making space an institutionally-driven industry. The US invests as much as the rest of the world put together in civil space; its defence space expenditure exceeds its civil expenditure. The influence of other nations such as Russia, China and India is increasing. In assessing these countries' budgets, local purchasing power needs to be taken into account.

Europe has a more market-centred approach. European governments allocate to civilian activities almost 90% of the €6.3bn space budget and strongly promote commercial space activities. Two-thirds of the European space segment turnover comes from institutional customers, while in the US it is 85%. For European satellite and launcher manufacturers, therefore, the global commercial market is essential to reach critical mass.

The ESA accounts for about two-thirds of an estimated €5.5bn European civil space expenditure. It places industrial contracts in proportion to each Member State's contribution. This has been a powerful investment incentive for nations but has limited specialisation. In 2003, ESA Member States concluded that an independent, cost-effective European launcher was in the strategic interests of Europe and could not be threatened by the fluctuations of the commercial market.

Commercial markets are substantial but highly cyclical; the institutional market provides a vital, stable revenue for manufacturers. The space value chain can be split into three categories: the space segment suppliers, the ground segment suppliers and the service sector. Global revenue for the industry as whole was valued at \$97.2bn in 2004, with the bulk generated by satellite services.²

There is considerable fragmentation in European demand and supply. The use of space systems for the development and implementation of public policies is limited in Europe, in comparison to other space powers. Some of the policy responses have been introduced at national level, particularly to meet security and defence requirements, leading to a lack of

² RPA February 2007

interoperability between systems. On the supply side, system integrators have consolidated in Europe, as elsewhere. For the equipment and subsystem supplier industry, ESA characterises the sector as rather fragmented³.

The space sector faces an uncertain regulatory outlook. Space technologies are sensitive by nature. Many countries have adopted stringent export or import control regulations, which may impede the free intra-European and extra-European flow of technologies, resulting in costs to industry from administrative complexity and schedule delays. The introduction of charges and auctions for spectrum may result in satellite operators being required to pay in each Member State for the same spectrum allocation. The regulation of space objects is governed by national law, for which there is no harmonisation.

3. OBJECTIVES OF A POLICY INITIATIVE FOR THE SPACE SECTOR

To overcome the effects of the factors described in the preceding chapter, a policy for the European space sector will need:

- to secure independent and cost effective access to space;
- to continue to invest strongly in space-based science;
- a strong and competitive space industry which creates innovation, growth and opportunities for commercial exploitation of satellite systems;
- the development and exploitation of space applications meeting the objectives of EU policies and the needs of European enterprises and citizens;
- to develop the space assets needed to meet the security and defence needs of European citizens.

To achieve this will involve:

- setting clear priorities, implementing a tailored industrial policy and optimising public resources;
- establishing an optimum regulatory environment;
- providing funding for the development of critical systems and technologies;
- developing balanced international cooperation with selected strategic partners.

Any policy should also take into account the value-added of space for a range of EU policies.

4. POLICY OPTIONS TO ACHIEVE THE OBJECTIVES

Four possible options have been identified.

³ 'AGENDA 2007 – A Document by the ESA Director General' (BR-213 October 2003)

No European Space Policy. This would imply abandoning the aim of bringing together the political commitment and actions of all European actors. It could either be a reversal of the previous trend towards increased EU investment in, and exploitation of, space systems or involve the current arrangements being frozen and not enhanced in the foreseeable future. The Member States would conduct their own space programmes without explicit coordination, leaving a fragmented institutional market and separate national positions being taken vis-à-vis third countries.

Increased coordination and growing use of space applications to deliver European policies. All actors in Europe would agree to the systematic exchange of information on space-related programmes, to achieve a coherent European institutional space market, allowing industry to manage variations in demand and invest in technology. The aggregation of European public policy needs would form an important part of this, using the European Space Programme. Sustained funding commitments would be required from all actors, including proposals on the funding and management of operational GMES services. Coordination mechanisms would be adopted between civil and military programmes, respecting institutional competences. Technology programmes would address the protection of the space infrastructures.

Changing the political framework for space in Europe would involve, bringing intergovernmental activities into the European Union framework. This would still permit Member States to participate optionally in programmes under intergovernmental funding arrangements but allow activities to draw on budgets managed along EC lines. Suitable administrative arrangements would be necessary for non-EU Member States in ESA. It might be structured so as to allow inter-pillar activities, in order to strengthen civil/military coordination.

Radical change – Community framework, substantial budget increase. A more radical option would bring space activities into the European Community framework and boost space investment significantly. This would involve the transfer of existing national civil space budgets into the EC budget and a commitment of new EC funds. The White Paper hypothesised an increase in overall expenditure on space across Europe in the range of 23-35 per cent or €1.25-2bn per annum.

5. COMPARISON OF POTENTIAL IMPACT OF THE OPTIONS

Political considerations limit the consideration of options for the short-term.

No European Space Policy would be contrary to the expressed wishes of Member States' ministers and could result in: failure to see GMES through to operational status; continued lack of coordination in civil space in Europe; an under-exploitation of civil and military synergies and continuing lack of interoperability; and under-utilisation of space systems by European public policies, resulting in lost opportunities for increased efficiency and effectiveness. In the impact assessment supporting study, the option of no change is taken as the base case against which other options are measured.

Changing the political framework for space in Europe to a fully EU framework could permit more effective coordination arrangements, including dual use, providing all Member States with an effective means to take part in space activities. It would create a clearer programmatic framework all stakeholders. It would be established in a way to avoid the need

for negotiations with the Commission on each programme. Analysis in the impact assessment supporting study suggests that, on the basis of given assessment criteria, the option of an EU agency under Pillar 2 would score highly under any of the demand scenarios studied.

However, it has a number of uncertainties which have still to be reduced. Space activities would need to encompass also Pillar 1. The legal base for an inter-pillar agency allowing variable participation in each programme requires further study. Further analysis is required of whether changes might be necessary to the financial and industrial policy rules of ESA, if its activities were to become intergovernmental under the Treaty. Member States have made it clear that the Policy should not pre-empt the outcome of this further analysis.

Radical change – Community framework, substantial budget increase would have two main features: a transfer of activities from national and intergovernmental frameworks to a Community framework; and an increase of European civil space expenditure of between one quarter and one third.

This could provide a framework for the Commission to develop a farsighted strategy for the development and use of space systems for the benefits of EC policies and the resources to implement it. There would be a single set of decision-making bodies. Industry would have a more secure framework for investment. This does, however, presuppose the percentage of support for R&D projects would continue at the current level, in many cases 100 per cent.

Analysis in the impact assessment supporting study suggests that, on the basis of the criteria used to make the assessment, the option of a Community programme managed by a Community Agency would score highly under any of the demand scenarios studied.

The radical option would represent a substantial commitment of all Member States to a strengthened space investment, increasing investor confidence. It would involve the transfer of more than €6bn per annum from intergovernmental and national expenditures to the Community budget, along with a pooling of decision making on priorities. There is every indication that Member States have no wish to pursue this approach at this point in time. The proposed Constitutional Treaty notes that "the exercise of [Community] competence shall not result in Member States being prevented from exercising theirs". Moreover, consultation with the Member States has revealed them to be vigilant against moves in this direction without a thorough analysis.

Increased coordination and growing use of space applications to deliver other European policies would provide visibility on European institutional programmes and pave the way for their better coordination. The process of increasing flexibility into the ESA rules could improve further the efficiency, specialisation and competitiveness of European industry.

The GALILEO project has been a clear example of the benefits of working in a collaborative project, depending on the development of dedicated technologies, the construction of a space infrastructure by the European space industrial base, and long-term funding and running commitment from a European user policy.

The **societal impact** of space-based systems is substantial. They are used in transmitting data, voice and video, play a critical part in collecting and distributing information. Their significance can be assessed by looking at the potential impact of any shutdown of part of our spatial infrastructure would have major consequences and freeze a significant part of the economic activity as well as impair considerably the organisation of emergency services.

The increased coordination option will accelerate the process of connecting EU policies to the potential benefits of space systems. Satellite links may be the only way to bring education to regions that are remote and/or lack ground infrastructure. Satellite applications can also be used for expanding medical support in developing countries.

The environmental impact of the increased coordination option will be in the introduction of systematic monitoring, through GMES. The benefits of GMES have been evaluated in a major study⁴ conducted by PricewaterhouseCoopers. The assessment covers 25 years. To secure these benefits will require investment in GMES services and infrastructure but also in each of the policy areas identified. GMES is therefore a necessary but not sufficient condition and the relevant costs have to be calculated accurately as part of a specific cost/benefits analysis. The overall benefits by the year 2030 identified include: efficiency savings of around €310 million per annum; benefits requiring new policies at European level of €2.9bn per annum; benefits requiring new global agreements and cooperation from 2025 projected to total €7bn per annum.

Satellites contribute to security and defence policy. The contribution of space to the European Security and Defence Policy has been identified to include unrestricted access over potential or actual areas of operation, providing evidence of illicit activities and in the conduct of Crisis Management Operations. The increased coordination option would encourage sharing and pooling resources of the European civilian and military space programmes; drawing on multiple use technology and common standards.

6. MONITORING AND EVALUATION

DG-ENTR will conduct an updated review of the sector at 2-3 year intervals. Evaluations will be made of the operation of the Framework Agreement as a basis for a decision on its prolongation, and of the main possible cost-efficient scenarios for optimising the organisation of space activities in Europe.

⁴ PricewaterhouseCoopers July 2006: Socio-Economic Benefits Analysis of GMES, prepared for ESA