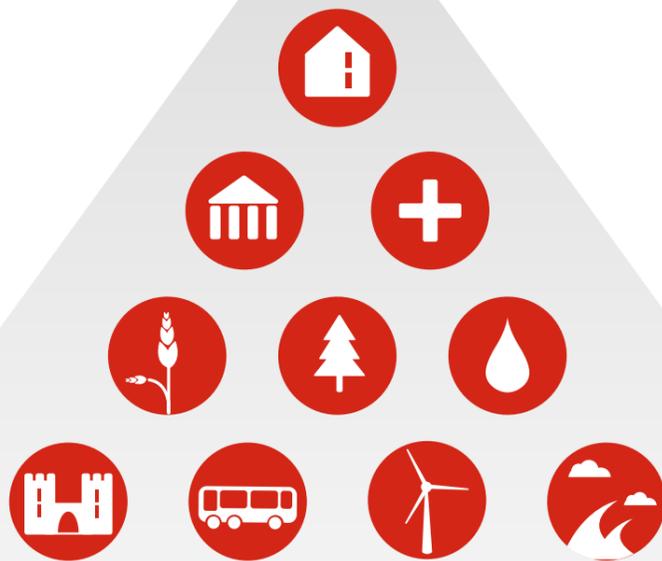




# SATELLITES FOR SOCIETY

## FOCUS ON POLAND

REPORTING ON OPERATIONAL USES OF SATELLITE-BASED  
SERVICES IN THE PUBLIC SECTOR





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uses of satellite-based  
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FOCUS ON POLAND

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## **FOREWORD**

*This document presents the results obtained through the Eurisy survey “Operational uses of satellite-based services within the public sector”. Focusing on Poland, the report analyses survey replies received between March and September 2015 from Polish public administrations.*

*The report was presented within the framework of the Poland User Forum “Satellites for Society: operational uses of satellite-based services by the Polish public administration”. The event was organised in Warsaw on the 19<sup>th</sup> of April 2016 by Eurisy, the Polish Ministry of Economic Development and the Polish Agency for Enterprise Development (PARP), with the support of the Polish Space Agency (POLSA) and the European Space Agency (ESA).*

*The goal of the User Forum was to gather a qualitative feedback on survey replies that would help organisers in building a series of country-targeted recommendations, which are presented at the beginning of this report. Contributing public authorities were also invited to provide inputs and reflections following the User Forum.*

*The report presents the main characteristics of respondent public administrations using services relying on satellites in Poland. It describes their motivations to use satellite-based services, quantifies the costs attached to their adoption and use, and pinpoints the benefits and challenges faced by these organisations.*

*The results obtained are not exhaustive and might not reflect the full range of satellite-based services used in the Polish public sector. Nevertheless, the report aims to provide an insight into the work of public administrations that Polish and European decision makers might take into account to better direct the process of transfer of the potential benefits of satellite applications to society.*



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## MAIN CONCLUSIONS AND RECOMMENDATIONS

With a population of almost 40 million inhabitants, a growing average GDP, and raising income and consumption rates, Poland is ready to take up the challenge of becoming a regional reference for higher-technology production. This will imply aligning academic skills with labour market needs, as well as strengthening the managing capacity of public administrations. Within this process, ministries, regions, academia and private companies are showing a growing interest in space and space-based technologies. The Polish space strategy for the coming years aims at creating a competitive national space supply and value-adding chain and at providing public administrations with better tools to manage public services.

The current process of reorganisation of space governance, with the creation of the Polish Space Agency, will lead to a multiplication of efforts to create a downstream market for satellite-based services and to favour the development and uptake of services which respond to the operational needs of the public administration. On their side, public authorities have already seized the potential of satellite-based services, sustained by a growing ecosystem of IT and data analysis private companies, including SMEs.

Indeed, the replies submitted to the Eurisy survey by Polish public administrations indicate that not only national authorities, but also administrations at the regional level have been consistently using these services. They are motivated both by the will to improve the quality of the offered public services and by the need to save resources. Three quarters of respondent public authorities have been using these technologies for at least five years. Satellite-based services are employed in sectors such as transport, environmental monitoring, agriculture and urban planning, which are considered of primary importance for the socio-economic and environmental well-being of the country.

In most cases, satellite-based services are used to respond to existing needs, replacing — fully or partially — previous systems used to perform similar tasks. The public bodies which took the Eurisy survey mentioned international organisations and private companies as the main entities providing them with satellite-based services. Only 16% of the sample declared that they rely solely on academic and research institutes.

Public authorities report a number of benefits entailed by the use of satellite data and signals. In particular, they highlighted time savings, the improvement of the services provided to the public and better information for decision-making. Although such benefits are clearly perceived by user public authorities, they remain difficult to quantify. Moreover, and despite the relatively low costs of satellite-based services, public authorities still face economic, material and technical challenges in adopting them. Most public administrations also face organisational and technical challenges to use and maintain the services. At the regional level in particular, one third of the surveyed sample reports technical challenges to first adopt and then use satellite-based services.

Based on the information collected through the survey and the feedback provided by public administrations during the User Forum held in Warsaw on April 19<sup>th</sup> 2016, Eurisy proposes the following set of recommendations to favour the uptake of satellite-based services within the public sector in Poland.

**In order to develop an efficient downstream market for satellite-based services, the government should support intermediate users.**

- The great number of national private companies, especially SMEs, who attended the User Forum proved the existence of a favourable ecosystem for the development of satellite-based services in Poland. Moreover, the results of the Eurisy survey showed that Polish public administrations are already collaborating with private companies and international organisations to adopt and use satellite-based services.
- To support intermediate users, governments and international organisations should keep offering them access to data, funding and expertise. Intermediate users can already profit from satellite-based data made available through national and international portals, and in particular through Copernicus. They can also apply to national and international tenders to get financial and technical support to develop new applications. Indeed, the projects presented at the User Forum showed how such schemes can lead to the development of satellite-based services for which users are willing to pay in the long term. At the User Forum, intermediate users were invited to apply to the ESA's Integrated Applications Promotion (IAP) Programme. The programme offers support to SMEs to create and validate applications and services based on the integration of space assets with the existing assets of the targeted customers and market segments.
- Private companies, public administrations and the academia should not compete as providers of the same satellite-based services for the public sector. Policy and decision makers should identify the sectors of national interest for which a number of satellite-based services could be managed by the public sector. Other services, dealing with less sensitive data, should instead be outsourced to private companies.
- Public procurement tenders for private companies should specifically mention the use of satellite data and signals.

**The development of new satellite-based services for the public sector should take into account current needs, workflows and the organisational structure of public administrations.**

- Service providers should become acquainted with the current organisation, working flows and needs of public administrations, and consider them when adapting or developing satellite-based services for their use.
- Policy and decision-makers should favour interaction among public administrations and service providers, be them private companies, research institutes or international organisations.
- Project tenders for the creation of new satellite-based services should require competitors to realise an assessment of the operational needs of the public administrations that are supposed to test or purchase the new developed services. These should be adaptable to the existing structure, mechanisms and workflows of the user public administrations.
- Governments should create mechanisms of interaction between the public and the private sectors to inform private companies of the current and emerging operational needs of public administrations. The organisation of periodical public fora in specific sectors (e.g. agriculture,

environmental monitoring, or transport) would also allow public administrations to provide feedback on their use of satellite-based services. Private companies could profit from this feedback to understand how existing services could be improved and which new services might be needed by public administrations in the future.

**Polish regional authorities are already using satellite-based services operationally. Instead local authorities seem to be less aware of these services. Hence, more efforts are needed to stimulate the uptake of satellite-based services at the local level.**

- National and regional administrators should raise awareness on existing satellite-based services among local public managers. Awareness raising activities could be organised by regions for the local administrations within their territory. Ministries, in collaboration with the regions, could also target local authorities working in specific sectors in different regions.

**Public administrations using satellite-based services should foresee a budget for training their staff on the use of these services.**

- Most of the public authorities taking the Eurisy survey overcame their challenges through training. Only a few among them reported having hired new staff. To favour both the smooth uptake and the enduring use of satellite-based services, public managers should be periodically trained to use the satellite-based services adopted by the institution.
- Whether these services are implemented within the regular operations of a public administration or within a demonstration project, a specific budget line should be dedicated to training. In public procurement procedures, the provision of periodical training could be considered as a preferential condition to select contractors.

**To support both the downstream and upstream sectors of the space market, the Polish government could launch a programme that would act as a “middleman” among public authorities, research centres and commercial service providers.**

- Conference participants agreed on the need to reinforce links between the private and public sectors to produce marketable satellite-based services. As an example, the Satellite Applications Catapult Centre, established in the UK, provides interested companies with tools and datasets to develop and test new services based on satellites.
- Within such a programme, funding and expertise could be made available to consortia including public authorities, private companies and research centres. According to Poland’s socio-economic and environmental priorities, sub-programmes could focus on specific sectors of application.

**End user public administrations need specific support to become familiar with satellite-based services and to identify the required services and procurers. The Polish Space Agency (POLSA), the Ministry of Economic Development and relevant stakeholders could offer punctual advice and technical support to public authorities interested in the uptake or in the development of satellite-based services.**

- The survey showed that satellite-based services are available at relatively small costs. Nevertheless, funding this kind of solutions remains a challenge. Furthermore, public authorities face challenges to translate their needs into technical specifications when writing procurement tenders for satellite-based services.

To link the public and private sectors, the Ministry of Economic Development, the Polish Agency for Enterprise Development (PARP), POLSA and other stakeholders are willing to cooperate to establish support mechanisms for public administrations in finding and procuring satellite-based services.

An example of such an initiative mentioned during the User Forum is the Space for Smarter Government programme of the UK Space Agency. The programme aims at leveraging national investments in the space sector by fostering the use of space-based technologies by public administrations.

- POLSA, in collaboration with the Ministry of Economic Development and other relevant stakeholders (such as PARP) could also work towards establishing a hub of experts who could support public authorities in writing procurement tenders for services based on satellite data on a punctual basis.
- Sector-focused meetings including public administrations, academia and private companies could also be organised to raise awareness on existing satellite-based services, assess specific needs and establish public/private collaborations. Not only would sectorial meetings help identifying public authorities' specific needs. They could also lead to developing services that can be shared, scaled or adapted throughout the Polish public administration. The implementation of satellite-based services which can be used by different public administrations at different levels would lower the costs related to both the development and maintenance of such services.

# INTRODUCTION

## Polish space history and policy

Poland is one of the founding members of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS). Since 1959, Poland has signed four of the five UN Treaties on Space-related Activities:

- The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies;
- The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space;
- The Convention on International Liability for Damage Caused by Space Objects; and
- The Convention on Registration of Launched Objects into Outer Space.

Poland appears for the first time as a space actor between the second half of 1970s and the beginning of 1980s as one of the countries involved in the Soviet Union space programme INTERKOSMOS. Within the programme, established to help the allies developing both manned and unmanned flights, Mirosław Hermaszewski became the first Polish citizen to travel out of space in June 1978 on board the spaceship Soyuz-30. In April 1973, the Polish People's Republic and the Soviet Union launched the satellite Kopernik-500 (Interkosmos-9) to measure solar radiation, and in October 1978 the satellite Intercosmos 18<sup>1</sup>.

The Space Research Centre of the Polish Academy of Science<sup>2</sup> was created in 1976. In 1994, Poland and the European Space Agency (ESA) signed their First Framework Agreement, later extended in 2002. Within this framework, Poland participated to several ESA's scientific programmes. Meanwhile, the first private Polish companies offering services based on satellite technologies emerged<sup>3</sup>.

A second important step was the signing, in 2007, of the European Cooperating States Agreement and of the PECS Charter (Plan for European Cooperating States Agreement)<sup>4</sup>. The PECS principal aim is to help the European Countries to join the Agency (in particular, the Plan is designed to help Countries that joined the EU after 2004). Thanks to the PECS Agreement, 45 projects were financed for a total amount of €11.5 million. In November 2012, after the Country formally requested to start the negotiations to the ESA Convention in 2011, Poland officially became an ESA Member State<sup>5</sup>.

In 2012, the Polish Council of Ministers approved an Action Plan for the Development of Space Technologies and the Use of Satellite Systems, prepared by the Interdepartmental Working Team under the leadership of the Ministry of Economy. The aim of this document is to stimulate innovation in R&D, by increasing entrepreneurship and industry competitiveness in the European supply chain. The Action Programme lists the following strategic objectives:

- To stimulate innovation and improve competitiveness of Polish companies by developing advanced technologies and fostering cooperation between R&D and business;
- To increase efficiency and effectiveness of public administration by developing and implementing space-based applications in order to optimise the use of existing infrastructure and resources;

<sup>1</sup> Polish Ministry of Economy and Polish Agency for Enterprise Development, *Reaching Stars: Polish Space Sector*.

<sup>2</sup> Space Research Centre, Polish Academy of Sciences, History. Consulted in April 2016 at: [www.cbk.waw.pl/en/index.php?option=com\\_content&view=article&id=145&Itemid=14](http://www.cbk.waw.pl/en/index.php?option=com_content&view=article&id=145&Itemid=14)

<sup>3</sup> Polkowska M., *Central European Rotation Group, Space Regulation and Activities*, ICAO / UNOOSA Aerospace Symposium, ICAO Headquarters, Montréal, 2015 [hereinafter Polkowska, 2015].

<sup>4</sup> European Space Agency Website, Plan for European Cooperating States, General overview. Available at: [www.esa.int/About\\_Us/Plan\\_for\\_European\\_Cooperating\\_States/General\\_overview2](http://www.esa.int/About_Us/Plan_for_European_Cooperating_States/General_overview2)

<sup>5</sup> Polkowska, 2015.

- To meet national security needs by using existing instruments and developing autonomous capabilities in chosen domains<sup>6</sup>.

The Action Plan involves different Ministries: the Ministry of Economic Development, the Ministry of Science and Higher Education — responsible for research (including the 7<sup>th</sup> Framework Programme and the Copernicus programme), the Ministry of Administration and Digitalisation — responsible for the Galileo programme, the Ministry of Interior, the Ministry of Defence, the Ministry of Foreign Affairs, the Ministry of Environment, the Ministry of Infrastructure and Development, and the Ministry of Agriculture and Rural Development<sup>7</sup>.

Within the Sejm, the Lower Chamber of the Polish National Assembly, a Parliamentary Space Group is responsible for undertaking legislative actions in the sector. The Polish Space Agency (POLSA) was established on September 2014<sup>8</sup>, with the task of implementing the national space strategy. In August 2014, POLSA sent into space Heweliusz, a satellite built by the Space Research Centre of the Polish Academy of Sciences. This launch is part of BRITE (Bright Target Explorer Constellation), an international project set up to observe the brightest star in our galaxy.

Space governance in Poland is led by the Inter-ministerial Board for Space Policy<sup>9</sup>, which represents the main political decision-making body for space activities, working on behalf of the Polish Government. The Ministry of Economic Development is in charge of coordinating the national space policy, while POLSA is tasked with supporting the creation of a Polish aeronautics industry by eliminating barriers between business and science, and helping Polish entrepreneurs obtain funds from the European Space Agency.

In 2016, Poland will contribute with almost €30 million to the European Space Agency's budget<sup>10</sup>. Moreover, Poland allocated more than €6 million to EUMETSAT in 2014<sup>11</sup>. Overall, the country's total space budget (PPP) amounted to \$80.7 million in 2013<sup>12</sup>.

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<sup>6</sup> Trzaskalska-Stroińska O., *Space activities in Poland*, 2015 [Hereinafter Trzaskalska-Stroińska, 2015]

<sup>7</sup> Polkowska, 2015.

<sup>8</sup> European Space Agency Website, Plan for European Cooperating States, General overview.

<sup>9</sup> Otylia Trzaskalska-Stroińska, *Space Opportunities and Challenges – A view from Poland*, Brussels, 2013 [Hereinafter Trzaskalska-Stroińska, 2013].

<sup>10</sup> The European Space Agency, ESA budget 2015.

<sup>11</sup> EUMETSAT, *EUMETSAT Annual Report 2014*, Darmstadt, 2015.

<sup>12</sup> OECD (2014), *The Space Economy at a Glance 2014*, OECD Publishing.

## The Eurisy survey on operational uses of satellite-based services within the public sector

Satellite navigation, satellite communication and Earth observation produce information that can support public managers in a number of strategic sectors, such as transport, environmental monitoring, risk management, urban planning, and tele-medicine, to quote but a few.

In 2015, Eurisy launched a survey targeting public authorities using satellite-based services operationally for civilian uses. Through this initiative we aimed to understand how public authorities use the services, what are the challenges they face and what benefits they obtain.

The survey was preceded by a preliminary test phase during which the questionnaire elaborated by Eurisy was submitted to ten public authorities using satellite-based services at the national, regional or local levels. The results of the preliminary case study analysis are synthesised in a report including ten case study reports<sup>13</sup>.

In March 2015, the survey was launched online through the Eurisy website<sup>14</sup> in nine languages: English, French, Spanish, Italian, German, Polish, Dutch, Greek and Romanian.

To assist with the implementation of the survey and the analysis of the results, an advisory committee was conveyed, including representatives from the Polish Ministry of Economic Development (former Ministry of Economy), the German Aerospace Center (DLR), the European Space Policy Institute (ESPI), the OECD Space Forum, and the European Space Agency (ESA). The Geo Secretariat and the Space for Smarter Government Programme (SSGP) of the UK Space Agency have also acted as observers within the advisory committee.

The overall results of the survey, including 106 replies from 19 countries, have been presented in the report "Satellites for Society", published by Eurisy in March 2016<sup>15</sup>.

Between March and September 2015, Polish public authorities operating at the local, regional or national level submitted 49 replies to the survey. This report analyses the replies received from Polish public administrations, with the aim of understanding how satellite services are being used in the Polish public sector and what could be done to further foster their use to the benefit of society in the near future.

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This report was produced at the instance of the Eurisy Members by Grazia Maria Fiore, research and project coordinator, with the assistance of Alessandra Vernile. We are especially grateful to the public authority officials who shared their experiences by contributing to the Eurisy survey and to Mr Zbigniew Burdzy, who disseminated the survey among Polish public administrations. Eurisy acknowledges the advice and methodological inputs kindly provided by the members of the Survey's Advisory Committee.

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<sup>13</sup> Eurisy, *Operational uses of satellite-based applications in the public sector: a case-study review*, Paris, 2015 [hereinafter Eurisy 2015]. Both the analytical report and the annexed case-studies are available for download on the Eurisy website: [www.eurisy.org/publications.php](http://www.eurisy.org/publications.php)

<sup>14</sup> See Annex II: Survey questionnaire.

<sup>15</sup> Eurisy (2016), *Satellites for Society: Reporting on operational uses of satellite-based applications in the public sector*, Paris, March 2016 [hereinafter Eurisy 2016].



# RESULTS OF ANALYSIS

## 1. The public administrations using satellite-based services in Poland

### Which kind of public administrations contributed to the Eurisy survey in Poland?

The first rollout of the Eurisy survey for public authorities collected 49 replies from 45 Polish public administrations.

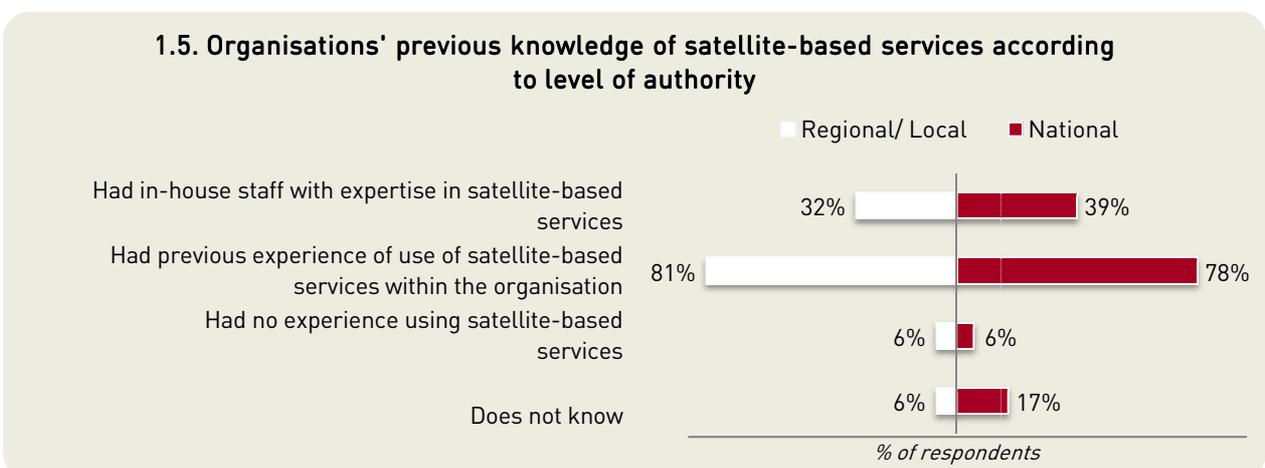
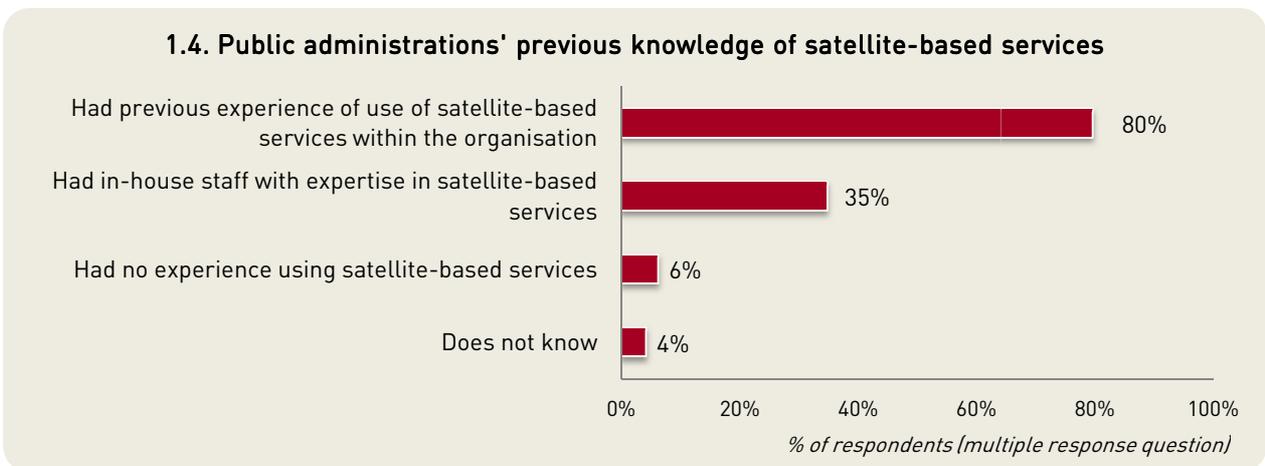
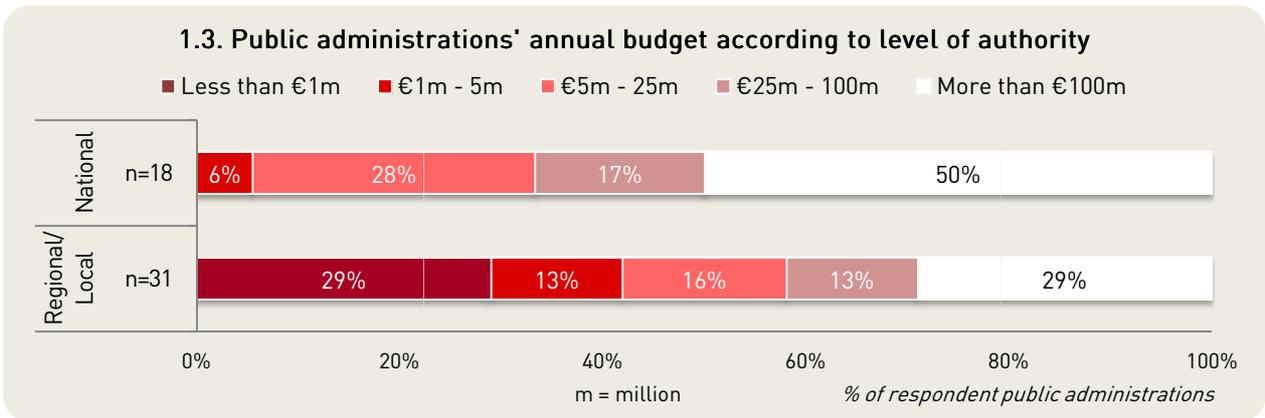
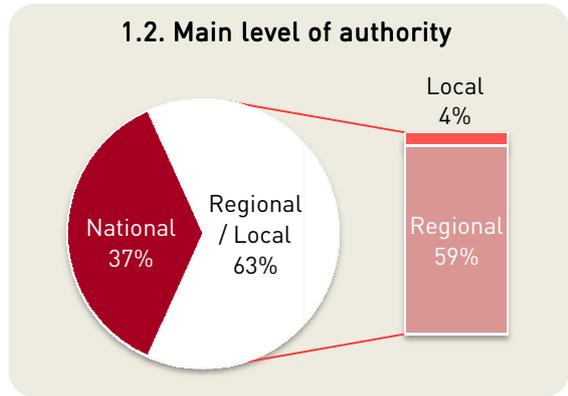
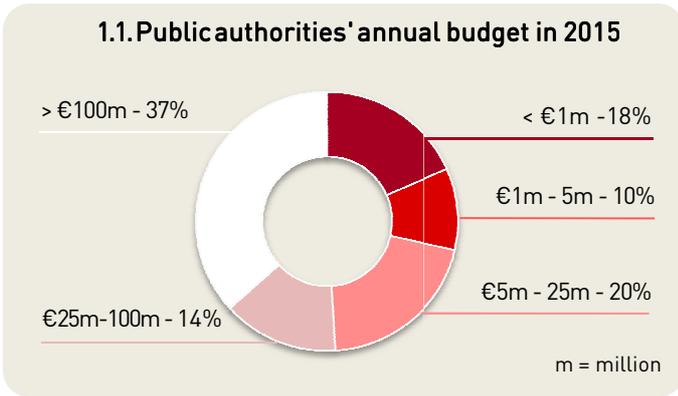
63% of respondents mainly operate at the regional or local levels, suggesting that satellite-based services are actually reaching out to public managers on the field. The remaining 37% have competencies at the national level (Graph 1.2.).

These public authorities can count on very different annual budgets to perform their tasks, ranging from less than €1 million to more than 100 million (Graphs 1.1. and 1.3.). Overall, the public authorities taking the Eurisy survey can count on relatively high budgets. Half of the national authorities and 29% of the regional and local authorities have annual budgets of over €100 million.

We asked public organisations what skills and experiences they had internally before they used the satellite-based services described in the survey questionnaire.

On average, the contributing organisations show a good level of awareness of satellite-based services. Only 6% of the sample — both at the national and regional levels — had no previous experience or internal knowledge with these technologies before using the solutions described (Graphs 1.4. and 1.5.).

1. The public administrations using satellite-based services in Poland



### **Which satellite applications are used by respondent Polish public administrations?**

51% of the Polish public administrations contributing to the Eurisy survey report using only one satellite application, while 43% use two. Only 6% of respondents use all three satellite applications (Earth observation, satellite navigation and satellite communication).

78% of respondents use satellite navigation, an application that is considered today as being widely available to both public and private entities. A similar percentage — 71% of respondents — use satellite imagery, alone or in combination with other applications (Graph 1.6.).

None of the surveyed organisation reports using Satellite Communications alone, although 6% of the sample uses them in addition to Satellite Navigation and Earth Observation.

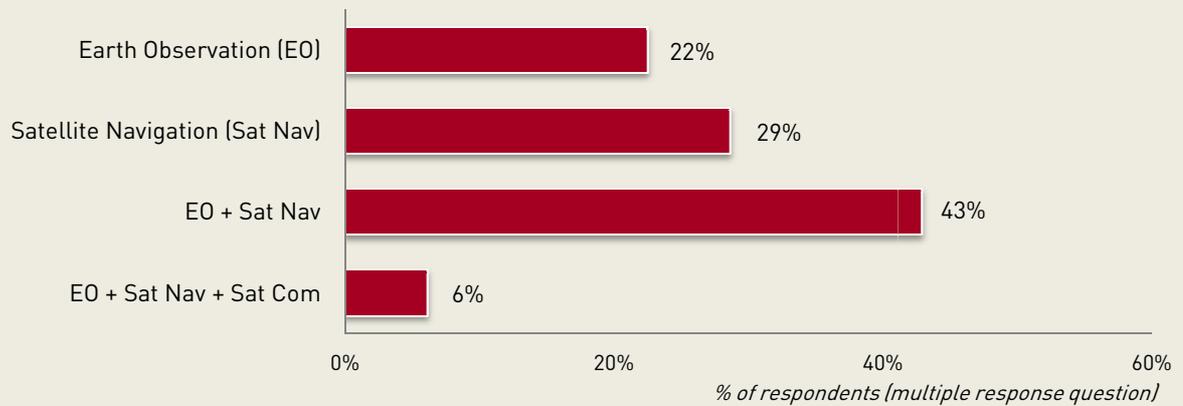
A high percentage of respondents declare using both Earth Observation and Satellite Navigation. To put these replies in context, it is necessary to look at the fields in which satellite applications are used.

### **How do Polish public authorities employ satellite applications?**

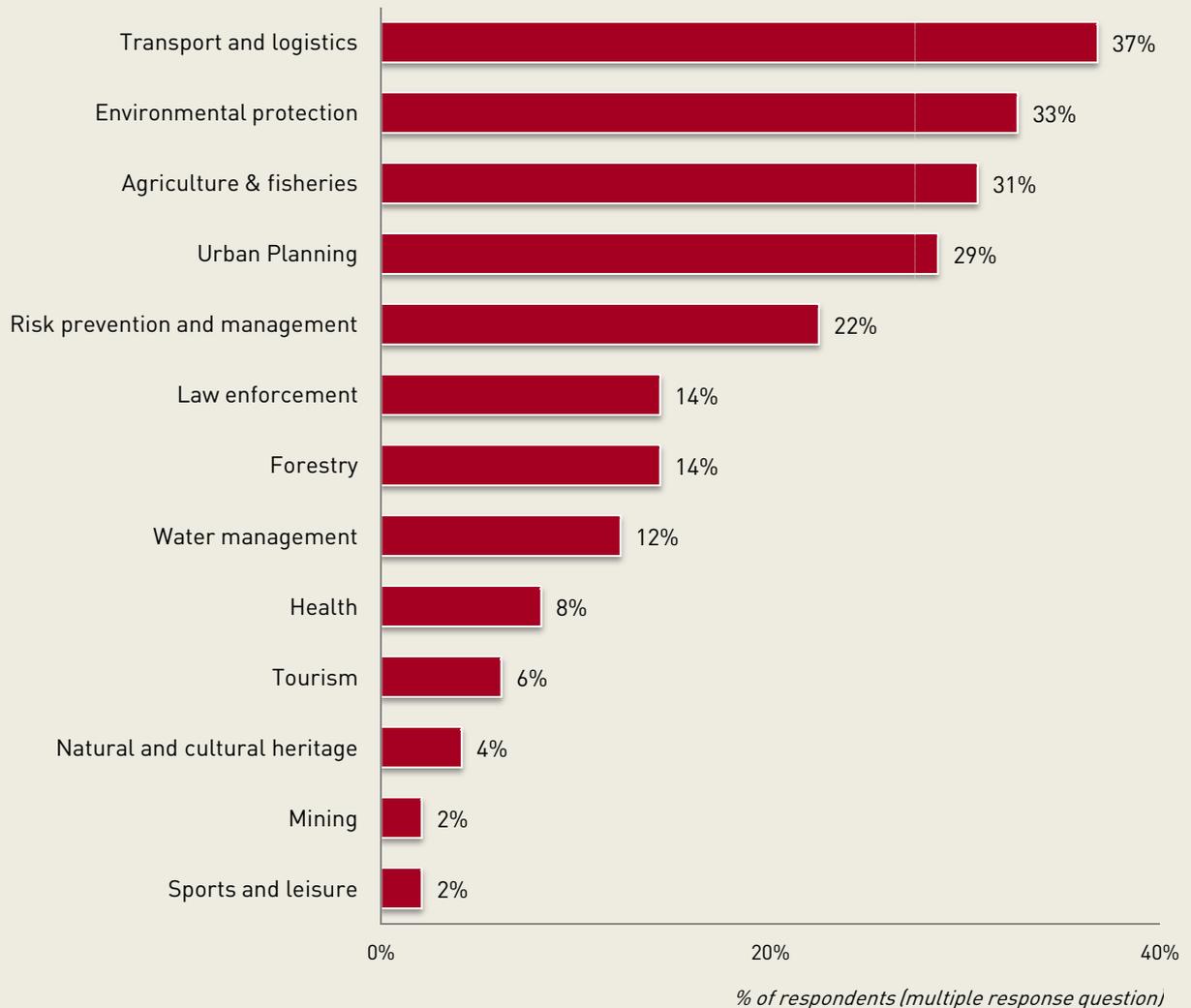
61% of the surveyed public authorities report using satellite-based services in more than one sector of application.

The most mentioned sectors are transport and logistics, environmental protection, agriculture and fisheries, urban planning, as well as risk prevention and management (Graph 1.7.). As confirmed by the presentations given at the Eurisy User Forum organised in Warsaw in April 2016, these sectors are indeed of outmost importance to pursue future strategic development goals in the Country.

### 1.6. Kind of satellite applications used by public administrations



### 1.7. Fields of use of satellite-based services reported by public administrations



## 2. The added value of using satellite-based services

### Are Polish public administrations interested in satellite-based services?

94% of respondent Polish administrations declared that the satellite-based services described in the questionnaire are still operational (Graph 2.1.).

For most public authorities, the adoption of satellite-based services is quite recent: almost half of the respondents declare to have started using these services between the years 2006 and 2010. Since Poland accessed the European Union in 2004, it is possible that European policies and the need to adapt to the *acquis communautaire* and to the EU regulations have favoured the uptake of satellite-based services in the following years.

Since 76% of respondents have been relying on satellite-based services for more than five years (Graph 2.2.), their enduring usage should indicate their reliability and quality over time. Moreover, it suggests that Polish public authorities have shown a consistent interest in exploiting the potential of satellites.

### What motivates public authorities to use satellite-based services?

The public authorities contributing to the Eurisy survey started using satellite-based services to improve an existing service or procedure (67% of the sample), to save time and/or economic and human resources (more than half of respondents), to comply with a policy or a regulation (37%), and for 27% of respondents to create a new service or procedure (Graph 2.3.).

Confirming the results obtained from the analysis of the all replies received to the Eurisy survey in Europe<sup>16</sup>, Polish public authorities were driven by the possibility to respond to pre-existing needs while improving current procedures or tools. Indeed, most respondents have declared that the satellite-based services they use replaced, partially or fully, a previous system used to perform the same tasks (Graph 2.4).

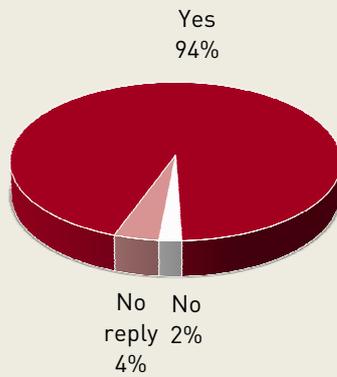
These figures confirm the results obtained from the preliminary case-study analysis<sup>17</sup>: public authorities use satellite-based services to perform their existing tasks more efficiently.

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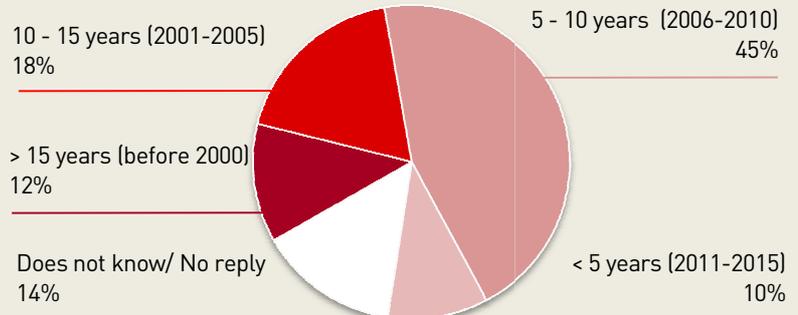
<sup>16</sup> Eurisy, 2016.

<sup>17</sup> Eurisy, 2015.

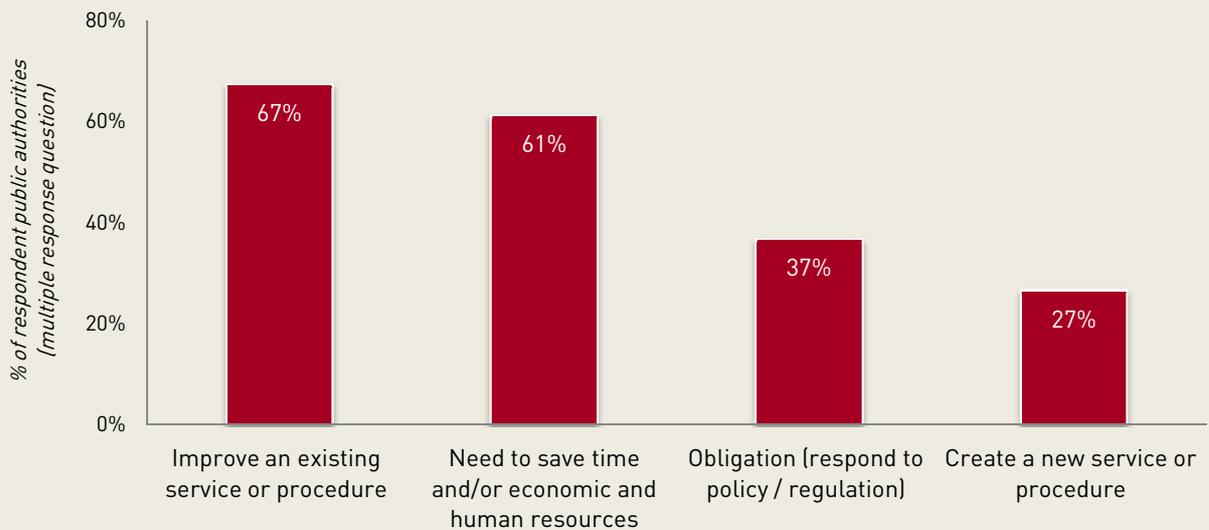
**2.1. Satellite-based services still in use**



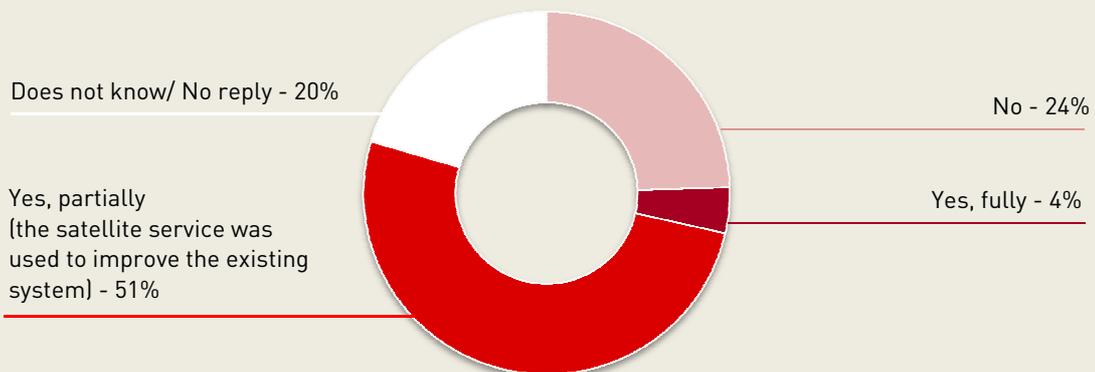
**2.2. Start date of use of the satellite-based services**



**2.3. Drivers and motivations to start using satellite-based services**



**2.4. Satellite-based services used to replace previous systems to perform the same tasks**



## Which is the added value of satellite-based services as compared to other technologies?

Half of respondent public administrations in Poland decided to start using satellite-based services because they were more effective than other available technologies. Only 8% of respondents declared to have chosen a satellite-based service due to a mandatory condition of a funding scheme. 31% considered that no other technology would have responded to their needs, and 22% declared that other solutions would have been more expensive (Graph 2.5.).

Despite the fact that only 16% of the sample performed a formal cost-benefit analysis of the satellite-based services used, public authorities perceive and are able to identify a number of qualitative and quantitative benefits (Graph 2.6.).

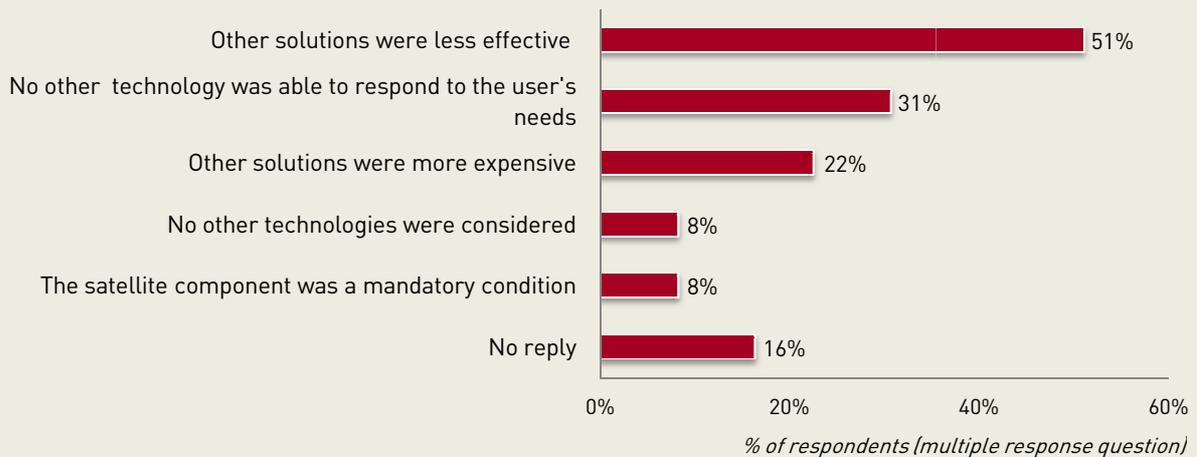
Half of the respondents report time savings and service improvements as a result of the use of satellite-based services. Moreover, significant percentages of the sample also declare that the institution is able to take better-informed decisions (39%) and to save money (37%) and that the use of satellite services improved their workflows (24%).

Even though the great majority of respondents was not able to quantify the savings entailed by the use of satellite-based services, for many these are clearly perceived. If duly quantified, time and money savings resulting from the use of satellite-based services can be an important incentive to stir the interest of more public authorities towards satellite-based services (Graphs 2.7. and 2.8.).

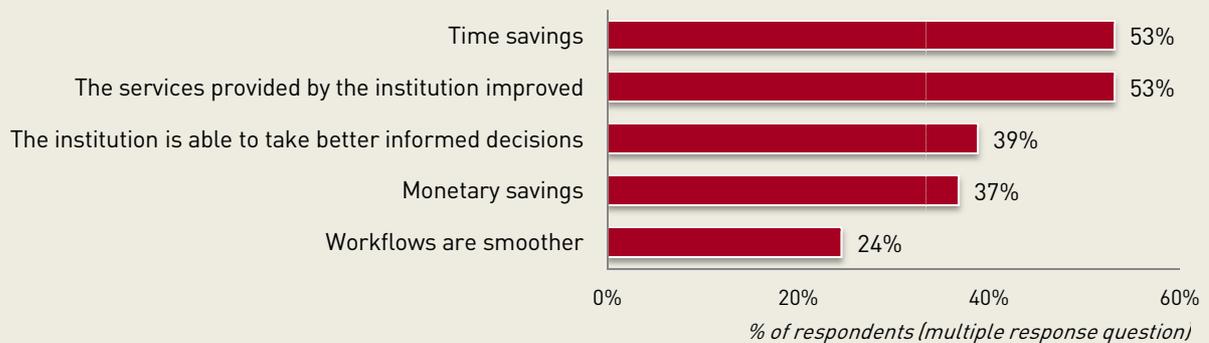
Competitive public systems foster the sharing of good practices among public administrations. Indeed, 39% of the Polish administrations replying to the survey declared that their experience inspired other public bodies, while more than half share the satellite-based services/data with other public administrations or departments (Graph 2.9.).

These figures confirm the importance of disseminating success stories and of sharing experiences among public administrations to make the most of satellite-based data and signals. They also highlight the transversal nature of satellite-based data. These can be used for different purposes by public administrations operating in different sectors and at different administrative levels.

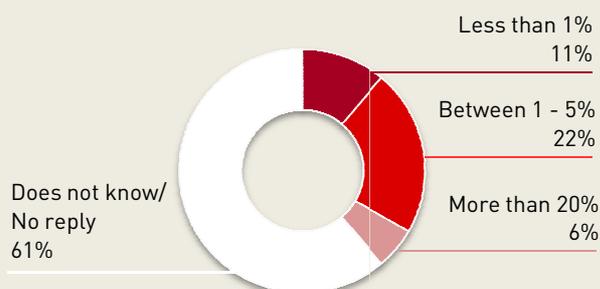
### 2.5. Reasons to prefer satellite-based services to other available technologies



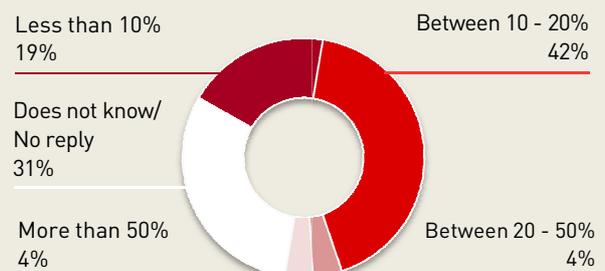
### 2.6. Benefits derived from the use of the services



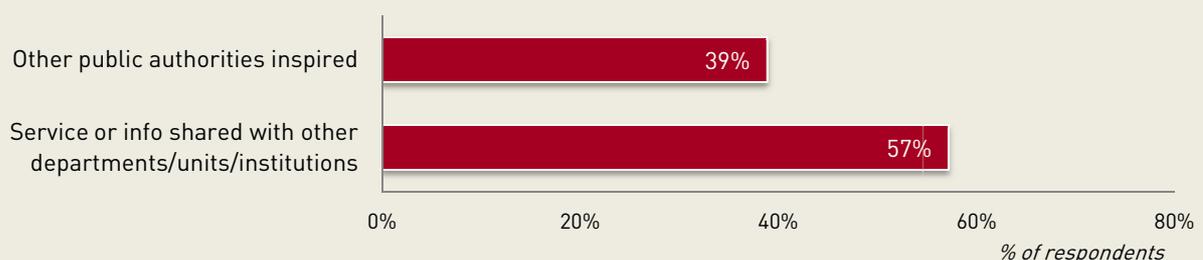
### 2.7. Monetary savings reported (37% of respondents, N=18)



### 2.8. Time savings reported (53% of respondents, N=26)



### 2.9. Other impacts of the satellite-based services



## 3. The acquisition process of the satellite-based services

### How public administrations procured the satellite-based services used?

30% of respondents found the satellite-based solutions they needed off-the-shelf (meaning that they were already developed and ready to use). A similar percentage looked instead for tailored solutions (Graph 3.1.).

Private companies alone provide satellite-based services to 23% of the surveyed Polish public authorities. 19% of respondents access the services exclusively through international organisations. 13% procured them fully in-house while 11% through other public administrations only. 34% of respondents collaborated with more than one kind of service provider to acquire the services described (Graph 3.2.).

Overall, almost half of the users mentioned international organisations and private companies among the suppliers of satellite-based services (Graph 3.3.). In consistence with overall European results of the Eurisy survey<sup>18</sup>, the Polish private sector is increasingly contributing in creating new uses for satellite data and signals.

Overall, 47% of respondents collaborate with international organisations, while only 16% work with research or academic institutes. In 10% of cases the satellite-based services are procured, fully or partially, from other public authorities, while 29% of respondents are directly involved in their whole or partial provision (Graph 3.3.).

International organisations and private companies play a key role in delivering satellite-based services to the Polish public administration regardless of the procedures used to procure them.

They are mentioned as the main providers whether the satellite-based services were adopted within demonstration projects or within regular operations (Graph 3.4.). This is also the case when considering the process of service acquisition (off-the-shelf vs. tailor-made, see Graph 3.5.).

The figures suggest that collaboration among public authorities and research centres could be enhanced to favour the provision of satellite-based services in the public sector. Indeed, academia and research centres are not mentioned at all as unique providers of services adopted within the regular operations of surveyed public authorities (Graph 3.4.).

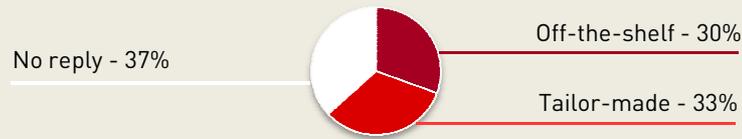
Nevertheless, a small percentage of respondents reports relying only on research institutes to procure services already developed (off-the-shelf) or to be developed for them (tailor-made).

Meanwhile, other public authorities are the sole providers of satellite-based services for 20% of the organisations procuring off-the-shelf solutions, while they do not figure at all among the providers of tailor-made services (Graph 3.5.).

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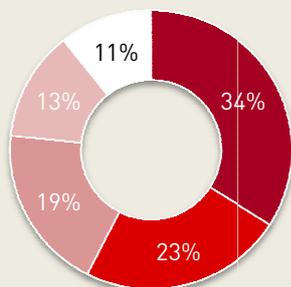
<sup>18</sup> Eurisy, 2016.

### 3.1. Acquisition of the satellite-based services



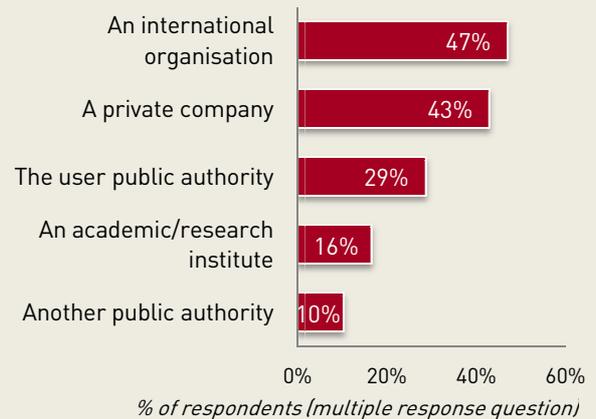
### 3.2. Kind of service providers/suppliers (1)

- Mix of service providers
- A private company only
- An international organisation only
- The user institution only
- Another public administration only



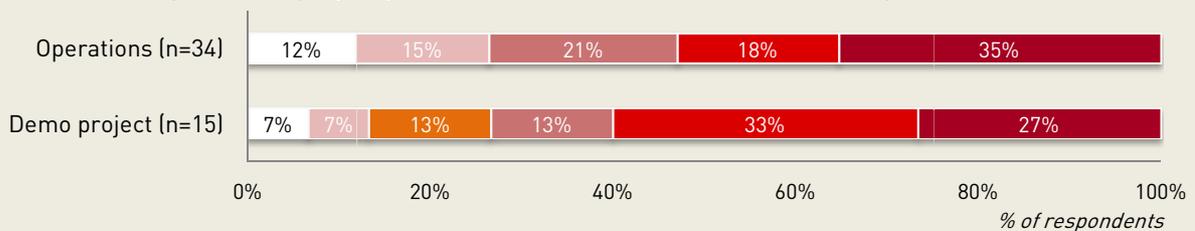
### 3.3. Kind of service providers /suppliers (2)

(Redistribution of organisations using more than one service provider among categories)



### 3.4. Kind of service providers according to implementation framework

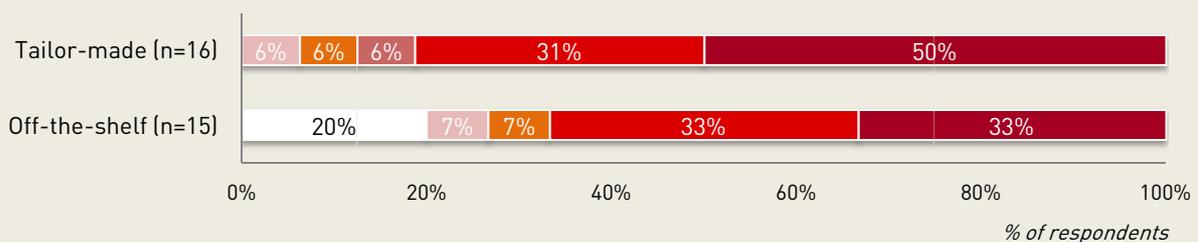
- Another public authority only
- An academic/research institute only
- A private company only
- The user public administration
- An international organisation only
- Mix of service providers



### 3.5. Kind of service providers according to service acquisition

(Blanks excluded, N=31)

- Another public authority only
- An academic/research institute only
- A private company only
- The user public administration
- An international organisation only
- Mix of service providers



### **Were satellite-based services readily available to respondent public administrations?**

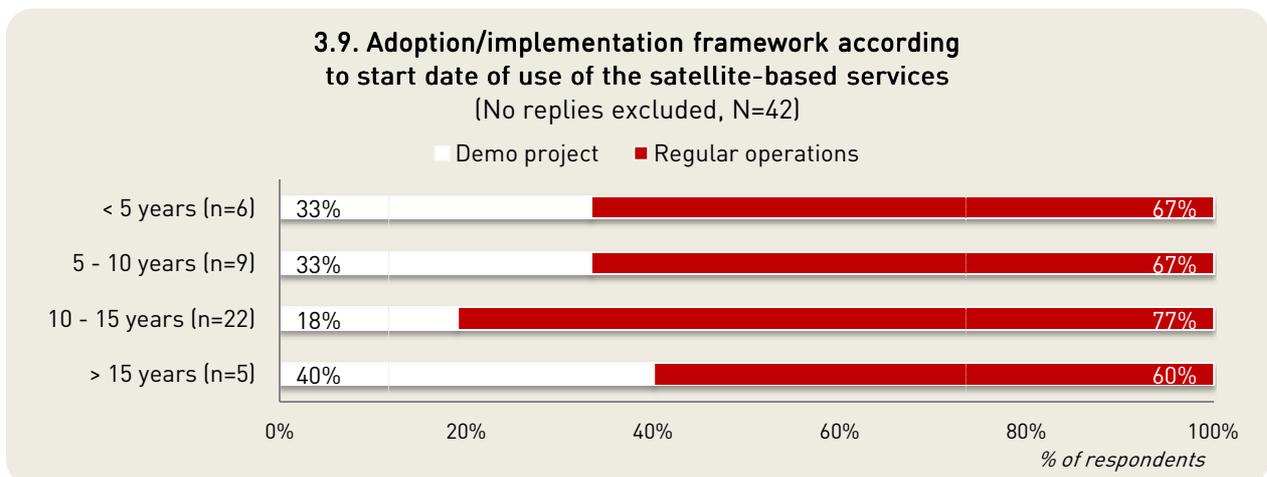
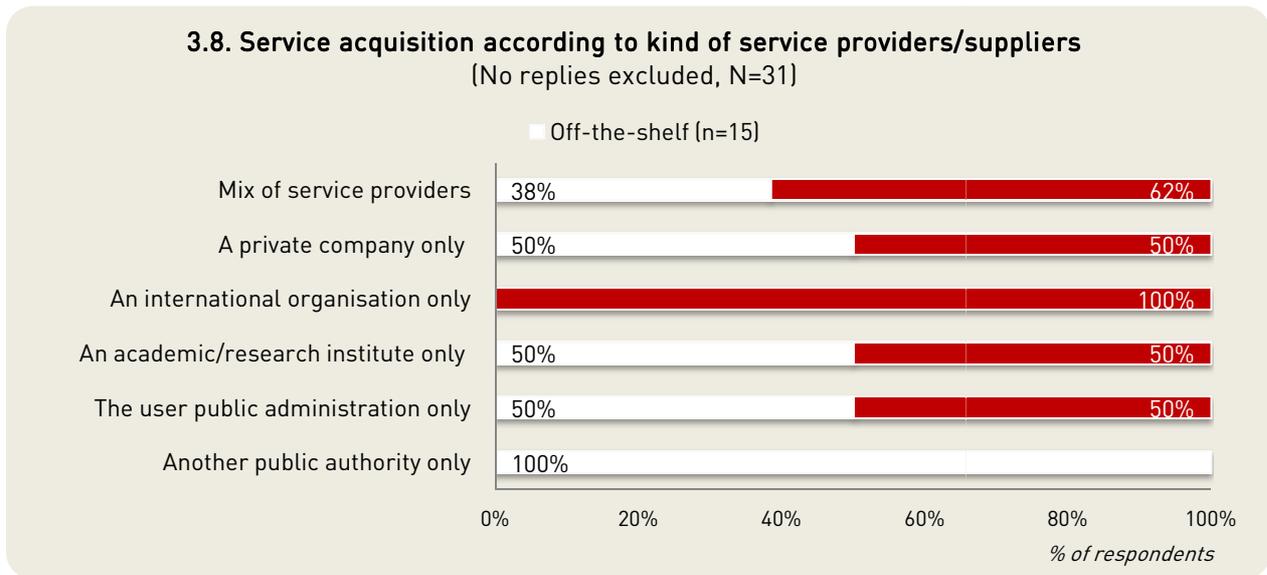
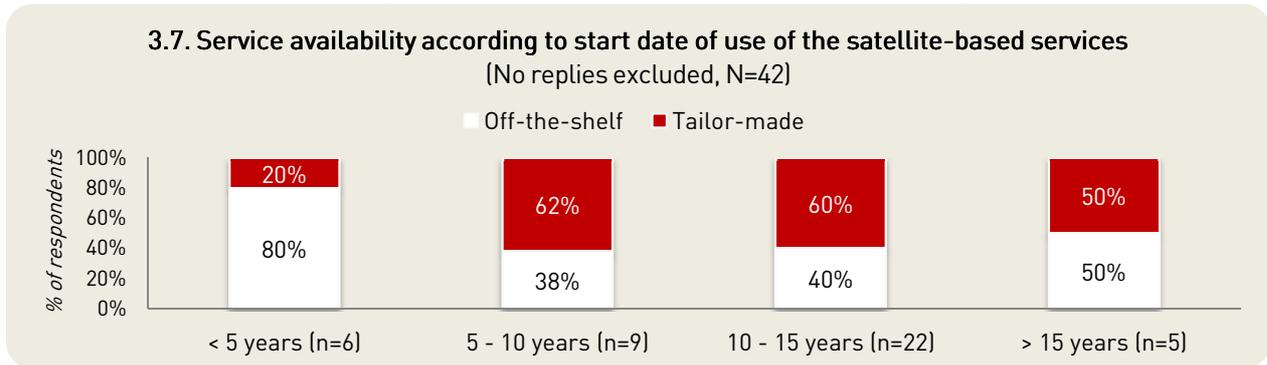
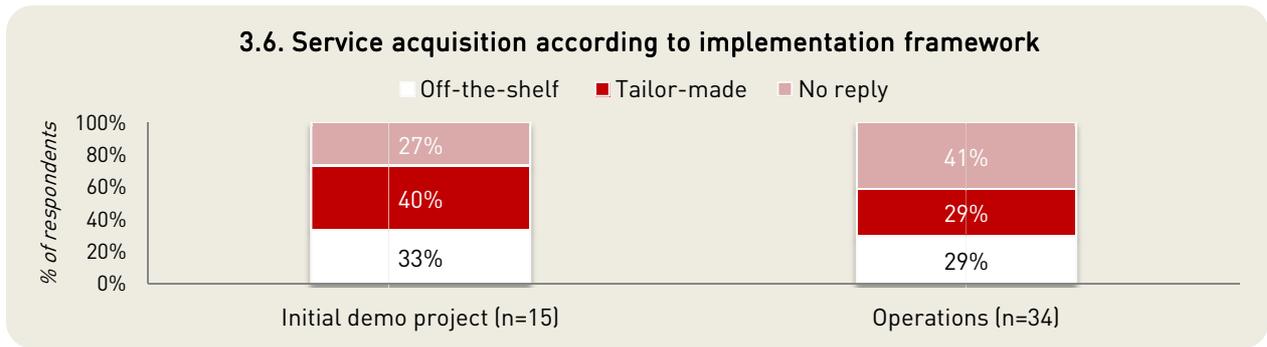
Although 30% of respondents found the satellite-based services needed off-the-shelf, 33% of them needed these services to be developed or adapted to respond to their specific needs (Graph 3.1.).

On the one hand, these figures suggest that not only have Polish public administrations become familiar with satellite-based services, but that many of the solutions they need are already developed and ready to use.

On the other, they show that there is still a need to further develop tailor-made solutions. Indeed, while 29% of respondents that have adopted the services within their regular operations found them already available, 40% of the services implemented within a demonstration project had to be tailor-made (Graph 3.6.).

Drawing on the responses related to service availability (Graph 3.7.), respondents have adopted a greater number of off-the-shelf services during the last five years. This suggests that satellite-based services are increasingly infiltrating the market and attracting downstream users in Poland.

Indeed, most public administrations did not need a demonstration project to take up these services (Graph 4.5.), but started using them within the framework of their regular operations. This is true also for services adopted 10 or 15 years ago (Graph 3.9.).



## 4. Costs to adopt and use satellite-based services

### How expensive is it to use satellite-based services?

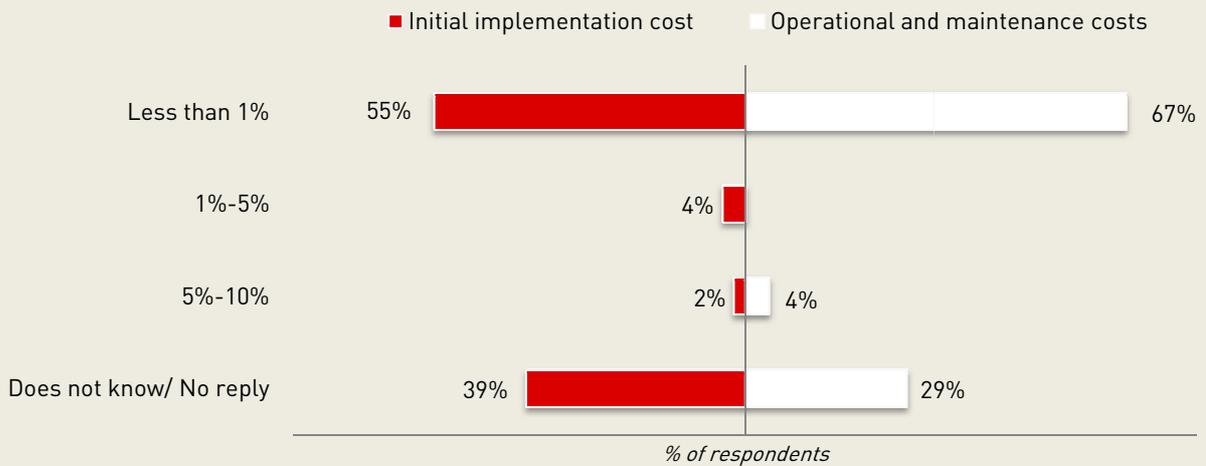
About 60% of the responding Polish public administrations were willing or able to share information on the initial costs of the satellite-based services they use. Simultaneously, about 70% reported on their operational and maintenance costs.

According to their responses, Polish public authorities invest a small percentage of their budgets to use satellite-based services.

Implementation costs represented less than 1% of the annual budget for 55% of respondents. Operational costs accounted for less than 1% of the budget for 67% of them (Graph 4.1.). Hence, both the adoption and the operation of satellite services required relatively modest investments.

Nevertheless, 12 out of 49 respondents reported to have encountered economic challenges to first adopt or implement the satellite-based services used (Graph 5.2.).

**4.1. Costs of the satellite-based services as a share of organisations' annual budget**

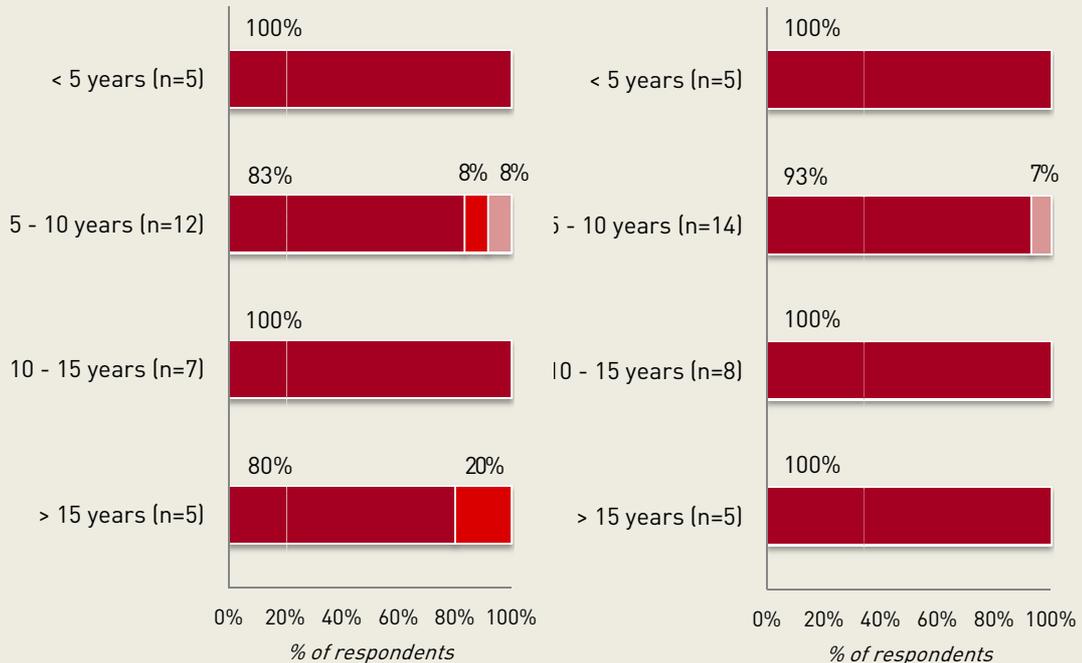


**4.2 Costs of the satellite-based service as a share of the organisations' annual budget according to the start date of use (Blanks excluded)**

Legend: Less than 1% (dark red), 1% - 5% (red), 5% - 10% (light red), 10% - 20% (pink), More than 20% (white)

**Initial Implementation costs**

**Operational and maintenance costs**



### How were the satellite-based services financed?

Almost half of respondents used external funds to fully or partially fund the initial implementation of their satellite-based services, while the other half funded them with their own budget (Graph 4.3.).

47% of respondents benefitting from external funds declared to have relied on national public funds. Another 35% received support from international organisations, while 12% relied on local public funds. None of the respondents mentioned funds made available by universities or research centres (Graph 4.4.).

Most of the respondent public administrations (69%) did not need a demonstration project to adopt satellite-based services, but were able to implement them within their regular operations. This shows both the awareness and the interest of the surveyed organisations towards such technologies.

At the same time, one third of respondents were able to profit from demonstration projects and to turn project results into operational practices (Graph 4.5.).

External support can actually be of crucial importance to foster the uptake of satellite-based services. 31 out of the 49 Polish administrations taking the Eurisy survey report to have received data or expertise for free to initially adopt the satellite-based services used.

One can therefore infer that mechanisms exist to transfer both data and expertise to public authorities in the Poland. Indeed, 49% of respondents reported to have benefitted from free satellite-based data, and 20% declared that the initial implementation of the satellite-based services was provided to them for free (Graph 4.6.).

### Who provides free data or expertise?

The majority of respondents collaborating with more than one kind of service provider receive data or expertise free of charge.

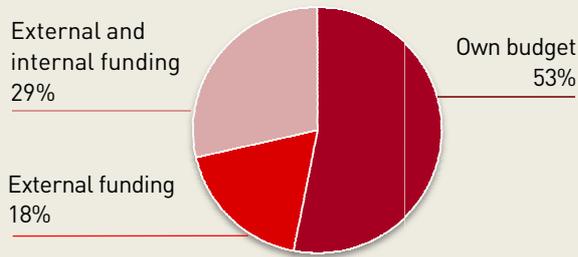
This is also the case for respondents who procured their satellite-based services in-house, from other public administrations, as well as from research centres and international organisations (Graph 4.7.).

Instead, among those procuring the services exclusively from private companies, only 27% report having benefitted from free data or support (Graph 4.7.).

No significant differences are observed between those adopting the services within demonstration projects and those implementing them during their regular operations (Graph 4.8.).

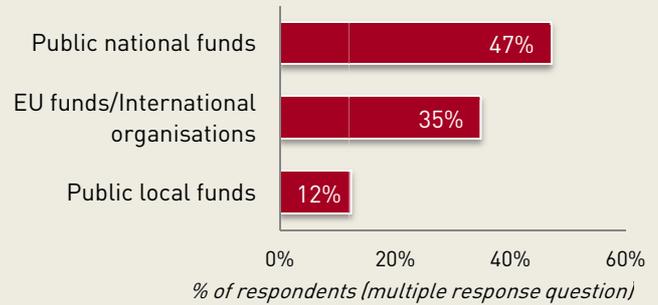
4. Costs to adopt and use satellite-based services

4.3. Initial funding of the satellite-based services

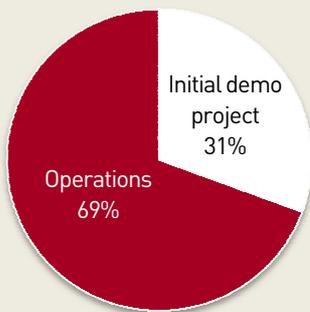


4.4. Kind of external funds used for the initial adoption of the satellite-based services

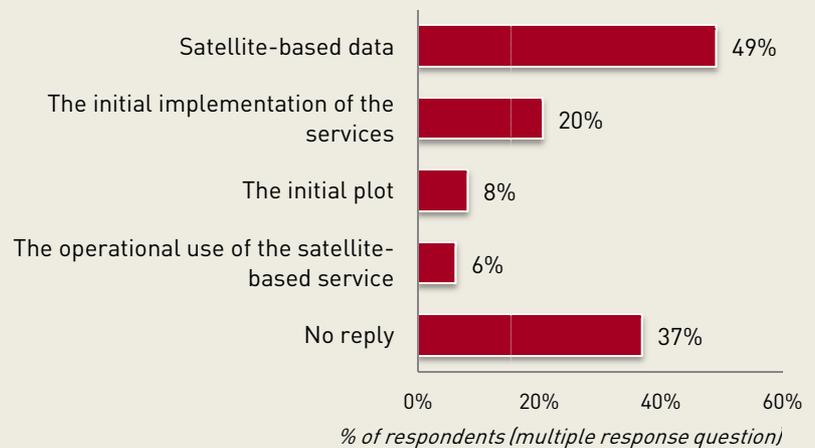
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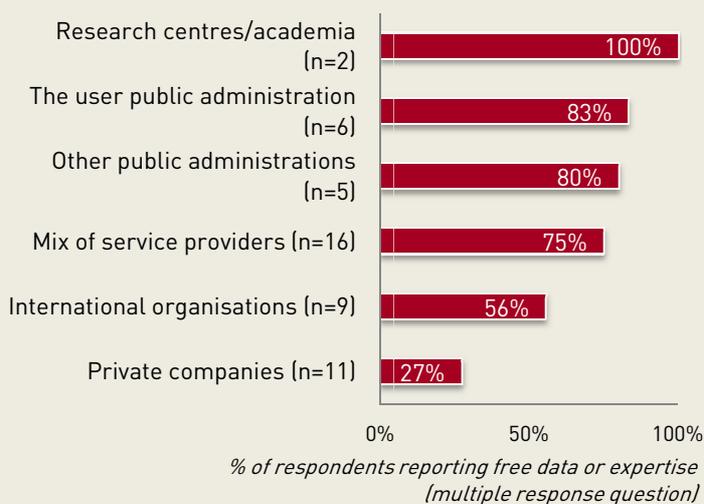
4.5. Implementation/adoption framework of the satellite-based services



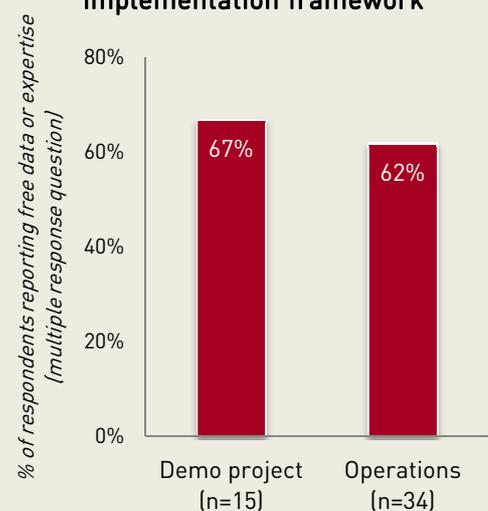
4.6. Data or expertise provided free of charge



4.7. Data or expertise provided free of charge according to service providers



4.8. Data or expertise provided free of charge according to implementation framework



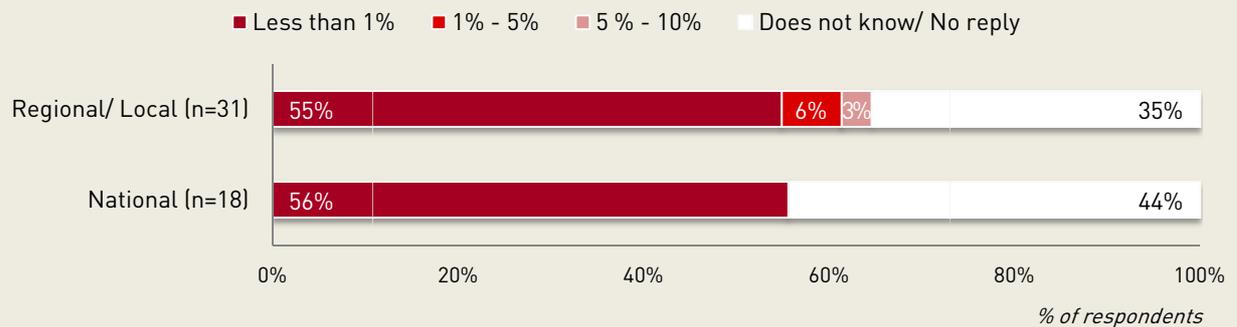
### **What influences the cost of satellite-based services?**

Respondent public administrations reported relatively small costs to both adopt and operate satellite-based services (Graph. 4.1.).

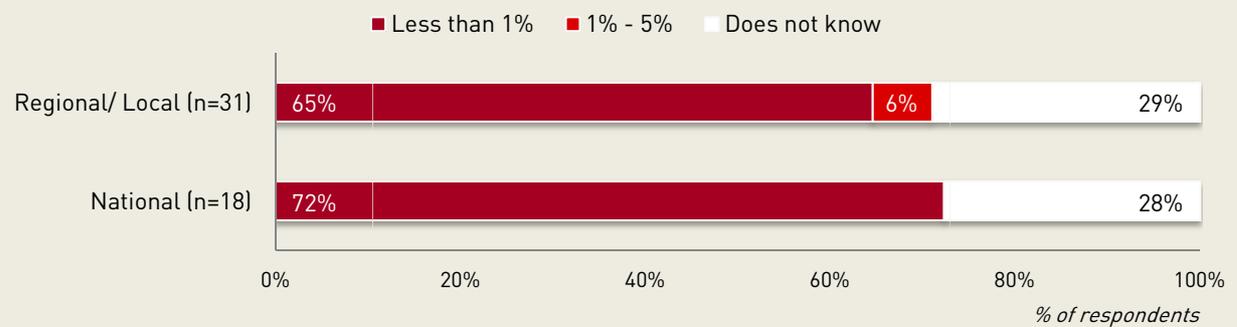
Indeed, more than half of respondents declared to have spent less than 1% of their annual budgets to implement and operate their satellite-based services (Graphs 4.9. and 4.10.).

Off-the-shelf services seem to be relatively less expensive than tailor-made services (4.11.). However, no significant difference is observed between the two groups.

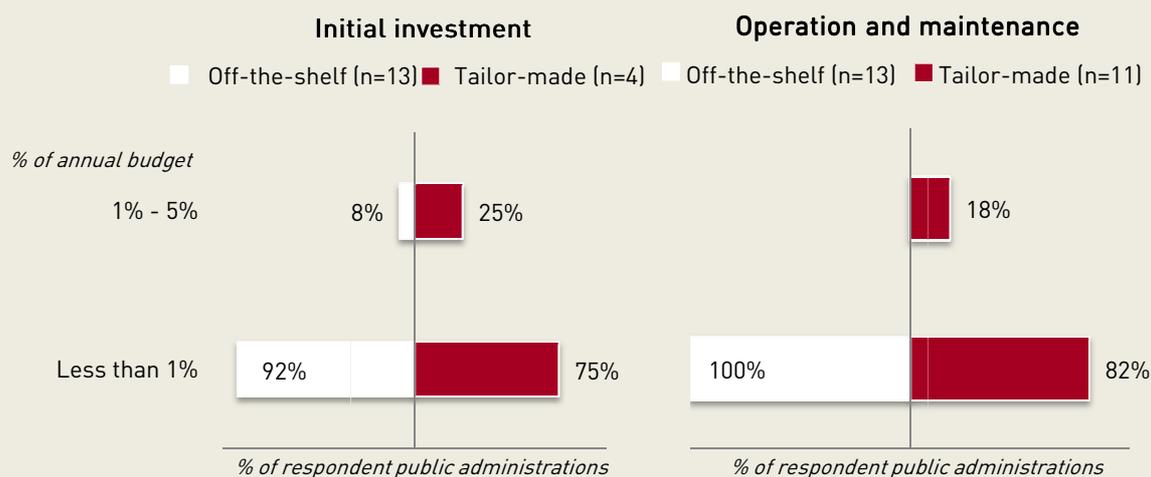
**4.9. Initial level of investment as a share of organisations' annual budget according to level of authority**



**4.10. Operational and maintenance costs of the satellite-based services as a share of organisations' annual budget according to level of authority**



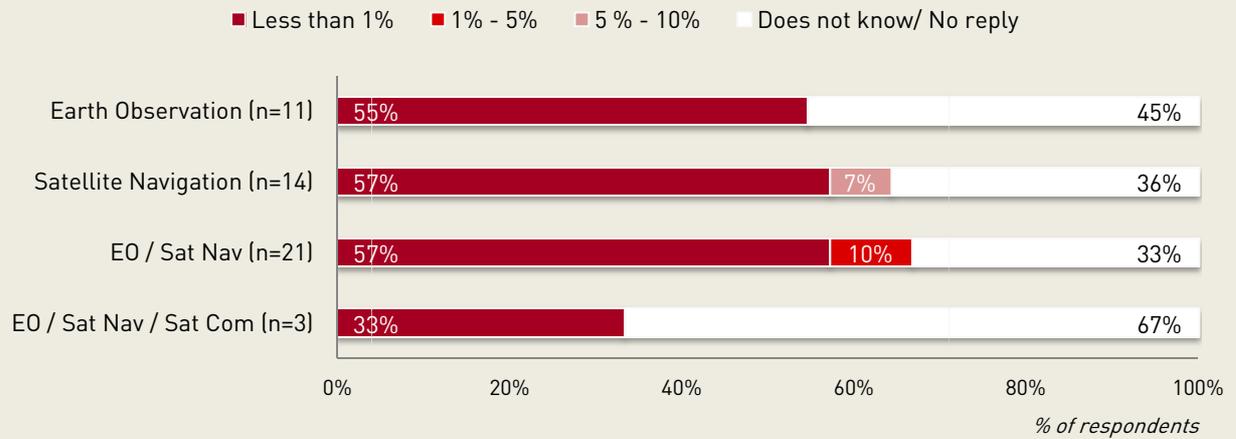
**4.11. Costs of the satellite-based services as a share of public administrations' annual budget according to acquisition procedure (Blanks excluded)**



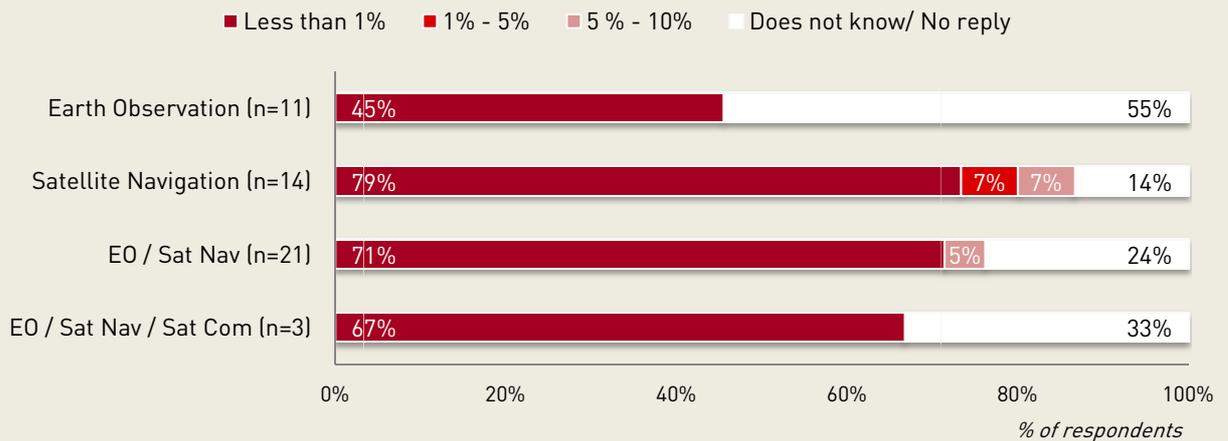
The analysis of the responses has not shown important differences in the initial implementation costs according to the type of satellite services used, i.e. satellite navigation, Earth observation or satellite communication (Graph 4.12.). Operational and maintenance costs seem instead to be higher for services based on Earth observation (Graph 4.13.), although more replies to the survey would be needed to confirm this tendency.

Both organisations operating at the national or regional levels report similar levels of access to free satellite data or expertise to adopt and use satellite-based services (Graph 4.14.).

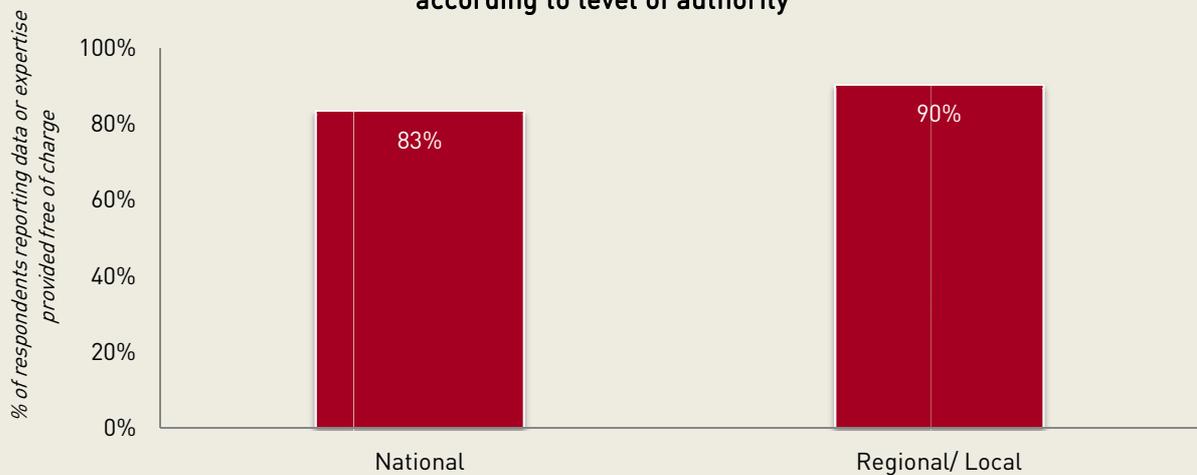
**4.12. Initial level of investments as a share of public administrations' annual budget according to type of satellite applications used**



**4.13. Operational and maintenance costs as a share of public administrations' annual budget according to type of satellite applications used**



**4.14. Organisations reporting data or expertise provided free of charge according to level of authority**



## 5. Challenges in adopting and using satellite-based services

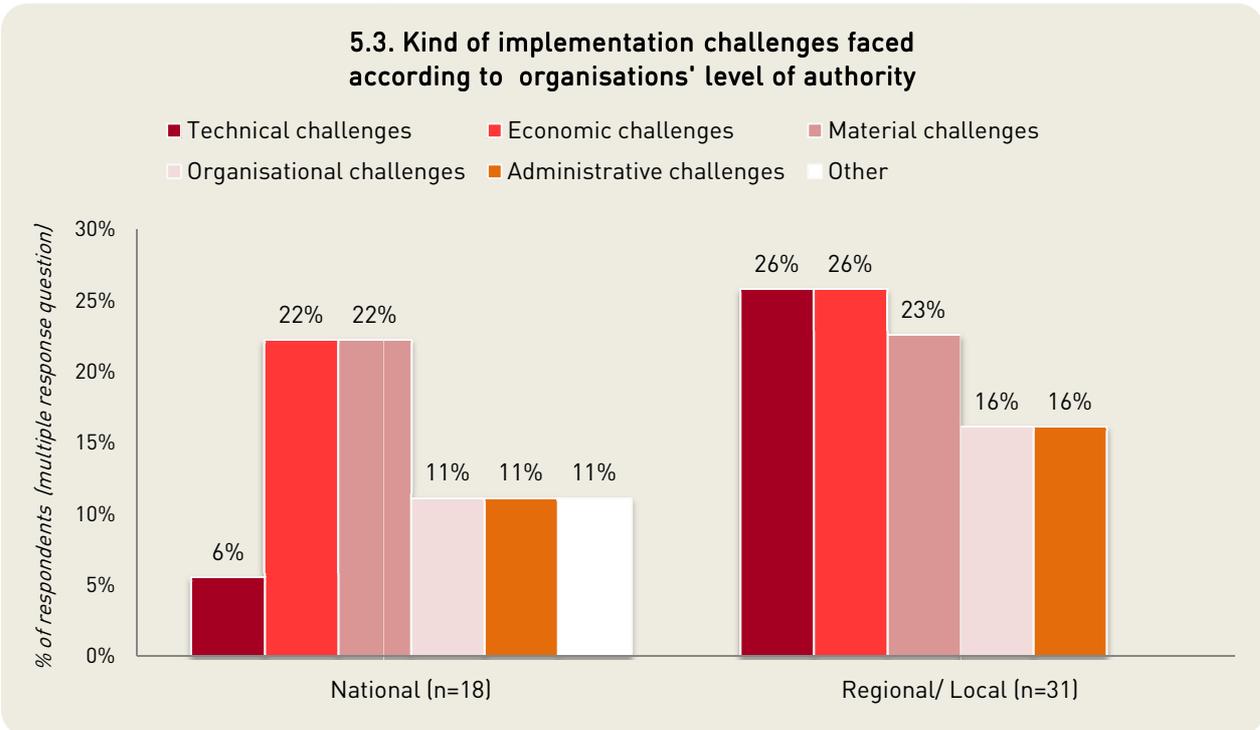
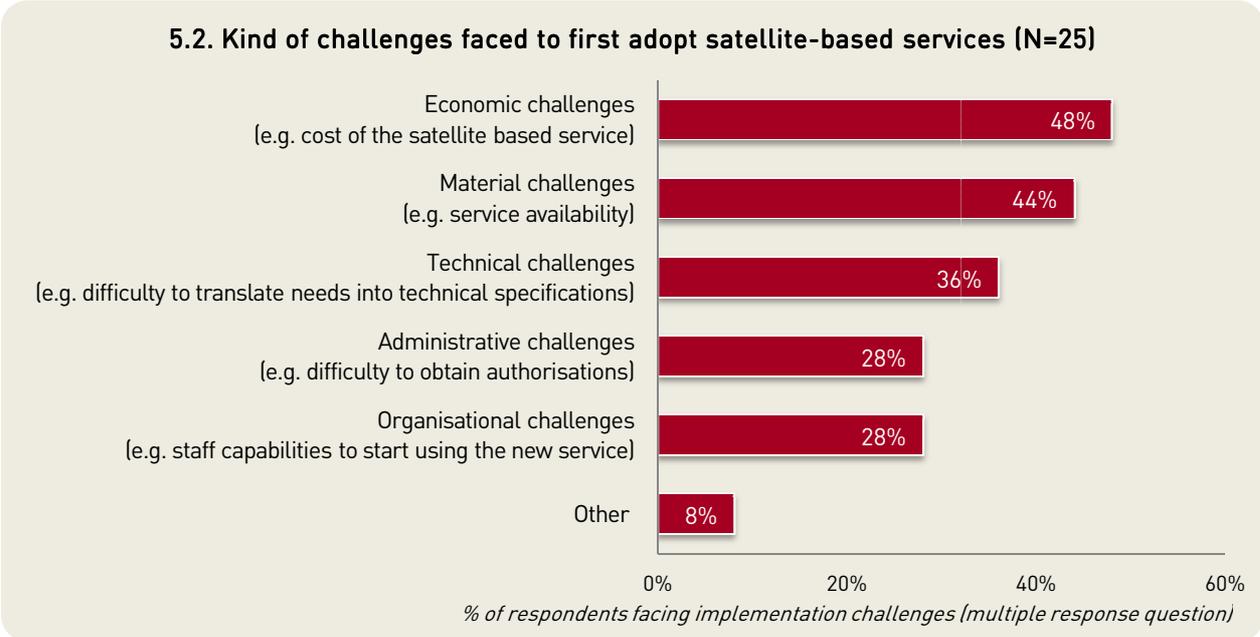
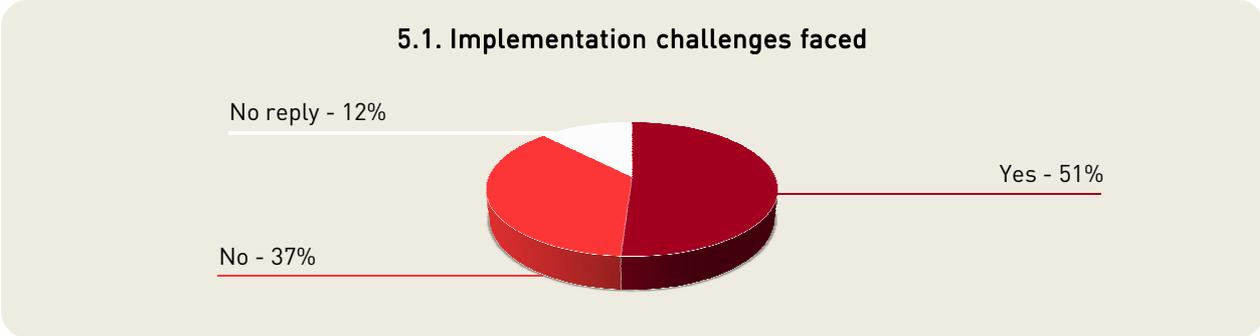
### Which are the challenges encountered by Polish administrations to first adopt satellite-based services?

51% of the Polish public authorities contributing to the Eurisy survey faced challenges when adopting their satellite-based services (Graph 5.1.).

Respondents mostly mentioned economic, material and technical challenges (Graph 5.2.). This suggests that, despite the relative small costs reported to adopt and use satellite-based services (Graph 4.1.), Polish public authorities still face difficulties to finance these services.

Furthermore, despite the fact that 30% of respondents declared to have acquired satellite services off-the-shelf (Graph 3.1.), many of them have difficulties to identify the services required and to translate their needs into technical specifications for procurement calls.

Proportionally, regional authorities report more challenges than national level administrations to first adopt satellite services. This is particularly true for technical challenges, suggesting that Polish regional and local level administrations are particularly in need of expertise and support to take up satellite-based services (Graph 5.3.).

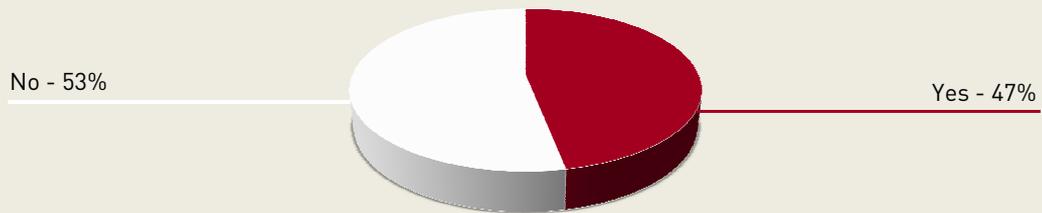


### **What challenges do Polish administrations face to operationally use satellite-based services?**

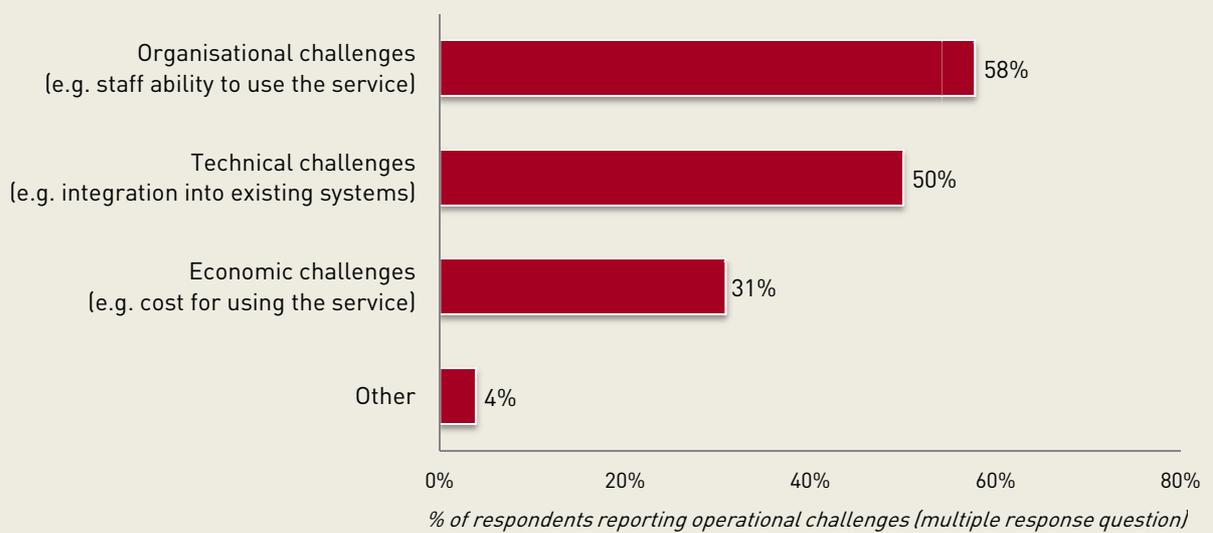
47% of the Polish public authorities replying to the Eurisy survey also mention challenges to operationally use their satellite-based services (Graph 5.4.). These challenges are mainly of organisational and technical nature (Graph 5.5.).

As per the implementation challenges, regional and local-level administrations report technical challenges in a higher percentage than national administrations (Graph 5.6.).

**5.4. Operational challenges faced to use and maintain satellite-based services**



**5.5. Kind of challenges faced to operate and maintain satellite based-services (N=26)**



**5.6. Kind of operational challenges faced according to organisations' level of authority**

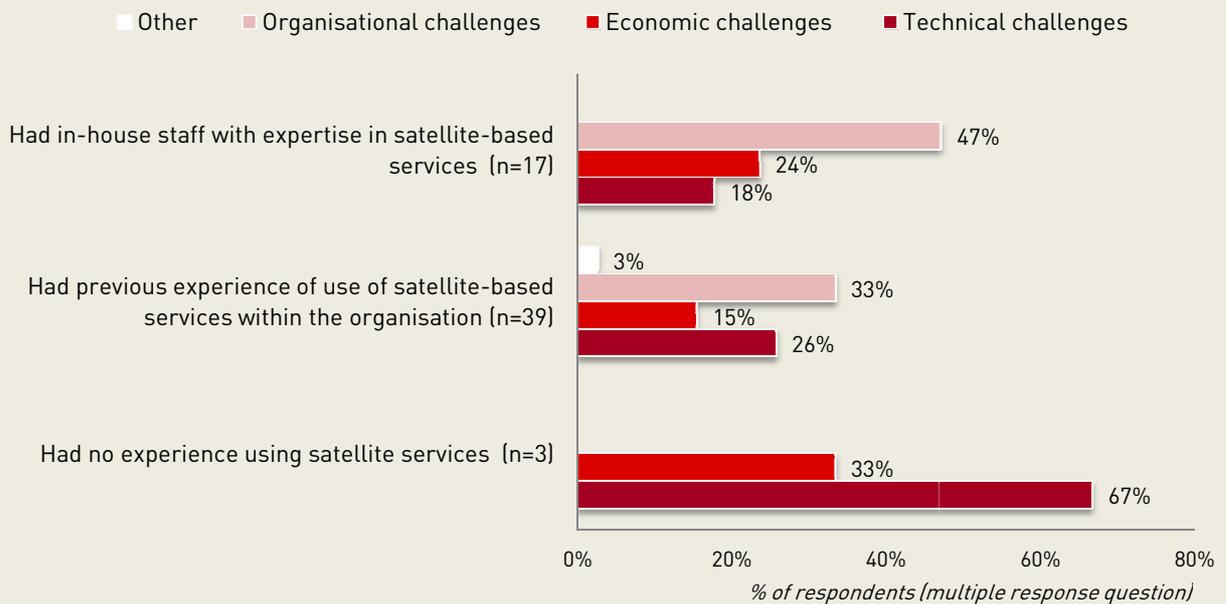


The public authorities who declared having no previous experience with satellite-based services report more technical challenges than other experienced users (Graph 5.7.).

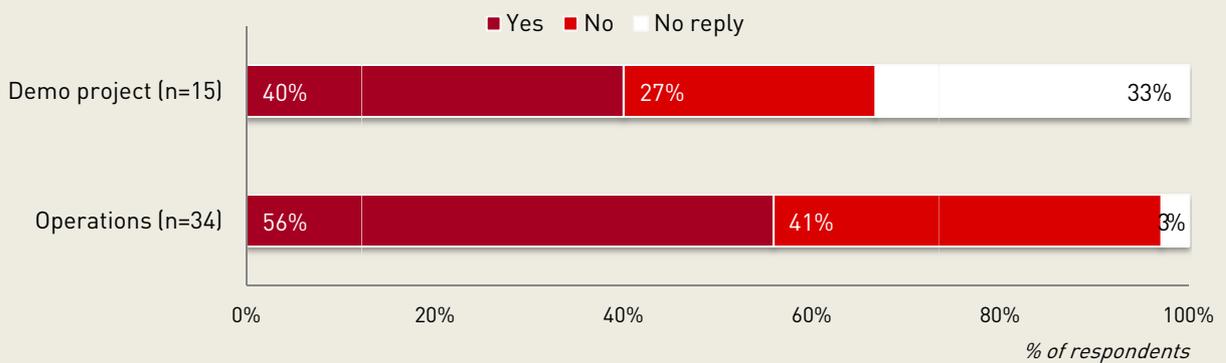
Interestingly, while the organisations adopting these services within their regular operations faced more initial challenges than those benefitting from a demonstration project (Graph 5.8.), they report less challenges to use the services operationally in their daily work (Graph 5.9.).

This could mean that, while demonstration projects help public authorities to procure innovative managing tools, they might not provide public authorities with the necessary training that would allow them to use such tools smoothly after the conclusion of the projects.

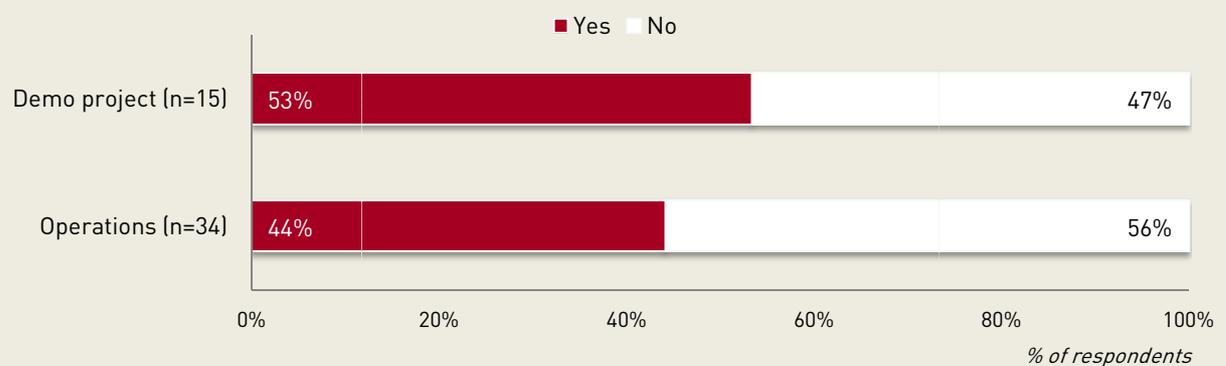
**5.7. Operational challenges faced according to previous experience with satellite-based services**  
(Blanks excluded)



**5.8. Implementation challenges according to implementation framework**



**5.9. Operational challenges according to implementation framework**



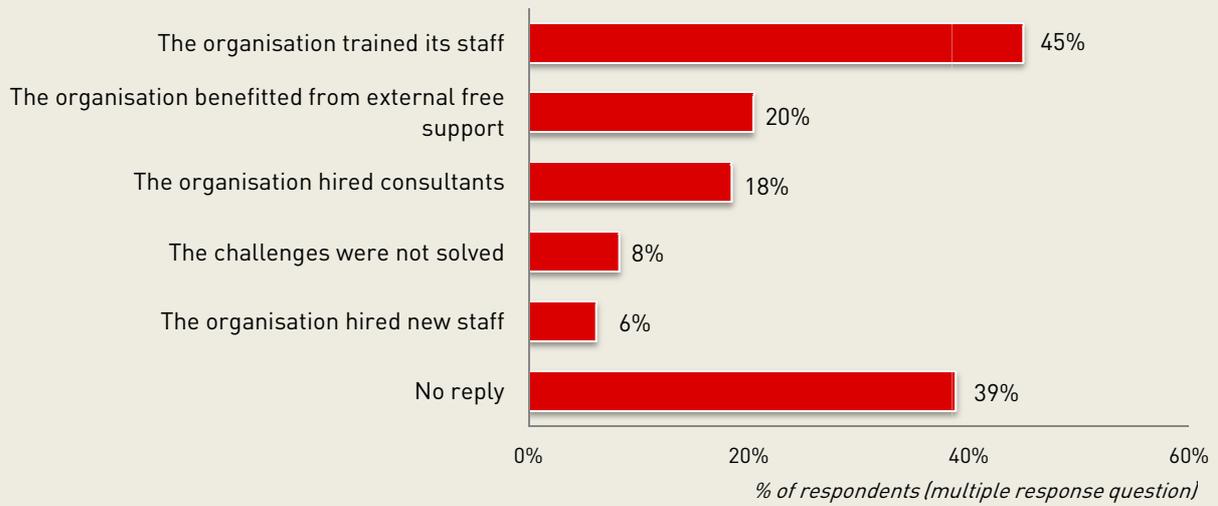
### **How did respondent public administrations overcome the challenges faced to adopt and use satellite-based services?**

45% of respondent Polish administrations were able to overcome both implementation and operational challenges through training. One fifth benefitted from external free support or hired consultants. A small part of the sample moved on to hire new staff, while only 8% of respondents declared that the challenges had not yet been solved (Graph 5.10.).

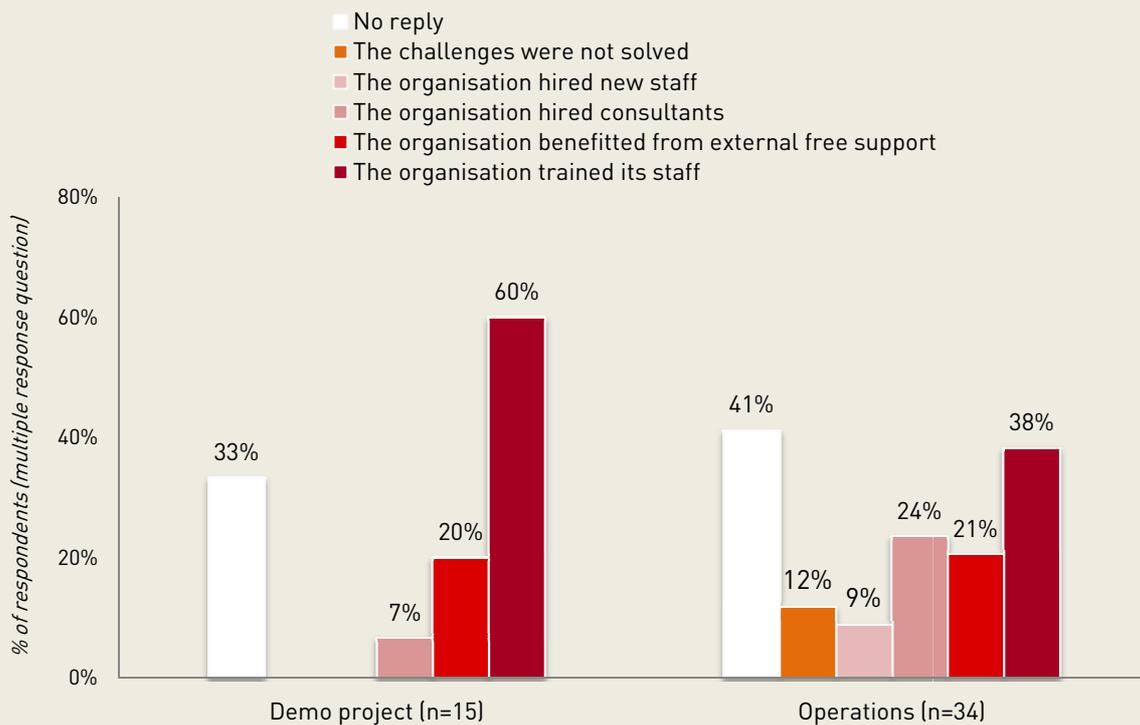
The replies indicate that in many cases training can represent a solution to overcome the obstacles encountered during the initial adoption or the subsequent use of satellite-based services. Investments in training are therefore to be encouraged.

Both when public authorities start using satellite-based services within a demonstration project or during their regular operations, training is mentioned as being the most effective tool to overcome the difficulties linked to the adoption and use of these tools. This is especially true among respondents who adopted the services within a demonstration project (Graph 5.11.).

### 5.10. Challenge mitigators



### 5.11. Challenge mitigators according to implementation framework of the satellite-based services



### Are the satellite-based services used sustainable?

12% of the surveyed Polish public authorities declared that they might face challenges to continue using their satellite-based services in the future (Graph 5.12.). Among those, one third is considering other technologies to substitute the satellite-based services; 17% mention their excessive cost or possible budget constraints in the future; an additional 17% mentions the poor benefits entailed by the use of the services. Other reasons include changes in local regulations and insufficient personnel skills (Graph 5.13.).

### What can we infer from the declarations of Polish public authorities?

The responses submitted by Polish public authorities suggest that satellite-based services can offer multi-level governance tools in a range of sectors of public interest.

They can support public authorities to build, renew and manage public infrastructure and transport networks. They can also provide data and signals useful to produce green energy, to monitor maritime navigation, and to maximise the efficiency of agriculture. Furthermore, satellite data and signals can also help reduce pollution and proved essential to foresee and manage natural hazards.

One common challenge for most European countries, including Poland, is to grant an efficient, timely and reliable system to acquire and distribute satellite data within the public sector at all levels.

Data acquisition, processing and distribution can for example happen through web systems shared by public entities operating in the same sectors or in the same areas.

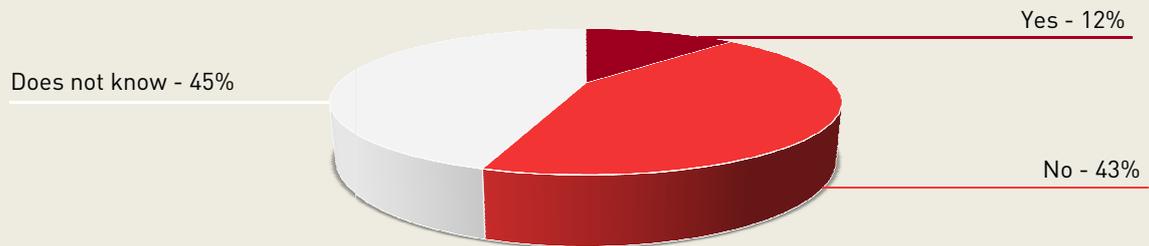
This is more and more the case in several European states, which are making satellite-data available not only to public administrations, but also to specific professional categories, e.g. farmers.

The establishment of coherent, transparent and fluid mechanisms for data acquisition, processing and distribution would facilitate synergies and coordination among Ministries, Voivodeships, Districts, Municipalities and other public actors in Poland.

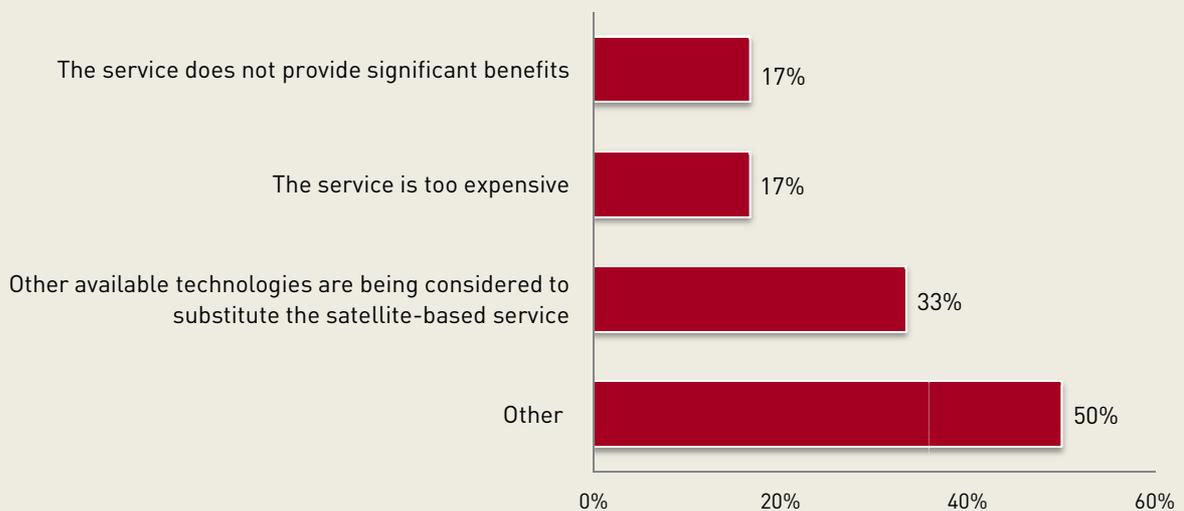
Many respondents report technical challenges to implement and use satellite-based services. This is particularly the case for administrations working at the regional and local levels. Since these challenges are often overcome with training, the central Government and National-level administrations such as the Polish Space Agency could establish a programme to specifically support the uptake of satellite-based services within the public administration.

Such programme should act as a “middle-man” among public authorities and providers of satellite-based services, offering punctual advice to public administrations, organising specific trainings for them and raising awareness on the potential uses of satellites to improve public services. An example of such initiatives is the Space for Smarter Government Programme implemented by the UK Space Agency.

### 5.12. Challenges to keep using the satellite-based services in the future



### 5.13. Threats to future use of the satellite based services (n=6)



*% of respondents reporting possible challenges to keep using the services in the future (multiple response question)*



# ANNEXES



## ANNEX I – USER FORUM POLAND

# “Satellites for society: operational uses of satellite-based services by the Polish public administration”

Date: 19 APRIL 2016, WARSAW, POLAND

Place: Premises of the Ministry of Economic Development

### Co-organisers



Ministry of Economic Development

The Polish Ministry of Economic Development was established in December 2015. It is responsible, among other tasks, for the implementation of Poland's strategies for socio-economic development and economic policy. The Ministry is also in charge of managing the deployment of European funds.



The Polish Agency for Enterprise Development (PARP) is a government agency established in 2000. The Agency provides support to entrepreneurs through different actions, including: financing for enterprises, development services, education and information activities, as well as actions aimed at enhancing entrepreneurship culture and innovation in Poland. Since 2012, PARP is implementing several activities to foster entrepreneurship and development in the space sector in Poland.

### Supporting entities



The European Space Agency (ESA) is Europe's gateway to space. Its mission is to shape the development of Europe's space capability and ensure that investment in space continues to deliver benefits to the citizens of Europe and the world.



Established in September 2014, the Polish Space Agency (POLSA) supports the national space industry by combining the worlds of business and science. An important feature of the Agency's activities is to promote the development of satellite technologies that can be used in everyday life, including communication, navigation, environmental monitoring and weather forecasting.

## User Forum objectives

This User Forum presented and discussed the results obtained from the analysis of the experiences of the Polish public authorities who participated to the Eurisy survey, with the following objectives:

- To examine the replies received to the Eurisy survey within the context of the Polish space policy and of national socio-economic priorities;
- To value the distinctive contributions of satellite-based services to support management of public services in sectors which are key to achieve social, economic and environmental well-being;
- To identify the challenges facing Polish public authorities to procure, use and maintain satellite-based services, and propose ways to overcome those;
- To envisage strategies to boost the exploitation of satellite-based data and signals in the public sector.

## Programme

**09:30-10:00**    **Registration**

**10:00-10:30**    **Welcome and introductions**

- **Jadwiga Emilewicz**, Undersecretary of State in the Polish Ministry of Economic Development
- **Marek Banaszekwicz**, President of the Polish Space Agency
- **Johannes Ortner**, Vice President at Eurisy

**10:30-11:00**    **Keynotes**

*Session chairperson: G. Fiore, Eurisy*

- Thibaud Delourme, European Commission - DG GROW - Directorate of Space Policy, Copernicus & Defence, "*The potential of satellite-based services to enhance public services in strategic sectors*"
- Otylia Trzaskalska-Stroińska, Deputy Director in the Innovation Department, Polish Ministry of Economic Development, "*The Polish space policy - objectives and challenges*"

**11:00-11:30**    **Coffee break**

**11:30-12:00**    **Some figures on the use of satellite-based services in the Polish public administration**

- Grazia M. Fiore, Research and project coordinator, Eurisy, "*Presentation of the Eurisy survey's objectives and methodology and of the results obtained from Polish public authorities in 2015*"

**12:00-13:00**    **Testimonials of use of satellite-based services**

*Session chairperson: G. Fiore, Eurisy*

- Jacek Kmita and Marta Nurzyńska, Jastrzębie-Zdrój City Office, and Jacek Strzelczyk, SATIM Monitoring Satelitarny sp. z o.o., "*Monitoring of the ground surface deformations in the City of Jastrzebie-Zdroj with the support of satellite services*"
- Krzysztof Mączewski, Department of Geodesy and Cartography, The Office of the Marshall of the Mazowieckie Voivodeship in Warsaw, "*Use of satellite data to improve the efficiency and coordination capacities of rescue services operations during emergencies*"
- Konrad Kurpiński, Maritime Office in Gdynia, "*Practical use of satellite technologies within the statutory duties of the Maritime Office*"

- Katarzyna Dabrowska-Zielinska, Institute of Geodesy and Cartography, and Artur Łączyński and Tomasz Milewski, Central Statistical Office, “*Monitoring crop growth conditions and crop yield in Poland using satellite data from NOAA AVHRR to Sentinel 1 and Sentinel 2*”

**13:00-14:00** Lunch break

**14:00-14:45** **Examples of projects enabling Polish public administrations to use innovative satellite-based services**

*Session chairperson: G. Fiore, Eurisy*

- Bartosz Kulawik, Market Development Director, SmallGIS Sp. z o.o., “*Integrated web-based service for forestry*”
- Jakub Ryzenko, Crisis Information Centre at Space Research Centre, Polish Academy of Sciences, “*Improving crisis management and coordination using satellite-based technologies*”

**14:45-15:00** Coffee break

**15:00-16:00** **Interactive discussion: Challenges and opportunities to develop and use satellite-based services in the public sector**

This session aimed at actively involving the audience in the discussion on the main challenges facing public authorities to use satellite-based services (economic, technical, legal, etc.). The audience was able to interact with the speakers and the decision-makers in the room, and to envisage possible solutions to overcome the obstacles identified.

*Moderator: Otylia Trzaskalska-Stroińska, Deputy Director in the Innovation Department, Polish Ministry of Economic Development*

Contributors:

- Marek Banaszekiewicz, President of the Polish Space Agency
- Thibaud Delourme, European Commission - DG GROW - Directorate of Space policy, Copernicus & Defence
- Norbert Hübner, Head of Feasibility Studies Section, Study and Project Management Office, Integrated and Telecommunication Applications Department, Directorate of Telecommunications and Integrated Applications, European Space Agency, ESTEC
- Jakub Ryzenko, Crisis Information Centre at Space Research Centre, Polish Academy of Sciences
- Anna Kacprzyk, Director of Pilot Programmes Department at the Polish Agency for Enterprise Development
- Zbigniew Burdzy, Chief Specialist, Department of Strategy and International Cooperation, Polish Space Agency

**16:00-16:15** **Final remarks and recommendations**

- Stefaan De Mey, Secretary General at Eurisy

## Synthesis of discussions

The Eurisy “User Forum Poland” was organised to present the results of the Eurisy survey on the use of satellite-based services within the Polish public administration and to discuss the main challenges still facing public authorities to fully exploit the potential of satellite applications. The over 100 participants, representing public administrations, private companies and other stakeholders, provided feedback on the results of the survey and helped contextualising the 49 replies received by Polish public authorities between March and September 2015.

Opening the conference, **Jadwiga Emilewicz** (Undersecretary of State at the Polish Ministry of Economic Development), and **Marek Banaszkiwicz** (President of the newly formed Polish Space Agency) underlined the key role of satellites to support fundamental public services, such as transport and rescue services. Ms Emilewicz praised the Eurisy initiative to survey current operational uses of satellite-based services within the Polish public administration and recognised the importance of building a data system as a first step to fully exploit the potential of such services. She also pinpointed that the challenge for the future will be the “operationalisation” of the data available, to make it immediately usable by public managers. Mr Banaszkiwicz also emphasised the role played by the academia to link R&D and societal needs, to raise public awareness on these new developments, and to generate new jobs in high technologies. **Johannes Ortner**, Vice-President of Eurisy, recalled the lasting presence of Polish institutions among the Eurisy members and recognised Polish endeavours in space policy and developments.

The keynote speeches introduced the basic concepts of the conference. **Thibaud Delourme**, representing the European Commission, stressed the difference between intermediate users (transforming satellite signals and data into usable applications) and end users, more concerned by the usability of the applications than by the technologies behind them. To favour the development of increasingly user-friendly services, collaboration between the public and private sectors remains fundamental. Indeed, Ms **Otylia Trzaskalska-Stroińska** from the Ministry of Economic Development explained that two of Poland’s strategic objectives in the space sector are to increase the competitiveness of national enterprises and to enhance the capabilities of public administrations.

During the “User testimonials” session, the audience was presented with four experiences from Polish regional and national administrations using satellite data and signals routinely. Representatives from the **Jastrzbie-Zdrój City Office** showed how they are able to monitor soil subsidence caused by mining activities. The **Office of the Marshall of the Mazowieckie Voivodeship in Warsaw** described their use of satellite data to co-ordinate ambulances and rescue teams during emergencies. The **Maritime Office in Gdynia** presented a range of satellite-based services which allow the Office to monitor ships, to intervene on oil spills and to ensure coastal security. Finally, the **Central Statistical Office** explained how they use satellite data provided by the Institute of Geodesy and Cartography to monitor crop yields on the national territory.

The Eurisy survey showed that demonstration projects can result in services that are used also after the conclusion of the projects. The following session gave examples of such virtuous processes, which were described by the private company **SmallGIS** and by the **Crisis Information Centre at Space Research Centre of the Polish Academy of Sciences**. The first presented a web-based service to monitor forests, including data from satellite imagery. The second reported on a system relying on satellite data to help co-ordinating rescue operations during emergencies. These examples, together with the user testimonials previously presented, confirmed the results obtained from the Eurisy survey: public authorities are interested in satellite-based services and actively participate in their development, although technical and economic challenges are still to be faced. The examples were also representative

of the main sectors of application of satellite services mentioned by the respondents to the survey, i.e. transport, agriculture, urban planning and risk management.

Finally, the roundtable allowed participants and speakers to discuss challenges and opportunities linked to the use of satellite-based services within the Polish public administration in the coming years. In addition to the previous speakers, the panel included **Anna Kacprzyk**, from the Polish Agency for Enterprise Development, **Zbigniew Burdzy**, from the Polish Space Agency, and **Norbert Hübner**, from ESA's Telecommunications and Integrated Applications Department. During the discussions, Mr **Banaszkiewicz** confirmed the existence of a growing ecosystem of private companies with an interest in satellite applications in Poland. Ms **Kacprzyk** specified that most providers of satellite-based services in Poland are SMEs and praised the work of the ESA IAP programme to support such entities.

Mr **Delourme** added that while to develop a competitive upstream space market might take years, developments in the downstream sector are much faster, since small companies can enter the market from an IT, rather than a space perspective. Mr **Hübner** confirmed that most private companies benefitting from the IAP programme are SMEs. He then identified a number of challenges that public authorities face to use satellite-based services. Among those, he mentioned the need for tailored-made services within the public administration, the disconnection between operational needs and procurement mechanisms, and the absence of specific reference to high-tech services in public tenders.



## ANNEX II - Survey questionnaire

### Page 1

#### OPERATIONAL USES OF SATELLITE-BASED SERVICES WITHIN THE PUBLIC SECTOR

Are you a public authority?

Do you use a service based on satellite applications routinely, to perform your work? (i.e. satellite navigation/ location-based services, satellite communication, Earth observation/ satellite images)

If so, help us document your experience with satellite-based services by responding to this short questionnaire.

We are not looking for technical details, but for information on the implementation process, as well as on the tangible and intangible benefits of the satellite-based service.

Please reply to these questions to the best of your knowledge and leave a blank space when you are not able to answer.

If you wish to raise awareness on your experience in particular, please indicate your intention by ticking the appropriate box on the last page of this questionnaire. The Eurisy Secretariat will contact you shortly to arrange an interview with you.

For more information about Eurisy, please visit our webpage at [www.eurisy.org](http://www.eurisy.org) or write to [grazia.fiore@eurisy.org](mailto:grazia.fiore@eurisy.org)

**\*mandatory**

### Page 2

#### Your Public Authority

Country \*

Annual budget of your institution in 2015 \*

Please select the corresponding range (N.B. k=thousands; m=millions)

- Less than € 500k
- € 500k - € 1m
- € 1m - € 2m
- € 2m - € 5m
- € 5m - € 10m
- € 10m - € 25m
- € 25m - € 50m
- € 50m - € 100m
- More than € 100m

On which area does your institution operate? \*

Please select one or more options

- Local
- Regional
- National

Before adopting the satellite-based solution, did you have internal expertise or previous experience of use of satellite navigation/ location-based services, imagery or satellite communication within your institution?

Please select one or more options

- We had staff with expertise
- We had previously used satellite-based services
- No
- I do not know
- Other:

**Page 3**

**The satellite-based service you are using**

Which kind of satellite application, or combination of them, is used by your institution? \*

Please select one or more options

- Satellite Imagery
- Satellite Navigation/ Location-based services
- Satellite Communication

In which field of application do you use the satellite-based service? \*

Please, select one or more options

- Agriculture
- Air quality
- Building and works
- Climate change
- Energy
- Environmental protection
- Forestry
- Health
- Law enforcement
- Mining
- Natural and cultural heritage
- Risk prevention and management
- Sports and leisure
- Tourism
- Transport and logistics
- Urban planning
- Water management
- Other:

When did you start using the satellite-based service?

(YEAR)

Do you still use it?

- Yes
- No

If you are not using the satellite-based solution anymore, until when was the solution operational?

(YEAR)

**Page 4**

**Motivations and framework under which you adopted the satellite-based service**

What made you consider using a satellite-based service? \*

Please select one or more options

- Obligation (respond to policy / regulation)
- Need to save time and/or economic and human resources
- Improve an existing service or procedure
- Create a new service or procedure
- Other:

Why did you prefer a satellite-based service to other available technologies?

Please chose one or more options

- We did not consider other technologies
- No other alternative technology was able to respond to our need
- Other solutions were more expensive
- Other solutions were less effective

- The satellite component was a mandatory condition under the funding scheme used to implement the solution described
- Other:

Did you adopt the service while participating to a demonstration project? \*

- Yes
- No

The satellite-based service you are using was...

- Off-the-shelf
- Tailor-made for you
- Other:

Who is the provider of the satellite-based service you are using? \*

Please, choose one or more of the options below

- Your own institution
- A private company
- An academic/research institute
- An international organisation
- Another public authority
- Other:

## Page 5

### Costs of adopting and operating the satellite-based solution

How was the initial implementation or adoption of the satellite-based service financed? \*

Please select one or more options

- Own budget
- External funding

Please, specify what kind of external funds were used:

Please select one or more options

- Public local funds
- Public national funds
- EU funds/ International organisations
- Private companies
- Universities/ Research centres
- Other:

Please specify if any of the following is provided for free:

Please select one or more options

- The initial implementation of the satellite-based service
- The initial pilot
- The operational use of the satellite-based service
- Satellite-based data
- Other:

What percentage of the institution's annual budget did the initial investment to implement the service represent?

Please, select the corresponding range

- Less than 1%
- 1% - 5%
- 5% - 10%
- 10% - 20%
- More than 20%
- I do not know

What percentage of the institution's annual budget does the cost to operate and maintain the service represent? \*

Please, select the corresponding range

- Less than 1%
- 1% - 5%
- 5% - 10%
- 10% - 20%
- More than 20%
- I do not know

## Page 6

### Challenges for the Public Authority

When first implementing or adopting the satellite-based solution, did you face one or more of the following?

Please select one or more options

- Technical challenges (e.g. difficulty to translate needs into technical specifications)
- Economic challenges (e.g. cost of the satellite-based service)
- Material challenges (e.g. service availability on the market)
- Organisational challenges (e.g. staff capabilities to start using the new service)
- Administrative challenges (e.g. difficulty in obtaining authorisations or funds)
- No challenges faced
- Other:

Once the satellite-based solution has been adopted, did you face one or more of the following challenges to use it? \*

Please select one or more options

- Technical challenges (e.g. integration into existing systems)
- Economic challenges (e.g. cost for using the service)
- Organisational challenges (e.g. staff ability to use the service)
- No challenges faced
- Other:

How did you solve these challenges?

Please select one or more options

- We trained our staff
- We hired new staff
- We hired consultants
- We benefitted from external free support
- The challenges were not solved
- Other:

Do you think it will be a challenge to keep using the satellite solution in the future? \*

- Yes
- No
- I do not know

If Yes, could you say why?

Please, select one or more options

- The service does not provide significant benefits
- The service is too expensive
- Other available technologies are being considered to substitute the satellite service
- The usefulness of the service is questioned within your institution or by external stakeholders
- Other:

## Page 7

**Benefits of the use of the satellite-based solution**

Did you make a formal assessment of the quantitative benefits resulting from the use of the satellite-based service? \*

- Yes
- No
- I do not know

Did the satellite-based solution replace a previous system to carry out the same tasks?

- No
- Yes, fully
- Yes, partially (the satellite service was used to improve the existing system)
- I do not know

What benefits does the service have for your institution? \*

Please select one or more options

- We are able to save money
- We are able to save time
- Workflows are smoother
- The services provided by our institution improved
- The institution is able to take better-informed decisions
- Other:

If you save money, how much do you save per year?

Monetary savings to perform the same tasks, as compared to a previous system or lack of

- Less than 1%
- Between 1 - 5%
- Between 5 - 10%
- Between 10 - 20%
- More than 20%
- I do not know

If you save time, how much time do you save each year?

Time savings to perform the same tasks, as compared to a previous system or lack of

- Less than 10%
- Between 10 - 20%
- Between 20 - 50%
- More than 50%
- I do not know

Did your experience inspire other public authorities to adopt a similar satellite-based solution?

- Yes
- No
- I do not know

Do you share the satellite-based system, or the satellite-based information, with other departments/units or institutions?

- Yes
- No
- I do not know



## ANNEX III

### List of Polish public administrations contributing to the Eurisy Survey between March and September 2016

Organisation's name	Website	Level of authority
Agricultural Property Agency of Warsaw, branch in Lodz	<a href="http://www.anr.gov.pl/web/guest/173">www.anr.gov.pl/web/guest/173</a>	National
Agricultural Property Agency, Regional Office in Bydgoszcz	<a href="http://www.anr.gov.pl/web/guest/bydgoszcz">www.anr.gov.pl/web/guest/bydgoszcz</a>	Regional
Agricultural Property Agency, Regional Office in Rzeszów	<a href="http://www.anr.gov.pl/web/guest/rzeszow/">www.anr.gov.pl/web/guest/rzeszow/</a>	Regional
Agricultural Property Agency, Regional Office in Wrocław	<a href="http://www.anr.gov.pl/guest/bydgoszcz">www.anr.gov.pl/guest/bydgoszcz</a>	Regional
ARiMR - Agency for Restructuring and Modernisation of Agriculture (3 survey submissions)	<a href="http://www.arimr.gov.pl/">www.arimr.gov.pl/</a>	National
Board of Regional Roads in Zielona Gora	<a href="http://www.zdw.zgora.pl/">www.zdw.zgora.pl/</a>	Regional
Department of Geodesy and Cartography, Marshal Office of Mazowiecki in Warsaw	<a href="http://www.mazovia.pl">www.mazovia.pl</a>	Regional
Gdansk Provincial Police	<a href="http://www.gdansk.policja.gov.pl">www.gdansk.policja.gov.pl</a>	National
General Directorate for National Roads and Motorways	<a href="http://www.gddkia.gov.pl/">www.gddkia.gov.pl/</a>	National
General Directorate of State Forests	<a href="http://www.lasy.gov.pl/">www.lasy.gov.pl/</a>	National
Government of the Opole Province	<a href="http://opolskie.pl/eng/">http://opolskie.pl/eng/</a>	Regional
Great Poland Poznan Provincial Office	<a href="http://www.poznan.uw.gov.pl">www.poznan.uw.gov.pl</a>	Regional
Institute for Territorial Development	<a href="http://irt.sam3.pl/">http://irt.sam3.pl/</a>	Regional
Institute of Inland Fisheries Stanislaw Sakowicz	<a href="http://www.infish.com.pl//">www.infish.com.pl//</a>	National

<b>Organisation's name</b>	<b>Website</b>	<b>Level of authority</b>
Maritime Office in Gdynia (2 survey submissions)	<a href="http://www.umgdy.gov.pl">www.umgdy.gov.pl</a>	Regional
Maritime Office in Slupsk	<a href="http://www.umsl.gov.pl/">www.umsl.gov.pl/</a>	Regional
Maritime Office in Szczecin (2 survey submissions)	<a href="http://www.ums.gov.pl/">www.ums.gov.pl/</a>	Regional
Marshal Office of Podlasie	<a href="http://www.bip.umwp.wrotapodlasia.pl/wojewodztwo/urzed_mar/">www.bip.umwp.wrotapodlasia.pl/wojewodztwo/urzed_mar/</a>	Regional
Marshal Office of Podlasie Bialystok	<a href="http://www.wrotapodlasia.pl/">www.wrotapodlasia.pl/</a>	Regional
Marshal Office of the Malopolska Region	<a href="http://www.malopolskie.pl">www.malopolskie.pl</a>	Regional
Marshal Office of the Silesia Province	<a href="http://www.slaskie.pl/en/">www.slaskie.pl/en/</a>	Regional
Marshal Office of Warmia and Mazury	<a href="https://portal.warmia.mazury.pl/">https://portal.warmia.mazury.pl /</a>	Regional
Marshal's Office of the Province of Zachodniopomorskie	<a href="http://wzp.pl/">http://wzp.pl/</a>	Regional
Mazovia County Council	<a href="http://www.mazovia.pl">www.mazovia.pl</a>	Regional
Mazovia Office for Surveying and Agricultural Equipment in Ostroleka, Budgetary Unit of the Mazovia Provincial Government	<a href="http://www.mbg.ostroleka.pl/">www.mbg.ostroleka.pl/</a>	Regional
Municipality of Wojciechów	<a href="http://www.wojciechow.pl/">www.wojciechow.pl/</a>	Local
National Council for Water Management	<a href="http://kzgw.gov.pl/">http://kzgw.gov.pl/</a>	National
National Headquarters of the State Fire Service	<a href="http://www.kgpsp.gov.pl/">www.kgpsp.gov.pl/</a>	National
PKP Cargo	<a href="http://www.pkp-cargo.pl/en/">www.pkp-cargo.pl/en/</a>	National
PKP Polskie Linie Kolejowe S.A.	<a href="http://www.plk-sa.pl">www.plk-sa.pl</a>	National
PKP S.A.	<a href="http://www.pkpsa.pl/en">www.pkpsa.pl/en</a>	National
Planning Office in Lublin	<a href="http://bpp.lublin.pl/">http://bpp.lublin.pl/</a>	Regional

<b>Organisation's name</b>	<b>Website</b>	<b>Level of authority</b>
Podkarpacki Province Office in Rzeszów	<a href="http://www.rzeszow.uw.gov.pl">www.rzeszow.uw.gov.pl</a>	Regional
Polish Air Navigation Services Agency	<a href="http://www.pansa.pl/">www.pansa.pl/</a>	National
Polish Ministry of Agriculture and Rural Development - MRiRW	<a href="http://www.minrol.gov.pl/">www.minrol.gov.pl/</a>	National
Pomorskie Regional Government	<a href="http://pomorskie.eu/swp">http://pomorskie.eu/swp</a>	Regional
Provincial Pharmaceutical Inspectorate in Lublin	<a href="http://www.wif.bip.lublin.pl/">www.wif.bip.lublin.pl/</a>	Regional
Railway Transport Office	<a href="http://www.utk.gov.pl/">www.utk.gov.pl/</a>	National
Railway Transport Office, Regional Office in Warsaw	<a href="http://utk.gov.pl/">http://utk.gov.pl/</a>	National
Regional Directorate for Environmental Protection in Lublin	<a href="http://lublin.rdos.gov.pl">http://lublin.rdos.gov.pl</a>	Regional
Regional Inspectorate for Environmental Protection in Gdańsk	<a href="http://www.gdansk.wios.gov.pl/">www.gdansk.wios.gov.pl/</a>	Regional
Regional Sea Fisheries Inspectorate in Slupsk	<a href="http://www.oirmslupsk.mojbip.pl/">www.oirmslupsk.mojbip.pl/</a>	Regional
Research Centre for Cultivar Testing - COBORU in Stupia Wielka	<a href="http://coboru.pl/">http://coboru.pl/</a>	National
State Fire Service in Lublin	<a href="http://www.kwpsp.lublin.pl">www.kwpsp.lublin.pl</a>	Regional
Torun Marshal's Office	<a href="http://www.kujawsko-pomorskie.pl">www.kujawsko-pomorskie.pl</a>	Local, Regional



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- Organisation for Economic Co-operation and Development (OECD): [www.oecd.org/](http://www.oecd.org/)

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# EURISY'S FULL MEMBERS









## **About Eurisy**

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Eurisy is a non-profit association of space agencies and government offices dealing with space affairs in Europe.

It is mandated and financed by its members to increase the access of society to the benefits of satellite information and services.

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