

# **Strengthening the Resilience of Public Administration after COVID-19 with the Common Assessment Framework: Case Study of the Italian Space Agency**



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# **Strengthening the Resilience of the Public Administration After COVID-19 with the Common Assessment Framework**

## **Case Study of the Italian Space Agency**

*by*

**Josef Bernhart, Sara Boscolo and Veronica Moscon<sup>1</sup>**

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<sup>1</sup> Institute for Public Management, Eurac Research.

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# **1** The Italian Space Agency and its experience with the Common Assessment Framework

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After providing a brief overview of the Italian Space Agency, this chapter discusses the agency's experience to date with the Common Assessment Framework for measuring, assessing and improving organisational performance.

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The Italian Space Agency (ASI) was established in 1988 and headquartered in Rome as a national public research institution to promote, develop and disseminate scientific and technological research applied to the space and aerospace sector. Given its statutory, regulatory, scientific, organisational, financial, administrative, patrimonial and accounting autonomy, the ASI co-ordinates and manages national projects as well as Italian participation in European and international projects. The ASI is under the Ministry of University and Research and its activities are, and have been, conducted in compliance with the guidelines issued by the Interministerial Committee for Space and Aerospace Research Policies. Due in large part to the ASI, Italy is one of the few countries in the world to have a complete knowledge and production chain based on a close relationship between basic research, applied research and enterprises. Moreover, the agency is tasked with developing research programmes that encompass the whole chain of culture, research and development, innovation, and social and economic value creation from acquired knowledge and technological spin-offs.

The sector is characterised by a wide range of applications in the civil and military spheres, the development of space technologies relating to all programmatic sectors, the study and research of engineering solutions, and the realisation of innovative space missions. In the future, the aim is to increase the competitiveness and visibility of the entire space supply chain (large system integrators, small and medium-sized enterprises [SMEs], start-ups), in relation to the new space economy as well, by fostering the growth and differentiation of technology portfolios and the development of new services and applications also for non-space sectors, such as Earth observation to predict and prevent environmental disasters, ensure rapid intervention in crisis areas, and measure the impacts of climate change. The national production chain consists of 7 000 employees (+15% over the last 5 years) and about 200 companies (80% SMEs) for an annual turnover of EUR 2 billion. The space sector is also fuelled by a network of universities and research centres active in the sector with which the ASI enters into numerous collaborations and/or funding agreements. These include the National Institute for Astrophysics, the National Institute for Nuclear Physics and the National Research Council.

Consisting of about 270 employees<sup>2</sup> (an overall figure that will increase by 25% by the end of 2022), the ASI currently manages an annual budget of EUR 1.1 billion. Over the years, the agency has become one of the world's most important players in all applicative sectors of space activities: Earth observation, telecommunications, space exploration, science, space transportation, navigation, space data services, Earth operational infrastructures of satellite technologies and of the development of means to reach and explore the cosmos. At the European level, Italy is the third-largest contributor to the European Space Agency (ESA).

The Italian space industry ranks third in Europe and seventh worldwide: it is a sector of companies active in the production of satellites, launchers and orbital systems; of major suppliers of subsystems, components, equipment, high-tech instruments and advanced services; with strong links to many other industrial sectors. The ASI is also the main contractor for the COSMO-SkyMed system, the first satellite constellation for Earth observation, designed for civil and military purposes. Thanks to its close collaboration with the United States National Aeronautics and Space Administration (NASA), the ASI has participated in many of the major scientific missions of these last years, both in the human environment (e.g., Expedition 60/61 – Beyond and Expedition 52/53 – VITA) and in the space missions (e.g. the Gaia spacecraft and Planck). Moreover, through the ASI and the national industry, Italy has a tradition of research in space propulsion, particularly as the leader of the European VEGA programme, the small launcher born and designed in Italy.

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<sup>2</sup> Permanent staff at 31 December 2020: 2 managers; 151 technologists; 24 researchers; 25 administrative staff; 40 technical and research staff; 25 administrative collaborators; 2 administrative staff; 8 technical operators (Source: Human Resources Department).

In compliance with the national regulatory requirement to measure and assess organisational performance (Legislative Decree No. 150/2009), in 2013, the ASI adopted the Common Assessment Framework (CAF), which has since become an increasingly fundamental tool for measuring, assessing and improving organisational performance. This can be observed by the integration of the CAF model into the agency's three-year planning (the three-year activity plan and the integrated performance plan), which sets, among others, the objective of periodically conducting self-assessments with the CAF model. The first two CAF self-assessments were carried out in 2014 and 2017 and followed by the related improvement plans carried out in 2015-16 and 2018-19, respectively. The third self-assessment process was conducted in 2020. Starting from the second self-assessment process, the ASI is supported by the CAF correspondent in Italy (Centro Risorse Nazionale CAF). The improvement projects envisaged in the 2021-2022 Improvement Plan were determined according to both the recent changes in the macro-organisation of the agency and the growing strive towards digitalising public administrations.

**Table 1.1. Italian Space Agency 2021-2022 Improvement Plan**

	Improvement project	Reference unit	Indicator	Target 2021	Target 2022
1	Employee training on digital transformation	Internal training	Percentage of employees that completed the training	≥ 50% by 31 December 2021	
2	Middle manager development	Business unit managers	Definition of the management manual and follow-up	Unit Management Manual by 31 December 2021	Follow-up workshop by 31 March 2022
3	Business unit manager training on e-Leadership	Internal training	Percentage of employees that completed the training	≥ 50% by 31 December 2021	
4	Participation in the Department for Public Administration's "Digital Skills" project	Digital Transition	Participation in the development and use of the platform	Participation in the development as a pilot organisation by 31 December 2021	Platform used by at least 30% of employees by 31 December 2022

Source: ASI, 2022.

The CAF self-assessment and the design/implementation of the improvement plan are overseen by the Executive Board of the ASI and involve all employees under the supervision of a special Operating Committee appointed by the management. The role of the Operating Committee is to co-ordinate the self-assessment process, define the improvement plan, monitor its process and, if necessary, take corrective action. The head of the Operating Committee also co-ordinates the Self-Assessment Group, which represents the organisation. For each improvement initiative, a project group representative of the main functions of the ASI (process owner, facilitator, representative of the strategic area and the technical-scientific area) is then appointed. The implementation of the improvement plan is integrated into the organisation's three-year planning. The improvement projects are chosen according to the value-importance matrix and are concisely described in terms of expected results (time targets of the "Do" and "Check/act" phases), indicators and targets (no output and outcome results).

Through the ASI's participation in the CAF External Feedback and the related checks of the external feedback actors appointed by the CAF Resource Centre, the entire process was audited in 2018. The following year the agency obtained the CAF Effective User Label. The current planning of the CAF programme runs until the end of 2022, with the conclusion of the improvement projects. A decision will soon be taken on the fourth self-assessment and improvement process (2023-2025), as well as the renewal of the CAF Effective User Label.

## **2** The impact of the COVID crisis and the role of the Common Assessment Framework

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This chapter discusses the impact of the COVID crisis in Italy before turning to the ensuing challenges for the Italian Space Agency. It concludes with a discussion of the role of the Common Assessment Framework in preparing for the crisis.

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## 2.1. The impact of the COVID crisis in Italy

On 23 February 2020, the Italian government declared a state of national emergency and adopted urgent measures to contain the spread of COVID-19 in certain Italian municipalities. At the beginning of March, measures for remote working and targeted restrictive closures were first imposed in some specific areas before being extended nationally on 11 March 2020. In quick succession, non-essential business activities were forced to close and leaving one's home or residence without a justified and proven reason was prohibited. With the end of the national lockdown on 3 May 2020, several restrictive measures were relaxed (e.g. the reopening of recreational, sporting and cultural activities). However, in October 2020, a spike in COVID-19 cases forced the adoption of new restrictions, like a nationwide curfew and a regional tier system that allowed implementing restrictive measures according to the level of risk and spread of the virus in a given territory.

In compliance with national regulations, the ASI rapidly reorganised the home office by improving flexible working and ensuring the adoption of online communication platforms to hold meetings. All in-person events, conferences and scheduled business trips were cancelled, postponed or rescheduled to take place on line.

The adopted measures had both direct and indirect immediate impacts on the ASI's activities. On the one hand, the ASI enhanced its technological infrastructure to enable the home office for any employee and reprogrammed its internal logistics to ensure physical distancing, for example, by reducing the maximum capacity of meeting rooms and the canteen. To finance unforeseen expenses in the annual budget, the ASI benefited, as did other Italian public administrations, from *ad hoc* contingency funds received from the Ministry of University and Research. On the other hand, the slowdown in the activities of industries and research laboratories with whom the agency signs co-operation and/or funding agreements had indirect effects on the management of the agency's activities and programmes, causing initial delays and extensions. The ASI's response to the crisis was positively affected by the regulatory recognition (Italian DPCM 6/2020) of the aerospace industry as a sector of strategic importance and, therefore, not subject to closure during the national lockdown.

## 2.2. Challenges of the COVID crisis for the Italian Space Agency

The COVID-19 crisis took place in a context of high discontinuity and change in the national governance of the aerospace sector, with a profound impact on the ASI and its mission. The pandemic emphasised the potential of the space sector for economic growth, sustainable development, technological innovation, and scientific and cultural education, as well as the central role of the ASI in strengthening the industrial base, scientific research and the competitiveness of the sector. Specifically, Italian Law 7/2018 (known as the Space Law) redesigned the agency's governance by establishing the Interministerial Committee for Space and Aerospace Research Policies (COMINT) and by enhancing the strategic role of the agency in sectoral policies. Amid the pandemic, with a new agency governance in place, the ASI has developed strategically important organisational-structural and process-optimisation measures: it has developed and approved a new macro-organisation, adding a new managerial level to the previous model; it has adopted a powerful recruitment plan, which envisages 600 employees by 2026, compared to the current 277; and it has further focused on the computerisation and digitalisation of processes and set up a new dedicated operational unit.

Today, the Italian space sector is one of the drivers with the greatest potential and impact on national recovery and growth, both in the short and medium terms. For example, space technologies and innovations play a fundamental role in telecommunications, agriculture, Earth observation and geo-localisation services. Space activities respond transversally to all the missions of the Italian Recovery and Resilience Plan: digitalisation; innovation; competitiveness and culture; ecological transition; sustainable mobility; education and research; inclusion and cohesion; and health.



The pandemic has further highlighted the ASI's central role in strengthening the industrial base and scientific research. For instance, the ASI was directly involved in finding practical proposals to contain the spread of the pandemic and contributed, in collaboration with the Italian government, by proposing a call for the experimentation of space technologies in the fields of health and distance learning. Furthermore, it supported the civil protection and healthcare sector with satellite information from affected areas.

The COVID-19 pandemic represented “a disturbing background noise” (quoting an interview) for the ASI which fortunately prevented neither the business continuity of the agency nor the implementation of important managerial reforms. In fact, the public health emergency has mainly implied delays and/or postponements in the achievement of planned objectives. In almost all cases, these delays and/or postponements were made up for during the year, thus without affecting the level of performance. Overall, the ASI has proven capable of rapidly adapting to the new work requirements, as shown by the positive results achieved in 2020 in terms of programmes/projects concluded and new initiatives launched.

In compliance with the COVID-19 containment measures, as of March 2020, the ASI had adopted a lot of remote working arrangements (approximately 95% of employees). In 2020, the agency was forced to cancel all in-person activities that were offered to stakeholders and citizens (e.g. guided tours for school groups and the public, “Research Night”, temporary exhibitions, thematic programme cinema) (Criterion 4: Partnership and resources; Criterion 2: Strategy and planning). Furthermore, the ASI operates in the international space community and counts an increasing number of bilateral and multilateral agreements with several important international organisations, i.e. the ESA, NASA, and other space bodies and agencies across the globe. By imposing remote meetings and relationships, the COVID-19 crisis had a direct impact on the agency's international partnerships (Criterion 4: Partnerships and resources). Some of its travel and several of its events had to be cancelled or postponed. Although the continuity of international relations could be guaranteed, the quality of direct contact and human relations suffered the most. The health emergency also impacted supply chain sustainability due to disruptions in logistics resulting in an average delay of one to two months in the space programmes, which could be partially recovered after the crisis.

The health emergency has impacts on one of the ASI's other core sectors, namely institutional relations with the ministries (COMINT) and with other relevant stakeholders from both the production world (i.e. industry, SMEs) and the scientific community (i.e. universities and research institutions). Here several operational adjustments were supported by technology and automated processes. At the production level, during 2020, the number of new initiatives of strategic importance (e.g. agreements and research and industrial contracts) declined and some programmes had to be delayed because of the temporary closure of several industrial plants. However, these challenges had only temporary negative effects on production chains and losses at this level were reabsorbed to a large extent in the post-pandemic phase (Criterion 4: Partnerships and resources).

Given the strategic context of the ASI's activity, the impacts of COVID-19 on its policies and strategies were only marginal or even irrelevant. The agency is responsible for implementing government guidelines and policies for the space and aerospace sector and defining a ten-year strategic vision document and, in line with the strategic vision document, a three-year operational planning document and a three-year performance plan that translate strategic and operational objectives into concrete actions and assign their implementation to the responsible organisational structure. The COVID-19 crisis therefore did not interfere in any way with its strategic (ten-year) planning, while it affected only to a marginal extent its operational (three-year and annual) planning, mainly due to the necessity to reschedule some micro-objectives and rapidly shift and prioritise the activities that could be carried out in each period (Criterion 2: Strategy and planning).

### 2.3. The role of the Common Assessment Framework in preparing for the crisis

The ASI has been conducting the CAF self-assessment (including the subsequent improvement plans) every three years since 2014 (see Chapter 1). By following this schedule, the third CAF self-assessment process was conducted in 2020 and thus at the same time as the COVID-19 crisis, but not as a direct response to it.

The plan for identifying improvement projects, which was completed in 2022, considered primarily instances that were unconnected to the COVID-19 crisis; for instance, the new 2020 macro-organisation of the agency and the acceleration in the digitalisation of public administrations. However, it crossed several instances that emerged during the COVID-19 pandemic, thus producing “cross-fertilisation” effects (e.g. digital skills development and e-leadership, digital organisational culture approaches) that were reflected in the self-assessment.

Experience with previous CAF self-assessments has contributed to the ASI’s responsiveness to the COVID-19 crisis. Specifically, the use of the CAF criterion “Partnerships and resources” in previous years had led to the adoption of ICTs to improve internal processes and provide online services to stakeholders. This proved to be crucial in supporting a rapid shift to remote working during the crisis. The use of the CAF criterion “Processes” in the past few years led the ASI to define a detailed map of its key organisational processes. This played a crucial role in rapidly determining the adjustments needed during the crisis. Previous CAF self-assessments enabled the ASI to identify the criterion “Leadership” as a critical and key issue and thus to implement several improvement projects accordingly. The COVID-19 crisis has highlighted some of the criticalities that emerged from the CAF self-assessments, confirming the necessity to strengthen internal co-ordination skills (e-leadership employees training). See Chapter 4 for more details on the role of CAF in the ASI’s responsiveness.

# **3** Innovative practices as a response to the crisis

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This chapter discusses some of the innovative practices put in place by the Italian Space Agency as a response to the COVID-19 pandemic, including accelerating digitalisation and process-based management, solidifying the transition to “smart working”, transitioning to collaborative leadership, and adapting services to support resilience and recovery from the pandemic.

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### 3.1. Accelerating digitalisation and process-based management

COVID-19 represented an opportunity for the ASI to accelerate its ongoing digitalisation reforms and quicken the full dematerialisation of processes (i.e. paperless management). This could furthermore create new opportunities for the model implemented and proved by the agency to be further adopted by other research institutions and public administrations, thus generating an economic return for the ASI that could be reinvested in other projects.

Before the pandemic, the CAF analysis had highlighted unstructured processes based on individual practice and experience, which were neither standardised nor evaluated in terms of effectiveness and efficiency. Thanks to the strong commitment of the top management, in 2016, the ASI began analysing and revising its internal processes geared towards process-based management. The shift to a process-based approach was conducted following the principles of digitalisation and dematerialisation through an IT platform called “Office Automation”. The ASI gradually developed its internal processes on this platform that combines document management, notifications, user-friendliness, the approval cycle and a web-based process control dashboard. The project initially focused on a single cross-cutting core process, namely the strategic deliberations of the Board of Directors, but was then scaled up to other processes. Before the pandemic, the ASI already had a detailed digital map of its macro-processes and core processes, as well as a considerable number of authorisation and approval processes; around 80% of its processes were already digitalised. Overall, the project consisted of three phases. In the first phase, the mapped process was engineered on the platform. The second phase consisted of its effective use by ASI personnel and collecting related statistical data and performance indicators. The third and final phase was to identify areas for improvement, develop shared corrective actions and revise the processes. The project provided data and indicators on the efficiency of the processes. This technology platform, based on a web browser and cloud, offers important advantages in terms of flexibility, peak workload, scalability, and business continuity. It allows employees to consult and modify documents anytime, anywhere and from any device; to share information immediately through messaging and audio-visual conferencing applications; to access an up-to-date digital archive; to use business intelligence tools; and to process the data and obtain comparisons that allow more effective monitoring of the status of their projects. To summarise, the system allowed the ASI to achieve the following objectives:

- standardised documents that prevent errors and enable the rapid sharing of updated forms
- accessibility to the system from any device and location, thanks to the cloud
- centralisation of users that allows rethinking of business functions
- user-friendliness, granted by the adoption of standard working tools already used by employees, thus facilitating the change
- dematerialisation (i.e. zero paper documents) thanks to fully digitalised processes
- real-time project control, process transparency and in-depth analysis using business intelligence tools.

Office automation enabled the optimisation of organisational processes management, leading – on an annual basis – to a 30% saving on processing time, the reallocation of 12 000 person-hours (7.7 full-time equivalents) and EUR 700 000 added to the benefit of higher value-added space projects.

The national lockdown and remote working conditions led to a sharp acceleration of the ASI’s ongoing digitalisation and process-based management reforms. During the pandemic, the development of information flows from previous years allowed the ASI to further push forward and complete the computerisation of processes related to resolutions; contracts; and preliminary investigations on European projects, missions and settlements. This avoided any slowdown in the day-to-day management during the pandemic:

- no decline in the approval of resolutions and decrees by the director during the three-month lockdown
- the shift to remote work was facilitated by digital procurement procedures, as well as by the fact that smart working had long been a tried-and-true practice and that the majority of employees had laptops and digital signatures
- the facilitation of relations with relevant external stakeholders (e.g., international affairs, aerospace programmes, science and research)
- an increase in the number of public administrations involved in the project during the pandemic (e.g., the Istituto Superiore di Sanità took advantage of the automation of some core processes, for instance, in the production of face masks).

The acceleration of these reforms highlighted some criticalities, especially the low number of IT support services and limited co-operation between the different IT platforms, which were mainly based on different interfaces, often with new processes, different access keys and a sometimes unidentified contact person. To overcome these issues, the ASI has instituted a specific operational unit, namely the Digitalization and Processes Unit, which was, and still is, responsible for the digitalisation of processes and procedures.

Moreover, in 2021, the ASI launched a new project to develop advanced business intelligence tools, including integrated dashboards capable of detecting predetermined indicators in real-time. The objective is to support the management in the decision-making process by controlling the state and progress of preliminary investigations and processes, thus facilitating the achievement of objectives. This measurement and reporting model should facilitate the exchange of digital data with other public administrations and could be adopted by similar organisations as a best practice.

Furthermore, the ASI has entered into an agreement with Microsoft to promote the use of office automation in other research organisations and public administrations, fostering a standardisation of automation processes between entities, allowing efficiency gains from dematerialisation, introducing innovative tools that allow information to be shared and accessed, and increasing transparency and traceability. Distribution to other entities is partly activated and the ASI intends to invest the economic returns from this project in internal development.

### 3.2. Solidifying the transition to “smart working”

The public health emergency caused by the COVID-19 pandemic has forced Italian administrations to adopt agile work as an ordinary way of working. This could be implemented in a simplified form, even in derogation to ordinary Italian law. Moreover, in line with government regulations (Italian DPCM, 9 March 2020), the ASI has adopted several preventive measures to contain the spread of COVID-19 while ensuring full operation and business continuity.

With the COVID-19 containment measures coming into force at the beginning of March 2020, all ASI employees had to work remotely and hold meetings online (through audio and video conferencing). Several enabling organisational factors allowed a rapid reorganisation of the work, thus facilitating the transition to remote working. The first determining aspect was the employees’ previous experience working from home. In fact, one of the ASI’s digital transformation activities consisted of developing a teleworking plan that was adopted in 2010. The telework agreement was renewed in 2019 and extended to 10% of the employees. Moreover, to achieve a work-life balance and increase productivity, in 2019, the agency started a “smart working project” that was implemented by 120 employees – namely 45% of its overall staff – for a period of four days per month. Another important aspect that contributed to a rapid reorganisation of remote working was the adequacy of both IT tools and processes. At the beginning of the crisis, 90% of employees already had a laptop, most internal processes were already digitalised, and all employees had shared and accessible databases. In addition, employees’ high level of digital literacy and the consolidated process

diagrams within the agency (i.e., mapping of its internal processes) allowed a rapid digitalisation of decision-making processes and procedures that until then had been analogue.

Overall, employees reacted rapidly to the new organisational requirements by opting for working methods that allowed them to maintain, and in some cases even increase, overall productivity and achieve their objectives, with the exception of those that involved in-person meetings with their stakeholders (e.g., events, conferences) or business trips for national and international missions. Virtual meetings could partially mitigate these shortcomings.

The implementation of remote work was followed by two initiatives addressed to the agency's employees: 1) a survey on "Smart Working in ASI" in the first semester of its adoption, conducted by the Human Resource Development Office; and 2) specific training on digital transformation.

Besides objective evidence, the survey provided data and information on employees' subjective perception of agile working, especially regarding the following areas: work organisation and co-ordination with colleagues, IT tools, skills needed for agile working and the related training, assessment of the impact of "smart working" on work organisation and its implementation in the post-COVID and ordinary scenario. Overall, 152 employees out of the approximately 200 who received the questionnaire (76%) participated in the survey, whereas 55 employees out of 78 recipients answered the questionnaire (i.e., a response rate of 71%), 25 of whom were heads of organisational units and 53 of whom were office managers.

According to the employees, this experience has overall been positive and does not seem to have harmed the quality or the quantity of their work. More than 70% of the sample believed that remote working had improved their work management by enabling co-operation between colleagues and reducing conflicts within the organisation. Approximately 90% of the sample would like remote working to be extended to all employees at the end of the pandemic.

The intensive use of remote working was followed by employee training on digital transformation and digital culture. The "Be Digital" training course involved the ASI personnel in two main ways. The first was in terms of content, by addressing topics related to organisational change and individual impacts of work transformation; the required skills, techniques and behaviour; as well as future scenarios and challenges. The second was in terms of personal participation in defining the methodology and the means of webinar teaching.

Employee training on digital evolution is one of the projects of the last Improvement Plan resulting from the third CAF self-assessment process of 2020. It aims to strengthen employees' digital skills in the framework of the digital transformation of the public administration.

The positive results achieved in 2020 (number of programmes/projects completed), as well as the direct and indirect benefits for the workers (e.g., work-life balance) and the agency, allowed the ASI to consider and evaluate the idea of extending and consolidating remote working to 90% of its employees, with at least 40% of individual working time to be spent on site. The transition from the emergency phase to more normalcy post-crisis, in which agile working is structurally embedded in the organisation, is regulated by a three-year development programme (the Organisational Plan of Agile Work). This plan, in line with national regulations, provides the programming of the objectives related to the new working methods and a system of indicators for evaluating both organisational and individual results. Furthermore, the plan is in line with the national Guidelines on the Organisational Plan for Agile Work and Performance Indicators issued by the Department for Public Administration in December 2020, which proposed a progressive and gradual implementation of agile working by all public administrations under a three-year programme.

### 3.3. Transitioning to collaborative leadership

One of the major critical issues for the ASI during the COVID-19 pandemic was unit managers' remote workforce management, accentuating a pre-existing area of organisational criticality. Employee survey results from the CAF 2020 self-assessment pointed to declining values (lower scores) compared to the two previous CAF self-assessments, in particular with respect to: 1) management does not regularly inform or consult the staff on key issues; and 2) management does not effectively communicate the agency's vision and mission. Progress, such as staff meetings, unit meetings and plenary meetings with the personnel, has been made on these aspects, which had been among the weakest critical success factors in the first CAF self-assessment in 2014. However, consistency and continuity in communication with the personnel and the ASI's main stakeholders still seem inadequate. This critical situation has been accentuated by remote working due to the increase in difficulties related to internal co-ordination, especially from the point of view of consistency and continuity of vertical information flows. Moreover, workforce management was even more complicated because the ASI's new macro-organisation launched in 2020 led to about 40% of new heads of organisational units/offices (Criterion 1: Leadership).

To tackle the crisis, an “e-leadership” employee training was held in 2020 to help managers co-ordinate their teams remotely and build relationships with stakeholders. The course, which was dedicated to the heads of organisational units, was divided four days of virtual classroom or in-person training and focused on the digital skills needed to manage employees in digital environments, in terms of both communications, sharing and collaboration, and project implementation. The “e” in “e-leadership” refers not only to electronic but also to evolution and thus thematises a new concept of diffused leadership (everyone, in some respect, is a leader because they possess skills and unique talents) that is more evolved than participative leadership (Criterion 1: Leadership; Criterion 3: People).

The e-leadership employee training is an improvement project of the CAF 2020 self-assessment process. The project was implemented because of its coherence with both the recent developments in the agency's macro-organisation and the growing push for the digitalisation of public administrations, which was further stimulated by remote working during the COVID-19 crisis. The previous CAF self-assessment processes allowed the ASI to identify leadership as a critical and priority aspect, thus requiring the implementation of several corrective actions, especially training interventions (for example, a “managerial leadership” employee training).

Both documentary evidence and the interviews with the executives of the agency revealed a criticality related to heavy workloads for the leaders defined as those with a role of responsibility in the organisational chart. The ASI has high productivity levels compared to similar institutions at the European and international levels (e.g. it manages a budget slightly smaller than, for example, the French CNES – National Centre for Space Studies – with a tenth of its human resources) but the attention given by the agency to both horizontal and vertical information is very low and needs to be improved. The critical lack of human resources should be overcome with the planned increase in the number of employees, from 277 (as of 31 December 2020) to 600 by 2026, which will allow the ASI to more adequately face the challenges entrusted by the new governance (Criterion 4: Partnerships and resources; Criterion 3: People). Following the changes introduced by the Space Law (see Section 2.2), an important contribution in this direction is the greater autonomy that the agency has received in determining staffing requirements (Criterion 2: Strategy and planning). At the same time, in view of the generational change that is currently taking place, the ASI plans to develop a structure for competency management and knowledge management to ensure knowledge continuity within the organisation (Criterion 4: Partnerships and resources; Criterion 3: People).

In conclusion, strengthening the CAF criterion “Leadership” requires a multi-pronged approach, which includes:

- a significant investment in enhancing existing human resources, applying motivational levers in a meritocratic, selective and incentive-based way (training, career development, assigning responsibilities to positions envisaged by the new organisational structure)
- the growth of the organisation to reach an adequate number of employees to meet the challenges entrusted to the ASI by the new governance
- a new organisational culture geared towards a new model of diffused leadership, thanks to the new management levers
- age management (for example, competency management and knowledge management), among others, to ensure knowledge continuity within the organisation, making the ongoing generational change more effective.

### 3.4. Adapting services to support resilience and recovery from the pandemic

Amid the critical phase of the pandemic, in agreement with the Italian Minister for Technological Innovation and Digitalization, the ASI presented a call for proposals “Space in response to COVID-19 outbreak”. This call, promoted by the ESA within the framework of the ESA ARTES BASS programme, aims to contribute concrete solutions to the containment of the COVID-19 pandemic in the fields of health and distance learning using space technologies. The initiative was addressed to all economic operators from ESA member states and received 130 proposals, 98 of which included an economic operator. To be able to finance a high number of Italian proposals, the ASI increased the funds allocated to the initiative (which envisaged an initial investment of EUR 2.5 million) by EUR 7.5 million, leading to a total contribution of EUR 10 million. The increase was requested on funds already subscribed to the ESA and thus did not imply an increase in Italy’s financial obligations to the ESA.

In this way, the ASI also aimed to support those companies that operate in the Italian space economy sector which might not be able to recover from the economic crisis triggered by the pandemic, as well as from the related risks of market concentration and lack of liquidity, mainly because of poor access to funding or institutional programmes. As underlined by the OECD (2020<sup>[1]</sup>), the economic crisis could cause medium- and long-term effects that may endanger young and innovative SMEs which operate in the Italian space economy sector.

National space and health companies presented innovative projects, both for the crisis and emergency management and for sustainable applications and services that could later become a part of citizens’ everyday life. Proposals in the field of health include, for example, social assistance, support for doctors’ activities, monitoring and security, telehealth, epidemiology, and resource planning. In the field of e-learning proposals include hybrid terrestrial-satellite telecommunications services to bridge the digital divide in national areas not covered by 4G, distance learning for all and the use of laboratories on board the International Space Station. Among the proposals that have been launched are projects with prestigious healthcare institutions in Italy, including Gaslini Children’s Hospital in Genoa; in Rome, the Agostino Gemelli University Foundation Hospital and the Lazzaro Spallanzani National Institute for Infectious Diseases; and in Milan, the Luigi Sacco Hospital. These initiatives support distance learning and training, social work, telehealth, and healthcare (Criterion 8: Social responsibility).

As part of its emergency management support activities, the ASI co-operated with the Civil Protection Department and national health authorities by providing 24-hour satellite maps of the territory. The service, known as “Copernicus Emergency Management Service”, is part of the Copernicus programme co-ordinated by the European Commission in collaboration with the ESA and with the contribution of the ASI. It is aimed at monitoring the environment and mitigating the impacts of climate change, thus



contributing to the management of humanitarian emergencies, natural disasters and the safety of the population. During the emergency phase of the pandemic, satellites monitored several areas, especially hospitals and mobile clinics, local open-air markets, and parks. For example, with regard to hospital areas, the maps allowed the health and civil protection authorities to conduct an evolutionary census of the different types of mobile facilities and identify those which displayed large catchment areas to highlight situations of possible overcrowding and criticality (Criterion 8: Social responsibility).

## Reference

OECD (2020), “The impacts of COVID-19 on the space industry”, OECD, Paris, [1]  
<https://www.oecd.org/coronavirus/policy-responses/the-impacts-of-covid-19-on-the-space-industry-e727e36f>.

# 4 Lessons learnt for resilience

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This chapter considers the negative as well as positive impacts of the COVID crisis within the Italian Space Agency as well as areas for improvement. It concludes with a discussion of the role of the Common Assessment Framework in building resilience.

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## 4.1. Lessons learnt from the COVID crisis

Both documentary analysis and interviews with key representatives of the ASI do not highlight any significant impact of the COVID-19 crisis on the ASI, underscoring its general reactivity during all phases of the crisis.

This case study has provided evidence on the positive and negative impacts the crisis has had on the different CAF criteria (enablers and results). To sum up, the negative impacts are mainly related to:

- Remote work: work-life balance issues, increased workload due to the need for new and extraordinary measures to adapt the internal system to the external requirements imposed by the government; lack of direct interpersonal relations with colleagues.
- Internal co-ordination issues, especially regarding the coherence and continuity of vertical information flows.
- Delays related to the national production chain and co-operation with other research entities. These delays were largely recovered during the year.
- International relations: missions were cancelled, negotiation and position consolidation processes in international boards and councils slowed down and led to an increased workload. Instead, during a settling-in phase of remote working, procedures and time frames could be adjusted accordingly and by exploiting the advantages offered by ICT, leading to positive effects on the agency's overall results. For instance, in 2020, national operators obtained 20% of the total industrial contracts assigned at the ESA and the ASI managed about 150 requests for authorisation to participate in tenders, compared to an average of 20-30 before the pandemic. It supported 15 project proposals.

As for the positive impacts, in particular, the COVID-19 crisis has contributed to rethinking working methods, enabling a drive for change and the simplification and digital transformation of the ASI's internal processes (Computerisation and Digitalisation Development Plan) and the adoption of agile working as a regular way of working (Organisational Plan of Agile Work).

Overall, the ASI's organisational performance in 2020, which was calculated for the four CAF result criteria (citizen/customer-oriented, people, social responsibility and key performance results) was 96.80%. The ASI's map of objectives, which has the highest weight in the measurement and evaluation of organisational performance, displayed an average achievement of 93.73%, divided as follows: institutional performance 92.85%; organisational, management and prevention of corruption performance 94.93%.

Several factors, related both to the context and the agency and individuals working in it, contributed to this. In terms of context, above all was the fact that space was considered a sector of strategic importance at the national level, and therefore only partially affected by the restrictions applied to most sectors of production and activity. Among the endogenous factors, several aspects contributed to and supported the adaptation to the crisis:

- By working in an ever-changing policy environment, primarily technological, the ASI is accustomed to handling unforeseen events and adapting its technological projects (e.g., space missions) to achieve its objectives. This flexibility proved useful during the crisis.
- The ASI operates in a highly dynamic and open context, in constant contact with institutional, production and research partners in the space sector all over the world and is therefore called upon to respond with a sense of urgency and responsibility to the challenges posed by a fast-growing sector that has an increasing impact on citizens' lives and the country's socio-economic situation.

- The experience gained in previous years with teleworking projects and home-office trials can be considered an enabler for the rapid extension of agile working to all employees. For instance, at the beginning of the pandemic, about 90% of the employees already had laptops, whereas the remaining 10% were quickly equipped with the necessary equipment for working from home.
- A good level of computer literacy among employees and the agency's main partners, coupled with the habit of working according to the high-quality standards imposed by the sector, enabled a rapid and efficient reorganisation of work. Particularly noteworthy were employees' ability to adapt to new work requirements and efficient response from IT services.
- The high level of re-engineering and automation of its core business production processes for around 80% of resolutions, decrees and tenders before the pandemic allowed the ASI to significantly limit the impact of the crisis on its daily operations, ensuring a rapid and smooth transition to agile working. Furthermore, the use of the CAF criterion processes, which in previous years led to a mapping of the agency's macro-processes and core processes, and which today represent a consolidated scheme, proved to be fundamental in quickly defining the necessary adjustments during the crisis.

The COVID-19 pandemic highlighted and/or confirmed several critical issues and areas for improving the ASI's resilience. Specifically, these refer to:

- Increasing the overall workforce (from 270 on 31 December 2020 to 600 by 2026). In this regard, a greater openness towards universities seems useful because it could indirectly foster the development of a new internal organisational culture and overcome the risk of self-referencing, since the ASI does not have any similar organisations to which it can compare/benchmark.
- Enhancing the provision of specific excellence trainings.
- Strengthening bottom-up input by encouraging dialogue, teamwork and internal collaboration based on trust and diffused responsibility as resources for innovation, even in the face of emergencies and unexpected events.
- Improving the internal organisational culture and performance management tools by strengthening the orientation towards public value creation and its measurement/evaluation and focusing on sharing the agency's mission.
- Improving dialogue with external stakeholders (e.g. other public institutions and citizens) and exploiting their information and experience to support decision-making processes in emergencies and planning for the future.

To conclude, the major drivers for improving the ASI's organisational resilience are: the development of collaborative and diffused leadership; internal collaboration and competence management; collaborative governance with all external stakeholders and the consequent adjustment of management and directional systems; strengthening the ability to measure, revise and adapt objectives.

## 4.2. Role of the Common Assessment Framework in resilience

The use of the CAF as a methodology for self-assessment and organisational improvement strengthened the ASI's ability to respond to the COVID-19 crisis, both directly and indirectly. The following quote taken from an interview conducted in the framework of this research best summarises the contribution of the CAF model to the responsiveness of an organisation dealing with the management of a crisis: "An organisation that assesses itself is better prepared than one that does not. This is because [CAF] self-assessments force organisations to answer questions that otherwise would have never even been asked, by developing projects that help to overcome a weakness and therefore allowing an organisation to be better prepared to handle emergencies and to understand the cause-effect relationship between enabling factors and results."

Both documentary analysis and interviews reveal the CAF's contribution to improving the ASI's ability to react in times of turmoil in several respects.

The CAF has significantly contributed to enhancing the level of integration between systems. First, the model plays an important role in the agency's planning system and is part of its system for measuring and evaluating organisational performance. The measurement and evaluation are inspired by the four CAF criteria results, which analyse the impacts of the ASI's activities in four specific fields. For each area, expected results (from 1 to 4) are defined, which can be measured by *ad hoc* indicators by the organisation's political-administrative top management. The operational planning is defined in the Map of Objectives, which homogeneously represents all the agency's activities and is carried out through a process where the Strategic Vision Document for Space provides the highest-level values and where the actions included in the Performance Plan represent instead the most detailed level. The Strategic Vision Document for Space defines the ASI's activities within the national, European and international framework. The Three-Year Activity Plan, a programming document of public research institutions, provides the link between the Strategic Vision Document for Space and the Integrated Performance Plan. The objectives foreseen in the PTA (Three-year Activity Plan) are linked to the four CAF criteria results. The CAF model is correlated to the agency's management control system and to the strategic control system through the CAF enablers and CAF results respectively. Improving the ASI's management system through the CAF model is one of the director-general's main objectives. Second, the CAF model also improved the agency's diagnostic and programming ability. In particular, the CAF model has highlighted the need to relate the different programming and control tools by linking the human resources acquisition plan with the ASI's strategies and correlating the resources to the objectives derived from its mission. Another example is the 2019 CAF improvement project "stakeholder mapping" followed by the first "Strategic Performance Reporting" that will allow measuring the impacts of the ASI's activities in its various strategic sectors of interest, thanks to key performance indicators linked to specific macro-categories of stakeholders. Third, the systemic dimension, as well as the integration between systems, is also reflected in terms of increased interaction between people resulting from the CAF self-assessment, and in terms of external communication, through intensive use of the agency's institutional website, dedicated printed and online newspapers and magazines, a TV platform, and all major social media (Has systems working together – integrated).

The ASI follows COMINT's guidelines established by Law 7/2018, which partially reduced the role played by the agency in the steering committee for the space sector at the Italian Presidency of the Council of Ministers. The ASI, therefore, doesn't have the power to intervene at the strategic level, but it is involved in short- to medium-term operational planning. Consequently, within this governance framework, the CAF model cannot be seen as a lever for improving the ASI's strategic ability (Has alternative strategies – flexible).

In the years before the crisis, the use of the CAF as a methodology for self-assessment and organisational improvement contributed to the creation of widespread awareness of the organisation and its functioning. This has enabled a transition from the perception of the organisation as a "machine" to one of the organisation as an "organism", i.e. as a set of interrelated parts, allowing the organisation to deal with the causes ("CAF-enabling factors") of its weakness by looking at and starting from the effects ("CAF results") and to determine shared priorities for action. Involving all staff in the CAF self-assessment process contributed to developing a results-based organisational culture and the tools to measure it. This helped to provide objective evidence to unfounded opinions and gut feelings and thus overcome a "defensive approach" and enabled the creation of a learning organisation. With special regard to the CAF self-assessment group/CAF facilitators, the CAF provides them with a privileged perspective on the organisation and an overview of the agency that will allow them to broaden their individual role-based viewpoints (Ability to learn – reflective).

The ASI's backup capacity (redundancy) in the face of the crisis can be defined as very advanced in several respects:

- Technologically: over time the ASI equipped itself with several tools and parallel operating systems to manage emergencies.
- Financially, thanks to the availability of several different sources of funding.
- From the point of view of international relations, through a dense network of bilateral and multilateral partnerships with several countries as well as within the ESA, European Union and NATO framework.
- In terms of IT resources, by taking advantage of the opportunities offered by digital transformation to enhance both the knowledge and the digital skills of the agency and its employees.
- From a human resources viewpoint, thanks to the large-scale adoption of agile working and, partially, through a definition of roles and tasks mainly focused on projects rather than duties. Many of these projects were developed as a result of the CAF self-assessment.
- Taking advantage of the impetus partly induced by the changes already implemented (e.g. smart working, process automation) and partly supported by the CAF, the ASI adopted many initiatives because they generated results.

The category “Ability to repurpose resources – resourceful” was instead not significant to the ASI. Temporary adjustments concerned the creation of new specific organisational roles with *ad hoc* tasks that will end once the emergency is over.

As for broad stakeholder consultation and communication (inclusive), during the pandemic, the ASI improved its external web and multimedia communication. Moreover, with the adoption of its first social report, it started communicating and reporting on its activity to internal and external stakeholders. As for defining strategies, there is the need to potentiate the inclusion of stakeholders and their needs. Internally, it is fundamental to promote a culture of dialogue and teamwork. Regarding the communication on the CAF, the ASI has defined a communication plan for the CAF self-assessment process and has both informed and included all employees in the stages of the process. Externally, the ASI held several meetings to disseminate the CAF experience to other public research institutions. However, there is still a lack of communication with external stakeholders and their involvement – through ideas and suggestions – in the improvement phase.

**Table 4.1. The Common Assessment Framework and resilience: self-assessment of the Italian Space Agency**

Resilience category	1	2	3	4	5
Ability to learn (reflective)					X
Limit the spread of failure (robust)				X	
Can easily repurpose resources (resourceful)		X			
Has alternative strategies (flexible)	X				
Has backup capacity (redundant)					X
Includes broad consultation and communication (inclusive)			X		
Has systems working together (integrated)				X	

Note: On a scale of 1-5 (1= no impact; 5 = high impact).

Source: ASI, 2022.

## Annex A. Methodological notes

The case study analysis conducted within the framework of this project was based on the following methods: document analysis (desk research of the documentation available on the ASI website and on other relevant online sources as well as additional documentation provided by the ASI upon request of the researchers) and direct interviews, both face-to-face and in focus groups (for organisational reasons, one interview was conducted online).

Based on a thorough analysis of the guidelines provided by the OECD and the KDZ – Centre for Public Administration Research during the online Zoom meetings and via email, the researchers identified the most relevant interlocutors and defined an interview agenda in agreement with the CAF programme manager. The interviews were conducted on-site, at the headquarters of the Italian Space Agency in Rome, on 15 and 16 March 2022. The CAF programme manager’s support was constant and punctual throughout the survey (initial contact, definition of an interview agenda, guidance at the agency, exchange of information and documentation, further contacts and information exchange after the face-to-face interviews). The outline of the interview questions was designed by the researchers of the Institute for Public Management based on the guidelines provided by the OECD and with reference to the CAF criteria. Different thematic focus areas were selected for each interviewee depending on their area of expertise and available interview time. The interviews, which lasted on average 60 minutes, were recorded, transcribed and analysed with MAXQDA qualitative analysis software. Table A.1 lists the organisational units interviewed – for a total of 26 people – as well as the respective interview method.

**Table A.1. Agenda of interviews**

Area	Interview method
Strategic area co-ordinator	In-person
Director-general	In-person
Risk and opportunity management	In-person
CAF programme manager	In-person
CAF self-assessment group	Focus group (5 people)
Programmes Directorate	In-person
Management control and performance	Online
Human Resources Directorate	Focus group (5 people)
International Relations Directorate	In-person
Processes and digitalization	In-person
Science and Research Directorate	In-person

Source: ASI, 2022.