Midterm Review Germany

TEMPLATE A

RESPONSE FOR SOLUTIONS: "Space2030" Agenda Mid-term Review

For Member States and

permanent observer organizations with COPUOS

NOTE BY SECRETARIAT: the following template is designed to allow Member States of the United Nations and permanent observer organizations with COPUOS to provide standardized responses to any of the 4 Overarching Objectives, and showcase their space solutions

1. *Enhance space-derived economic benefits and strengthen the role of the space sector as a major driver of sustainable development*

Project 1: INNOspace

Overarching objective [1]	**Actions** 1.1.; 1.2; 1.3; 1.4; 1.7; 1.8
Country/Observer Organization	Germany
Project partners	German Space Agency at DLR
Short Project summary and goals	Launched in 2013 by the German Space Agency at DLR, **INNOspace** fosters cross-sectoral technology transfer between space and terrestrial industries. It supports spin-ins and spin-offs, enabling innovations in medicine, engineering, security, energy, mobility, and more. Through its Networks space2health, space2motion and space2agriculture, INNOspace initiates the use of space-based technology in multi-stakeholder parternerships. By strengthening collaboration within the NewSpace economy, INNOspace also accelerates commercialization.
Relevant SDGs	3, 6, 8, 9, 11, 12
Space/Satellite solution:	Utilization of space through funded projects such as: **SpaceVOCs in cooperation with the Technical University Munich.** The project monitors volatile organic compounds (VOCs) concentration to detect plant stress and create an early warning system that enhances agricultural productivity and sustainability by ensuring plant health.
Project impact	• Facilitated cross-industry innovation through knowledge transfer • Supported startups and SMEs in space commercialization • Promoted adoption of space-based solutions in key industries • Strengthened Germany's high-tech economy and multi-stakeholder partnerships • Has (as of March 2025) funded 50 projects
Reference	https://www.dlr-innospace.de/ https://www.dlr-innospace.de/Project/spacevocs/

Project 2: Microlauncher and Payload Competition

Overarching objective [1]	**Actions:** 1.2.; 1.4.; 1.8.
Country/Observer Organization	Germany
Project partners	European Space Agency (ESA)
Short Project summary and goals	The **DLR Microlauncher Competition**, launched in May 2020 by the German Space Agency at DLR, supports German start-ups in developing and operating commercial microlaunchers. The competition aimed to establish cost-effective and sustainable small satellite launch services. Two participants won funding for the final qualification phase, including two demonstration flights.
Relevant SDGs	8, 9
Space/Satellite solution:	Small satellites for scientific and industrial applications will be deployed by supported commercial actors.
Project impact	The competition has strengthened Germany's NewSpace ecosystem and launch service market and encouraged private-sector innovation in cost-effective launch systems. Funding enabled selected start-ups in the Upstream sector to develop microlaunchers. Funded through the competition, HyImpulse has successfully tested the first Parrafin-based sub-orbital rocket in 2024. Isar Aerospace was awarded the title of "Startup of the Year" by SpaceNews in 2023 and has successfully conducted a first test launch of its orbital class rocket from the launch pad in late March 2025. Rocket Factory Augsburg has performed stage tests of all stages in 2024 and is aiming for a first launch in 2025.
Reference	https://www.dlr.de/de/ar/themen-missionen/raumfahrttechnologien/traegersysteme/dlr-mikrolauncher-und-nutzlast-wettbewerb https://spacenews.com/the-2023-spacenews-icon-awards-winners/

2. ***Harness the potential of space to solve everyday challenges and leverage space-related innovation to improve the quality of life***

Project 1: EnMAP

Overarching objective [2]	**Actions** 2.1; 2.2; 2.3; 2.4; 2.5; 2.8
Country/Observer Organization	Germany
Project partners	German Federal Funding: Ministry for Economic Affairs and Climate Action Mission Management: German Space Agency at DLR Space Segment: OHB; Ground Segment: DLR Science PI: GFZ, LMU Munich, AWI, Humboldt University Berlin; Scientific advisors/contributors: BGR, CSIRO, CNR ISMAR, UCLA JIFRESSE, Instito Nazionale die Geofisica e Volcanologia, Universita Politecnica De Valencia, Greifswald University, Leipzig University, USGS, VTT; Cooperation on agency level: ESA, ASI, NASA, JPL
Short Project summary and goals	**EnMAP** (Environmental Mapping and Analysis Program) is a hyperspectral satellite that monitors environmental changes and supports sustainable resource management. It provides high-resolution spectral data to analyse vegetation health, water quality, land use, and atmospheric conditions. EnMAP enables precise monitoring of ecosystems and helps develop solutions for climate change adaptation and sustainable agriculture.
Relevant SDGs	6, 7, 12, 13, 14, 15

Space/Satellite solution:	EnMAP delivers hyperspectral Earth observation data for: • Climate Change Impact and Interventions • Land Cover Changes and Surface Processes • Biodiversity and Ecosystem Processes • Water Availability and Quality • Natural Resources • Hazard and Risk Assessment
Project impact	The EnMAP-Mission records a continuous increase in users with a growing percentage of international users. As of December 2024, there were a total of 2828 registered EnMAP users from 88 countries. The free and open-source data processing and analysis tool, EnMAP-Box, as well the educational program, HYPERedu receive growing interest from an international user community.
Reference	https://www.enmap.org/mission "The EnMAP spaceborne imaging spectroscopy mission: Initial scientific results two years after launch." https://doi.org/10.1016/j.rse.2024.114379

Project 2: TerraSAR & TanDEM-X

Overarching objective [2]	**Actions** 2.1.; 2.2.; 2.3.; 2.4.; 2.7.; 2.8.
Country/Observer Organization	Germany
Project partners	TerraSAR-X and TanDEM-X are twin German SAR satellites created and operated in a Public-Private Partnership (PPP) between the German Aerospace Centre DLR (with funds from the Federal Ministry for Economic Affairs and Climate Action) and Airbus Defence and Space.
Short Project summary and goals	The scientific objective of the missions is to provide multi-mode, high-resolution X-band radar data for a wide range of applications in fields such as hydrology, geology, climatology, oceanography, and disaster monitoring. Additionally, the missions offer a high-precision, global 3D model of Earth's surface. DLR is responsible for disseminating data for scientific use, while Airbus handles the provision of data to commercial users.
Relevant SDGs	1, 2, 6, 9, 11, 13, 14, 15, 17

Space/Satellite solution:	The two nearly identical X-band radar satellites, **TerraSAR** (launched in 2007) and **TanDEM-X** (launched in 2010), fly in close formation at 514 km altitude to generate a uniform digital elevation model (DEM) with unprecedented accuracy. The mission enables precise terrain mapping for land monitoring, disaster management, infrastructure planning, forestry, and security.
Project impact	The data from TanDEM-X and TerraSAR-X have enabled highly accurate, weather-independent monitoring of Earth's surface, providing valuable insights across various domains. The data has been pivotal for addressing environmental challenges, including climate change, land degradation, and deforestation. The mission also contributed to the creation of a globally accurate digital elevation model as well as global 3D change maps. Furthermore, the data is frequently utilized within the International Charter: Space and Major Disasters, enhancing response efforts and recovery operations in disaster-stricken areas worldwide.
Reference	https://www.d-copernicus.de/daten/satelliten/satelliten-details/news/tandem-x/?tx_news_pi1%5Bcontroller%5D=News&tx_news_pi1%5Baction%5D=detail&cHash=fdd3c044296e5daea68e8ae4e423d77e https://www.dlr.de/de/forschung-und-transfer/Projecte-und-missionen/terrasar-x/ https://www.dlr.de/de/forschung-und-transfer/Projecte-und-missionen/tandem-x/weitere-nachrichten-zu-tandem-x Link with more information about the missions: - https://www.eoportal.org/satellite-missions/terrasar-x#eop-quick-facts-section - https://www.eoportal.org/satellite-missions/tandem-x Data access for scientific use - Science Service System for the TerraSAR-X: sss.terrasar-x.dlr.de - Science Service System for the TanDEM-X Mission: https://tandemx-science.dlr.de/ - Link to the most recent Science Team meeting of the mission with an overview of applications: https://tandemx-science.dlr.de/cgi-

	bin/wcm.pl?page=TSM-TDM-Science-Team-Meeting_2023 Data access for commercial use - https://space-solutions.airbus.com/imagery/our-optical-and-radar-satellite-imagery/radar-constellation/

3. ***Improve access to space for all and ensure that all countries can benefit socioeconomically from space science and technology applications and space-based data, information and products, thereby supporting the achievement of the Sustainable Development Goals***

Project 1: DropTES

Overarching objective [3]	**Actions** 3.2; 3.3.; 3.4; 3.5; 3.6;
Country	Germany
Project partners	UNOOSA, Center of Applied Space Technology and Microgravity (ZARM), DLR
Short Project summary and goals	**The Drop Tower Experiment Series (DropTES)** provides students an opportunity to learn and study microgravity science by performing experiments at the Bremen Drop Tower, which is a ground-based laboratory with a drop tube of a height of 146 meters. The experiments conducted range from astrophysics, biology, chemistry, combustion research, fluid mechanics, materials science to fundamental physics.
Relevant SDGs	4, 8, 9
Space/Satellite solution:	DropTES is part of the "Access to Space for All" initiative by UNOOSA and considered a "hands on component" of its Hypergravity and Microgravity track set to build capacity for conducting experiments in orbit.
Project impact	So far, teams of international students from 6 institutes have benefited from 7 rounds of experiments having conducted many different types of scientific experiments and technology demonstration missions. In 2024, a total of five drops were conducted at the drop tower for UNOOSA.
Reference	https://www.unoosa.org/oosa/en/ourwork/access2space4all/index.html https://www.zarm.uni-bremen.de/en/drop-tower/general-information.html "DropTES: The Stepping Stone into Space Activities and its Contribution to the SDGs". AccSpace4All_x_SDGs_Interview_DropTES_ZARMUCB.pdf "DropTES: The Opportunity to Expand Your Horizon and its Contribution to the SDGs". AccSpace4All_x_SDGs_Interview_DropTES_Jordan_CostaRica.pdf

Project 2: SPACEBUZZ ONE

Overarching objective [3]	**Actions** 3.1.; 3.3.; 3.5.; 3.7.;
Country/Observer Organization	Germany
Project partners	DLR, German Federal Ministry for Economic Affairs and Climate Action (BMWK)
Short Project summary and goals	**SpaceBuzz One** is an innovative, mobile space education program designed to inspire and educate children about space, Earth observation, and sustainability. Using a high-tech mobile learning environment, SpaceBuzz One offers an immersive astronaut experience, fostering curiosity about space, science, and technology. The program aims to make space education accessible to schools and communities across Germany.
Relevant SDGs	4, 5, 8, 9, 10, 11, 12, 13, 16, 17
Space/Satellite solution:	SpaceBuzz One simulates an astronaut's perspective of Earth through VR technology, featuring recordings of German astronauts Matthias Maurer, and Alexander Gerst and reserve astronauts Amelie Schoenenwald and Nicola Winter. This immersive experience introduces children to Earth observation, climate science, and space exploration.
Project impact	SpaceBuzz One engaged thousands of students in hands-on space education, fostering STEM awareness and highlighting career opportunities in space-related fields. It also strengthened public understanding of climate change and Earth observation at hundreds of schools and public events, including the UN World Space Forum 2024 and the inaugural Space Days in Germany in late March 2025.
Reference	https://spacebuzzone.de/ueber/

4. Build partnerships and strengthen international cooperation in the peaceful uses of outer space and in the global governance of outer space activities

Project 1: UN-SPIDER/SPEAR

Overarching objective [4]	4.1.; 4.3.; 4.9.;
Country/Observer Organization	Germany
Project partners	UNOOSA
Short Project summary and goals	**UN-SPIDER** is a programme of UNOOSA that provides Member States with access to space-based data and services for disaster-risk reduction and emergency response, and through the UN SPIDER knowledge portal, enables access to space-based resources in all phases the disaster management. Germany hosts one of currently three UN-SPIDER offices in Bonn and has initiated the SPEAR-project in cooperation with the University of Bonn to understand needs, develop solutions and strengthen national capacities in using space-based information for disaster monitoring and prevention in Africa in line with international and regional frameworks.
Relevant SDGs	3, 4, 10, 11, 13, 15, 17
Space/Satellite solution:	Integration of optimized spectral and geometric resolution of Sentinel-1, Sentinel-2 and Sentinel-3 data (time series analysis, data fusion, regional downscaling). UN-SPIDER also trains disaster management agencies, particularly in the Global South, on accessing and utilizing space-based data to support the prevention, mitigation, and response to natural disasters.
Project impact	Strengthened use of Earth Observation based data for the multi-hazard and multi-disaster-monitoring. Development of country-specific information for drought and flood prone regions in Africa, considering biophysical and socio-economic preconditions and cascading effects, represent the main basis for the technical advisory service missions (TAM) which are conducted with support by UN-SPIDER in the project's pilot countries. The development of methods to integrate biophysical and socio-economic data analysis to improve information on vulnerability and exposure in consensus with international conventions and initiatives.
Reference	https://www.un-spider.org/projects/spear https://www.un-spider.org/about

Project 2: UN World Space Forum

Overarching objective [4]	Actions 4.1; 4.2; 4.7; 4.10.
Country/Observer Organization	Germany
Project partners	UNOOSA, United Arab Emirates, Peru
Short Project summary and goals	The UN **World Space Forum** 2024 under the theme "Sustainable Space for Sustainability on Earth" took place in December 2024 in Bonn, Germany in cooperation with the United Nations Office for Outer Space Affairs (UNOOSA), Peru and the United Arab Emirates. The World Space Forum 2024 built upon the foundations of the "Space2030" Agenda. Special focus was placed on the outcomes of the Summit of the Future, held in September 2024, and the newly adopted Pact for the Future, exploring space-driven solutions to strengthen global cooperation and governance systems.
Relevant SDGs	4, 13, 15, 16, 17
Space/Satellite solution:	Exploration of the transformative potential of space-based technologies in supporting global priorities, including climate action, disaster management, and sustainable development through international collaboration.
Project impact	The World Space Forum reaffirmed the critical importance of international collaboration to address the evolving challenges in space governance and sustainability. Attendance from 95 countries reflected a unified commitment to addressing the evolving challenges of space governance through collaboration, transparency, and inclusion.
Reference	"Report on the United Nations World Space Forum 2024 Sustainable Space for Sustainability on Earth": https://www.unoosa.org/res/oosadoc/data/documents/2025/aac_105c_12025crp/aac_105c_12025crp_11_0_html/AC105_C1_2025_CRP11E.pdf "Key take-aways from the UN World Space Forum 2024 on the implementation of Action 56 of the UN Pact for the Future Written submission by the delegations of Germany, Peru and the United Arab Emirates": https://www.unoosa.org/res/oosadoc/data/documents/2025/aac_105c_12025crp/aac_105c_12025crp_12_0_html/AC105_C1_2025_CRP12E.pdf