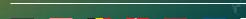# Space for Sustainable Forestry

Call for Proposals (Non-competitive)

Webinar, 30 October 2024

Beatrice Barresi: Beatrice.barresi@esa.int

30/10/2024

→ THE EUROPEAN SPACE AGENCY

Welcome to the webinar

Before we start…

- Please keep your microphones muted at all times and switch off the webcam function

- You can use the conversation function anytime to submit your questions. They will be addressed during the Q&A at the end of the webinar

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Agenda

- European Space Agency

- Business Applications & Space Solutions Programme

- Space for Sustainable Forestry Call

- How to Apply

- Q&A

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space transportation

science

human spaceflight

earth observation

telecommunications and applications

navigation

exploration

operations

technology

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Business Applications: space-enabled services

BASS aims at reaching **commercial exploitation of space assets, data and capabilities** addressing **technical feasibility and business development**. This includes the development **of operational services for a wide range of users** through the combination of different systems, and **support in creating viable companies as well as to existing companies**

Space Weather

Earth Observation

Satellite Navigation

Satellite Communication

Maritime

Healthcare

Transport

Environment

Agriculture

Media

Energy

Education

Aviation

Financial

What's in it for us?

SOCIO-ECONOMIC IMPACT

Deliver social value and economic sustainability

USE OF SPACE TECHNOLOGY

Expand the utilization of space in new markets and user communities

INDUSTRY COMPETITIVENESS

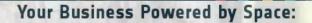**Strengthen European Industry competitiveness on the global space and non-space markets**

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What can BASS offer to companies?

Your Business Powered by Space:

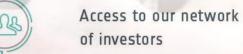- Zero-equity funding (from €50k to €2M+ per activity)
- A personalised ESA consultant
- Technical support and commercial guidance
- Tailored project management support
- Access to our international network of ESA and partners
- Access to our network of investors
- Credibility of the ESA brand

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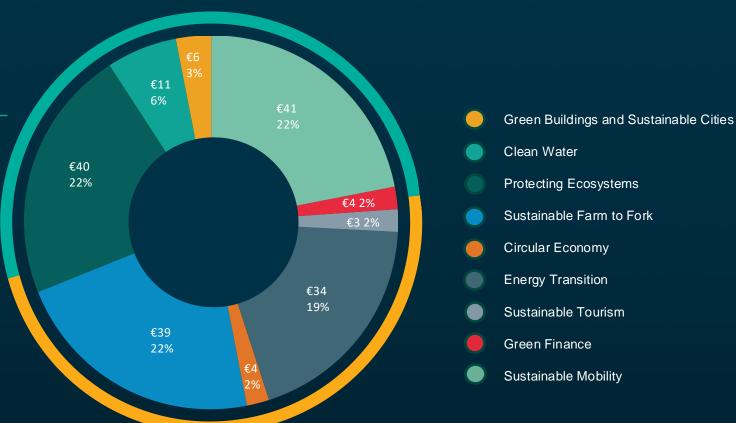# Sustainable applications with green impact

It is estimated that abandoning the current high-carbon pathway in favour of a low-carbon future will bring €26 trillion in economic benefit.

Investment in BASS Green Activities since 2010

Market demand for green solutions, new ESA BASS funding opportunities, and collaborations with industry partners will support future growth in sustainable development investment

With **€183M** **invested into**
300 ideas the green transition now drives
48% of all new ESA Space Solutions.

Pie chart data:
- €41 22%
- €4 2%
- €3 2%
- €34 19%
- €4 2%
- €39 22%
- €40 22%
- €11 6%
- €6 3%

Legend:
- Green Buildings and Sustainable Cities
- Clean Water
- Protecting Ecosystems
- Sustainable Farm to Fork
- Circular Economy
- Energy Transition
- Sustainable Tourism
- Green Finance
- Sustainable Mobility

Partners

Space for Bioeconomy Task Force

The focus of the Task Force is to unite interdisciplinary perspectives to generate a knowledge base for a new, sustainable bioeconomy, and to demonstrate the commercial perspectives of using natural and biological resources to produce energy, food, animal feed, and expensive chemicals.

Objectives

Promoting the development and demonstration of **sustainable innovative space-based technologies and applications addressing the sustainable and circular practices in the bioeconomy supporting the growth of a sustainable green economy**;

Increase the **impact of the space-based applications** developed through ESA programmes, thanks to the support of the sector stakeholders and financial actors

The Task Force Members will identify key topics based on priorities.

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Bioeconomy Task force members

https://business.esa.int/bioeconomy

Potential Topics

Sustainable Agriculture

Sustainable Forestry

Sustainable Pharmaceuticals

Sustainable Textiles

Waste Management

Water Resources

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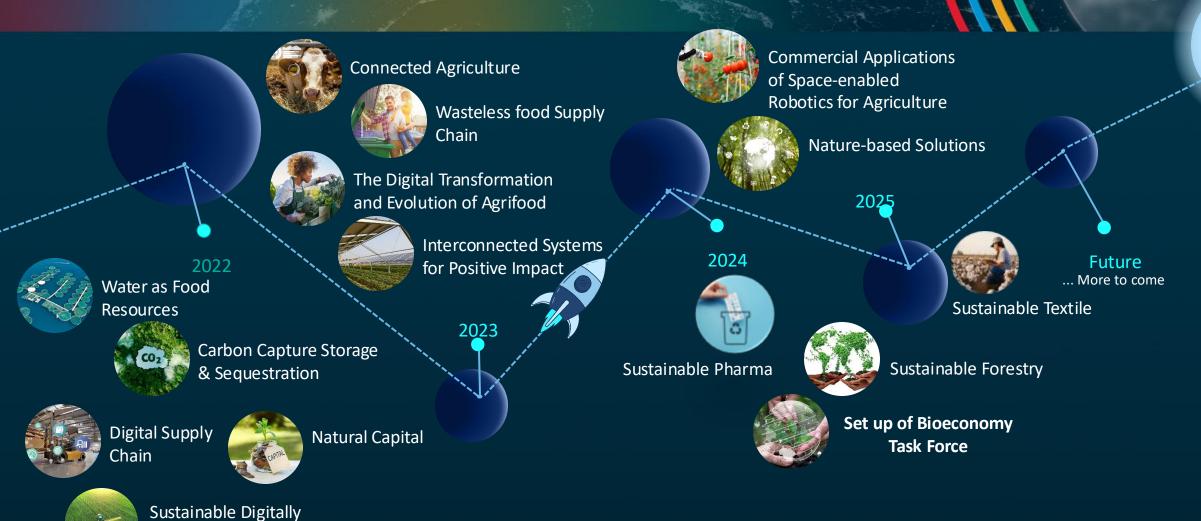
Bioeconomy initiatives in BASS

Connected Agriculture

Wasteless food Supply Chain

The Digital Transformation and Evolution of Agrifood

Interconnected Systems for Positive Impact

Commercial Applications of Space-enabled Robotics for Agriculture

Nature-based Solutions

2025

2022

Water as Food Resources

Carbon Capture Storage & Sequestration

2023

Digital Supply Chain

Natural Capital

Sustainable Digitally Connected Solutions for the Commodities Crisis

2024

Sustainable Pharma

Sustainable Forestry

Set up of Bioeconomy Task Force

Future
… More to come

Sustainable Textile

Space for Sustainable Forestry Call

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Background: Forestry

Forests:

- 31 % of the Earth's land area

- 80 % of terrestrial biodiversity

- Providing essential ecosystem services: regulating rainfall, protecting water sources, and preventing flooding and soil erosion

- Combating climate change: 40% of the world's oxygen and 660 gigatons of carbon stored in forests.

- 86 million green jobs

- Wood-derived products

Forests are being threatened: 10 million ha lost annually & contributing 25% of GHG emissions

- Deforestation

- Habitat fragmentation

- Climate change: Increased wildfire risk, Insects & pest disease move, Water shortage

→ Protect our forests: implementing sustainable forest management practices
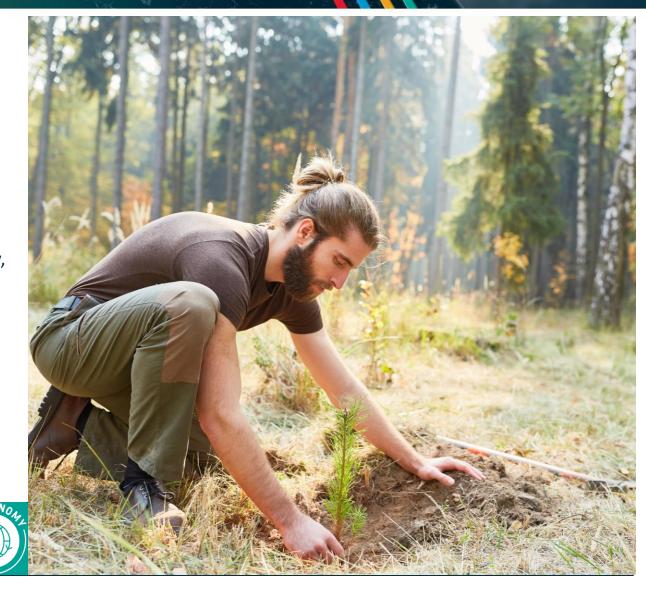
The Call for Proposals will be open for Demonstration Projects only.

Demonstration Projects:

- Selected teams will run **12-24 months** projects to develop the application and pilot the service with end users on board.

- are **co-funded up to 50%** by the European Space Agency, up to 80% in case of SMEs (pending authorization from National Delegation).

- Team needs to be based in one of the **eligible countries**: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Luxembourg, Norway, the Netherlands, Poland, Portugal, Romania, Slovenia, Sweden, Switzerland and United Kingdom.

Call opens on **1st of November** for 6 weeks. Closing date is **20th December 2024**

Please do not wait until the end of the opening period to apply! We will be reviewing proposals regularly throughout the opening period.

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Demonstration Project: key features

esa

Idea Creation

Explore idea generation.

Filling out the narrative, exploring ideas.

Concept Design

Defining core functionality.

Understanding the market size and potential revenue

Prototyping

Create Prototype and assess feasibility.

Updating of the business plan.

Service Development

Definition of service specification and design of system elements

Validation with pilot customers.

Verifying the viability of the financials.

Commercialisation/ Service Rollout

Demonstration Projects: Up to 50% co-funding*

*Up to 80% for SMEs (depending on specific initiative and approval of national delegation

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PEFC
User Case Ideas

Hubert Inhaizer

Forestry & Conservation Manager

PEFC International

PEFC/01-00-01

PEFC Sustainability Benchmark is designed through multi-stakeholder process and is aimed to support the **health and vitality of world's forests,** as well as care about the workers and forest communities.

Program for the **E**ndorsement of **F**orest **C**ertification systems

Alliance of independent **national forest certification systems** under the umbrella of **PEFC International**

National forest certification systems based on PEFC's **Sustainability Benchmark**

Voluntary mechanism promoting **sustainable forest management** through independent, **third-party certification**

World's largest forest certification system and **provider of three-quarters of the world's certified sustainably managed timber**

North America
163 million ha
55% TCA
422 CoC

Europe
82 million ha
28% TCA
10'428 CoC

Asia
17 million ha
6% TCA
1,472 CoC

Africa
1.6 million ha
34 CoC

Central & South America
10 million ha
3% TCA
159 CoC

Oceania
21 million ha
7% TCA
201 CoC

■ PEFC members with **endorsed** systems

■ PEFC members with systems **not endorsed** yet

● Countries where **chain of custody** certificates have been issued

* ha - hectares
CoC - Chain of Custody certificates
TCA - % of total PEFC certified area

Data: March 2024

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EU Deforestation Regulation

Increasing wood demand from forests and non forest areas

Changes in forest ecosystems

FSC®

A **sustainable forestry solution** to help protect healthy and resilient forests, for all, forever.

esa

From a good idea to a global market tool

1,200+
international members in 92 countries

150+ million
hectares of forest land certified
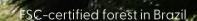
54,000+
certificates that verify sustainable sourcing

1,600+
companies licenced to promote the FSC-labelled products.

FSC-certified forest in Brazil

© FSC / Arturo Escobar

Trusted by NGOs, consumers, and businesses

BY NGOs

Active FSC International Members:

RAINFOREST ALLIANCE

WWF

SIERRA CLUB

FSC is uniquely supported by the world's most trusted environmental organizations.

BY CONSUMERS

46%

of global consumers recognize the FSC logo. When compared to other organizations, consumers have the highest confidence in FSC, which is significantly higher than their trust in businesses or governments.

Source: 2022–23 Ipsos Consumer Research

BY BUSINESSES

IKEA   JYSK

L'ORÉAL   BMW

Tetra Pak   Kimberly-Clark

BEST BUY   P&G

… chosen by 1,000s of global brands

FSC is the preferred certification system for many companies worldwide, issuing more Chain of Custody certificates worldwide than any other forest certification system.

USE CASE: EARTH OBSERVATION FOR CLIMATE & ECOSYSTEM SERVICES

Ecosystem Services & FSC

FSC allows Certificate Holders to develop *Verified Impact claims* for sustainably managed forest. FSC provides guidance on the application of technology, including remote sensing and GIS, to this process.

Soil Conservation

Biodiversity Conservation

Carbon Sequestration & Storage

Cultural Practices & Values

Recreational Services

Watershed Services

Air Quality

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How it works

Enabling investment from sponsors, including businesses, financial institutions and governments, **in projects that monitor, maintain and improve ecosystem services in FSC-certified forests.**

Helping harness the full force of forests' positive power as a scalable, long-term solution to the climate and biodiversity crises.

Use Case: Improvement of Ecosystem Service (ES) Verification

There is growing demand for transparent, verifiable sustainable forestry practices FSC is developing an online registry to help Forest Managers demonstrate positive environmental impacts.

Key Challenges:
1. Estimating ES indicators like biodiversity conservation and carbon sequestration
2. Defining and comparing against baseline data for verification.

Solutions:
Satellite data allows for precise Monitoring, Reporting, and Verification (MRV) Additional data and tools also needed – Light Detection & Ranging, Internet of Things technology, Bioacoustics, environmentalDNA, Satellite Navigation, Satellite Communication.

Primary focus on high priority indicators for biodiversity & carbon (in future to be expanded with other ES like clean water and healthy soil).
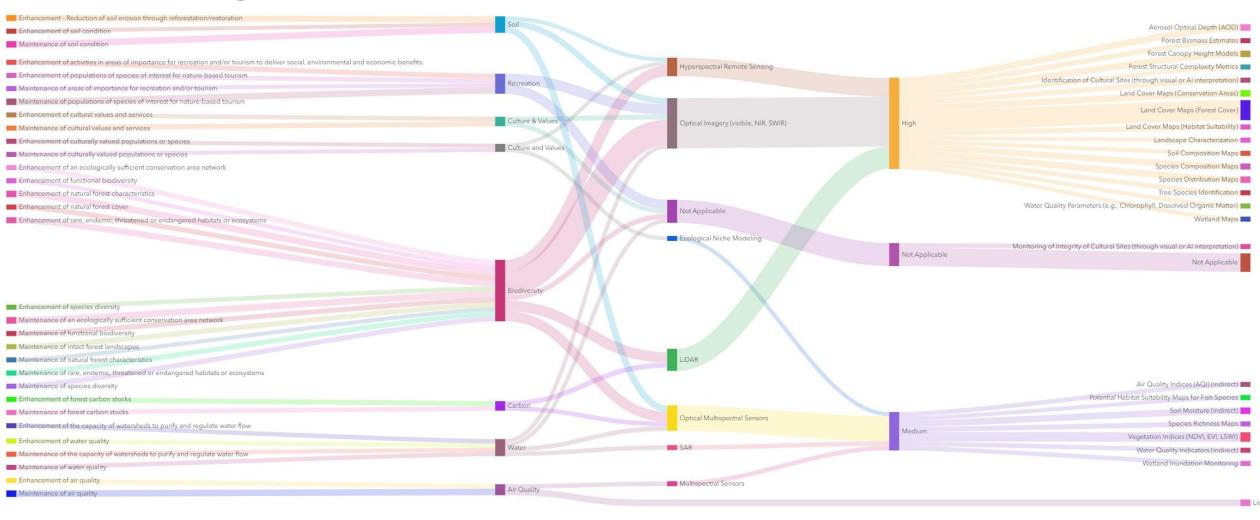
Claims process 101

Claims are the outcome of the Ecosystem Services Verification and can be used by forest managers or corporations

QUANTIFY

Forest managers quantify impacts on Carbon, Biodiversity, Water etc.

Claim Generated

PARTNER

Interested companies connect with these forest managers

Claim Sponsored

VALUE

They agree on the appropriate retribution for the forest manager

REWARD

Companies benefit from solid data, forest managers have an extra income

Claim Used

Quantifying Indicators

Indicator, Ecosystem Service, Sensor Type, Resolution and Sample Derived Product

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Thank you

For questions or more information, please contact

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Thank you

FSC

FORESTS FOR ALL FOREVER

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Space for Sustainable Forestry Call:

Use Cases

Forestry Use Cases

Natural Disaster Response Support

Insect Pest and Disease Monitoring

Carbon Storage Estimation

Improvement of Ecosystem Service Verification

Improved Forest Inventory

Agroforestry

Deforestation

Forest Degradation

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1. Natural Disasters Response Support

Extreme weather events (e.g. droughts, storms, flood) can lead to forest degradation or deforestation. Especial mention to windstorms and snow.

In severe damage cases, the negative impacts are long-lasting with secondary impacts e.g. pest outbreaks, wildfire and erosion. Besides, huge amounts of wood are unexpectedly available disrupting the forest product supply chain

Includes topics like:

- **Detection of affected areas**
- **Size of the affected areas**
- **Type of damage**
- **Supporting plan intervention**

Impact from insect pests and disease on forests affect tree growth, reduce yield wood, impact wildlife habitat, reduce biodiversity and species richness, limits plantation programmes, etc.

Bark Beetle = one of the most infesting insects affecting forests

Includes topics like:

- **Detection of bark beetle infections at early stages (red attack stage)**

- **Detection of forest stands which need to be thinned**

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3. Carbon Storage Estimation

Forests are crucial in **mitigating climate change** by absorbing and storing CO_2 through photosynthesis.

Forests act as **carbon trading** mechanism. Need solutions improving:

- Vegetation carbon storage
- Soil carbon storage estimation

Traditional carbon monitoring methods are labour intensive & lack accuracy.

Includes topics like:

- **Monitor carbon sequestration**
- **Monitor sources and sinks**
- **Spatial patterns of forest productivity**

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Improvement of Ecosystem Service Verification

FSC is developing **an ES registry**, requiring forest managers to submit indicator values for their ES certification. The indicators will allow to measure and verify responsible forestry practices by comparing them with established baselines, e.g.:

- **Biodiversity conservation**

- **Carbon sequestration and storage**

- Watershed services

- Soil conservation

- Recreational services

- Cultural services

- Air quality

Challenge:

- **Estimate the indicators**

- **Identifying the baseline input data**

- **Proper methodology to assess the impact within forestry ecosystem**

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5. Improved Forest Inventory
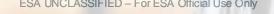
Demand for comprehensive forestry information to:

- Support and plan timber supply: evaluating available forest resources

- Monitor forest health & biodiversity

- Provide reference information monitoring activities related to policy instruments

It is crucial for planning sustainable forest management operations.

Includes topics like:

- **Improve forest inventory up-to-date information and accuracy:**

  - **Species composition**

  - **Standing stock estimation**

  - **Tracking annual removals**

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6. Agroforestry

Global demand timber products x4 by 2050, however expansion of industrial plantations is constrained due to alternative land use & timber from natural forests are less available.

→ Solution **Agroforestry**: trees integrated into agricultural landscape. Benefits:

- Enhancing soil fertility

- Assisting in soil & water conservation

- Providing fodder, fuelwood and construction materials for rural households

- Contributing to biodiversity and landscape enhancement

Includes topics like:

- **Monitor available timber resources in areas managed by non-forestry stakeholders**

- **Give access to non-forestry stakeholders to timber-based supply chain**

Deforestation = Critical global issue

- 10 million has of forest loss annually.

- Need to monitor deforestation.

- Particularly relevant:

  - For industry players sourcing timber within and from outside of the EU

  - Due to the EUDR.

  - To improve transparency.

Includes topics like:

- Differentiation between areas of established regeneration after a final cut and those that have been deforested.

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Forest degradation = pressing global issue resulting from:

- Human activities
- Severe climatic events
- Pests & diseases
- Other environmental disturbances

Negative impacts:

- Reduction of forest goods and services
- Biodiversity values
- Productivity
- Forest health

Key Challenge:

- **Differentiate between tree species**.

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Value-added from space

EO

- To analyse **tree health status, forest inventory and species classification.**
- To **monitor forest vigour** and can support decision-making.
- To identify and alert forest owners about events affecting their **forest like fires, pest outbreaks or illegal logging activities**.

SatNav

- To efficiently locate samples from the field.
- **To guide machinery** which are needed for operations in the forestry.

SatCom

- In **remote areas** where communication is lacking, SatCom provides the possibility of **connection to IoT** sensors and devices or to **provide alerts**, such as fire alarms or emergency warnings for extreme weather events.

Other Technologies

- Light Detection and Ranging **(LiDAR)**
- **IoT Technologies**
- **Bioacustics**
- **eDNA**

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- If pitching an idea based on one of the use-cases introduced in the call, ESA will share the pitch (if the bidder permits) with the stakeholder organisation.

- Depending on their interest, the stakeholder will act as pilot user.

- The Bidder shall not contact any of the stakeholders directly.

- You can always bring your own user.

- You are open to propose your own idea.

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Space for Sustainable Forestry: How to apply?

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How to apply - process

Register	Register by completing online questionnaire on ESA-STAR Registration (minimum 'light registration') (Doing Business with ESA)
Download	Download Activity Description (including the scope of the call, procurement approach...), an Annex (including relevant use-cases), and other supporting materials (e.g. webinar slides) https://business.esa.int/funding/call-for-proposals-non-competitive/space-for-sustainable-forestry
Submit	Download the Activity Pitch Questionnaire (APQ/APQ+) template and submit your pitch as instructed in the Activity Pitch Questionnaire guidelines (https://business.esa.int/apq-submit) through the online form before the deadline, selecting the Space for Sustainable Forestry Initiative in the drop-down of the APQ.

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How to apply – points to note

National Delegation Authorisation of Funding

APQ → *2 months* → Outline Proposal → *4 months* → Full Proposal → *2 months* → Activity Kick-off

ESA Feedback — *2 weeks*

ESA Feedback — *2 weeks*

Negotiation and Contract Signature

APQ+ — *4 months*

- Incremental procurement approach: APQ is the starting point – max. 8-page document with a standard template to present WHAT, WHY, HOW

- The APQ+ may substitute the outline proposal as an alternative entry point for mature propositions only

- Multiple Pitches with different ideas can be submitted

- Standard templates for proposals and deliverables before and during activity implementation

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How to apply – Activity Pitch Questionnaire (APQ)

1. (WHO) Company Background Information

2. (WHAT) do you want to offer your customers and what is the added-value?

3. (WHY) Who are the target beneficiaries addressed by your offer, and what is the expected impact?

4. (HOW) How do you intend to implement?

(OPTIONAL) APQ+ Fast-Track Questions

Thank you for your attention:
Q&A

Opening Date: 1st November2024

Closing Date: 20th December 2024

Click here and visit
Space for Sustainable Forestry (esa.int)

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TOWARDS A SPACE-POWERED ECONOMY

25-26 November 2024
ESA ECSAT Conference Centre, UK

Space applications for competitive, sustainable economies and resilient societies

esa
SPACE SOLUTIONS

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