CAPEO – Capitalising on EO data in support of IFAD operations

Grant proposal identification form (for competitive selection)

Strategic objective	*Indicate the main Strategic Objective that the grant intends to support (please only choose one)* ☒ SO1: Leverage better impact on the ground for IFAD's programme of work, including through improvement of in-country capacity for greater sustainability of benefits ☐ SO2: foster a more conducive policy and investment environment for smallholder agriculture and rural development, including at the regional and global level
Priority Area	*Indicate the main Priority Area that the grant intends to support (please only choose one)* ☐ PA1: Increased ambition on mainstreaming and other priority issues, and enhanced targeting of the most vulnerable rural people ☐ PA2: Strategic focus on fragility, conflict and building resilience ☐ PA3: Strategic partnerships to enhance impacts ☒ PA4: Enhancing performance and efficiency ☐ PA5: Sustainability and scaling-up results
Pathways	*Indicate the main Regular Grants Policy's pathway that the grant intends to support (please only choose one)* ☐ Policy and investments ☐ Partnerships ☒ Knowledge
Theme	Enhanced use of satellite data for the design, implementation, monitoring, sustainability assessment, monitoring and evaluation (M&E), and impact assessment of investment projects in the rural development sector. The grant project will focus on open-access satellite-derived data and other spatial datasets that can be used to assess land assets such as pastures, forests, cropland and water resources.
Background and relevance	**Background** Over the past three decades, there has been an enormous increase in the capacities of satellites to observe land use, forest cover, water distribution and soil condition. Open-access, free satellite data are available at increasing resolution (down to 10 meter) and with increasing frequency (up to weekly). Whereas the processing of 'raw' satellite images is not straightforward, there are now many databases of processed satellite images providing valuable information such as net primary production (of vegetation), water use, soil cover, forest cover, standing biomass, etc. Examples of on-line tools that provide such data are Google Earth Engine, the EU

	Copernicus, and the FAO Earthmap and WAPOR databases, among many others. These data are also frequently updated, so that this information becomes available only days or weeks after satellite overpass. This information is highly relevant for rural development projects including targeting and measurement of impacts. For example, it can indicate degraded or recovering farmland or pastures, impacts of projects on restoring agro-ecosystems, help understand the resilience of farming systems to climate change, ecological and biodiversity impacts, or assist in impact assessments. Satellite data are highly relevant for IFAD's strategic goals. Satellite data can be used to assess the productive capacity of land assets and facilitate the design and monitoring of interventions aimed at increasing the livelihoods of poor rural people. For example, satellite data indicate if local natural resources are over- or underexploited, which require different investment approaches. Satellite data will also allow a much more precise analysis of the environmental sustainability and climate resilience of smallholders' economic activities, facilitating M&E and assessment of projects' impacts on climate resilience as well as biodiversity. Hence, satellite data can be used for project design and to support project implementation, M&E, and project impact assessments. Project design can be supported, for example, by indicating the capacity of natural resources to support sustainable agricultural, livestock ranging or forestry activities. Satellite data can provide essential data for project monitoring, for instance trends in agricultural productivity, forest cover, protected or key biodiversity areas, or water availability including in project intervention areas. Satellite data is complementary to household survey data in project impact assessments, by showing impacts on (agro)ecosystems in project intervention and control group areas. Also the satellite data can help in selecting representative groups of households in areas with different agro-ecological conditions, or the spatial scaling up of household survey data. The 'MDB for nature coalition' recently adopted principles for tracking nature finance which requires also to demonstrate levels of impacts. Furthermore, IFAD 13 includes now also a target to develop and test an ecological indicator and expand investments in nature to which this project can contribute. In these various ways, satellite data facilitates more informed decision-making to promote sustainable land management and environmental sustainability. There is an urgent need to tap into the large, and still growing, reservoir of spatial data derived from satellite images available from various sources (e.g. European Space Agency, NASA, other national space agencies, Copernicus, Google Earth Engine, FAO, Climate Change Initiative, etc.) and make these data available for easy use

	in IFAD projects, IFAD Project Management Units, and other stakeholders and partners in development. This requires: (i) selecting specific satellite and other spatial datasets in order to ensure that the user has the most relevant, accurate and up-to-date datasets available (and does not have to select her or himself from a wide range of overlapping datasets); (ii) organizing data in such a way that the user is guided by an intuitive and logical system to select the appropriate datasets; (iii) developing a back-end solution that allows storing data, connecting to data from a wide range of sources, and basic processing of data; (iv) developing a user interface (front-end) that is extremely easy to use, also for people without any background in geographical information systems (GIS); (v) building use cases in order to test and showcase how spatial data derived from satellites can support IFAD operations. This includes facilitating IFAD staff and development partners in collecting geo-referenced intervention data and analyzing areas of interest such as watersheds and fields to be monitored/assessed via the tool; (vi) building training materials and manuals; and (vii) capacity building through a series of workshops and hands-on training sessions. Regular updates need to be provided given staff rotations – however an objective of this project is to build a tool that requires no or minimum training to use it. To organize the data, the United Nations System of Environmental Economic Accounting – Ecosystem Accounting (SEEA EA) will be used, which was adopted in 2021 as a global standard for environmental economic data by the UN Statistical Commission. This project grant is complementary to ongoing efforts to enhance the GIS capacity in IFAD, in particular, the GEONODE and GEOSCAN spatial databases. Linkages with GEOSCAN and GEONODE will be explored and optimized. In particular, the current project will establish the most relevant datasets, at high resolution, for IFAD projects that could, data storage capacities allowing, also be incorporated or linked to GEOSCAN and GEONODE. Furthermore, the project is complementary to the ABC tool currently being developed by FAO with IFAD participation. The current project will provide much more detailed information, at high resolution, that could be used as complementary indicators to the ABC tool, or potentially to enhance the ABC tool. **Relevance** The grant is highly relevant to IFAD13 priorities, in particular climate-resilient agriculture, environmental sustainability and biodiversity management. The project will inform on the climate resilience of pasture systems, among others, allow tracking the sustainability of projects in forest ecosystems, and include

	ecological indicators relevant to assess biodiversity impacts. It will make sustainability assessment and implementation of sustainability safeguards more efficient by providing additional data, in an easy-to-use format in support of SECAP. This project also aligns with IFAD's regular grants policy (EB 2021/132/R.3), and contributes significantly to the following areas: 1: Leverage and focus on better impact on the ground for IFAD's programme of work: This grant will ensure that information that can strongly enhance the effectiveness of IFAD projects and programmes will be made available to IFAD staff, Project Management Units (staff implementing IFAD projects, in some cases not including specific GIS expertise) and other partners, and that IFAD staff and selected other parties will be capacitated in using this information in order to support project design, implementation, M&E and impact assessment. The project will facilitate more effective project implementation and performance monitoring, and subsequently improved project outcomes and operational efficiency. 2. Fostering a conducive policy environment for smallholder agriculture and rural development: strengthening the information base available for M&E and impact assessment in agriculture and rural development at national and local level (i.e. leveraging such data to inform participatory landscape planning). This will provide an enhanced evidence base for policymaking, thereby fostering evidence-based decision-making in the rural sector. 3. Corporate strategies and tools: contribute to IFAD 13 preparation for an ecological impact indicator and improved use of geospatial indicators.
Project goal and objectives	**Goal:** To improve development effectiveness of rural development programmes through the enhanced application of spatial information for project targeting and measuring of results. **Objective:** To make up-to-date, high resolution and accurate spatial data (maps) derived from satellite imagery available to IFAD staff, PMUs and development partners, and to support them in using these data in an effective and cost- and time-efficient manner. This project will enhance the capacity of IFAD to focus on project delivery. At design IFAD needs, among others, to identify vulnerable land assets of the rural poor and assess type and extent of support. During implementation and at completion IFAD needs to measure the success of land-based interventions. Satellite data can make a critical and highly cost- and time-effective contribution to project design, implementation, M&E and impact assessment.
Target regions and countries	This grant aims to reach to all countries and regions with ongoing IFAD operations. Spatial data will be collected and made available for **all IFAD countries and regions**, following IFAD's Data

	Governance Policy and local regulations. Its inclusive approach can have a broad and meaningful impact on rural development and capacity building in a wide range of contexts in IFAD-financed projects. By including all countries and regions where IFAD operates, this grant demonstrates its commitment to enhancing capabilities for evidence based rural development on a global scale. Whereas spatial information will be made available across all regions in which IFAD operates (at a target resolution of 30 by 30m or less), at least six specific use cases will be developed to showcase the integration of spatial information in project design and during implementation. These showcases may be modified in the initial phase of project implementation, but tentatively include: (i) monitoring grass resources for livestock feeding in support of the LLRPII project in Ethiopia; (ii) monitoring forest resources (productivity, standing biomass, water regulation capacity) in Brazil in support of the PROCASEII project (community development in a forest agro-ecological environment); it will be examined if the project can also directly support the PAGES project in the Brazil Amazon region; (iii) cropping in Sierra Leone (monitoring the effectiveness of inland valley development in particular flood control measures, conversion of land for cropping, and productivity) (it will be examined if a link can be made as well to the Bangladesh Smallholder Agricultural Competitiveness Project (SACP) using IFAD staff). (iv) testing an ecological indicator that can be derived from satellite data and help inform impact assessments (country to be determined together with RIA and ECG but preferably in Asia to have a spread over the regions). Additional use cases and countries will be selected based on the interest of the Country Directors and Country Programme Officers and may include Lesotho and/or Sudan. Furthermore, the project grant will support work in NEN on pasture productivity, status of rangeland degradation/ restoration and C sequestration (in collaboration with the PMI Lead Global Technical Specialist - Livestock).
Target group	The primary target group encompasses: 1. IFAD staff including staff working on natural resource management projects in project design and supervision, staff working on environment, biodiversity, climate and social inclusion, IFAD staff involved in project evaluation and impact assessment, and staff working on risk management (in particular: risks of climate change and biodiversity loss). 2. Technical (natural resource management, environment, climate and social inclusion), M&E officers working within

	Project Management Units (PMU) of IFAD-financed projects. The viewer with spatial information as well as training materials and operational guidance notes (aligned with IFADs Operational Manual) will be made available to all PMUs, and brief technical trainings will be provided to at least 50 staff from PMUs. 3. IFADs partners in development, including NGOs, IPs, government offices, private sector and multilateral finance organisations. The viewer will be made available open-access, and training manuals will be made available on-line. A set of webinars will be given to introduce the on-line viewer to external stakeholders.
Outcomes/Outputs and deliverable	**Expected outcomes**: • Enhanced access of IFAD staff and consultants, and Project Management Unit Staff in IFAD-financed projects to spatial, satellite derived data for project design, implementation, M&E and impact assessment. • Enhanced capabilities of IFAD staff, and Project Management Unit Staff in IFAD-financed projects to use spatial, satellite derived data for project design, implementation, M&E and impact assessment. • Increased experience of IFAD staff and consultants, and Project Management Unit Staff in IFAD-financed projects with assessing spatial data and using this in support of IFAD operations. • Enhanced access of IFADs development partners (government, NGOs, private sector) to data relevant for rural development including climate resilience and biodiversity impacts • Enhanced delivery focus of investment projects included in the use cases. **Expected outputs**: • A back-end web tool that integrates datasets derived from satellite images, either as datasets in a server or through APIs; • A series of carefully selected, up-to-date, high resolution (10-100m) and accurate spatial data layers of particular relevance to IFAD projects, organized based on the SEEA EA (i.e., covering land cover and use information, the health/condition of ecosystems, and the services provided by ecosystems); see seea.un.org. The data needs to cover all IFAD countries, i.e. the Africa, LAC, Asia and Pacific regions. The data series will go back in time to at least 2016 (launch of the Sentinel satellites), and data will be presented with annual or seasonal time steps. All data to be selected will be free, open-access datasets. The indicators will be selected jointly with IFAD staff. Tentatively, a set of around 30 to 35 indicators is foreseen, such as Net Primary Production, bare soil cover, Rain use Efficiency (for semi-arid rangelands), standing biomass and Normalized Difference Water Index. • A front-end data viewer/tool that allows very easy access to the data layers, also for people without any experience in GIS. Data

	can be downloaded as geotiff files, or as pdf maps, and the user can construct tables and accounts for user-defined areas. Data needs to be updated regularly, with automated links to relevant APIs so that updates can continue after project closure. Projects should be able to upload their areas of interest, with treatment and control areas to measure attributable impact. • A connection to the FAO EarthMap tool (that is built in Google Earth Engine). To avoid duplication of efforts, collaboration with the FAO EarthMap and ABC teams will be sought in order to exchange experiences and datasets (a budget of US$ 50k needs to be reserved in the project proposal for the FAO EarthMap team to facilitate this collaboration). • A set of at least six user cases, spread over IFAD regions, where the satellite derived data is connected in detail to project design, participatory land use planning, implementation, M&E and/or impact assessment, so as to showcase how spatial data can be used in practice. The use cases include organizing a workshop with country teams to discuss outcomes of the work. • An IFAD publication on the use of Earth observation for rural development, to be prepared with help from IFAD staff. • A short user manual in English, translated into two other languages to be selected from French, Spanish and Portuguese (aligned with the final selection of the showcases) • Dissemination workshop with IFAD and local stakeholders to validate findings and discuss results from the grant. • Delivery of on-line webinars and training courses in English and potentially also in French and/or Spanish and/or Portuguese, in accordance with a predefined schedule. • A final report synthesizing project achievements and recommendations for follow-up.
Value and cofinancing	IFAD financing: US$ 1,200,000 IFAD highly values proposals that demonstrate substantial co-financing and partnerships, enabling broader outreach. All submitted proposals are required to include a minimum of 20% co-financing (25% for private sector companies). This comprises both cash and in-kind contributions (e.g. by providing datasets, staff time, etc.), bringing the total value of the project to at least US$ 1,400,000.
Recipient selection process	The grant recipient will be chosen through a competitive selection process. Submissions for grant proposals are now being invited. This call for proposals is advertised on the IFAD website and social media platforms. A minimum of three (3) proposals for per call is expected. Should only one (1) or two (2) proposals be submitted, the sponsoring division will seek endorsement from the Operational Strategy and Policy Guidance Committee (OSC) Chair for a selection with fewer applicants.

	For an equitable and thorough competitive selection, all relevant communications must occur through the designated corporate email address (capeo@ifad.org). Submissions are to be in pdf format. The submission window will remain open from 25 April to 30 May 2024. Proposals must be received within this timeframe; any revisions post-submission will not be considered. The Competitive Screening Evaluation Team (CSET) will assess all proposals and confirm eligibility based on pre-defined criteria, detailed in "Evaluation methodology and criteria for the review of the submissions." After verifying applicant eligibility, each CSET member will evaluate the Concept Notes against these criteria, providing ratings and justifications. The proposal with the highest cumulative score will be selected. Following the CSET's decision and approval by the Director of the sponsoring division, the grant team will notify the top-ranked recipient that their proposal is moving forward to the OSC, pending IFAD's internal approval and successful contract negotiations. The chosen recipient is required to confirm acceptance within five (5) business days of notification. Further information on IFAD's GIS operations can be found here: https://www.ifad.org/documents/38714170/45948858/GeoMapManual-Final_WEB.pdf/05a555cc-65d8-2367-c7ce-3775f52d3101?t=1658502655336 Further information on IFADs projects can be found here: https://www.ifad.org/en/web/operations/projects-and-programmes
Additional information	The grant will be implemented in close collaboration between the selected applicant, IFAD's headquarters staff, and regional division focal points, as well as staff of IFAD project management units in countries where IFAD operates. The grant proposal should consider the following key elements**:** • Implementation Period: The maximum duration for the implementation of this project is 36 months. • Knowledge-Sharing and Learning Infrastructure: The grant must include a robust strategy for knowledge-sharing and learning. This should foster a supportive culture for the exchange of knowledge and collaborative learning among all partners involved. • Cost Competitiveness: The costs of the back-end and front-end of the system, the development of training manuals and the organization of training should be competitive when compared to other similar programs. • Sustainability and Scaling-up: The grant envisions a program that is demand-driven with an aim towards eventual self-sustainability. The proposal should include explicit strategies for ensuring the sustainability and scalability of the program including maintain the database and viewer for a period of at least 5 years after project closure. These strategies should detail how the program plans to evolve and expand, maintaining its relevance and effectiveness over time.