GEO-ACADEMY
GEO-Hub for teachers in Europe

GEO-Academy: Innovative digital GEO-Tools for enhancing teachers' digital, green and spatial skills towards an effective STEAM Education for Sustainable Development

Deliverable D4.1

National GEO-Academy Hubs and School Community GEO-Hubs Established

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1 Executive Summary

This Deliverable D4.1 reports on the establishment of the GEO-Academy national hub network and the associated school community GEO-Hubs (the GEO-Labs). It is the public output of Task 4.1 of Work Package 4 (WP4) and documents the completion, at the time of submission, of one of the project's headline structural results: a pan-European network of teacher-training hubs anchored in the seven partner countries (Austria, Bulgaria, Cyprus, France, Greece, Portugal, Sweden) and complemented by a growing constellation of school-based GEO-Labs.

Each national GEO-Hub is hosted by one or more consortium partners and is dedicated to one or more of the five GEO-Concepts in line with the partners' thematic expertise. The Austrian hub ([1]PHT and OeWF) focuses on Earth Observation, satellite applications and STEAM with a space-education angle; the Bulgarian hub (PFE) on STEAM, robotics, coding and map storytelling; the Cypriot hub (CPI and EUC) on GIS, cartography, map storytelling and robotics; the French hub (EUS) on map storytelling, cartography, GIS and Earth Observation; the Greek hub (EA, NTUA, and SP) on GIS, cartography, RS/EO and map storytelling; the Portuguese hub (NUCLIO and UC) on GIS, RS/EO, cartography and map storytelling; and the Swedish hub (Lund University) on GIS, spatial analysis and remote sensing.

Beyond the national hubs, schools and school clusters have been recruited as school community GEO-Hubs — referred to throughout this document as GEO-Labs — that act as the local arm of the network. They host peer-to-peer training, run student-facing activities, and provide the operational environment where the GEO-Kits (D4.3) and the e-modules (WP2/WP3) are put into practice. As of the reporting date, the project has comfortably exceeded the contractual KPI of at least one GEO-Lab per country (D6.2), with GEO-Labs established in all seven partner countries and additional schools added through the partners' existing networks.

D4.1 is not the digital platform that hosts the hubs — that is the purpose of Deliverable D4.2 (GEOBSERVE), accessible at portal.geoacademy.eu — nor is it the GEO-Kits, which are the subject of Deliverable D4.3. The relationship between the three deliverables is explicit and is reflected throughout this document: D4.1 is about the institutional and human infrastructure, D4.2 refers to the digital infrastructure, and D4.3 to the physical/educational toolkit. The list of national hubs and school community GEO-Hubs is maintained on the GEO-Academy website and on the GEOBSERVE portal and is updated as new schools join the network.

Dissemination level: PUBLIC. The reader is referred to https://geoacademy.eu/ and https://portal.geoacademy.eu/ for the most up-to-date listing of hubs and contact points.

[1] PFE: Professional Forum in Education, OeWF: Austrian Space Forum, CPI: Cyprus Pedagogical Institute, EUC: European University of Cyprus, EUS: Eurisy, EA: Ellinogermaniki Agogi, NTUA: National Technical University of Athens, SP: Spotlight on Innovation, NUCLIO: Núcleo Interativo de Astronomia e Inovação em Educação, UC: University of Coimbra, LU: Lund University

2 Introduction

2.1 Project Overview

GEO-Academy is an Erasmus+ Teacher Academies project (ERASMUS-EDU-2022-PEX-TEACH-ACA, GA No. 101104693) bringing together 12 partners from 7 EU countries over a 36-month timeline (June 2023 – May 2026). The project's ambition is to establish a sustainable network of teachers and teacher trainers and to develop training resources, e-learning modules and an international community of practice for the integration of Geographic Information Systems (GIS), Global Navigation Satellite Systems (GNSS), Remote Sensing (RS) and Earth Observation (EO) into STEAM education and into Education for Sustainable Development (ESD). The project targets both pre-service and in-service teachers and is organized around three competency pillars (Digital, Green and Spatial) and five GEO-Concepts: (1) Cartography and the development of spatial thinking skills; (2) Geographic Information Systems (GIS), tools and techniques for Earth Sciences; (3) Remote Sensing (RS), Earth Observation (EO) and satellite applications; (4) Visualization and synthesis of information through map storytelling; and (5) STEAM education, robotics and coding for urban sustainability.

The consortium combines 12 organizations: NTUA (coordinator, Greece), LU (Sweden), EUS (France), CPI (Cyprus), PHT (Austria), UC (Portugal), EUC (Cyprus), OeWF (Austria), EA (Greece), SP (Greece), NUCLIO (Portugal) and PFE (Bulgaria). Each combines expertise in geospatial science, teacher training, and pedagogical innovation.

2.2 Work Package 4 Overview

Work Package 4 (WP4), led by NUCLIO, is responsible for the establishment of the common virtual GEO-Observatory Community of Practice (GEOBSERVE) and the national and local hubs. Its specific objectives are to develop a common platform for teachers and trainers for GEO-education and learning; to create a sense of community at national and European level among teachers with expertise in GEO-related topics and to recruit new ones; to stimulate exchanges among experts and support the creation of the GEO community; to develop national GEO-Academy hubs with the support of local entities and educational authorities, with a focus on climate change education and on digital, green and spatial skills; and to create a network of school-based GEO-community hubs that act as a central aggregator of training opportunities, as a promoter of community stakeholder involvement and as the implementation booster of the GEO-Academy resources.

The Work Package is organized into four tasks:

- **Task 4.1 —** Development of national GEO-Academy hubs and school community GEO-Hubs (the subject of this deliverable, D4.1).
- **Task 4.2 —** Development of the common virtual GEO-Observatory (GEOBSERVE), reported in D4.2.
- **Task 4.3 —** Community Building Support Mechanism (visionary workshops, practitioners' gatherings and activists' events), feeding directly into the long-term sustainability of the hub network.

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- **Task 4.4 —** GEO-Labs in schools, including the design and roll-out of the GEO-Kits, reported in D4.3.

2.3 Purpose of the Deliverable

Deliverable D4.1 reports on the establishment of the national GEO-Academy National Hubs, and of the school community GEO-Hubs (GEO-Labs) under Task 4.1. Concretely, this document presents:

- The methodology and selection criteria used to identify, recruit and formalise the hubs and GEO-Labs.
- A standardised description of each national hub, including the host partner(s), thematic specialisation, target audience and contact information.
- An inventory of the school community GEO-Hubs (GEO-Labs) established to date in each partner country.
- The mapping of stakeholders, networks and points of contact that connects the hubs to the broader educational ecosystem in each country.
- The interfaces between the hub network and the other project work packages.

D4.1 is not:

- The virtual platform that hosts the hubs — this is delivered as D4.2 (GEOBSERVE).
- The GEO-Kits and the catalogue of school-level activities — these are delivered as D4.3.
- A training implementation report — training events and pilot implementations are reported under WP5 (D5.1, D5.2) and under the Mid-term and Final reports.

2.4 Document Structure

This document is structured as follows:

- Chapter 3 sets out the methodology used to establish the GEO-Academy Hubs, including definitions, selection criteria and common identity elements.
- Chapter 4 presents the seven national GEO-Academy Hubs, one per partner country.
- Chapter 5 presents the school community GEO-Hubs (GEO-Labs) and an inventory per country, with cross-references to the GEO-Kits.
- Chapter 6 maps stakeholders, networks and national points of contact, aligning with D6.2.
- Chapter 7 documents the linkages between the hub network and other work packages, including GEOBSERVE.
- Chapter 8 reports on current status, sustainability and outlook, including the post-project governance of the hubs.
- Chapter 9 presents the conclusions.

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3 Methodology for the Establishment of the GEO-Academy Hubs

3.1 Definitions: GEO-Hub vs. School Community GEO-Hub (GEO-Lab)

To avoid ambiguity, this deliverable adopts the following definitions, which are used consistently across the document:

- **National GEO-Academy Hub (GEO-Hub):** an institutional centre, hosted by one or more consortium partners in each of the seven partner countries, that constitutes the national entry point for teachers and stakeholders, organises training events at local and national level, channels GEO-Academy resources to the school community and acts as the primary interface between GEO-Academy and national educational authorities. Each national hub is thematically anchored on one or more of the five GEO-Concepts according to the local expertise of the hosting partner(s).
- **School Community GEO-Hub (referred to as *GEO-Lab* throughout this document and on the GEOBSERVE platform):** a school or school cluster recruited to operate as the local arm of the hub network. GEO-Labs are anchored in schools and serve as the stage where educators and learners put into practice the use of GEO data, implement the methodologies acquired in training events and engage students and their communities in the use of the GEO-Kits. A GEO-Lab can be hosted by an individual school or by a central school serving a cluster of schools.

The two layers are complementary: national GEO-Hubs deliver training and curate resources, while GEO-Labs implement, test, and disseminate them in real classroom settings. Together they form a two-tier network in which the national hubs sit at the top of the training pipeline and the GEO-Labs at the operational front line.

3.2 Task 4.1 Actions Revisited

In accordance with the Grant Agreement, Task 4.1 articulates four foreseen actions:

- **(i) Analysis of existing GEO hubs** dedicated to spatial learning and sustainable development within schools or other educational authorities, in each of the seven partner countries. This analysis informed the selection of the consortium's host institutions and identified existing networks, infrastructure and stakeholder communities that could be leveraged by GEO-Academy.
- **(ii) Mapping of national points of contact for teachers**, so that any teacher in any of the partner countries has a clear, named contact at the national hub level. The mapping is summarised in Chapter 3 of this document and is publicly available on the GEO-Academy website and on the GEOBSERVE portal.
- **(iii) Identification of physical hosting options**. Each national hub is physically hosted by one or more consortium partners, leveraging existing facilities (teacher education colleges, universities, science centres, NGO premises) so that GEO-Academy does not need to build new infrastructure and can rely on institutional continuity.
- **(iv) Recruitment of schools and school clusters** to officially become GEO-Community Hubs / GEO-Labs. This action started with the recruitment of the first cohort of teachers who attended the first Summer School in Marathon, Greece (July 2024) and the Winter School in Austria (February 2025), and has been continuously expanded

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since through the Visionary Workshops, the Practitioners' Gathering events and the Call for Schools published by the consortium.

3.3 Selection Criteria for Partner-Led National Hubs

The seven national GEO-Hubs are hosted by consortium partners that are already active in spatial learning, teacher training, or space education. The criteria applied to their selection (and consolidated in the GEO-Hub Host Organizations document) include:

- **Institutional capacity and training accreditation:** partners that are formally recognised as teacher training centres in their country, or that have a long-standing institutional mandate to deliver continuous professional development (e.g. PHT in Austria, CPI in Cyprus, NUCLIO in Portugal, UC in Portugal, LU in Sweden, NTUA in Greece, PFE in Bulgaria).
- **Training experience and network reach:** demonstrated capacity to deliver face-to-face and online training, with established networks of pre- and in-service teachers (e.g. Ellinogermaniki Agogi's Seismolab network of 100 schools, Eurisy's pan-European space-policy network, OeWF's school-engagement programme).
- **Thematic fit with one of the five GEO-Concepts:** each partner has been chosen to anchor at least one of the five GEO-Concepts according to its local expertise (see Chapter 3).
- **Geographical coverage:** the seven national hubs are distributed across northern, central, southern and south-eastern Europe to ensure pan-European coverage. In countries like Greece, Austria and Portugal, additional locations and rural areas have been included to ensure a broader geographical distribution of activities and to extend coverage beyond the capital city regions.
- **Motivation and commitment:** national coordinators identified, in each country, organisations that could demonstrate motivation, competencies and willingness to take on the role of GEO-Hub host beyond the project's lifetime.

3.4 Selection Criteria for School-Level GEO-Labs

The recruitment of schools as GEO-Labs has been driven by the national coordinators, on the basis of the following criteria:

- **Demonstrated interest in geospatial technologies and in Education for Sustainable Development**, often evidenced by a teacher's prior participation in a GEO-Academy training event, summer or winter school.
- **Availability of basic infrastructure** (computer lab, internet connectivity, possibility to install the GEO-Kit) and **willingness to make space** — physical or institutional — for GEO-Lab activities.
- **Presence of at least one teacher prepared to take on the role of local GEO-Academy ambassador / leader**, in line with the peer-to-peer training philosophy of the project.
- A **balance**, within each country, between primary, lower-secondary and upper-secondary schools, with a deliberate effort to include vocational schools and schools in rural areas (e.g. islands, mountain areas).

The benefits and obligations of GEO-Labs are formalized in the dedicated Guidelines for GEO-Labs in Schools (annexed by reference to this deliverable). Benefits include access to

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accredited training, open access to all GEO-Academy resources, integration into the European network of GEO-Hubs and GEO-Labs, increased visibility and recognition for the school, and curriculum-development support. In return, schools commit to creating and actively maintaining a GEO-Lab, participating in training and pilot activities, sharing experiences via the GEOBSERVE platform, involving the wider community, and contributing to the project's evaluation and feedback loop.

3.5 Common Identity Elements

All hubs and GEO-Labs share a common identity, coordinated by the Dissemination team in WP6:

- **Use of the GEO-Academy logo and visual identity on all hub-related materials** (signs, certificates, presentations).
- **Reference to the project title and grant agreement number** (ERASMUS-EDU-2022-PEX-TEACH-ACA — GA No. 101104693) and acknowledgement of EU co-funding on all dissemination materials.
- **Use of the standard EU disclaimer** regarding the views expressed.
- **A common naming convention**: all national hubs are referred to as the "[Country] National GEO-Hub" and school community hubs are referred to as "GEO-Hub [school/location]" (or, equivalently, "GEO-Lab").
- **A common contact pattern:** the national hub coordinator is the single national point of contact for teachers seeking information, registration or support.

4 National GEO-Academy Hubs

This chapter presents, in a standardized format, the seven national GEO-Academy Hubs established under Task 4.1. For each hub, the following information is provided: host partner(s), country and city, thematic specialization (in terms of GEO-Concepts), target audience, links with national networks and educational authorities, and contact information. Table 3.1 at the end of the chapter provides a synthetic view of the seven hubs.

4.1 Austrian National GEO-Hub

The Austrian National GEO-Hub is coordinated jointly by the University College of Teacher Education Tyrol (PHT) and the Austrian Space Forum (OeWF). To ensure adequate national coverage, the hub operates from two complementary locations: a western node at PHT in Innsbruck, Tyrol, and an eastern node at OeWF's office in Vienna.

PHT is one of the 14 University Colleges of Teacher Education in Austria that are accredited for pre-service teacher training, continuing professional development and school development. As such, it can deliver formal, recognized CPD courses (announced via the official training catalogue) at primary and secondary level and across all subjects. Within the GEO-Academy, PHT has set up a dedicated 5-ECTS micro-credential course on the GEO-Academy training programme, embedded into a 30-ECTS university programme; this provides quality, transparency and cross-border recognition in line with the European Approach to Micro-Credentials. The PHT-hosted hub offers three training formats: short-format CPD courses (typically 3–4 hours in the afternoon), an extended package built around two school visits with a several-month implementation phase between, and online webinars.

The Vienna-based node at OeWF leverages the Austrian Space Forum's extensive experience in school engagement through space-themed workshops, science classes and collaborative projects. The node connects global challenges (sustainability, climate change, digital transformation) to the classroom through the lens of space exploration, in line with the Austrian national curriculum. Its offer is organized in three primary formats: space-themed CPD training; integrated school workshops with two trainer visits to each school (one to introduce the concept, one to follow up after implementation); and webinars and online training accessible across the region.

Thematic specialization: Earth Observation (EO), satellite applications and STEAM education with a space-exploration emphasis (GEO-Concepts 3 and 5), with additional offerings on cartography and spatial skills (GEO-Concepts 1 and 4).

National connections: the hub is connected to the Bildungsdirektion Tirol and the Bildungsdirektion Steiermark (regional boards of education), to the OeAD Agency for Education and Internationalisation, and to networks such as ÖKOLOG, IMST, MINT-Tirol, BINE-Tirol, Green Skills Austria, Ars Electronica – ESERO Austria, Klimabündnis Österreich and BOKU Vienna.

Target audience: pre-service and in-service teachers across primary and secondary education in Austria.

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- **Contact (Vienna node):** Seda Özdemir-Fritz, OeWF — education@oewf.org

4.2 Bulgarian National GEO-Hub

The Bulgarian National GEO-Hub is led by the Professional Forum for Education (PFE) in Sofia. PFE has been certified since 2016 by the Bulgarian Ministry of Education as one of approximately 80 organizations licensed nationally to deliver credit-bearing in-service teacher training, with 31 educational modules approved (covering innovative school models, emotional intelligence, project development, non-formal education and coaching). PFE holds an ISO certification for quality assurance and trains, in a typical year, more than 300 teachers and youth workers in Bulgaria.

Within GEO-Academy, the Bulgarian hub focuses on the thematic areas of the Unified Competence Framework (UCF) and on targeted training activities on GIS, map storytelling and STEAM, robotics and coding (corresponding to e-modules 2, 4, 5 and 6). Training is delivered through the established channels of PFE, in particular the National Teacher Academy organized annually in February in Bulgaria. The hub's planned and delivered activities include a 3-hour virtual workshop on the GEO-Academy training and teaching resources (November 2024), a 3-hour face-to-face workshop on Map Storytelling in the frame of the National Teacher Academy (February 2025), a 3-hour face-to-face workshop on STEAM, coding and robotics for pre-service teachers at Sofia University (2025), a presentation of the project and its results at the National Teacher Academy (February 2025 and February 2026), a 3-hour face-to-face workshop on STEAM, coding and robotics within the National Teacher Academy (February 2026), and a 3-hour face-to-face workshop on Map Storytelling for pre-service teachers at Sofia University in 2026.

Thematic specialization: STEAM education, robotics and coding (GEO-Concept 5); map storytelling (GEO-Concept 4); GIS tools and techniques (GEO-Concept 2).

National connections: the National STEM Center at the Bulgarian Ministry of Education and Science; the Regional Governance of Education (RUO Sofia-city); academic partners (Sofia University); private and NGO providers active in Bulgarian education (Center for Creative Training, Minu Balkanski Foundation, Steampowered.team, Technocrats, Education Without Backpacks, Sci-High, Ucha.se, Institute for Progressive Education, Robotika, PARA, STEM Education Bulgaria, EduTechFlag).

Target audience: pre-service and in-service teachers across all subjects, with a particular focus on STEM/STEAM teachers.

- **Contact:** Yuliya Andzhekarska, PFE — juliajurieva@yahoo.com

4.3 Cypriot National GEO-Hub

The Cypriot National GEO-Hub is coordinated jointly by the Cyprus Pedagogical Institute (CPI) and European University Cyprus (EUC), in Nicosia. CPI is accredited by the Ministry of Education, Sports and Youth of the Republic of Cyprus as the national centre for in-service teachers' professional development and learning at pre-primary, primary and secondary level.

CPI also plays a key role in developing teacher competency frameworks aligned with international, European, and local standards. EUC contributes with its academic expertise, particularly through its School of Humanities, Social and Education Sciences, and through its work with pre-service teachers.

Training on Geo-Concepts is delivered through three formats: (a) optional face-to-face or online training courses (typically 12–15 hours of instruction spread across 4–5 afternoons, announced via the official circulars of the Primary and Secondary Education Directorates); (b) school-based training delivered directly within a school setting to the whole school team or to small subject-area groups, with the trainer making 3–4 visits to monitor and support teachers during implementation; and (c) one- or two-day educational conferences providing an overview of Geo-Concepts and offering hands-on workshops.

Thematic specialization: GIS, tools and techniques (GEO-Concept 2); visualization and synthesis of information through map storytelling (GEO-Concept 4); STEAM education, robotics and coding (GEO-Concept 5); cartography and spatial skills (GEO-Concept 1).

National connections: Ministry of Education, Sports and Youth of Cyprus, including the Unit of Education for the Environment and Sustainable Development (EESD), an institutional GEO-Hub in its own right; Department of Electronic Communications (Deputy Ministry of Research, Innovation and Digital Policy); Cyprus University of Technology — Faculty of Geotechnical Sciences and Environmental Management; Cyprus Marine and Maritime Institute (CMMI); Department of Environment and Geological Survey Department (Ministry of Agriculture, Rural Development and the Environment).

Target audience: pre-service and in-service teachers from pre-primary through secondary education, school directors, school inspectors.

- **Contact:** Eleni Papageorgiou, CPI — papageorgiou.e@cyearn.pi.ac.cy; Loucas Louca, EUC — L.Louca@euc.ac.cy

4.4 French National GEO-Hub

The French National GEO-Hub is hosted by Eurisy (EUS) in Paris. Eurisy is a non-profit association founded in 1989 whose members include most European space agencies and governmental space offices, as well as international organizations dealing with space matters. Eurisy's mission is to bridge space and society, and, in over 30 years, the association has built a vast network among space and non-space communities. The proximity to CNES (the French National Centre for Space Studies) and ESA (the European Space Agency), both headquartered in Paris, gives the French hub direct access to Earth Observation expertise and satellite imagery resources.

The Geo-Academy training programme at the French GEO-Hub is delivered in the form of a series of 3-hour online workshops, conducted in collaboration with other consortium partners, in order to maximize reach across the country. Sessions delivered or planned in the first implementation period include: Storytelling in the Classroom (November 2024, in collaboration with SPOTIN — Map Storytelling); Urban Sustainability, GIS and Earth

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Observation via the Living Labs Approach (March 2025, in collaboration with NTUA — Earth Observation and GIS); and Interdisciplinary Teaching through EO (June 2025, in collaboration with PHT — Earth Observation).

Thematic specialization: visualization and synthesis of information through map storytelling (GEO-Concept 4); cartography and spatial skills (GEO-Concept 1); GIS tools and techniques (GEO-Concept 2); Remote Sensing and Earth Observation (GEO-Concept 3).

National connections: Planète Sciences (national association for science and technology outreach for young people); APMEP (Association des Professeurs de Mathématiques de l'Enseignement Public); CNES; ESA; the wider Eurisy membership network.

Target audience: pre-service and in-service teachers across France, with particular emphasis on those involved in earth science, geography and STEM teaching. The French hub also plays a special role in the project as the host of the final International Conference (in Paris).

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4.5 Greek National GEO-Hub

The Greek National GEO-Hub is coordinated by three consortium partners: Ellinogermaniki Agogi (EA), the National Technical University of Athens (NTUA) and Spotlight on Innovation (SPOTIN). The hub is anchored at the EA Seismolab in Pallini (Attica) — a school network already operating 100 seismographs across European schools — and benefits from the geospatial expertise of NTUA's Cartography Laboratory (School of Rural, Surveying and Geoinformatics Engineering) and the dissemination capabilities of SPOTIN, a non-profit specialized in digital maps, geospatial information and geo-storytelling.

EA leads the hub at primary and lower-secondary levels, where the Greek curriculum offers flexibility for project-based learning through dedicated skill labs. The training programme is delivered jointly by EA, NTUA and SPOTIN and includes in-person workshops at the EA premises, online webinars and a strong link with the Greek Summer School (held in Marathon in July 2024, the first international training event of the project). NTUA's Cartography Laboratory specifically supports pre-service teacher training, organizing 2–3-hour workshops on cartography fundamentals at the university and 1-hour introductory sessions on GEO-Labs, plus remote supervision for pre-service teachers developing Geo-Activities for secondary education.

NTUA is also one of the 24 KEDIVIM / Centers for Education and Lifelong Learning in Greece that are accredited for pre-service and in-service teacher training and continuing professional development. As such, NTUA can deliver formal, recognized CPD courses (announced via the official KEDIVIM training catalogue) at primary and secondary level and across all subjects. Within the GEO-Academy, NTUA has set up a dedicated 5-ECTS micro-credential course on the GEO-Academy training programme, which is anchored in the institutional accreditation scheme of KEDIVIM. Through this mechanism, the project results are not left as a one-off output, but are translated into two accredited E-modules (Cartography and Spatial Thinking – GIS for Earth Sciences) that have already been approved for inclusion in NTUA's training

programmes for the 2026–2027 cycle. Both courses have been extensively tested during the National Hub training and piloting activities for years 2 and 3. This provides a stable framework for continuation, visibility, and uptake, while also ensuring that the educational and pedagogical content developed within GEO-Academy remains embedded in a formal university structure with recognised quality assurance procedures and long-term administrative and technical support.This provides quality, transparency and cross-border recognition in line with the European Approach to Micro-Credentials.

The Greek hub has also begun to expand geographically beyond Attica through identified potential satellite locations in Northern Greece (Thessaloniki area), the North Aegean and the Dodecanese (see Section 3.8 in D3.2), as well as through the GEO-Kit activities in schools in Cyclades islands (Paros and Antiparos rural schools).

Thematic specialisation: Cartography and Spatial Thinking (GEO-Concept 1), GIS, tools and techniques (GEO-Concept 2); Remote Sensing, EO and satellite applications (GEO-Concept 3); visualisation and synthesis of information through map storytelling (GEO-Concept 4). The hub also organizes the international Eratosthenes Experiment in collaboration with schools across Europe.

National connections: Institute of Educational Policy (IEP); Regional Directorates of Primary and Secondary Education of Attica, Western Greece and Central Macedonia; SeismoLab School Network; BEYOND Center of EO Research & Satellite Remote Sensing (National Observatory of Athens); Hellenic Geographic Society - HellasGIs (non-profit GIS network); ESERO Greece (ESA Education Office Resource Office, hosted at Aristotle University Thessaloniki); STEM Education Greece; WRO Hellas; Department of Geography of the University of the Aegean; Marathon Data Systems (Esri distributor); Open Schools for Open Societies network.

Target audience: pre-service and in-service teachers, with strong outreach to teachers at primary, lower-secondary, upper-secondary and technical/vocational levels.

- **Contact:** Angelos Lazoudis, EA — angelos@ea.gr

4.6 Portuguese National GEO-Hub

The Portuguese National GEO-Hub is coordinated jointly by Núcleo Interativo de Astronomia e Inovação em Educação (NUCLIO) and the University of Coimbra (UC). NUCLIO is an official training centre recognized by the Portuguese Ministry of Education, with a long-standing track record of training teachers in innovative methodologies and of supporting student-centred learning across multiple Horizon and Erasmus+ projects. UC, founded in 1290, is one of Portugal's leading universities, with strong commitments to the UN Sustainable Development Goals and to innovative pedagogy.

Within GEO-Academy, the work is divided so that UC focuses on the training of pre-service teachers and NUCLIO on the training of in-service teachers. NUCLIO is also responsible for the establishment of additional Portuguese GEO-Labs (a minimum of six is planned, covering Lisbon, Porto, Coimbra, Madeira and other regions), coordinated by the teachers who

attended the first Summer School in Marathon and the Winter School in Austria. A nationwide teacher training program, "Sustainability and Citizenship", has been delivered during the 2024-25 academic year, supporting curricular integration of citizenship and sustainability topics across disciplines through the Whole-School Approach.

Sessions delivered in the first implementation year included: the opening workshop "Reducing the Impact of Heat Waves through Nature-Based Solutions" (with NTUA and EA, using Sentinel-2 and Sentinel-3 imagery, NDVI and land-surface temperature products, and web-mapping tools); a 5-hour seminar at UC entitled "Geo-Academy: Geo-Hub for Teachers in Europe" for pre-service teachers; two events titled "Sustainability Citizenship: students as agents of change" organized by NUCLIO in Porto and Coimbra; and additional Visionary Workshops in Oeiras, Faro, Lisboa - Póvoa de Santa Iria, Porto, Fundão, Coimbra and Chaves (January–February 2025).

Thematic specialisation: GIS, tools and techniques (GEO-Concept 2); Remote Sensing, EO and satellite applications (GEO-Concept 3); cartography and spatial skills (GEO-Concept 1); visualisation and synthesis of information through map storytelling (GEO-Concept 4). Spatial Data Acquisition and Processing constitute the planned national event theme.

National connections: Associação Portuguesa para Sistemas de Informação Geográfica; Instituto de Geografia e Ordenamento do Território (IGOT - ULisboa); Associação Portuguesa de Geógrafos and Associação Portuguesa de Geólogos; ASPEA - Associação Portuguesa de Educação Ambiental; CITEUC (Centre for Earth and Space Research of UC, host of the Coimbra GEO-Lab); Centro de Informação Geoespacial do Exército; Direção Geral do Território; Faculdade de Ciências da Universidade de Lisboa; Universidade do Porto - DGAOT; private sector partners (TopoGIS, GeoPoint, Mapidea, NaturalGIS, GIS Tree, etc.).

Target audience: pre-service teachers (via UC) and in-service teachers (via NUCLIO), with the Portuguese hub coordinating WP4 across the consortium as Work Package leader.

- **Contact:** Gustavo Rojas, NUCLIO — gustavo.rojas@nuclio.org

4.7 Swedish National GEO-Hub

The Swedish National GEO-Hub is hosted by Lund University (LU), through its Centre of Geographical Information Systems and its Department of Physical Geography and Ecosystem Science. Lund University was the first university in Sweden to offer a comprehensive GIS programme and currently runs three MSc programmes and a PhD programme in Geographical Information Science. The principal physical location of the hub is Vattenhallen Science Centre at Lund University, an experiential science centre visited every day by approximately 150 students of all ages and equipped with classrooms and multimedia resources. A second node has been established at the Science Centre Helsingborg, also part of Lund University.

Training is delivered through workshops, webinars and practical, lab-based sessions, with cross-disciplinary collaboration and strong industry ties. Following the GEO-Academy Winter School in February 2025, a 3-hour event was organized in spring 2025 for high school teachers in the Lund area, introducing the training materials and laying the groundwork for school-

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based follow-up events. A nationally relevant focus area is responding to the shortage of skilled professionals in geodata and geotechnologies, in line with the national campaign "Stop Guessing, Choose Geodata" launched in February 2024 by Geoforum Sverige and partners.

Thematic specialisation: GIS, spatial analysis and Remote Sensing/EO (GEO-Concepts 2 and 3); with a structured collaboration with Malmö University on the Unified Competence Framework for pre-service teachers.

National connections: Skolverket (Swedish National Agency for Education); Lantmäteriet "Geoskolan" (the Swedish Mapping Authority's national geo-education resource); Geografilärarnas riksförening (National Association for Geography Teachers); SCB (National Statistics Bureau); Geoforum Sverige; SSAG (Swedish Society for Anthropology and Geography); Naturskolan in Lund; Sveriges lärare (Swedish Teachers' Union); science teacher networks; National Swedish Science Centres Network (20 centres).

Target audience: pre-service and in-service teachers at upper-secondary and lower-secondary levels, with the Malmö University collaboration extending the reach to pre-service teachers in the wider region.

- **Contact:** Jean-Nicolas Poussart, Lund University — jean-nicolas.poussart@nateko.lu.se

4.8 Synthesis of the National Hubs

Tables 4.1 and 4.2 below provide a synthetic view of the seven national GEO-Hubs activities during the lifetime of the project.

In particular, all national hubs established a substantial and geographically distributed infrastructure: roughly 52 GEO-Labs across the consortium, more than 100 stakeholders mapped, and 38 events, including visionary, practice reflection and summative (GEO-Activists) workshops delivered to approximately 634 participants. Every hub built on a common backbone of pre- and in-service teacher engagement, and collectively the network covered the full span of the five GEO-Concepts, from cartography and spatial skills (GC1) through GIS (GC2), remote sensing and Earth observation (GC3), map storytelling (GC4), and STEAM/robotics (GC5). GC2 and GC4 recur in almost every hub and effectively shaped the shared methodological core, whereas the STEAM/robotics strand (GC5) was tested in several hubs (including Austria, Bulgaria, Cyprus, and Portugal), reflecting deliberate thematic specialisation rather than uniform replication. A few hubs also extended their reach beyond the classroom: Cyprus engaged school directors and inspectors, and Greece worked across all educational levels.

Also, the pronounced variation in scale and strategy between hubs is highlighted. For example, Austria, Greece, Cyprus and Portugal emerge as key driving forces of the network, but in contrasting ways. Cyprus and Greece delivered the highest engagement by participation, with 17 events reaching 362 participants and 28 GEO-Labs established. Portugal ran the most events (13), achieved the broadest thematic coverage (all five GEO-Concepts) and by far the most extensive stakeholder mapping (44). In contrast, France, Bulgaria and Sweden operated

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as compact hubs, with France's distinct value lying in its role as host of the final Conference rather than in event volume.

Reading across the event typology shows a network that is rapidly building its full engagement potential. Visionary Workshops were adopted universally, delivered by all seven hubs within the first 15 months of the project, an impressive pace that established a common entry point across the consortium countries. Practitioners' Gatherings have already taken root in five of the seven countries (Austria, Bulgaria, Cyprus, Greece, and Portugal), marking a clear and growing shift from initial awareness-raising toward sustained, hands-on practitioner communities. The more advanced GEO-Activists and Summative workshops format has also been successfully piloted, with Portugal leading the way through three events and France demonstrating its viability, an encouraging early foothold for the network's most ambitious engagement model. Taken together, the results show a functioning, energetic seven-country network with clear successes with Cyprus and Greece excelling in depth of participation, Portugal and Austria in thematic breadth and stakeholder embedding, and every hub contributing GEO-Lab infrastructure and events that provide a strong platform for scaling activity in the project's next phase.

Country	Host partner(s)	City / nodes	Thematic specialisation (GEO-Concepts)	Audience	GEO-Labs	Stakeholders mapped
Austria	PHT + OeWF	Innsbruck (west) and Vienna (east)	EO and satellite imagery (GC3); STEAM with space-education angle (GC5); cartography and spatial skills (GC1)	Pre- and in-service teachers	7	12
Bulgaria	PFE	Sofia	STEAM, robotics, coding (GC5); map storytelling (GC4); GIS (GC2)	Pre- and in-service teachers	4	15
Cyprus	CPI + EUC	Nicosia	GIS (GC2); map storytelling (GC4); STEAM/robotics (GC5);	Pre- and in-service teachers; school directors	19	6

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Country	Host partner(s)	City / nodes	Thematic specialisation (GEO-Concepts)	Audience	GEO-Labs	Stakeholders mapped
			cartography (GC1)	and inspectors		
France	Eurisy (EUS)	Paris	Map storytelling (GC4); cartography (GC1); GIS (GC2); EO (GC3)	Pre- and in-service teachers; host of final Conference	1	2
Greece	EA + NTUA + SP	Pallini/Athens; potential satellites in Thessaloniki, North Aegean, Dodecanese	Cartography (GC1); GIS (GC2); RS/EO (GC3); map storytelling (GC4)	Pre- and in-service teachers across all levels	9	13
Portugal	NUCLIO + UC	São Domingos de Rana; Coimbra; six+ GEO-Labs across the country	Spatial data acquisition (GC2); RS/EO (GC3); cartography (GC1); map storytelling (GC4); STEAM/robotics (GC5);	UC for pre-service; NUCLIO for in-service	7	44
Sweden	Lund University (LU)	Lund (Vattenhallen Science Centre); Helsingborg (Science Center)	GIS and spatial analysis (GC2); RS/EO (GC3)	Pre- and in-service teachers	5	10

Geographical distribution and the live list of hubs are maintained on the GEO-Academy website (https://geoacademy.eu/) and on the GEOBSERVE portal (https://portal.geoacademy.eu/). A map visualizing

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the location of the seven national hubs and their physical nodes will be added to the public version of this deliverable on the project website.

Table 4.2: Visionary Workshops, Practitioners' Gathering & GEO-Activists Events delivered per country

Country	Visionary Workshops	Practioner's Gatherings	GEO-Activists Events	Total Events	Total Participants
Austria	2	1		3	54
Bulgaria	1	1		2	45
Cyprus	8	3		11	336
France	1		1	2	12
Greece	3	3		6	26
Portugal	7	3	3	13	147
Sweden	2			2	14

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5 School Community GEO-Hubs (GEO-Labs)

5.1 Definition and Role of GEO-Labs

The school community GEO-Hubs — referred to as GEO-Labs throughout this document and on the GEOBSERVE platform — are the local arm of the hub network. Anchored in schools, they support peer-to-peer training among teachers, host student-facing activities and provide the physical and human environment for the use of the GEO-Kits (D4.3) and of the GEO-Academy e-modules (WP2/WP3). They are, in short, the place where the project's resources are put into practice.

GEO-Labs operate following a Living Lab pedagogical methodology: they create an experimental space within the school where students, teachers, researchers and external stakeholders collaborate to address real-world sustainability challenges using geospatial technologies. As such, GEO-Labs are not simply equipment rooms — they are issue-driven, real-world environments where sustainable development and innovative teaching practices intersect. A GEO-Lab can be hosted in a primary school, in a secondary school, in a vocational school or in a science centre; in some cases, a single GEO-Lab can serve a cluster of schools that share the resources.

5.2 Inventory of GEO-Labs per Country

Tables 4.1–4.7 list the GEO-Labs established to date in each of the seven partner countries. The information is drawn from the consortium's internal GEO-Hubs and GEO-Labs registry (updated continuously) and reflects the situation at the time of submission of this deliverable. The live list is maintained on the GEO-Academy website and on the GEOBSERVE portal.

Each entry indicates the GEO-Lab name (or school name), the city, the type of organization, the main audience (typically in-service teachers, occasionally including students or pre-service teachers) and the contact person. Coordination is via the relevant national hub.

5.2.1 Austria — GEO-Labs

GEO-Lab / Organization	City	Type	Audience
Geo-Hub BRG-Reutte	Reutte	Federal secondary school	In-service teachers
Geo-Hub PMS-PH-Wien	Vienna	Federal secondary school	In-service teachers
Geo-Hub BRG/BORG-Schwaz	Schwaz	Federal secondary school	In-service teachers
Geo-Hub PMS-PH-Ibk	Innsbruck	Federal secondary school	In-service teachers

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GEO-Lab / Organization	City	Type	Audience
Geo-Hub Volksschule Mutters	Mutters	Federal primary school	In-service teachers
Geo-Hub OeWF Wien (partner-hosted)	Vienna	NGO	Pre- and in-service teachers
GRG II Zirkusgasse	Vienna	Federal secondary school	In-service teachers (OeWF-led training)

5.2.2 Bulgaria — GEO-Labs

GEO-Lab / Organization	City	Type	Audience
Geo-Hub PPMG "Akad. Ivan Tsenov" (Letter of Intent)	Vratsa	School	In-service teachers
54 School "Sv. Ivan Rilski"	Sofia	School	In-service teachers, students
134 School "Dimcho Debelyanov"	Sofia	School	In-service teachers, students
Innovative High School "Metodiy Draginov"	Draginovo	School	In-service teachers, students

5.2.3 Cyprus — GEO-Labs

GEO-Lab / Organization	City	Type	Audience
Geo-Hub Ayia Napa Primary School	Ayia Napa (Ammochostos)	Primary education	In-service teachers

GEO-Lab / Organization	City	Type	Audience
Geo-Hub Gymnasio Kokkinoxorion Panou Ioannou	Frenaros (Ammochostos)	Secondary education	In-service teachers
Geo-Hub Unit of Education for the Environment and Sustainable Development (EESD)	Nicosia	Horizontal structure, Ministry of Education	In-service teachers
Geo-Hub Gymnasio Drosias	Larnaca	Secondary education	In-service teachers
Geo-Hub Periferiako Gymnasio Livadion	Larnaca	Secondary education	In-service teachers
Geo-Hub Periferiako Gymnasio Kokkinotrimithias	Nicosia	Secondary education	In-service teachers
Geo-Hub Periferiako Gymnasio Kitiou	Larnaca	Secondary education	In-service teachers
Geo-Hub Periferiako Gymnasio Agiou Mamantos Trachoniou	Limassol	Secondary education	In-service teachers
Geo-Hub Periferiako Gymnasio Agias Barbaras	Nicosia	Secondary education	In-service teachers
Geo-Hub Pagkyprion Gymnasion	Nicosia	Secondary education	In-service teachers
Geo-Hub Lyceum Soleas	Nicosia	Secondary education	In-service teachers
Geo-Hub Lyceum Latsion	Nicosia	Secondary education	In-service teachers
Geo-Hub Lyceum Archaggelou Apostolos Markos	Nicosia	Secondary education	In-service teachers

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GEO-Lab / Organization	City	Type	Audience
Geo-Hub Lyceum Agiou Georgiou Lakatameias	Nicosia	Secondary education	In-service teachers
Geo-Hub Lyceum Agias Fylaxeos	Limassol	Secondary education	In-service teachers
Geo-Hub Elementary School Mathiati	Nicosia	Primary education	In-service teachers
Geo-Hub Gymnasio Paralimniou	Paralimni (Ammochostos)	Secondary education	In-service teachers
Geo-Hub Gymnasio Latsion	Nicosia	Secondary education	In-service teachers
Geo-Hub European University Cyprus — School of Humanities, Social and Education Sciences	Nicosia	University (EUC)	Pre-service teachers

5.2.4 France — GEO-Labs

GEO-Lab / Organization	City	Type	Audience
GEO-Hub Paris	Paris	Non-profit (Eurisy)	Pre- and in-service teachers

5.2.5 Greece — GEO-Labs

GEO-Lab / Organization	City	Type	Audience
GEO-Hub Seismolab (network of 100 schools)	Pallini	School (EA)	In-service teachers
American Farm School	Thessaloniki	Secondary education	In-service teachers

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GEO-Lab / Organization	City	Type	Audience
1o Protypo GEL Manolis Andronikos	Thessaloniki	Secondary education	In-service teachers
3rd Junior High School of Argyroupolis	Argyroupoli	Secondary education	In-service teachers
3rd Gymnasium of Ano Liosia	Ano Liosia	Secondary education	In-service teachers
1st Lyceum of Chios	Chios	Secondary education	In-service teachers
Secondary school of Antiparos	Antiparos	Secondary education	In-service teachers
Secondary school of Parikia	Paros	Secondary education	In-service teachers
Secondary school of Archilochos	Paros	Secondary education	In-service teachers

5.2.6 Portugal — GEO-Labs

GEO-Lab / Organization	City	Type	Audience
GEO-Hub ChangeMakers (partner)	São Domingos de Rana	NGO (NUCLIO)	In-service teachers
GEO-Hub Torres Novas — Agrupamento de Escolas Gil Paes	Torres Novas	Secondary school	In-service teachers
GEO-Hub Coimbra — CITEUC	Coimbra	University (UC partner)	In-service teachers; Pre-service teachers

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GEO-Lab / Organization	City	Type	Audience
GEO-Hub Paredes — Agrupamento de Escolas de Vilela	Paredes	Secondary school	In-service teachers
GEO-Hub Carcavelos — St. Julian's	Carcavelos	Primary/Secondary school	In-service teachers
GEO-Hub Beja	Beja	Primary/Secondary school	In-service teachers
GEO-Hub Funchal — EB 2,3 Dr. Horácio Bento de Gouveia	Funchal (Madeira)	Primary/Secondary school	In-service teachers

5.2.7 Sweden — GEO-Labs

GEO-Lab / Organization	City	Type	Audience
GEO-Hub Vattenhallen	Lund	Science Centre (Lund University)	In-service teachers
Nils Fredriksson Gymnasium	Svedala	Public school	In-service teachers
Bilingual Montessori School of Lund (BMSL)	Lund	Private school	Students and teachers
GEO-Hub Science Center Helsingborg	Helsingborg	Science Centre (Lund University)	In-service teachers
Hedda Anderssongymnasiet Lund	Lund	Public school	In-service teachers and students

5.3 Linkage with GEO-Kits (D4.3)

Each GEO-Lab is the operational environment for the deployment of the GEO-Kits, the educational toolkits being developed under Task 4.4 and reported in Deliverable D4.3. The GEO-Kits employ programmable boards based on Arduino UNO R3 and BBC micro:bit v2, complemented by sensors (DHT11 temperature/humidity, BME280, NEO-6M GNSS geolocation, MQ-series air-quality sensors, particulate-matter dust sensors and an Arduino

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SD-card shield). Five hands-on activities have been designed, each connected to one or more GEO-Concepts, and have been piloted both in international training events (Winter School in Austria) and in national-level activities. The detailed description of each kit component, its electronic schematics, the code resources, and the lesson plans are out of scope for D4.1 and are reported in D4.3.

5.4 Examples of Activities Run in the GEO-Labs

To illustrate, without duplicating D4.3 and D5.2, the breadth of activities being implemented in the GEO-Labs, a representative subset is summarized below. EA's network of Greek GEO-Labs has run, among others:

- "The Fires of Greece" (RS/EO; ~50 students);
- "Migratory Bird Tracking" (120 students);
- "The Sustainable School Trail" (cartography; 120 students);
- "Urbanisation" (120 students);
- "Offshore Wind Farm" (GIS; 110 students);
- "Sea Ice from Space" (RS/EO);
- "GEO-Religion" (cartography; 130 students); and
- "Mapping My Schoolyard with Arduino" (STEAM/robotics; 115 students).
- "Building a Seismograph" (STEAM/robotics; 53 students).
- "Cartography & GIS Peddy Paper" (STEAM/robotics; 53 students).

The Cypriot GEO-Labs have run activities including:

- "EcoTrakker: Green Route Challenge — Smart and Sustainable Park";
- "Flying Forest Hero";
- "Prickly Pears in Crisis: Mapping the Enemy and Designing the Future";
- "When the Earth Moves: Earth Dynamics, Natural Hazards and Human Adaptation";
- "The Night that Disappears: Mapping Light Pollution and Designing Sustainable Solutions";
- "When the Sea Meets the Sky: Tornadoes in Cyprus";
- "Nicosia through its Buildings: A Walk through Architectural Memory"; and
- "Cool School Map: Sustainable Solutions for a Cooler School".

Detailed accounts of these activities — student numbers, teachers involved, GEO-Concepts addressed and lesson plans — are deferred to D4.3 (GEO-Kits) and to the WP5 reporting (D5.2 and Mid-term/Final reports).

5.5 KPI Alignment with D6.2

Deliverable D6.2 (Dissemination Plan) establishes the contractual target of at least one GEO-Lab per partner country. As shown in Sections 4.2.1–4.2.7, this target has been comfortably exceeded: as of the reporting date, the project has established roughly 50 GEO-Labs across the seven partner countries, ranging from one in France (which is being actively expanded)

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to nineteen in Cyprus. The aggregate breakdown by country is summarized in Table 4.8 below.

Country	**Number of GEO-Labs established**	**KPI status (target: ≥1 per country)**
Austria	7	Achieved
Bulgaria	4	Achieved
Cyprus	19	Achieved
France	1 (expansion in progress)	Achieved
Greece	9 (plus Seismolab network of 100 schools)	Achieved
Portugal	7	Achieved
Sweden	5	Achieved
Total	**~52 GEO-Labs (excluding Seismolab affiliates)**	**Achieved across all 7 countries**

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6 Mapping of Stakeholders, Networks and Points of Contact

6.1 Letters of Intent and Memoranda of Understanding

Each national hub has formalized — or is in the process of formalizing — its relationship with the schools and other organizations participating as GEO-Labs. Two main instruments have been used: Letters of Intent, signed at the moment when the school commits to becoming a GEO-Lab, and, where required by national rules, formal Memoranda of Understanding (MoUs) between the host partner and the school authority. Examples include the Letter of Intent signed with PPMG "Akad. Ivan Tsenov" in Vratsa (Bulgaria); the partner agreement linking OeWF and selected Austrian schools (e.g., GRG II Zirkusgasse, Vienna); the partner agreement between NUCLIO (NGO and accredited training centre) and several Portuguese schools (Torres Novas, Paredes — pending formal agreement; Carcavelos, Beja, Funchal — joining); and the affiliations with the Cypriot Ministry of Education's Unit of Education for the Environment and Sustainable Development. The corresponding files are archived by NUCLIO as WP4 leader and are accessible to the EACEA upon request.

6.2 Per-country Points of Contact for Teachers

The mapping below provides, for each partner country, the named national point of contact — the entry door for any teacher seeking information about GEO-Academy in that country. This information is also published on the GEO-Academy website and on the GEOBSERVE portal and supersedes any superseded list.

Country	Hosting organization and city	Point of contact (name and email)
Austria	PHT, Innsbruck (west) — OeWF, Vienna (east)	Klaus Albrecht — n.albrecht@ph-tirol.ac.at; Seda Özdemir-Fritz — education@oewf.org
Bulgaria	Professional Forum for Education (PFE), Sofia	Yuliya Andzhekarska — juliajurieva@yahoo.com
Cyprus	Cyprus Pedagogical Institute (CPI), Nicosia	Eleni Papageorgiou — papageorgiou.e@cyearn.pi.ac.cy
France	Eurisy (EUS), Paris	Žaklin Butinar — zaklin.butinar@eurisy.eu
Greece	Ellinogermaniki Agogi (EA), Pallini	Angelos Lazoudis — angelos@ea.gr
Portugal	NUCLIO, São Domingos de Rana	Gustavo Rojas — gustavo.rojas@nuclio.org

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Country	Hosting organization and city	Point of contact (name and email)
Sweden	Lund University, Lund	Jean-Nicolas Poussart — jean-nicolas.poussart@nateko.lu.se

6.3 Cross-Reference to the WP6 Stakeholder Map

A detailed and continuously updated stakeholder map is maintained under WP6 and is published as Annex 1 of D6.2 (Dissemination Plan). To avoid duplication, this deliverable provides only a country-by-country summary of the main stakeholder categories with examples; the full stakeholder list (with URLs and contact details) is in the WP6 Annex.

Country	Main stakeholder categories (representative examples)
Austria	School networks (ÖKOLOG, IMST, MINT-Tirol, BINE-Tirol); Boards of Education of Tyrol and Styria; OeAD; Klimabündnis Österreich; Umweltdachverband; Ars Electronica — ESERO Austria; Green Skills Austria; BOKU Vienna.
Bulgaria	National STEM Center at the Ministry of Education and Science; Regional Governance of Education (Sofia-city); Center for Creative Training; Minu Balkanski Foundation; Steampowered.team; Technocrats; Education Without Backpacks; Sci-High; Ucha.se; Institute for Progressive Education; Robotika; PARA; STEM Education Bulgaria; EduTechFlag.
Cyprus	Department of Electronic Communications (Deputy Ministry of Research, Innovation and Digital Policy); Cyprus University of Technology — Faculty of Geotechnical Sciences and Environmental Management; Department of Environment and Geological Survey Department (Ministry of Agriculture, Rural Development and the Environment); Unit of Education for the Environment and Sustainable Development; Cyprus Marine and Maritime Institute (CMMI).
France	Planète Sciences; APMEP (Association of Mathematics Teachers in Public Education); CNES; ESA; the wider Eurisy membership.
Greece	Institute of Educational Policy (IEP); Regional Directorates of Primary and Secondary Education (Attica, Western Greece, Central Macedonia); SeismoLab network; BEYOND Center of EO Research & Satellite Remote Sensing; Hellenic Geogpraphical Society - ESERO Greece; STEM Education Greece; WRO Hellas; Department of Geography of the University of the Aegean; Marathon Data Systems (Esri).

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Country	Main stakeholder categories (representative examples)
Portugal	APSIG (Sistemas de Informação Geográfica); IGOT-ULisboa; Associação Portuguesa de Geógrafos; Associação Portuguesa de Geólogos; ASPEA; Direção-Geral do Território; Centro de Informação Geoespacial do Exército; Faculdade de Ciências da Universidade de Lisboa (DEGGE); Universidade do Porto (DGAOT); Universidade do Minho – Departamento de Geografia; CITEUC; private GIS sector (TopoGIS, GeoPoint, NaturalGIS, GIS Tree, Mapidea and others).
Sweden	Skolverket (National Agency for Education); Lantmäteriet (Swedish Mapping Authority) — "Geoskolan"; Geografilärarnas riksförening; SCB (National Statistics Bureau); Geoforum Sverige; SSAG; Naturskolan Lund; Vattenhallen Science Centre; Sveriges lärare; networks for science and natural-science teachers; National Swedish Science Centres Network.

6.4 KPI Alignment with D6.2

Deliverable D6.2 sets the target of 30 stakeholders mapped. The stakeholder mapping consolidated in WP6 (and reflected in summary form in Section 6.3 above) comfortably exceeds this target, with more than 80 distinct organizations and institutional networks identified across the seven partner countries. The KPI is therefore considered as achieved.

Beyond the headline figure, the value of this result lies in the breadth and quality of the network assembled since it spans across national ministries and education authorities, regional and municipal education boards, universities and research institutes, national mapping and statistical agencies, science centres, professional and teacher associations, and private-sector GIS and EO providers and geospatial experts. Every partner country has contributed to this map, ensuring that the engagement base is genuinely distributed across the consortium rather than concentrated in a few hubs, and several countries have already established links to influential system-level actors (such as national STEM centres, institutes of educational policy, and national mapping authorities) that can amplify the project's reach and support its long-term sustainability.

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7 Linkages with the GEOBSERVE Platform and Other Work Packages

7.1 Linkage with D4.2 (GEOBSERVE)

The hub network and the GEOBSERVE platform are the institutional and the digital faces of the same project ambition. Each national hub and each GEO-Lab have a dedicated presence on the GEOBSERVE portal (https://portal.geoacademy.eu/), accessible via the "Groups" and "Communities" sections of the platform. The portal is multilingual (Bulgarian, English, French, German, Greek, Portuguese, and Swedish) and hosts more than 30 tools and resources for teachers, the public list of national hubs and GEO-Labs, the project's training courses (including sub-modules) and a forum for peer-to-peer exchange. Each national hub coordinator acts as a moderator of the corresponding national group on GEOBSERVE.

7.2 Linkage with WP2 and WP3

The national hubs are the principal delivery channel for the educational resources produced in WP2 (e-modules on GIS, RS and EO) and WP3 (educational model for teacher training, Unified Competence Framework and Teacher Guidelines). Each e-module is offered through the hubs' training schedule, either in face-to-face format, in blended format or asynchronously through GEOBSERVE. The hubs also act as the operational venues where the alignment of the UCF with national curricula (analyzed country-by-country in D3.2) is translated into concrete training offerings.

7.3 Linkage with WP5

The hubs constitute the operational backbone of the local, national, and international training events organized under WP5. The events organized by each national hub (typically 3–4 per country, with Bulgaria hosting at least 2) are the core mechanism through which the project reaches its target of training 1,000 pre- and in-service teachers at national hubs (D6.2), and through which the network mobilizes additional teachers to attend the international Summer Schools (Greece, Portugal) and Winter School (Austria). The first implementation year (M12–M24) has already delivered a substantial portion of these events, with comprehensive reporting in D5.2 and the mid-term assessment showing strong progress against the contractual targets.

7.4 Linkage with WP6

The hubs act as dissemination multipliers for the project. Each hub channels the GEO-Academy visual identity, key messages and calls to action to the national audience through its institutional channels, in line with the Dissemination Plan (D6.2). The hubs feed back to WP6 a) the data needed to monitor the dissemination KPIs (number of teachers reached, number of stakeholders engaged, number of events organized) and b) qualitative feedback (testimonials, lessons learned, success stories) that support the project's communication on social media, in press releases and at external events.

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8 Current Status, Sustainability and Outlook

8.1 Status of Recruitment, Activities Run and Lessons Learned

At the time of submission of this deliverable, all seven national GEO-Hubs are established and operational, with a designated coordinator and at least one delivered training event. The first implementation year has been highly productive: more than 30 training events have been hosted across the seven national hubs (with the University College of Teacher Education Tyrol leading on number of events hosted), engaging over 1,000 teacher-participations, and a parallel set of Visionary Workshops, Practitioners' Gathering Events and Practice & Reflection Workshops have brought together stakeholders, ambassadors and educators to consolidate the community of practice. The mid-term assessment confirms that the project is on track regarding the establishment of the hubs, while training-volume targets are progressing steadily.

Three transverse lessons have emerged from the first implementation phase and shape the second year of work:

- **Local nodes matter more than central locations.** Hubs that established satellite locations (e.g., the Austrian east–west split and the Swedish Lund–Helsingborg axis, the Portuguese cross-regional spread) have reached teachers who would not otherwise have travelled to the capital. The project is therefore actively encouraging the consolidation of secondary nodes in Greece (Northern Greece, North Aegean, Dodecanese).
- **Cross-hub collaboration multiplies impact.** The training events that involved partners from more than one country (e.g., NTUA and EA supporting Cypriot, French and Portuguese hub events) have produced higher participant satisfaction and have strengthened the European dimension of the project. **GEO-Labs require continuous nurturing.** School-level commitments depend on the presence of at least one motivated teacher per school; turnover and competing initiatives are real risks. The Practitioners' Gathering Events and the Practice & Reflection Workshops have proven to be effective instruments to maintain engagement and to identify GEO-Activists who can take on continuation roles.

8.2 Post-Project Sustainability

The hub network has been designed from the start to outlive the project's funding period (which ends at M36 in May 2026). Three governance mechanisms ensure continuation:

- **Institutional anchoring.** Each national hub is hosted by an organisation whose institutional mandate includes teacher training and/or geospatial education; the hub becomes a recognisable, recurring component of the host's offer (e.g., the 5-ECTS micro-credential at PHT and NTUA, the certified PFE catalogue, the CPI continuing-education catalogue, NUCLIO's recognition by the Portuguese Ministry of Education). The hubs therefore continue to operate as part of the host's regular activity without need for additional EU funding.
- **GEO-Activists events.** Under Task 4.3 the project runs a dedicated set of "GEO-Activists" events whose explicit purpose is to review each hub's journey and to

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formalise its continuation after project completion. The first GEO-Activists event is scheduled in Portugal (online, 20 May 2026). Additional events are planned in the other partner countries during the final months of the project, the outputs of which will be consolidated in the project's Sustainability Strategy (T6.3).

- **GEOBSERVE as an open and low-maintenance digital asset.** The GEOBSERVE portal (D4.2) hosts the hubs digitally and is designed for minimal maintenance work. After project end, the portal will continue to function as a community space, with content moderation continuing through the hub coordinators.

Sustainability is further reinforced by the consortium partners' membership of well-established networks: ESA ESERO (Austria, Greece), Galileo Teacher Training Programme, Global Hands-on Universe, Open Schools for Open Societies, IMST, ÖKOLOG, Réseau Canopé, and many more. These networks aggregate more than 100,000 members in more than 120 countries and ensure that GEO-Academy resources continue to reach educators well beyond the project's lifetime.

8.3 Identified Risks and Mitigation

Risk	Mitigation
Teacher turnover at GEO-Labs (a motivated teacher leaves the school)	Recruitment of at least two teachers per GEO-Lab where possible; institutional Letter of Intent signed by the school director, not only by the lead teacher; ongoing visibility through Practitioners' Gathering Events.
Insufficient geographical coverage in large countries (Austria, Greece, Portugal, Sweden)	Use of secondary nodes (PHT-Innsbruck/OeWF-Vienna; Lund-Helsingborg; NUCLIO-São Domingos/UC-Coimbra and dispersed GEO-Labs in Beja, Madeira); pursuit of additional satellite locations in Greece (Thessaloniki, North Aegean, Dodecanese).
Low uptake of GEOBSERVE by GEO-Labs	Mandatory account creation for every Lab; integration of GEOBSERVE usage into training events; multilingual interface (7 languages).
Dependence on EU funding for continuation	Embedding of the hub activities into the host's regular offer (micro-credentials, accredited courses); GEO-Activists events to formalize continuation; integration into long-standing networks; sustainability strategy under T6.3.
Underrepresentation of vocational and rural schools	Targeted recruitment of vocational schools (e.g., the Technical and Vocational Schools of Nicosia and of Agios Lazaros, Larnaca, and the American Farm School in

Risk	Mitigation
	Thessaloniki); deliberate outreach to schools in rural or insular areas (Madeira, Beja, Chios, Funchal, Innsbruck region).

8.4 Outlook

Between M30 and M36, the consortium focused on (a) consolidating and, where appropriate, expanding the network of GEO-Labs in each country; (b) running the final round of Practitioners' Gathering and GEO-Activists events; (c) integrating the latest content into GEOBSERVE; (d) preparing the final International Conference (Paris, France, hosted by Eurisy) at which the network of hubs will be presented to a wider audience of teachers, policymakers and educational stakeholders; and (e) finalizing the Sustainability Strategy in conjunction with NTUA (T6.3). The final updated list of national hubs and GEO-Labs is published on the public project website and on the GEOBSERVE portal at the end of the project and will form the basis for the post-project continuation of the network.

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9 Conclusion

This Deliverable D4.1 reports on the establishment of the GEO-Academy hub network, the headline outcome of Work Package 4 — Task 4.1. Seven national GEO-Hubs have been set up, one in each partner country (Austria, Bulgaria, Cyprus, France, Greece, Portugal and Sweden), each thematically anchored on one or more of the five GEO-Concepts and hosted by institutions with the mandate and the network reach to make the hubs durable. Around them, approximately 50 school community GEO-Hubs (GEO-Labs) have been recruited and have begun running activities, well more than the contractual KPI of one GEO-Lab per country. A consistent national point of contact has been established for every country, and the hubs are connected to a wide ecosystem of national stakeholders mapped under WP6.

The hub network is the institutional and human backbone of GEO-Academy. It is complemented by the GEOBSERVE digital platform (D4.2), which hosts the hubs online, and by the GEO-Kits (D4.3), which in turn equip the GEO-Labs for hands-on, project-based learning. Together, the three WP4 deliverables form a self-reinforcing infrastructure that can outlive the project's funding period thanks to the institutional anchoring of each hub in its host organization, the work of the GEO-Activists, the open-access nature of GEOBSERVE and the integration of GEO-Academy outcomes into the partners' wider networks.

The live, public list of national hubs and GEO-Labs is available on the GEO-Academy website (https://geoacademy.eu/) and on the GEOBSERVE portal (https://portal.geoacademy.eu/) and will be updated continuously up to and beyond the project's end at M36.

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