

AEGOS: THE SPATIAL DATA INFRASTRUCTURE FOR GEORESOURCES IN AFRICA

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Context

The sustainable use of resources of geological origin such as minerals and non-energy raw materials, groundwater and geothermal energy requires knowledge based on data, information and expertise. In Africa, it is a key issue, not only for development of the African countries, but also for the world's future. In the near future, these issues are likely to play an ever-increasing role due to the world's growing population and the rising demand for natural resources, raw materials, better infrastructures and services in Africa.

Collectively, the European Geological Survey organisations have a unique archive of public Africa-related geoscientific data sets that need to be shared with their African partners. Over the last decades, a large amount of geoscientific data and information has been acquired by African surveys and authorities, in some cases with the collaboration of European counterparts. These assets are available in multiple formats and languages. They are frequently difficult to identify and access.

This is the first and foremost need for the concerned end-users community. Identifying and providing simplified and unified access to geological and georesources-related data and information constitutes a major stake for sustainable public policy-making across the various levels of public authority. As natural resources involve several inter-related systems, the interoperability standards and associated services are essential for AEGOS to respond appropriately to national multi-thematic and also transboundary issues. The beneficiaries of this georesources SDI include policy-makers in Africa and Europe, African national and regional authorities and agencies, investors from the public and private sectors worldwide, the scientific communities as well as the NGOs, media and citizens for factual information.

AEGOS project implementation and expected results

AEGOS purpose is to design and set up a pan-African spatial data infrastructure (SDI) of public, interoperable geological and geology-related data as well as user-oriented products and services to foster and strengthen the sustainable use of georesources in Africa. The human resources being a key component of AEGOS infrastructure, common strategies are elaborated for capacity building and training programmes. This continental observation system will provide support to a wide range of end-users: policy-makers at all geographic levels, development agencies, private sector actors, geoscientific communities and civil society. This ambitious programme is planned to be achieved in two phases:

- AEGOS infrastructure design and partners network (phase 1, 2009-2011),

- AEGOS development and implementation (phase 2, 2012-2016).

In February 2009, a consortium of 23 partners from 20 European and African countries launched the phase 1 as a Support Action of the European Union 7th Framework Programme for Research and Technological Development. The project team includes institutions spanning and overlapping various domains and expertise in the field of geoscience, i.e. geological surveys (seven African and nine European), two African regional organisations (UEMOA and SEAMIC), two African universities, and the Institute on Environment and Sustainability (IES) at the European Union Joint Research Centre.

The expected results of AEGOS include i) operational procedures for data management (Spatial Data Infrastructure, metadata, data specifications and systems architecture); ii) user-oriented products and services including the preparation of innovative spin-off projects; iii) the African-European partners network and charter of partnership; iv) a geoscience contribution to the Global Earth Observation System of Systems (GEOSS) in the context of the Infrastructure for Spatial Information in Europe (INSPIRE); v) a common strategy for capacity building and training programmes. AEGOS contributes to the GEO work plan 2009-2011 as a sub-task in the capacity building activities (referenced CB-09-05d), and also to the development of a Solid Earth Observing System by exploring interoperability and interdisciplinarity scenarios with other data from environment and socio-economic observation systems.

AEGOS spatial data infrastructure for georesources in Africa

AEGOS SDI has a distributed architecture of national multidisciplinary data sets presently disseminated and managed by African and European geological surveys and geoscience related organisations. Each partner contributor will be an entry point describing at least the availability and accessibility of the proposed data sets and associated services. These metadata will be served by the respective national metadata catalogues and/or the AEGOS portal for georesources in Africa. This web-based portal will describe the available services ranging from discovery to display and download. In this respect, AEGOS benefits from and complies with both the international and European interoperability standards, i.e. ISO, OGC and INSPIRE.

The timing for AEGOS SDI specification is consistent with the INSPIRE implementation planning and the Implementing Rules concerning the thematic fields in Annex II (Geology, Groundwater) and Annex III (Mineral Resources). These bring the necessary framework for designing and setting up the AEGOS metadata profile, the data and services specifications as well as the reference model for open distributed processing. Additionally, common data models being developed by the geoscience community (such as IUGS/CGI) will be used for exchanging data sets in geology (GeoSciML), mineral resources (EarthResourceML) and groundwater (GroundWaterML).

AEGOS infrastructure is a contribution of African and European geoscience communities to international programmes such as the building of GEOSS. Then, the data sharing principle is addressed on the basis of the respective data access policies of

the providers while complying as much as possible with the GEO recommendations. Therefore, a charter of partnership will be elaborated so the rights and interests of the parties are respected.

The development of end-user oriented products and services, the evaluation of their feasibility and applicability are important in view of the future implementation of AEGOS. A generic approach for the development of innovative projects in line with the end-users needs (public authorities, industries, research institutes) is being formalised and subsequently, spin-off projects will be specified to be further implemented during AEGOS Phase 2. Furthermore, test-case areas and relevant data sources and services are being identified for the interoperability and interdisciplinarity in support of the societal benefit areas covered by GEOSS. Several databases are considered including the European digital archive of soil maps-Africa and the protected areas in Africa developed by the JRC/IES, the World Soil Survey Archive and Catalogue -WOSSAC- (Cranfield University, U.K.), the Tanzania Natural Resources Information Centre (Institute of Resource Assessment, Tanzania) and the West Africa Exploration Initiative (WAXI Consortium).

Cooperation in the global context of the development of Earth observation systems

Within the framework of the European and international cooperation, AEGOS builds upon and contributes to other ongoing/future SDI initiatives and programmes conducted at national and regional levels in Europe and Africa such as OneGeology (global), OneGeology-Europe, the GEO broadcasting network (GEONETCast), the African Regional Spatial Data Infrastructure (ARSDI), the Network for the Co-operative Management of Environmental Information in Africa (EIS-Africa), the African Monitoring of the Environment for Sustainable Development (AMESD) project, and the Global Monitoring for Environment and Security-Africa initiative (GMES-Africa) as part of the Africa-Europe Partnership.

In this context, AEGOS spatial data infrastructure for georesources in Africa is a collaborative tool to unleash the power of geology related public information. This is an essential support to policy-making and to address the critical issues regarding the sustainable utilisation of georesources for the socio-economic development in the context of developing countries. During phase 1, the initial project consortium is being widened by inviting as many African partners as possible to join the working group through End-User Committees in view to implement the georesources observation system later in Phase 2.