

A Report on the Workshop on Earth Science Education Initiative in Africa held in Assiut, Egypt from 28 to 29 October, 2009

I. Introduction

Based on requests from African National Committees of the International Year of Planet Earth, the Director General of UNESCO announced a new Earth Science Education Initiative at the regional launch of the International Year of Planet Earth in Arusha, Tanzania on 8 May 2008. The overall intention of this Initiative is to support the development of the next generation of earth scientists in Africa who are equipped with the necessary tools, networks and perspectives to apply sound science to solving and benefiting from the challenges and opportunities of sustainable development. This Initiative for Africa is being developed through a participatory approach beginning with a series of regional workshops to be organized in different African regions (Assiut, Egypt, Lunada, Angola, Cape Town, South Africa, Dakar, Seenegal, and Kinshasa, DRC) before the end of 2009 and early 2010. These deliberations will be compiled in a form of a report and will be discussed at the UNESCO headquarter in Paris at the middle of 2010.

II. Organizers and participants:

The Assiut workshop was organized by UNESCO office, Cairo, Geological Society of Africa (GSAf) and the Department of Geology, Assiut University. Experts from North African countries and other African Arabian countries were invited. Three participants from Algeria, two from Marroco, two from Sudan and about 15 participants from Egypt attended the workshop representing (NGO) African Women Geoscientis, Productive sector (Cemex Company), Adminstration of Environmental affairs, Deans of Faculty of Science (geologists), Heads of Geology departments, students and selected staff from Assiut Geology Department. The opening session of the workshop was honoured by the presence of the Vice-President of Assiut University (Prof. Mohamed Ragab Bayoumy) and the working sessions were held over two days, chaired by Prof. Dr..Moustafa M. Youssef and Dr. Mohamed El Awaah.

III. Workshop program and activities

The first day of the workshop included two technical sessions, 1) introduction and assessment of existing situation and 2) discussions regarding the future of Earth Sciences in the region. In the second day, the morning technical session was an open discussion on challenges and opportunities while the afternoon session was devoted to recommendations based on the previous technical sessions.

The first technical session comprised three invited talks titled:

- 1) National and International Earth Science partnerships and future opportunities (Prof. Hassan A. Soliman, Assiut University, Egypt)
- 2) Educational centers-Production sector linkage; present situation and future opportunities (Prof. Samir Riad and Prof. Moustafa Yousef, Assiut University, Egypt)
- 3) High Quality Education Programs According to International Standards in Geology Department – Faculty of Science – Assiut University (Prof. Esmat Kehela, Assiut University, Assiut University, Egypt)

The second technical session started with three presentations

- 1) Presentation of the document prepared by the Geological Society of Africa on the Earth Science Education Initiative (Hassan Helmy, Vice President of North Africa Region, GSAf).
- 2) Le système LMD: Validation des modules en Sciences de la terre (Bourgeoini Yamina and Bougadir Blaid, Faculté des sciences et techniques, Marrakech. Département des Sciences de la terre)
- 3) Status of Earth Science in Sudan (Prof. Abdelhafiz Gadelmula, University of Khartoum, Sudan).

Third technical session included an Open discussion on: Regional Assessment of all componenets of Earth Science Education in general and in North Sfrica, in particular:

1) Institutions

- a) What are the unique regional challenges and opportunities?

- b) What are the centers of expertise in North Africa, what are the educational gaps, which centers need assistance?
- c) Possible partners and their role in the Initiative?

2) Education

- d) From where come the geology students? Is it possible to accept students from mining schools, for example?
- e) What kind of Earth Science education is best suited for the future in Africa: Classic Geology or Earth Science systems?
- f) What level of education should this initiative start from? If it starts at the university level, are there adequately educated students to enter programs?
- g) In the present situation is the geology student qualified to work in international companies working in North Africa: How to ensure practical education and job opportunities?

3) Earth Science challenges and opportunities

- a) Regional status of Earth Sciences
- b) Application for improving human and environmental well-being
- c) Future potential for Earth Science in the region
- d) What is the regional public perception of the Earth Sciences
- e) What is the relationship with the media?

Fourth technical session: Open discussion on:

4) UNESCO's role in the Initiative

- a) What should the Initiative do?
- b) How do we increase African participation in International Geoscience Program (IGCP) projects?
- c) How do we make IGCP projects more relevant with a capacity building component.
- d) How could the Initiative be linked with the IYPE and successive initiatives?

5) Funding mechanisms

- a) What are the possible mechanisms to support the Initiative?
- b) Which organizations should fund the Initiative?

IV. Outcomes:

General: There was a general agreement between participants that Geology education in North African region faces many challenges but has potential opportunities. The number of educational institutes is enough, surveys and other geological organizations are also everywhere in North African countries. Number of students is getting low, however, the number of students in certain programs is sometimes more than the capacity of the institutes. Despite the large number of institution, the scientific cooperation within a national research plan is missing. In general, the geologic research is not devoted to solve specific industry or society problems, at the same time, the governmental and production sectors underestimate the role of geology institutes.

Institutions and Education: There was a general agreement that North African countries have no problem in the number of centers of expertise or student, the problem is the facilities. Challenges comprise: a) decreasing level of students, b) lack of research facilities for the staff, c) weak link between institutes and the production sector, d) no Integration and/or cooperation between national and regional organizations, e) resources are limited and f) no unified educational system even within each country. Graduates from the Department of Geology are not qualified to work in international companies due to the little training and classic programs they study.

Earth Science challenges and opportunities: It is generally agreed that, we, as geologists speak to each other nicely, but communications with societies and production sector is weak. Important challenges are to convince the governmental and industry section by the importance of geology centers of expertise and the help they can provide. Opportunities are great due to the fact that more than 90% of the countries lands are deserts! Future potential of Geology in socio-economic development is great. Important potential areas of Earth Sciences are water management, geological hazards, mineral

resources, mining sector and health problems, future planning of desert areas and construction of new cities and roads. We have to work hard to increase the public awareness about the subject. Media can play an important role in marketing geology, as subject, to the society.

UNESCO's role and funding mechanisms: UNESCO should make direct contacts with departments of geology in the region to provide more information on current IGCP projects, organizing workshops on how to initiate and participate in IGCP projects is needed. More fund is needed to increase the participation of geoscientists from North African countries in IGCP projects.

V. Recommendations

- Earth Science curricula of North African universities and higher institutes need upgrading to fulfil international standards and to include specific and direct courses pertaining to society development and environmental protection. **Earth Science education is preferred over the classic geology.**

- More efforts to upgrade the professional skills of Earth Science programs by increasing facilities for teaching, field courses and students training programs. Introducing new programs with more applied subjects is needed to qualify the geology students to find jobs and to compete internationally. **Partnership with European universities is needed.**

- Earth Science institutes must always stress on the role of applied geological disciplines in the sustainable development plans of the society. **A network between all earth science institutes in each country is a must to integrate efforts.**

- Earth Sciences should be introduced in an early stage during primary and secondary school levels to students of the science section able to continue their university studies in geology, mining engineering, petroleum engineering and physical geography. Accepting students from the mining schools is possible, however, they should be

introduced to the basic sciences which help understand various geology subjects **The Initiative should start from the secondary school level.**

- It is important to establish centres of excellence for training Earth Sciences graduates in North African Countries in applied trends needed in the labour market. **There is a need for Centers of Excellence in North African countries for capacity building.**

- The link between Earth Sciences centres and media should be strengthened; weekly or monthly page in some newspapers on Earth Science is recommended. Society awareness could be increased by arranging open geology days for the public and open the Geology Museums in each university to the public, especially students from the primary and secondary schools.

- Unesco's Environment and Earth Science division must play an effective role in encouraging activities in north African geological institutes related to society development plans through, a) Encouraging local, regional and international cooperation between Earth Science institutes in north Africa, and support them in getting IGCP projects, b) introduce Earth Science to the archaeological sector throwing more light on the importance of geo-archaeology in exploration, protection and restoration of antiquities, and c) Assisting north African Earth Science institutes in improving education curricula to be compatible with international academic standards through cooperative memos of understanding between universities and UNESCO for expertise exchange .

- The Geological Society of Africa should be considered as a continental organization under the Umbrella of the African Union. The society can play more active role in information dissemination between African institutes.

- OPEC is a recommended funding organization for the Initiative.

The organizing committee:

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