GEOTHERMAL KNOWLEDGE IN EDUCATIONAL INSTITUTIONS, CASE OF DEMOCRATIC REPUBLIC OF CONGO

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ABSTRACT

Africa is taking the advantage of the new avenues that All Renewable Energy initiative opes to advance its national, regional and continental goals and aspirations regarding energy access, renewable energies and energy efficiency for its sustainable development (MESERTE T.Zemedkun, 2014). Each country has its own education program but some similarities are to be taken. Some notions such as Mathematics, languages, literature, geography, are thought from primary up to universities and some, Geology are known arriving at university while particularity is unknown in all degrees. According to the exploration and teaching of geothermal related disciplines are to be taken: such as petrography, structural analysis, geochemistry, geophysics, rocks and soil mechanics, etc. This paper seeks to highlight a comprehensive inventory of the importance earth sciences and engineering, and place accorded to Geothermal as part of physics in DRC national education program. Our surveys according to the teaching of geothermal even notions from Congolese youth still a dream, how could them be able to manage in this domain to produce energy supplying hydroelectricity and fuel source by showing other complex uses in energy to the people, scientists and government in DRC for industries, green houses hot houses and tourism. Often, the high use of fuel poses detrimental issues on climate. The reduction of their use will be effective through awareness creation right from the teaching institution. The curriculum should therefore be anchored on the premise of renewable energy utilisation by highlighting the benefits to be accrued against the old fuel based energy forms. Being the pillar of tomorrow changes, the youth is an elementary age to be formed in all class. While difficult, developing country is among geothermal power plant and might be benefits of their local riches to solve energetically problems. DRC in its educational program, the legislator had given less force to teach Geothermal in elementary, secondary schools. The chance is for these students who choose natural sciences highly in geosciences or earth study. Any secondary department in DRC has geothermal in its program because of less knowledge of teacher about this domain. As researcher, expert in the domain, our results showed a negligence of this domain, are European tourists who are good to identify Great Lake Geothermal via its springs. But some universities in the country organize earth science with
the specialization of mining and in Africa such as Morocco, Egypt, Malawi…where Kenya is the first African country to value the geothermal energy. Our recommendations are to insert this domain in schools at the same level as motor teachings. In DRC, geothermal should therefore be considered as a key resource to spur development just like the Copper, Tin, Gold, gems which have been the traditional resources. The focus should therefore be on geothermal in schools and describe advantages to be realized from geoinstallation of an educational facility.

1. Introduction

The education sector, like other sectors in the Democratic Republic of Congo, faces major challenges because of the high population growth—a population of more than 71 million. Its growth is 3.1% per year, and nearly 70% live in rural areas. A fragile political climate due to this currency of ethnic conflicts and macroeconomic instability due to a lack of resistance mechanism is key.

Despite the efforts made by the Government of Congo with the support of its technical and financial partners, universal primary schooling has not yet been possible. Primary school attendance has indeed increased from 61% in 2007 to 74.8% in 2010 and then later to 80.4% in 2013-2014. However, there are significant disparities. In Kinshasa, the capital city, only 13% of children and adolescents aged 6-11 are out of school, while others where, such as in North Kivu, 40% of children are out of school. The teaching staff lack motivation and are largely underqualified, and therefore, neglect giving practical or experiential training and favor theoretical, rote learning, do not meet the labor market’s changing needs, and do not include current technologies. While publicly financed institutions enroll 86% of students, only 24% of these are managed directly by the state, and the remainder is managed by religious institutions. Each management type receives the same amount of public funding, which is insufficient for operating costs. Thus, most universities are largely financed by private households, which means that all faculties that necessity several practices must be neglected by the scientist of the country because of the privating of this key sector of modernization. This translates in reality that at this educational level, the natural sciences stop at geography to the disadvantage of geology as geosciences which has geothermal as part.

2. Research methodology

The descriptive méthodé allowed us to describe the reality under the study and identify the main problèmes of the sector. The analytic problèmes allows us to analyse and establish the relations, causes and effects between différents composants of éducation à sector which are at the base of the weakness of good results and all disparities to the géosciences (geothermal) notions in educational system in DRC.

3. Overview of educational system in DRC

The educational system in the DRC is divided to three ministries: the Ministry of elementary Secondary and Professional (MEPSP), the Ministry of high school and University (MESU) and at last the Ministry Sociale Affaires (MAS) which seems absent. The educational system in the DRC is similar to Belgian and there are six years of primary completed by 6 years of Secondary education. After twelve years of education, students are ready to get admission at university. The ministry in charge of this schooling level is dives by two, the technical one and the reseach one. The first branch is charge to form spetilization while the second one is offering taught for researchers. The educational system in the DRC has been challenged by economic decline, violence, and political turmoil, yet has continued to expand at all levels.
Many Congolese, particularly women, lack basic education. The adult literacy rate was 61.2% in 2012 and the literacy rate for youth aged 15-24 was 65.8% in 2007. Only 53.3% of female youth are literate while the literacy rate for male youth was 78.9% in 2007. There is a significant need for improvement in terms of the reach and quality of education. Technical, agricultural, and earth sciences education is particularly weak even though technical and agricultural skills are what is most needed to grow the economy (Herderschee et al., 2012). The educational infrastructure is dilapidated and the educational tools, materials are obsolete. Most of the institutions of the Congolese State created in past years to provide technical and vocational training are in a state of severe disrepair. This situation reflects the government's inadequate investment in school reconstruction and rehabilitation, which hurts enrolment capacity (enrollment in TVET is only 20%) and the provision of specialized training at secondary schools and institutions of higher learning.

3.1 School enrollment trend

In respect of overall education, the school enrollment rate is declining. The gross enrollment ratio in primary school has declined sharply, from 92% in 1972 to 64% in 2002. In 2000, according to national sources, the rate stood at 33% for primary schools. Only 29% of children finish primary school and 4.7 million young children, including 2.5 million girls, receive no education at all. In secondary schools, it is estimated at 29% in 2001/2002 as compared to 26% in 1977-1978, with an internal efficiency coefficient of 36%. Besides, there has been: Deterioration in the school survival, a low level of supervision and the existence of inequalities in gross enrollment ratios by gender.

3.2 Structure of education system

Education law amended on September 6, 1990, stipulated the right to education ensuring equal access to education and vocational training. Public education is free and basic education is compulsory. Learning and evidence-based decision making, USAID (2013) has started to collaborate with the Ministry of Education and national universities to initiate a robust operations research agenda on topics such as 1) monitoring the relationship between school fees, enrollment, and student learning outcomes; 2) studying the relationships between learning outcomes and repetition and dropout; 3) evaluating inclusive community engagement/oversight on access and learning outcomes; 4) assessing retention and frequency of school departure for boys and girls in high-risk areas, and 5) evaluating the impact of primary and secondary education for girls concerning progress in the health and economic sectors.

For today the primary education is free, compulsory, and targeted at students aged 6-12. The six-year program is divided into three levels of two years each, namely, an elementary level for children six to seven years old; a middle level for children eight to nine years old, and a terminal level for children ten to eleven years old. The primary education system is characterized by (i) rapid population growth; (ii) the large number of children not attending school; (iii) low population density, a large number of residences that are scattered and difficult to access, children living in forest areas, and disadvantaged groups; (iv) under-qualified teachers and the shortage of instructional materials; and (v) instruction in a foreign language and the high cost of private education.

The major target is to boost congolese scientist value this domaine because it bas many avantages for the développment of the country about the use of energy un all sectors,knowing
whole the world is threatened by climats changing; reason why it's son important to show learners, peoples an politiciens the impact of geothemal notions and data base un the country.

3.3 Secondary school

Typical of Francophone educational systems, the secondary school consists of three tracks: the long cycle medium one, and the short cycle. The long cycle, which is also referred to as formal secondary education.

At the end of this level of secondary education, students are ready to choice domains. Some take Scenitifical determination while others take social domain. In each of these domains there are a plenty of under domains. As the target of conference is energies, you maust also have high stress on physical lessons to introduce generation of energies.

D.R. Congo is known to be endowed with natural resources: Minerals, Fresh water Fresh water, Timber. Electric power is therefore mainly Hydropower Electric power is therefore mainly Hydropower. Which enormous untapped resources. inspite of large resources, only 10% of population use electricity

The long cycle, or formal secondary education, lasts 6 year and allows entry into higher education. The vast majority of secondary students are enrolled in the long cycle. The first two years, or common level, provides common education before students split into three streams. These streams are of general, teacher education and techniques are meant to last four years.

There are several options within each stream; the four-year program is divided into literary, scientific, commercial, social, artistic, vocational (for women), agricultural, veterinarian, medical, pedagogical, and professional/technical sections... This cycle ends in a national public examination, the state Exam.

The short cycle, or vocational training, offers courses of varying lengths. Though most last 2-3 years, others run as short as 6 months. Several different types of vocational training schools exist, each resulting in a different certification for graduates. Craft schools prepare students for manual unskilled occupations. Upon completion, students learn a vocational aptitude certificate or the Brevet (in area of specialization) after passing the exams in all subjects on the program with 50% or more. Areas of concentration depend on the availability of the subjects after the two-year core program of lower-level secondary education sections. The school year is divided into two semesters and each semester (6 months) into two periods of 3 months each. At the end of a period, the students must have sat for as many quizzes as the hours of a course per week. Schools for skilled occupations require that students first complete the tronce common of the long cycle. These programs last 2-3 years, translating to 4-5 years total of post-primary education.

3.4 Structure of higher education system

The category of higher education comprises both university and non-university institutions, which have approximately, equal enrollment rates. Non-university institutions are professional institutions, generally classifying as either an Institut Supérieur Technique (IST) or an Institut Supérieur Pédagogique (ISP). There are more non-university institutions, though they tend to be smaller than university institutions. The ISPs have begun adding courses outside the realm of teacher training, including business courses.
Many ISPs and ISTs are demanding that their status be raised to that of a full-fledged university. The World Bank further states that these institutions offer two cycles or degree levels. Completion of the first cycle, lasts three years and is the equivalent of an undergraduate degree for English speakers. Its honored with a graduate diploma. The second cycle, to be completed after the first one, is the two years complement added, it is take to be a quick specialization. The qualification is diploma of license equivalent of Bac+5 in English way. After this key and responsible teaching leve, students are now ready to pass a master degree leading to PhD later, levek absent or scare in the country. Otherwise, each High level is ended by thesis redaction and its public expose.

Enrollment in science, technology, engineering, and agriculture is low data gathered in 2007 from the universities of Kinshasa, Kisangani, Goma, and Lubumbashi show that only 14% of students are enrolled in non-health science, engineering and technology disciplines. The University of Lubumbashi second to the University of Kinshasa in size is the premier higher education in the Katanga province. Due to the emphasis of the mining sector in Katanga, the university has a strong emphasis on geology, mining still, only 14% of students are enrolled in science, engineering, and technology disciplines, a lower percentage than all other fields.

4. Earth sciences in DRC and its acknowledgment

We take care to insert this part in this paper because most of geothermal manifestations are guided by geology settings. Geology is so the basement of springs. Since the second half of the 19th century, the role of the geologist has been seen to fall to the study of mineral deposits and this has occupied a central place in the teachings and researchs of geological sciences. Geological haversts therefore occupied a key place in the economy evolution. In whole world industrialized countries there were projects financed research in these fields even more. Certainly, very suddenly, the interest fell and, the reason was economically explained.

For the 21st century, the economic dome of the major Asian countries, including China, India, Korea and soon Indonesia, requires more and more mineral raw materials, yet these nations sell the least and perhaps not all of them. The development of new technologies, either IT or energy, requires the use of rare metals (Indium, Lithium, Tantalum, Rare Earths, etc.) which until now have been little explored and whose proven reserves seem very insufficient. Given the resumption of nuclear development in all its uses, Uranium is also becoming a potential target for work.

Let us admite here that the need for mining exploration activity becomes an emergency. But there is a catch, a prerequisite, it is to train specialists considering the age of the geologists because in certain places the majority of the experts are getting old and lend themselves to the retirement soon. Thus, it is necessary a regeneration of geoscientists through the universities which are the granaries. The mining research activity being multidisciplinary and referring to all its sub-branches, within earth science, each has a specific place according to its strengths and genre because crossroads science, difficult science and yet, as noticed before, essential to human societies. End this passage by introduce by here the relationship between earth sciences and the geothermal The formation of basement rocks commenced with the deposition of sediments and the emplacement of plutons between cratonic crust that had been evolving separately during the Archean (>2.5 Ga) through the accretion of granite-bearing rocks and greenstone belts resulting in the formation of mobile belts. Between 2.2 and 1.86 Ga this area was part of a supercontinent assembly during the Eburnean orogenic cycle. The supercontinent broke up during the post-orogenetic Kibarian phase of crustal extension.
between 1.60 and 1.2 Ga. This resulted in a supercontinent assembly by the collision of continental blocks, culminating in the formation of the PanafriCan orogenic belts straddling the margins of the Tanzania Craton. The Kivu region is dominated by the “Zaire-Nile Crest” of the crystalline basement belonging to the Kibarian Orogen and comprises metasediments, metavolcanics, and granitic intrusions with younger granitic pegmatites and abundant basic intrusions. All of these units have been heavily fractured by later orogenic and extensional processes. This fracturation allowed for the development of permeable formations, particularly in the pegmatites, providing potentially suitable conditions for geothermal reservoirs (GDC/Géo2D, 2017), thus interventions of petrography, stratigraphy, geochemistry, geophysics, pedology, etc. to put un evidence geothermal occurrence.

5. Geothermal teachings and African geoscientists

Nowadays, geothermal is guided by UNE. It has necessity to assist and form evoides geoscientists and all connected domains to geothermal energies.

The united Nations University Geothermal Training Program (UNU-GTP) in Iceland specializes in capacity building for geothermal exploration and development for professionals from developing countries. The aims top assist countries with geothermal potential to build up expertise trough training and post-graduate academic studies in Iceland and, more recently, also trough short courses and workshops in the developing countries themselves, Ludvik S. Gergsson, 2012. Since 2005, more than 360 individuals from 19 countries in Africa (including Yemen) have benefitted from this Training. These series have also provided a basis that has made it possible for the UNU-GTP to go one step further by offering customer-designed short courses in the line with the needs of clients from the developing countries through local or external financial sponsors.

Many of Africa’s leading geothermal experts have obtained their basic geothermal Training in Iceland. Together with Icelandic experts, they now share their knowledge and experience with a new generation of African geoscientists and engineers. In 2012, the same UNU had announced the creation of south countries some unities of formation, an African regional sub-center in Kenya preferably by through cooperation with GDC and KenGen and international sponsors; El Salvador for Latin America.

In all these activities, DRC geoscientific are later by missing the volunteers, information and maybe the political decisions of local and UNU-GTP or moreover Regional connectivity to insert French countries youngsters.

The tasks of UNU-GTP is to assist with this, to help development countries with significant geothermal potential to establish groups of specialists in geothermal exploration and development that have the basic knowledge necessary for geothermal development.

In forming world young geoscientists, UNU-GTP thought on offering 6 months intensive training in Iceland for varies fields. Completing this training, a MSc and PhD degree program were announced in 2000 and 2008 with collaboration with University of Iceland.

Kenya is the first African country to have started Geothermal power plant harvest and later in Djibouti, Eritrea, Uganda, Tanzania, and more recently Comoros, Zambia, Rwanda, Malawi, Mozambique and Sudan could in 2012 include the list. The place of DRC is scare and anywhere is cited while it has geothermal plants.
Table 1. Shows the formation of geothermal experts under UNU-GTP Since 2001 to 2012, 33 individuals has competed Msc degree under fellowships funded by Government of Iceland.

<table>
<thead>
<tr>
<th>Table N°1 UNU-GTP participation to Msc Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
</tr>
<tr>
<td>Chinese</td>
</tr>
<tr>
<td>Coast Rica</td>
</tr>
<tr>
<td>Djibouti</td>
</tr>
<tr>
<td>Mongolia</td>
</tr>
<tr>
<td>Uganda</td>
</tr>
</tbody>
</table>

Ludvik S.Gergsson, 2012

Having a look at the table, it certifies that most of efforts of UNU-GTP is upon Kenya, and this is a key to take this country as African sub-center of geothermal formation. However, other African countries are to be encouraged by the same program to take admission for this training at all its levels, to mean Master and later PhD to have more experts and deep geothermal research, development of local geothermal power plants.

Tabel 2 below illustrates the participations of Africans in the UNU-GTP and short courses in East Africa for a period of 13 years, 2005-2018

<table>
<thead>
<tr>
<th>Table 2: Africans’ participation in the UNU-GTP and short courses 2005-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>--------</td>
</tr>
<tr>
<td>Algeria</td>
</tr>
<tr>
<td>Burundi</td>
</tr>
<tr>
<td>Comoros</td>
</tr>
<tr>
<td>Congo</td>
</tr>
<tr>
<td>Djibuti</td>
</tr>
<tr>
<td>Egypt</td>
</tr>
<tr>
<td>Eritrea</td>
</tr>
<tr>
<td>Ethiopia</td>
</tr>
<tr>
<td>Kenya</td>
</tr>
</tbody>
</table>
The looks at this table, data until 2012, most of African countries are participating in UNU-GTP formation. The negative view is the absence of only three nations, Sudan, DRC, and Nigeria at UNU-GTP. Burundi represents for participation 2.73%, 1.63% for DRC, and 0.54% for Sudan and Kenya represents 42.0% for followers at UNU-GTP.

6. Geothermal in Congolese education

In the DRC, the domain of the social universe made up of geography, history, education for health and the environment as well as civic and moral education is part of general culture. The objective of these branches is the acquisition of knowledge and the adoption of positive attitudes and behavior through contextualized situations in space and time. In other words, initiation in this area develops through the observation and description of concrete facts, known or observable by the students likely to grab their interest and their attention and then lead them to what the program offers. MIN EPSP, 2011. This translates in reality that at this educational level, the natural sciences stop at geography to the disadvantage of geology as geosciences which has geothermal as part.

6.1 Primary schools

In DRC the only course in which notions of geothermal could be taught is Geography where Teachers who are licensed to teach geography at all levels should possess the knowledge, capabilities, and dispositions to organize and provide instruction at the appropriate school level for the study of geography but makes a strong wrong for the limitation in knowledges to the leaners by teaching them relief, rivers, solar system superficialy those notions. That’s to say starting to primary schools there's no way of showing this interest to the earth sciences. Teachers who are licensed to teach should process the knowledge, capabilities, and dispositions to organize and provide instruction at the appropriate school level for the study of geography.
6.2 Secondary schools

The teaching of Geothermal in Congolese secondary schools has not existed and presents several difficulties. Qualifying secondary geology education is a specialization phase which gives the student the necessary scientific and technical concepts allowing him to access higher education. In sides, teaching Geothermal also seems problematic for teachers who must teach it without having themselves sometimes been trained in the teaching of this discipline even to have got notion about it. As a result, teaching and understanding Geothermal in the DRC will face several difficulties for both students and teachers. It is therefore for all these reasons and many others that it seems important to us to seek the origins of the difficulties of teaching this branch.

6.3 Congolese Universities students facing geothermal knowledge

The teaching of Geothermal are to be taken in same sense and is inserted in geosciences faculties of universities.

Congolese students lag behind in geoscience and Geothermal energies compared to French, Moroccan and elsewhere in the world. While the notions of geology and Geothermal teachers are introduced to secondary schools, the Congolese legislator does not take this matter into account in the distribution of the national curriculum. Certainly, the lessons of the common core leaves the students to discover some concepts on water resources, a chapter of external geodynamics is devoted for the first year of the baccalaureate while the geology program which will focus on internal geodynamics including certain notions which are renewed and yet would appeal to the knowledge of the students. Experiencing difficulties in understanding the concepts that are related to visible surface water resources and groundwater, the learning difficulties in the absence of the scientific model that can facilitate Geothermal geological phenomenas are further increased. This unambiguously highlights as many of the difficulties for the congolese student and geologist to want to specialize in Geothermal energies for university cycles and research even projects.

While some secondary schools organize the mining and geology sector, their finalists fail to explain by simple terminology of sedimentation environments and sedimentary process.so the notions of Geothermal is far to be understand by these trainers. The high cause is mostly again the absence of geoscientists to teach and the scarcerity of Geothermal specialist trained in this subject.

The table N°3 illustrates some research thesis of Congolese students to complete their degrees.

<table>
<thead>
<tr>
<th>N°</th>
<th>Student ID</th>
<th>University</th>
<th>Year</th>
<th>Degree</th>
<th>Title</th>
<th>Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SAMY SAMAKY</td>
<td>UCNDK</td>
<td>2009</td>
<td>Bac+3</td>
<td>Etude bibliographique sur les eaux thermales</td>
<td>MAKABU KAYEMBE</td>
</tr>
<tr>
<td>2</td>
<td>NYOTA NGONGO</td>
<td>UCNDK</td>
<td>2017</td>
<td>Bac+3</td>
<td>!!!!!!</td>
<td>KAMATE EUPHEM</td>
</tr>
</tbody>
</table>
Taking the titles in French, as the country educational system demands, Congolese students, researchers and Professors efforts are certainly known. The table below gives the frequency of Congolese participating in geothermal international events. There’s a lot more to this but this quantity represents the knowledges of DRC partnership in geothermal inter regional network.

<table>
<thead>
<tr>
<th>N°</th>
<th>Reseacher ID</th>
<th>Year</th>
<th>Title of presentaion</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mambo Vikandy S., Kasereka Mahinda, Mapendano and Wafula Mifundu</td>
<td>2008</td>
<td>Geothermal Potential in Eastern D.R. Congo</td>
<td>ARGeo-C2</td>
</tr>
<tr>
<td></td>
<td>Mambo Vikandy S., Kasereka Mahinda, Yalire Mapendano and Wafula Mifundu</td>
<td>2008</td>
<td>Geochemical Study of Thermal Springs in Eastern D.R. Congo</td>
<td>ARGeo-C2</td>
</tr>
<tr>
<td>2</td>
<td>Mahinda K, Yalire M, Kavuke J., Nkokori N and Simpeze J</td>
<td>2016</td>
<td>management and development issues of geothermal energy in the western branch of the african rift system</td>
<td>ARGeo-C6</td>
</tr>
<tr>
<td>3</td>
<td>KASEREKA MAHINDA</td>
<td>2016</td>
<td>COUNTRY UPDATES, CASE OF DRC</td>
<td>ARGeo-C6</td>
</tr>
<tr>
<td>4</td>
<td>KAMBALE KAVYAVU</td>
<td>2018</td>
<td>The distribution and geology of the Geothermal weadth of the kivu</td>
<td>ARGeo-C7</td>
</tr>
</tbody>
</table>
7. Congolese media and education of geothermal notions

Most of Congolese media stations are private and have specific editorial lines, some are commercial, religious and others are political. Due to this case of specialization of media, only some castings are targeting energies. The highly radios in charge of environment can deep on this topics. But in DRC, most of nations of geothermal are taken to be publically enounced by the UN, Radio okapi. This chain tries to diversify news about even degrees of temperatures of some springs and their localizations.

8. Difficulties in Geothermal teaching in DRC

This article shows how Geothermal notions are is taught across the DRC in genaral and among geoscience mostly. At the lower age levels by general science or geography teachers who have a weak background in Earth Science.

Look for the case according o this topic Teachers: Teachers are the main building block in the educational system; they can make any science interesting and understandable. If they are not sufficiently qualified to teach a particular subject, the system will fail in short course. In Egypt teachers are not qualified to teach geosciences, as mentioned previously, they have no background in geology, which creates a huge gap between students and the subject. The two weaknesses are interrelated; fixing the first point depends on amending the second point and vice versa.

Thus, Earth Science can endow citizens with knowledge and abilities to conclude effective and proper use and conservation of energy, water, and other natural resources. Citizens who understand their environment and its processes are better able to judge and behave in a more scientifically aligned way. Moreover, a few countries present substantial evidence based data indicating that the Earth systems educational approach can fulfill its potential and, more importantly, how to do it. Only exists in a small number of countries. To access geothermal resources, wells are drilled to depths at which the required high temperatures and thermal capacities are reached. The depth required to reach that temperature depends upon the temperature gradient (the rate of temperature increase with depth), which varies significantly from place to place. Therefore, the depths of geothermal wells vary over a wide range, from less than 1,000 to 5,000 meters (m) in rare cases.

Egypt

Abdel Maksoud and others (2014) interviewed teachers to discover their teaching methods in schools. In each of the schools, there are four to eight science teachers; only three are allowed to teach geoscience, The fact is that geologists are not involved in planning geology education in Egypt, whereas geographers and chemists are allowed to teach geology. This is the default for many reasons, such as geology’s absence from the syllabus as a separate
subject until university and the general lack of recognition of geology’s importance by society in Egypt.

Handling geology and geosciences as though they are not important and have no meaning in our life is a fatal mistake in education. Discrimination of sciences is common in Egypt, where decision makers take engineers’ opinions in building and neglect geologists’ input regarding any potential geo-hazards. From this perspective, society places no value on creating a syllabus imbued with the importance of all science branches. Earth Science concepts in Malawi are taught under a broad discipline of Geography. Geography covers Astronomy, Oceanography, Geomorphology, Geology and Environmental Science.

Malawi

Team at the International Earth Science Olympiad (IESO) in 2011. The country's national selection process is an integral part of the team’s performance at the Olympiad. Now, it is taught four times during the forty periods per week. In Malawi, students in secondary schools sit for two National Examinations: a Junior Certificate Examinations (JCE) at form 2 and a Malawi School Leaving Certificate (MSCE) at form 4. The performance of Earth Science at MSCE descended over the years, reaching a low of 58.64 percent in 2010, from 73.34 percent in 2006 (Malawi National Examination Board, 2015). There is a clear-cut boundary between public and private schools, with private schools excelling over public schools.

9. Conclusion

Our research results indicate there is a strong and pressing need to tackle the educational system facing students and the country in a coordinated and concurrence researcher around the world. Even if in this period many modifications in the national program are seen; our primary research was carried out, a high degree of diversity in the patterning of the vulnerability of pupils affecting the scientific level doing science or engineering can be as simple as an individual conducting field studies or as complex; Pursuing science as a career or as a hobby can be both fascinating and intellectually rewarding.

In sides, in DRC at all educational levels teachings of Geothermal notions also seems problematic for teachers who must teach it without having themselves sometimes been trained about this energies. In the teaching of this discipline even to have got notion about it most of interested in geothermal are geologist in its diversity. As a result of quick survey from schools, teaching and understanding Geothermal in the DRC will face several difficulties for both students and teachers if UNU-GTP, UI, and regional geothermal agencies don’t take care of some talents and volunteers who had accept to be link to other geothermal experts. This nation highlights as many of the difficulties for the Congolese student and geologist to want to specialize in geothermal energies for trainings, degrees and careers during a post study moment to deep professionalism and solve some meters according to energies by exploiting renewable ones.

The role of international experts and relationships are highly welcomed to assist this big unknown reservoir.
REFERENCES


Study on Governance Challenges for Education in Fragile Situation Democratic Republic of Congo Country, non-edited

Lila B Karki, Md. Mutaleb, AET Background Study Ntam Baharanyi, Tuskegee University Democratic Republic of the Congo.

MORISHO GULAMU Richard, les enjeux du système éducatif en République Démocratique du Congo


http://theargeo.org/fullpapers/papers1.html,
http://theargeo.org/agid/newagid/DRCreports2.php,
http://theargeo.org/presentations/