

## **GEOTHERMAL ENERGY EXPLORATION & EXPLOITATION IN JORDAN, SUDAN AND MOROCCO, AN IMPLEMENTATION ROADMAP**

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### **ABSTRACT**

*As a preamble and according to the Montreal based National Canadian Geo-Exchange (GXS) Coalition's definition of GEOTHERMAL ENERGY, the sun, since its creation, has always provided heat for the earth. Its energy warms the earth directly, but also indirectly. Its heat evaporates water from the lakes and streams, which eventually falls back to earth and filters into the ground. A few meters of surface soil insulate the earth and ground water below. The warm earth and ground water below the surface provide a free, renewable source of energy for as long as the sun continues to shine. The earth under an average residential lot can easily provide enough free energy to heat and cool the home built on it.*

*The free energy has only to be moved from the ground into your home. This is done either by pumping water from a well (open loop) or by pumping a heat transfer fluid through a horizontal or vertical circuit of underground piping (closed loop). The fluid, called the heat transfer fluid, absorbs the heat in the ground water or soil and transfers it to the heat pump. The heat absorbed by the fluid from the solar-heated ground is extracted from it by the heat pump, and the now-chilled fluid is circulated through a heat exchanger over and over again to extract more heat from the earth.*

*Jordan, Sudan and Morocco are amongst the poorest Arab countries with little or no indigenous hydrocarbon energy resources (oil, gas and coal). In this context and due to global warming and climate change, our firm ARACAN GEOTHERMAL ENERGY Ltd., is working with the World Bank HQ in Washington as well as the Local WB Reps for the above countries to tap into the Global Geothermal Development Plan (which started implementation in March 2013). By December, donors had come up with \$115 million of the initial \$500 million target to identify and fund test-drilling for promising geothermal projects in the developing world.*

*ARACAN GEOTHERMAL's plans and detailed engineering actions focus on field training, drilling, installation, performance testing and maintenance. The target installations and buildings covered shall include government buildings, hospitals, schools, apartment buildings, shopping malls, etc. In each of these cases an elaborate and detailed planning shall be performed by ARACAN in order to seek the approval of the Host National Government for implementation.*

**Keywords:** *geothermal energy, geo-exchange systems, ground loops, hydron heating systems, heat pump in a forced-air GXS*