Hidden in the deep waters of Lake Kivu, one of Africa’s Great Lakes situated between Rwanda and the Democratic Republic of Congo, lies a colossal reserve of methane gas. The Project represents the first large scale use of this methane. Extracting it will greatly reduce the environmental hazards associated with a natural release of the lake gases, and also provide an environmentally friendly and sustainable source of power generation.

The potential of this vital resource is only matched by the challenge in extracting it. The KivuWatt project is set to do just that, with an integrated methane gas extraction and production facility, driving a 25MW power plant. When completed, the project will both generate vital electricity for the people of Rwanda, and safely remove harmful gases from the lake – transforming a serious health hazard into a tangible community benefit.

Background
Along with Lakes Nyos and Monoun, both in Cameroon (lakes that only contain CO2 and no methane), Kivu is one of three known ‘exploding lakes’, which can experience violent overturns as a result of unusual gaseous composition. Methane gas – which is 21 times as damaging as CO2 – is formed in Lake Kivu from a combination of geological and biological processes. Due to its unusual stratification – and the fact that deeper levels of the lake lack oxygen – the lake functions like a giant biomass digester, producing methane based on the nutrients flowing into the lake. The gases are dissolved in the water in much the same way that carbon dioxide dissolves in bottled mineral water.

The project is the first in the world to use methane on such a large scale, and will be followed by three more phases – eventually increasing the electricity generation capacity to 100MW. Besides supplying additional, cleaner, power to the national grid, KivuWatt is expected to do so at much lower prices than existing diesel-fired power plants. The project is expected to launch commercial operations by late 2012.

PIDG IN DEVELOPMENT
The Private Infrastructure Development Group (PIDG) mobilises private sector investment to assist developing countries in providing infrastructure vital to boosting their economic growth and combating poverty.

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Experts agree that, left alone, Lake Kivu will become saturated with the dissolved methane gas in 50 to 200 years. At this point, a potentially catastrophic gas eruption could occur, endangering the lives of millions of people living on the lake’s shores. But the KivuWatt project is converting this risk into an opportunity, by extracting the harmful gases people fear in order to create vital electricity people need.

The deal
The PIDG company, Emerging Africa Infrastructure Fund (EAIF), was the co-arranger for this transaction. Long term debt was not easily available, due to the technical challenges involved. After tracking the project over a period of six years, EAIF, along with the Netherlands Development Finance Company (FMO), was able to raise the total amount of US$91.25m of debt required, by creating a flexible financing structure. This meant bringing together a lending group comprising: EAIF, FMO, the African Development Bank, and Belgian Investment Company for Developing Countries NV/SA (BIO). Electricity generated by the 25MW power station will be sold to EWSA, the Rwandan national power, water and sanitation utility. The Project will be carried out by a ContourGlobal subsidiary, KivuWatt Ltd. It will be governed by a 25-year Gas Concession Agreement with the Government of Rwanda, and a 25-year Power Purchase Agreement with EWSA. Completing Phase I of the project will cost approximately US$142m – US$25m of long term debt was supplied by EAIF. It is one of the largest ever private sector investments in Rwanda.

PIDG position
The potential and risks posed by the methane gas field have been known for many years, but it took the intervention of PIDG’s company EAIF to assemble the innovative financing structure. Without it, the KivuWatt project may not have gone ahead. The unique character of this project, and its technical challenges, meant that long-term (commercial) debt for this transaction was simply not available. EAIF investment of US$25m towards the construction of the KivuWatt Power Project in Lake Kivu was crucial. The project won the Euromoney Project Finance Africa Power Deal for 2011, and is expected to generate PSI of US$142m. PIDG’s Technical Assistance Facility (TAF) has provided a US$500k grant for lake stability monitoring, to oversee, co-ordinate, and evaluate gas extraction activities, and finance training of local technicians.

**DEVELOPMENT IMPACT**
- Total private sector investment committed of US$142m.
- 200 people will be employed during the construction period, and approximately 60 permanent jobs created over the course of the operation of the plant.
- Close to two million people will be protected from the threat of a methane gas explosion.
- Only 9% of Rwandan households are connected to the national grid. The Government’s target is to increase this to 16% by 2012. KivuWatt is expected to add 25MW of base load power to the national grid which will enable this expansion.
- KivuWatt is expected to deliver power at a tariff substantially lower than the cost for running diesel-fired power plants. By tapping the indigenous fuel, the KivuWatt project will significantly lower the cost of electricity necessary to drive Rwanda’s fast growing economy.
- The Government of Rwanda will receive a royalty for the utilised gas, and may be able to make a significant saving in subsidies (it currently subsidises the importation of oil for power generation by around US$10m a year), as KivuWatt will reduce the cost of power generation.
- If the project is successful, it should attract further investment in methane gas-to-power projects, elsewhere.