



## Presentation at the Opening Session of the ENGINE Conference by Madame PAPPALARDO

Chairwoman of ADEME

Address on 13 February 2006

First of all I wish to express my appreciation to BRGM, to its chairman, **Philippe Vesseron**, and to his co-workers who are making us welcome today at this launching conference for the ENGINE project: a co-ordination action of the European Union's 6th European Framework Research & Development Programme. In this connection, we are indebted to **Mr. Schuppers**, representing the Research Directorate-General and who honours us with his presence today, for the Commission's support of projects devoted to geothermal energy.

The **ENGINE Project**, designed to ensure the co-ordination on a European scale of Research & Development activities devoted to Unconventional Geothermal Resources and to Enhanced Geothermal Systems, has benefited from ADEME's unconditional backing.

In this connection, let me underline the exemplary collaboration between ADEME and BRGM, partners in the field of geothermal energy; BRGM remains ADEME's most favoured partner in this sector, not only because of the expertise regarding the subsurface it has long attained and manifested, but also because geothermal energy is a field in which the technical complementary nature of our two institutions receives its fullest expression.

This close collaboration, dating back more than 20 years, can be expected to strengthen yet further, now that, with the durable rise in cost of traditional forms of energy and climate disturbance, we must come to grips with these major challenges regarding energy and the environment. Reduced consumption alone will not enable the objective to be met of dividing the country's greenhouse gas emissions by a factor of four so as to achieve a halving of these emissions worldwide by 2050. A policy that develops renewable energy resources is therefore an essential complement, notably for heat and electric power.

In such a context, geothermal energy is capable of playing a highly active role. It can contribute to the energy pool that will help us respect our commitments to the Koyoto protocol and, in the longer term, reach the goals of Factor 4.

### 1) France's favourable legislative and statutory framework

To meet the objectives defined following the Kyoto Protocol, France recently adopted a legislative framework (the so-called POPE Law enacted on 13 July 2005) that determines the orientations of French energy policy for the next 15 years:

- **In the heat sector: increase by 50% the contribution of these energy sources by 2010** (5 additional megatons of oil equivalent - MTOE).

An exercise in the PPI framework (Multi-annual investment schedule) devoted to heat has just been initiated by the Ministry for Industry in order to assess the respective projected contributions of the various renewable energy technologies for 2015. ADEME and BRGM are collaborating actively in its geothermal energy portion.

- **Power production: obtain an increase from 15% in 1997 to 21% in 2010** (33 additional TWh - terawatt hours).

Moreover, transposing the European Directive relative to renewable sources of electricity, the national utility **EDF is under the legal obligation to purchase the electricity produced**, and at rates that are sufficiently incentive to make way for the emergence of economically viable projects, particularly concerning aeolian energy. These rates are currently being revised under the supervision of the Ministry for Industry.

Geothermal energy's potential is substantial in both the heat and power production areas, but challenges remain that must be taken on board before the results can be made commensurate with the issues at stake.

These challenges are both economic and technological; progress still needs to be made to ensure:

- reliability,
- cost-reduction,
- safety with respect to the environment.

They must be accompanied by research & development programmes like those mentioned in Philippe Vesseron's introductory address.

Geothermal energy deserves the mobilisation of all the players in the public sector, with ADEME foremost.

## **2) The most promising orientations for developing heat from geothermal sources**

In order to achieve the objectives set forth in the POPE Act, ADEME has proposed to prioritize **three goals for development**. Thus, heat of geothermal origin could contribute the equivalent of nearly **700,000 TOE yearly in 2010 to the total national heat production from renewable sources**. This would result in **tripling the 2003 production** and would amount in 2010 to **reducing CO<sub>2</sub> releases into the atmosphere by virtually 2 million tons** annually.

- **Goal 1: geothermal energy for households using heat pumps connected to vertical ground loops**

**Objective:** To succeed in equipping one out of five single-family homes with efficient heat pumps in 2010, thereby reaching a total of 300,000 units.

**Means:** appropriate tax provisions (the tax credit has been increased to 50% of equipment costs starting with the 2006 LFI - Initial Finance Law) in conjunction with measures designed to organize the profession around a quality-conscious approach could be expected to install the French market in a sustainable situation, where it might well become the most important in Europe.

- **Goal 2: Geothermal energy termed “intermediate-level”**

This category covers medium-sized **operations**, that is, those **involving heat pumps on groundwater bodies at varying depth or using arrays of vertical exchangers** (intended for heating and cooling medium- to large-sized office-buildings or for heating apartment houses). **This type of geothermal technology can be implemented in a majority of regions in France and is more liable to be developed, hence its attractiveness.**

The measures proposed to support this activity include:

- **Improving what we know about exploitable resources** (updating by BRGM of inventories of subsurface data correlated with energy needs at the surface, for example).
- **Furnishing more complete information to concerned contractors and project managers** (providing mapping tools on the resources and setting up structures that train in putting together and managing projects).
- Aid in financing model operations may also represent a good means for **generalizing best practice.**

- **Goal 3: The geothermal technology of district heat supply systems as found in the Paris region**

Today, 34 doublets are operational, with an average level of availability exceeding 95%. Mostly located in the Paris area, **they provide heat to some 160,000 housing equivalents, or almost 800,000 persons** (the most important renewable energy source in the Ile-de-France Region).

**Objective:** ensure a strong increase in total installations, i.e. **+50% over the current level in the Ile-de-France Region by 2020**, through more efficient use of the existing geothermal resource.

**Means:** New dispositions such as **certificates of energy conservation**, together with the **inexorable rise in fossil fuel costs**, can be expected to aid in the achievement of this objective.

**To accompany this programme for reviving district heat supply technology, a proposal was made in 2005 to establish within BRGM a “Technical Centre”-type structure in support of professionals in the sector.** This project should be able to be implemented quickly.

### **3) Promote power production from geothermal energy**

#### **A) By taking advantage of particular geographical conditions**

In the power production sector, geothermal energy should continue to account for **only a modest proportion, except in the Overseas Departments in the Antilles** (Guadeloupe and Martinique) and the Indian Ocean (Reunion Island), where the geological settings, volcanic in nature, are conducive to the exploitation of potentially profitable geothermal resources.

Geothermal energy can be expected to make a modest contribution to the national effort in favour of the development of renewable sources of electricity, amounting to 0.3 terawatt hour. This objective, that corresponds to an installed capacity of about 50 MW, may seem small indeed, but it is not to be scoffed at on the scale of the Overseas Departments, where this geothermal resource may represent a very real response to the rising demand for energy. Thus in Guadeloupe, with **Bouillante’s two units in operation, geothermal energy currently contributes approximately 10% of the island’s power needs. In coming years an objective of 20 to 25% might be met.**

Projects on a regional scale (the Caribbean zone) also deserve attentive examination. Such is the objective of the GéoCaraïbes project that ADEME helped to organize and which is scheduled to start

up as early as 2006 on Dominica with financial support from the INTERREG-Caraïbes Programme (FEDER Fund).

### **B) By prioritizing Research & Development**

As of 2020, electric power production from geothermal sources should occupy a more important rank provided Research & Development receives full support today.

**Rendering intermediate-energy resources profitable** (Triassic resources, for example), as has been done for a number of years in several European countries, including Germany and Austria, may represent a means to increase geothermal energy's contribution.

**Modules of only a few MW of electric power that also permit joint production of heat** could go on line in a number of regions in France.

The other promising-looking aspect involves the **industrial implementation of the techniques for exploiting the deep enhanced geothermal systems developed at Soultz-sous-Forêts.**

Each one of you is certainly familiar with the Soultz programme: that research project born in 1987 of a Franco-German initiative and that has attracted interest and active support from the European Union's Research Directorate-General. Since that time, ADEME has never ceased to stand firmly behind this major project –“major” when viewed in the context of what is occurring in the area of renewable energies– seeing to what extent the perspectives it offers may be important. Today, the final phase of this program is underway, with a scientific demonstration plant composed of three 5,000 meter-deep wells which hopefully will generate its very first kWh by the end of 2006.

With this programme, we have reached the heart of Project ENGINE's preoccupations, which is the reason for our presence here today, insofar as the research conducted at Soultz helped to engender the concept of Enhanced Geothermal Systems. What phenomena are at work? Are projects like Soultz reproducible? What potential do EGS resources have? Are such projects economically viable? Are they capable of attracting interest from industrial players? These are the main questions that are posed in connection with this project, and we have every hope that ENGINE will help bring answers to them.

### **Conclusion**

Before inviting you to engage in debate during the three days to come, I want you to know that I feel resolutely optimistic about the future of geothermal energy. If the present and future energy and environmental context is favourable and places this technology durably in the energy picture, one of the great advantages of geothermal energy, to my mind, is that it represents a field where knowledge and the command of technologies still have a potential for material improvement. The scope of progress that can be anticipated remains very considerable. This is a genuine challenge to imagination and creativity from which geothermal energy should derive great benefit.