The present work aims the importance of gas thermoelectricity for the country, considering the Brazilian electrical sector characterization, specificities and their impacts.

Demonstrate the importance of environmental management and concepts it in several scenarios. Issues regarding legal and institutional aspects, mainly permitting process for generator units.

It was presented a characterization of Macae Power Plant, the object of our environmental management studies. A critical approach to the implementation of the environmental management system of UTE Macaé has identified several lessons learned during different project periods.

We have the historical evolution of thermoelectrical plants in Brazil in order to understand the type of energy matrix available. In 2001, the country faced problems due lack of rain when the whole Country was supplied by Hydro plants needed to save energy. The lack of energy tied the Country development. Immediately the Brazilian government take action with the using a gas from Bolivia-Brazil pipeline putting emergencial gas power plants as a fast track project In order to implement an alternative energy source based on natural gas, it was considered the lesser impact alternative source and more reliable for the power plants in case of lack of rain that supplies the Hydro plants.

The characterization of Brazilian energy sector, verifying the main characteristics and specificities of thermoelectrical plants and their environmental impacts, are the most critical paths in order to implement a projects. To develop any project or specific projects such power plants it is necessary to understand the
culture and specific environmental and social issues in order to avoid any impact to the project.

Other specificities regarding hydro plants and gas power plants such environmental and social impacts generate by each specific type of generation was brought up.

During the development of this work is highlighted the environmental management concept analyzing the national and international guidelines regarding environmental management, some of them are already well accepted however all the organizations should be aware that not just a good recognized management system will guarantee an excellent results of environmental, health, safety and production. Knowledge and commitment is required from everyone in the organization.

It is impossible not mention and discuss in a work like that, the legal and institutional aspects related with natural gas power plant emphasizing environmental licensing problems. The Brazilian legislation is pretty new and all the time has some changes that usually can impact the project. During the our case of study UTE Macaé, we were learning together with the environmental agency because this was one of the first gas power plants built in Brazil.

The UTE Macaé – Power Plant our case of study is well characterized with all project details. In the process side there is a good description, energy generation process, basic sources “water and natural gas “.

Operational and project characteristics is aligned with all information needed to understand the project are described in this work.

Considering our case of study UTE Macaé we went through all the experience and each specific area including: Environmental management system, mitigation programs and a really huge monitoring program that covers whatever deviation that could appear due any operation.

With all the experiences before us established a lessons learned to be shared with you in order to avoid future environmental, social or economic impacts in other Gas power plant implementation worldwide. It is good to be clear
that two separated phases are explained and both are very important, construction and operation.

The Environmental Management analysis of Macaé Power Plant was identified in the previous paragraphs and concluded with the lessons learned giving a really good supporting a critical approach of implementation of the environmental management system of UTE Macaé.

Create a good interaction between competent project manager and integrated project team. Define on time with good anticipation HSE resources necessarily as following: people, budget and time.

**Keywords**

Environmental; health and safety; sustainable management system; HSE considered in project management.