

## **PRESENTATION**

The Instituto de Engenharia Nuclear (IEN), Nuclear Engineering Institute in English, is a research and development unit of the Comissão Nacional de Energia Nuclear (CNEN), the Brazilian Nuclear Energy Commission, of the Ministry of Science, Technology and Innovation (MCTI).

Nuclear Science and Technology can offer a variety of solutions for economical, social and environmental problems, ranging from electricity generation to nuclear medicine, with applications in nearly all imaginable human activity.

In particular, nuclear energy is a carbon-free electricity generation technology which, according to the Intergovernmental Panel on Climate Change (IPCC), is expected to play an important role in the mitigation of the Green House Gases (GHG) emissions associated to global warming.

Besides energy generation, nuclear technology applications in health sciences have relevant contributions to improving the quality of life of patients. Moreover, this reduces public expending through the availability of early diagnostic of diseases, which results in less expensive treatments.

Research and Development in Nuclear Engineering is the Institutional Process which allows IEN to develop, renew and create the knowledge needed to meet the present and future needs of its clients.

In 2013 a comprehensive review of the research and development organization at IEN has been performed in order to identify and select the most promising research areas according to the Institute's strategy.

The chapters of the present Progress Report are organized according to the contributions of these selected research areas, highlighting the research and development accomplished by IEN in the period 2013-2014.