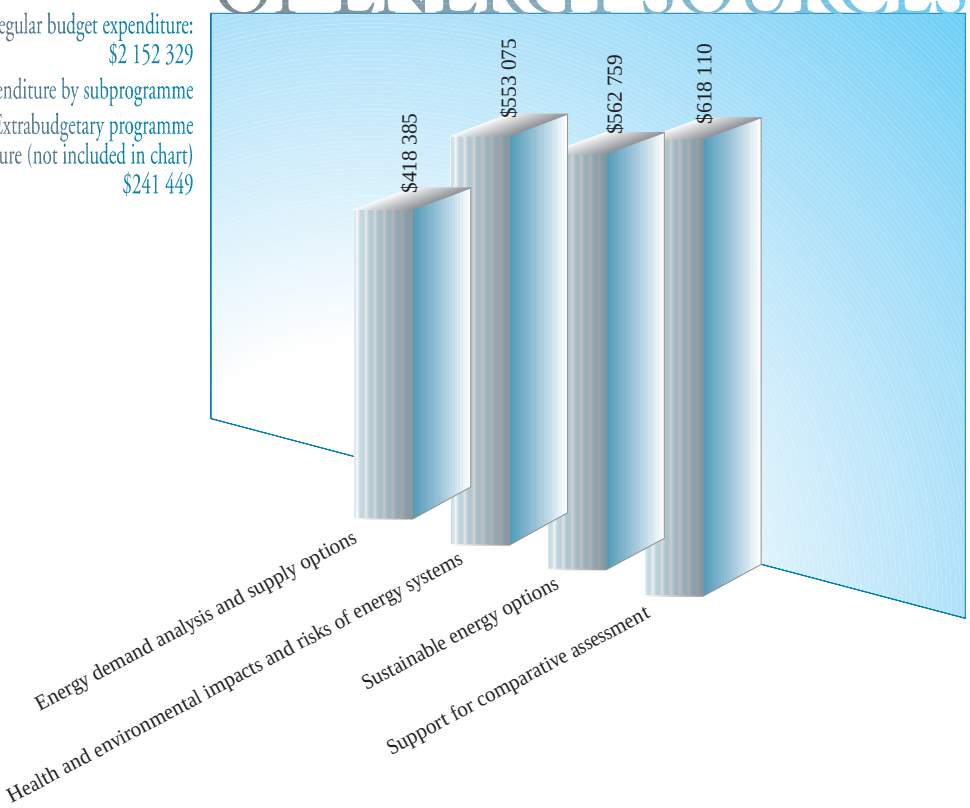
COMPARATIVE ASSESSMENT OF ENERGY SOURCES

Regular budget expenditure:
$2 152 329

Expenditure by subprogramme

Extrabudgetary programme expenditure (not included in chart)
$241 449



The major goal of the programme is to strengthen the capabilities of Member States to conduct comparative assessment studies in a national context and to make informed decisions on the potential role of different energy sources in their sustainable energy and electricity supply strategies. The Agency is continuing to develop a set of databases and analytical tools specifically designed for the comparative assessment of different options and strategies for electricity supply. These tools are disseminated to Member States and assistance is provided in adapting and applying them for national studies.

Energy demand analysis and supply options

Together with the OECD/NEA, the Agency began preparation of a technical report on long term regional and global projections of energy and electricity demand to the year 2050 and beyond. The report will help the Agency to select long term scenarios for the analysis of the potential and limitations of nuclear energy in comparison with other energy options. This effort, together with another project (also with the OECD/NEA and with national research teams from Japan, the Russian Federation and the USA) on extending Agency energy demand and supply analyses up to 2050 and 2100, will be the first step in providing an overall comparative assessment of different energy systems and their potential in long term sustainable energy mixes.

Work began on developing a simplified methodology for estimating the externalities (costs and benefits) associated with energy use with minimum data requirements. This methodology will ultimately be incorporated into the Agency's comparative assessment and energy/electricity system planning tools.

Estimates of high and low growth rates of nuclear capacity in various world regions to 2015 were updated and these, together with the corresponding estimates for growth in energy and electricity demand, were published in the Agency's *Energy, Electricity and Nuclear Power Estimates for the Period up to 2015* (Reference

Data Series No. 1). In this connection, work was started on enhancing the Energy and Economic Databank (EEDB) by including information on energy resources, their availability and prices.

The final draft of a report on the projected costs of generating electricity was completed, the latest in a series of studies carried out jointly by the OECD/NEA, the IEA and the Agency. The report compares the costs of electricity generated by nuclear power and other energy sources.

Health and environmental impacts and risks of energy systems

In response to growing concern over the health and environmental impacts of different electricity generation options in Member States, a technical report providing guidance on this subject was completed.

At a Technical Committee meeting in October, guidance was developed for estimating and comparing the long term health and environmental impacts and risks from different energy systems. Typical examples were selected and assessment methods identified in the technical report that was produced.

A CRP was initiated on formulating approaches to compare the potential impacts of waste from electricity generation technologies. This CRP has two primary objectives: filling gaps in the database on waste amounts, characteristics and management practices for different electricity generation fuel chains; and reviewing and testing approaches for calculating and comparing the health and environmental effects of radioactive and non-radioactive contaminants found in wastes from electricity generation.

Sustainable energy options

The Agency's work in support of the Intergovernmental Panel on Climate Change (IPCC) and the Framework Convention on Climate Change (FCCC) included preparation of a brochure, *Sustainable Development and Nuclear Power,* which was distributed at the FCCC's Third Conference of the Parties held in December in Kyoto.

In 1997, the DECADES databases were expanded to include information on renewable energy sources (solar and wind), advanced and innovative nuclear fuel cycles and secondary emissions associated with the production of materials used in the construction, operation and decommissioning stages of different energy technologies. A peer review was also initiated of the Reference Technology Database (RTDB), which contains information on the technical, economic and environmental aspects of various components of the different energy chains.

Improvements were made to DECPAC, the Agency's methodological software for comparative assessment studies, to permit comprehensive reviews at the power plant, full energy chain and electricity supply systems levels. A decision aiding module was developed and added to the software package and prototypes were developed for interfaces to the VALORAGUA model and the DECADES home page on the Internet.

Support for comparative assessment

Some of the existing 24 Country Specific Databases (CSDBs), which permit more specific assessments to be undertaken in particular national situations, were upgraded and 10 new CSDBs were developed. A revised version of the DECADES Tools user's manual was completed,

Croatia and Brazil received assistance in performing comparative assessments of electricity supply options and strategies. In a new CRP, 16 country teams are using DECPAC and comparative assessment techniques to carry out case studies on: the cost effectiveness of different options for reducing atmospheric and greenhouse gas emissions; the potential roles of nuclear power and renewable energy in sustainable energy development; and the identification of sustainable energy development indicators.