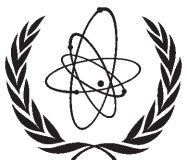


# ANNUAL REPORT 2002

**Article VI.J of the Agency's Statute requires the Board of Governors to submit "an annual report to the General Conference concerning the affairs of the Agency and any projects approved by the Agency".**

**This report covers the period 1 January to 31 December 2002.**



**IAEA**

International Atomic Energy Agency

GC(47)/2

# Member States of the International Atomic Energy Agency

(as of 31 December 2002)

AFGHANISTAN	GUATEMALA	PHILIPPINES
ALBANIA	HAITI	POLAND
ALGERIA	HOLY SEE	PORTUGAL
ANGOLA	HUNGARY	QATAR
ARGENTINA	ICELAND	REPUBLIC OF MOLDOVA
ARMENIA	INDIA	ROMANIA
AUSTRALIA	INDONESIA	RUSSIAN FEDERATION
AUSTRIA	IRAN, ISLAMIC REPUBLIC OF	SAUDI ARABIA
AZERBAIJAN	IRAQ	SENEGAL
BANGLADESH	IRELAND	SIERRA LEONE
BELARUS	ISRAEL	SINGAPORE
BELGIUM	ITALY	SLOVAKIA
BENIN	JAMAICA	SLOVENIA
BOLIVIA	JAPAN	SOUTH AFRICA
BOSNIA AND HERZEGOVINA	JORDAN	SPAIN
BOTSWANA	KAZAKHSTAN	SRI LANKA
BRAZIL	KENYA	SUDAN
BULGARIA	KOREA, REPUBLIC OF	SWEDEN
BURKINA FASO	KUWAIT	SWITZERLAND
CAMBODIA	LATVIA	SYRIAN ARAB REPUBLIC
CAMEROON	LEBANON	TAJIKISTAN
CANADA	LIBERIA	THAILAND
CENTRAL AFRICAN REPUBLIC	LIBYAN ARAB JAMAHIRIYA	THE FORMER YUGOSLAV REPUBLIC OF
CHILE	LIECHTENSTEIN	MACEDONIA
CHINA	LITHUANIA	TUNISIA
COLOMBIA	LUXEMBOURG	TURKEY
COSTA RICA	MADAGASCAR	UGANDA
CÔTE D'IVOIRE	MALAYSIA	UKRAINE
CROATIA	MALI	UNITED ARAB EMIRATES
CUBA	MALTA	UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND
CYPRUS	MARSHALL ISLANDS	UNITED REPUBLIC OF TANZANIA
CZECH REPUBLIC	MAURITIUS	UNITED STATES OF AMERICA
DEMOCRATIC REPUBLIC OF THE CONGO	MEXICO	URUGUAY
DENMARK	MONACO	UZBEKISTAN
DOMINICAN REPUBLIC	MONGOLIA	VENEZUELA
ECUADOR	MOROCCO	VIET NAM
EGYPT	MYANMAR	YEMEN
EL SALVADOR	NAMIBIA	YUGOSLAVIA, FEDERAL REPUBLIC OF*
ESTONIA	NETHERLANDS	ZAMBIA
ETHIOPIA	NEW ZEALAND	ZIMBABWE
FINLAND	NICARAGUA	
FRANCE	NIGER	
GABON	NIGERIA	
GEORGIA	NORWAY	
GERMANY	PAKISTAN	
GHANA	PANAMA	
GREECE	PARAGUAY	
	PERU	

---

\* Name changed to Serbia and Montenegro as of 4 February 2003.

The Agency's Statute was approved on 23 October 1956 by the Conference on the Statute of the IAEA held at United Nations Headquarters, New York; it entered into force on 29 July 1957. The Headquarters of the Agency are situated in Vienna. Its principal objective is "to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world".

© IAEA, 2003

Printed by the IAEA in Austria  
July 2003

## The Agency's Board of Governors

The Board of Governors oversees the ongoing operations of the Agency. The Board comprises 35 Member States and generally meets five times a year, or more frequently if required for specific situations. Among its functions, it adopts the Agency's programme for the incoming biennium and makes recommendations on the Agency's budget for the General Conference.

In 2002, the Board considered the *Nuclear Technology Review 2002* and various activities related to nuclear science, technology and applications. In the area of safety, it considered the *Nuclear Safety Review for the Year 2001* and various related activities. It also approved an 'Action Plan for the Radiological Protection of Patients' and the development of an Agency safety standard on Preparedness and Response for a Nuclear or Radiological Emergency. It approved the Agency's activities in the area of nuclear security and the establishment of a Nuclear Security Fund. As regards verification, the Board considered the *Safeguards Implementation Report for 2001*. It approved a number of safeguards agreements and additional protocols and considered the Agency's work related to the conceptual framework for integrated safeguards. The situation with regard to the Democratic People's Republic of Korea was kept under constant review. The Board also approved the Agency's Technical Co-operation Programme for 2003–2004 and agreed to fix target figures for the Technical Co-operation Fund for each of these years. It also recommended for approval applications for membership from Eritrea, the Kyrgyz Republic and the Republic of Seychelles.

## Composition of the Board of Governors (2002–2003)

Chairperson:	H.E. Ms. Nabeela AL-MULLA Ambassador, Governor from Kuwait
Vice-Chairmen:	H.E. Mr. Antonio NÚÑEZ GARCÍA-SAÚCO Ambassador, Governor from Spain
	Mr. Șerban Constantin VALECA Governor from Romania
Argentina	Kuwait
Australia	Malaysia
Brazil	Morocco
Bulgaria	Netherlands
Burkina Faso	New Zealand
Canada	Panama
Chile	Philippines
China	Romania
Colombia	Russian Federation
Cuba	Saudi Arabia
Czech Republic	South Africa
Denmark	Spain
Egypt	Sudan
France	Switzerland
Germany	Turkey
India	United Kingdom of Great
Iran,	Britain and Northern
Islamic Republic of	Ireland
Japan	United States of America

## The General Conference

The General Conference comprises all Member States of the Agency and meets once a year. It considers the annual report of the Board of Governors on the Agency's activities during the previous year, approves the Agency's accounts and the budget, approves any applications for membership and elects members to the Board of Governors. It also conducts a wide ranging general debate on the Agency's policies and programme and passes resolutions directing the priorities of the Agency's work.

# The IAEA at a Glance

(as of 31 December 2002)

- **134** Member States.
- **58** intergovernmental and non-governmental organizations worldwide having formal agreements with the Agency.
- **45** years of international service in 2002.
- **2229** professional and support staff.
- **\$243 million** Regular Budget for 2002, supplemented by extrabudgetary contributions received in 2002 amounting to **\$43 million**.
- **\$73 million** target in 2002 for voluntary contributions to the Agency's Technical Co-operation Fund, supporting projects involving **3351** expert and lecturer assignments, **2750** meeting and workshop participants, **2398** participants in training courses and **1632** fellows and visiting scientists.
- **3** international laboratories and research centres.
- **2** liaison offices (in New York and Geneva) and **2** safeguards regional offices (in Tokyo and Toronto).
- **132** approved Co-ordinated Research Projects involving **1818** active research contracts and agreements.
- **229** safeguards agreements in force in 145 States (and with Taiwan, China) involving **2400** safeguards inspections performed in 2002. Safeguards costs in 2002 amounted to **\$70.8 million** in regular budget and **\$15.1 million** in extrabudgetary resources.
- **15** national safeguards support programmes and **1** multinational support programme (European Union).
- **5 million** monthly visits to the Agency's *WorldAtom* web site.
- **2.3 million** records in the International Nuclear Information System (INIS), the Agency's largest database.
- **198** publications issued (in print and electronic formats) in 2002.

# Abbreviations

ABACC	Brazilian–Argentine Agency for Accounting and Control of Nuclear Materials
ADB	Asian Development Bank
AFRA	African Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology
ARCAL	Co-operative Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean
BWR	Boiling water reactor
CRP	Co-ordinated Research Project
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
ESTRO	European Society for Therapeutic Radiology and Oncology
Euratom	European Atomic Energy Community
FAO	Food and Agriculture Organization of the United Nations
FORATOM	Forum Atomique Européen
HWR	Heavy water reactor
IAEAMEL	IAEA Marine Environment Laboratory
IEA	OECD International Energy Agency
ICTP	International Centre for Theoretical Physics
IPCC	Intergovernmental Panel on Climate Change
IIASA	International Institute for Applied Systems Analysis
ILO	International Labour Organization
IMO	International Maritime Organization
INDC	International Nuclear Data Committee
INIS	International Nuclear Information System
IOC	Intergovernmental Oceanographic Commission (UNESCO)
ISO	International Organization for Standardization
LWR	Light water reactor
NEA	Nuclear Energy Agency of the OECD
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OECD	Organisation for Economic Co-operation and Development
OLADE	Organización Latinoamericana de Energía (Latin American Energy Organization)
OPANAL	Organismo para la Proscripción de las Armas Nucleares en América Latina y el Caribe
PAHO	Pan American Health Organization/WHO
PHWR	Pressurized heavy water reactor
PWR	Pressurized water reactor
RAF	Regional Africa
RAS	Regional East Asia and Pacific
RAW	Regional West Asia
RBMK	Light boiling water cooled graphite moderated pressure tube reactor (former USSR)
RCA	Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology
SQ	Significant quantity
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNECLAC	United Nations Economic Commission for Latin America and the Caribbean
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNMOVIC	United Nations Monitoring, Verification and Inspection Commission
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
WANO	World Association of Nuclear Operators
WCO	World Customs Organization
WEC	World Energy Council
WFP	World Food Programme
WHO	World Health Organization
WMO	World Meteorological Organization
WTO	World Trade Organization
WWER	Water cooled and moderated energy reactor (former USSR)

## Note

- The *Annual Report* reviews the results of the Agency's programme according to the three "pillars" of **technology, safety** and **verification** — and also management — as presented in the *Medium Term Strategy*. The main part of the report, starting on page 13, follows the programme structure as it applied in 2002. The introductory chapter, "The Nuclear World in 2002", seeks to provide a thematic analysis, based on the three pillars, of the Agency's activities within the overall context of notable developments during the year. Additional information on specific issues can be found in the Agency's *Nuclear Safety Review, Nuclear Technology Review* and *Technical Co-operation Report for 2002*.
- Additional tables giving information on the:
  - Facilities under Agency safeguards or containing safeguarded material on 31 December 2002.
  - Co-ordinated Research Projects conducted by the Agency.are available on the Agency's *WorldAtom* web site (<http://www.iaea.org/Worldatom/Documents/Anrep/Anrep2002/>).
- All sums of money are expressed in United States dollars.
- The designations employed and the presentation of material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat concerning the legal status of any country or territory or of its authorities, or concerning the delimitation of its frontiers.
- The mention of names of specific companies or products (whether or not indicated as registered) does not imply any intention to infringe proprietary rights, nor should it be construed as an endorsement or recommendation on the part of the Agency.
- The term "non-nuclear-weapon State" is used as in the Final Document of the 1968 Conference of Non-Nuclear-Weapon States (United Nations document *A/7277*) and in the NPT.

# Contents

The Nuclear World in 2002 .....	1	
<b>Technology</b>		
Nuclear Power .....	13	
Nuclear Fuel Cycle and Material Technologies .....	18	
Analysis for Sustainable Energy Development .....	22	
Nuclear Science .....	26	
Food and Agriculture .....	31	
Human Health .....	36	
Water Resources .....	40	
Protection of the Marine and Terrestrial Environments .....	43	
Physical and Chemical Applications .....	46	
<b>Safety</b>		
Safety of Nuclear Installations .....	51	
Radiation Safety .....	55	
Management of Radioactive Waste .....	59	
<b>Verification and Security</b>		
Safeguards .....	65	
Security of Material .....	72	
Verification in Iraq Pursuant to UNSC Resolutions .....	75	
<b>Outreach and Information Support Services</b> .....		77
<b>Management</b>		
Management of Technical Co-operation for Development .....	83	
Policy and General Management .....	88	
Annex .....	93	
Organizational Chart .....	inside back cover	

## Annex

Table A1.	Allocation and utilization of Regular Budget resources in 2002 . . . .	95
Table A2.	Extrabudgetary funds in 2002 . . . . .	96
Table A3.	Technical co-operation disbursements by Agency programme and region in 2002 . . . . .	97
Table A4.	International Regulatory Review Team (IRRT) missions . . . . .	98
Table A5.	Peer reviews of radiation safety infrastructure . . . . .	98
Table A6.	Operational Safety Review Team (OSART) missions . . . . .	98
Table A7.	Peer Review of Operational Safety Performance Experience (PROSPER) . . . . .	99
Table A8.	Safety Culture Enhancement Programme (SCEP) missions . . . . .	99
Table A9.	International PSA Review Team (IPSART) missions . . . . .	99
Table A10.	Engineering Safety Review Service missions . . . . .	99
Table A11.	Integrated Safety Assessment of Research Reactors (INSARR) missions . . . . .	100
Table A12.	Transport Safety Appraisal Service (TransSAS) missions . . . . .	100
Table A13.	Status with regard to the conclusion of safeguards agreements and additional protocols (as of 31 December 2002) . . . . .	101
Table A14.	Number of States having significant nuclear activities at the end of 2000, 2001 and 2002 . . . . .	107
Table A15.	Approximate quantities of material subject to Agency safeguards at the end of 2002 . . . . .	107
Table A16.	Number of facilities under safeguards or containing safeguarded material on 31 December 2002 . . . . .	108
Table A17.	Additional safeguards support provided by States . . . . .	108
Table A18.	Co-ordinated Research Projects — new or completed in 2002 . . . .	109
Table A19.	Training courses, seminars and workshops in 2002 . . . . .	112
Table A20.	Publications issued in 2002 . . . . .	122