

---

# IAEA Annual Report 2017

**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 2017.**

# Contents

<i>Member States of the International Atomic Energy Agency</i> .....	iv
<i>The Agency at a Glance</i> .....	v
<i>The Board of Governors</i> .....	vi
<i>The General Conference</i> .....	vii
<i>Notes</i> .....	viii
<i>Abbreviations</i> .....	ix

---

Overview .....	1
----------------	---

## **Nuclear Technology**

Nuclear Power .....	29
Nuclear Fuel Cycle and Materials Technologies .....	36
Capacity Building and Nuclear Knowledge for Sustainable Energy Development .....	40
Nuclear Science .....	43
Food and Agriculture .....	50
Human Health .....	53
Water Resources .....	55
Environment .....	58
Radioisotope Production and Radiation Technology .....	60

## **Nuclear Safety and Security**

Incident and Emergency Preparedness and Response .....	65
Safety of Nuclear Installations .....	70
Radiation and Transport Safety .....	75
Radioactive Waste Management and Environmental Safety .....	79
Nuclear Security .....	82

## **Nuclear Verification**

Nuclear Verification .....	89
----------------------------	----

## **Technical Cooperation**

Management of Technical Cooperation for Development .....	101
---	-----

---

<b>Annex</b> .....	113
<b>Organizational Chart</b> .....	159

# Member States of the International Atomic Energy Agency

*(as of 31 December 2017)*

AFGHANISTAN	GERMANY	PALAU
ALBANIA	GHANA	PANAMA
ALGERIA	GREECE	PAPUA NEW GUINEA
ANGOLA	GUATEMALA	PARAGUAY
ANTIGUA AND BARBUDA	GUYANA	PERU
ARGENTINA	HAITI	PHILIPPINES
ARMENIA	HOLY SEE	POLAND
AUSTRALIA	HONDURAS	PORTUGAL
AUSTRIA	HUNGARY	QATAR
AZERBAIJAN	ICELAND	REPUBLIC OF MOLDOVA
BAHAMAS	INDIA	ROMANIA
BAHRAIN	INDONESIA	RUSSIAN FEDERATION
BANGLADESH	IRAN, ISLAMIC REPUBLIC OF	RWANDA
BARBADOS	IRAQ	SAINT VINCENT AND THE GRENADINES
BELARUS	IRELAND	SAN MARINO
BELGIUM	ISRAEL	SAUDI ARABIA
BELIZE	ITALY	SENEGAL
BENIN	JAMAICA	SERBIA
BOLIVIA, PLURINATIONAL STATE OF	JAPAN	SEYCHELLES
BOSNIA AND HERZEGOVINA	JORDAN	SIERRA LEONE
BOTSWANA	KAZAKHSTAN	SINGAPORE
BRAZIL	KENYA	SLOVAKIA
BRUNEI DARUSSALAM	KOREA, REPUBLIC OF	SLOVENIA
BULGARIA	KUWAIT	SOUTH AFRICA
BURKINA FASO	KYRGYZSTAN	SPAIN
BURUNDI	LAO PEOPLE'S DEMOCRATIC REPUBLIC	SRI LANKA
CAMBODIA	LATVIA	SUDAN
CAMEROON	LEBANON	SWAZILAND
CANADA	LESOTHO	SWEDEN
CENTRAL AFRICAN REPUBLIC	LIBERIA	SWITZERLAND
CHAD	LIBYA	SYRIAN ARAB REPUBLIC
CHILE	LIECHTENSTEIN	TAJIKISTAN
CHINA	LITHUANIA	THAILAND
COLOMBIA	LUXEMBOURG	THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA
CONGO	MADAGASCAR	TOGO
COSTA RICA	MALAWI	TRINIDAD AND TOBAGO
CÔTE D'IVOIRE	MALAYSIA	TUNISIA
CROATIA	MALI	TURKEY
CUBA	MALTA	TURKMENISTAN
CYPRUS	MARSHALL ISLANDS	UGANDA
CZECH REPUBLIC	MAURITANIA	UKRAINE
DEMOCRATIC REPUBLIC OF THE CONGO	MAURITIUS	UNITED ARAB EMIRATES
DENMARK	MEXICO	UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND
DJIBOUTI	MONACO	UNITED REPUBLIC OF TANZANIA
DOMINICA	MONGOLIA	UNITED STATES OF AMERICA
DOMINICAN REPUBLIC	MONTENEGRO	URUGUAY
ECUADOR	MOROCCO	UZBEKISTAN
EGYPT	MOZAMBIQUE	VANUATU
EL SALVADOR	MYANMAR	VENEZUELA, BOLIVARIAN REPUBLIC OF
ERITREA	NAMIBIA	VIET NAM
ESTONIA	NEPAL	YEMEN
ETHIOPIA	NETHERLANDS	ZAMBIA
FIJI	NEW ZEALAND	ZIMBABWE
FINLAND	NICARAGUA	
FRANCE	NIGER	
GABON	NIGERIA	
GEORGIA	NORWAY	
	OMAN	
	PAKISTAN	

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 located in Vienna. The IAEA's principal objective is "to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world".

© IAEA, 2018

# The Agency at a Glance

(as of 31 December 2017)

- 169** Member States.
- 83** intergovernmental and non-governmental organizations worldwide invited to observe the Agency's General Conference.
- 61** years of international service.
- 2510** professional and support staff.
- €363.8 million** total Regular Budget for 2017<sup>1</sup>. Extrabudgetary expenditures in 2017 totalled **€100.1 million**.
- €84.9 million** target in 2017 for voluntary contributions to the Agency's Technical Cooperation Fund, supporting projects involving **3641** expert and lecturer assignments, **5913** meeting participants and other project personnel, **3913** participants in **222** regional and interregional training courses and **1979** fellows and scientific visitors.
- 144** countries and territories receiving support through the Agency's technical cooperation programme, including **35** least developed countries.
- 807** active technical cooperation projects at the end of 2017.
  - 2** liaison offices (in New York and Geneva) and **2** safeguards regional offices (in Tokyo and Toronto).
  - 15** international laboratories (Vienna, Seibersdorf and Monaco) and research centres.
  - 11** multilateral conventions on nuclear safety, security and liability adopted under the Agency's auspices.
  - 4** regional/cooperative agreements relating to nuclear science and technology.
- 134** Revised Supplementary Agreements governing the provision of technical assistance by the Agency.
- 135** active CRPs involving **1599** approved research, technical and doctoral contracts and research agreements. In addition, **73** Research Coordination Meetings were held.
  - 29** active IAEA Collaborating Centres. In 2017, **4** institutions were newly designated as IAEA Collaborating Centres and **2** centres were redesignated as IAEA Collaborating Centres for a period of 4 years.
  - 16** national donors to the voluntary Nuclear Security Fund.
- 181** States in which safeguards agreements were being implemented<sup>2,3</sup> of which **132** States had additional protocols in force, with **2102** safeguards inspections performed in 2017. Safeguards expenditures in 2017 amounted to **€137.1 million** (includes €0.1 million 2016 carryover) in the operational portion of the Regular Budget and **€27.4 million** in extrabudgetary resources.
  - 20** national safeguards support programmes and **1** multinational support programme (European Commission).
- 500 000** visitors a month to [iaea.org](http://iaea.org), which was revamped in 2016. The Agency's social media audience had increased to **400 000** followers on social media at the end of 2017, a 12% increase compared with the year before. As of the end of the year, the Agency had social media accounts in Arabic, French, Russian and Spanish, as well as English.
  - 4.1 million** records in the Agency's International Nuclear Information System (INIS) database, with over **540 000** full texts not readily available through commercial channels and **2.9 million** page views in 2017.
  - 1.3 million** documents, technical reports, standards, conference proceedings, journals and books in the IAEA Library and over **10 000** visitors to the Library in 2017.
  - 138** publications, including newsletters, issued in 2017 (in print and electronic formats).

<sup>1</sup> At the UN average rate of exchange of US \$1.122 to €1.00. The total Regular Budget was €369.0 million at the US \$1.00 to €1.00 rate.

<sup>2</sup> These States do not include the Democratic People's Republic of Korea, where the Agency did not implement safeguards and, therefore, could not draw any conclusion.

<sup>3</sup> And Taiwan, China.

# The Board of Governors

The Board of Governors oversees the ongoing operations of the Agency. It comprises 35 Member States and generally meets five times a year, or more frequently if required for specific situations.

The Board appointed by acclamation Mr Yukiya Amano to the post of Director General of the Agency for a further term of office of four years, from 1 December 2017 to 30 November 2021.

In the area of nuclear technologies, in the course of 2017 the Board considered the *Nuclear Technology Review 2017*.

In the area of safety and security, the Board discussed the *Nuclear Safety Review 2017* and the *Nuclear Security Report 2017*, and approved the *Nuclear Security Plan 2018–2021*.

As regards verification, the Board considered the *Safeguards Implementation Report for 2016*. It approved one safeguards agreement. The Board considered the Director General's reports on verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council resolution 2231 (2015). The Board kept under its consideration the issues of the implementation of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) Safeguards Agreement in the Syrian Arab Republic and the application of safeguards in the Democratic People's Republic of Korea.

The Board discussed the *Technical Cooperation Report for 2016* and approved the Agency's technical cooperation programme for 2018–2019.

The Board approved the recommendations contained in the *Proposal to the Board of Governors by the Co-Chairs of the Working Group on the Programme and Budget and the Technical Cooperation Fund Targets for 2018–2019*.

## Composition of the Board of Governors (2017–2018)

Chair:

HE Mr Darmansjah DJUMALA  
Ambassador  
Governor from Indonesia

Vice-Chairpersons:

HE Ms Liselotte KJÆRSGAARD PLESNER  
Ambassador  
Governor from Denmark

HE Mr Andrej BENEDEJČIČ  
Ambassador  
Governor from Slovenia

Algeria  
Argentina  
Armenia  
Australia  
Belgium  
Brazil  
Canada  
Chile  
China  
Costa Rica  
Côte d'Ivoire  
Denmark  
France

Germany  
India  
Indonesia  
Italy  
Japan  
Jordan  
Kenya  
Korea, Republic of  
Netherlands  
Peru  
Portugal  
Qatar  
Russian Federation

Serbia  
Singapore  
Slovenia  
South Africa  
Sudan  
United Arab Emirates  
United Kingdom of  
Great Britain and  
Northern Ireland  
United States of America  
Venezuela, Bolivarian  
Republic of

---

# The General Conference

The General Conference comprises all Member States of the Agency and meets once a year.

In 2017, the Conference approved the Board's appointment of Mr Yukiya Amano as Director General of the Agency for a further term of office of four years, from 1 December 2017 to 30 November 2021.

The Conference — upon the recommendation of the Board — approved Grenada for membership of the Agency. At the end of 2017, the Agency's membership was 169.

The Conference adopted resolutions on the Agency's financial statements for 2016 and budget for 2018; on measures to strengthen international cooperation in nuclear, radiation, transport and waste safety; on nuclear security; on strengthening the Agency's technical cooperation activities; on strengthening the Agency's activities related to nuclear science, technology and applications, comprising non-power nuclear applications and nuclear power applications; on strengthening the effectiveness and improving the efficiency of Agency safeguards; on the implementation of the NPT Safeguards Agreement between the Agency and the Democratic People's Republic of Korea; on the application of Agency safeguards in the Middle East; and on personnel matters, comprising the staffing of the Agency's Secretariat and women in the Secretariat. The Conference also adopted decisions on the progress made towards the entry into force of the amendment to Article XIV.A of the Statute of the Agency, approved in 1999; on the report on the promotion of the efficiency and effectiveness of the Agency's decision making process; and on the progress made towards the entry into force of the amendment to Article VI of the Statute of the Agency, approved in 1999.

# Notes

- The *IAEA Annual Report 2017* aims to summarize only the significant activities of the Agency during the year in question. The main part of the report, starting on page 27, generally follows the programme structure as given in *The Agency's Programme and Budget 2016–2017* (GC(59)/2 and Mod. 1). The objectives included in the main part of the report are taken from that document and are to be interpreted consistently with the Agency's Statute and decisions of the Policy-Making Organs.
- The introductory chapter, 'Overview', seeks to provide a thematic analysis of the Agency's activities within the context of notable developments during the year. More detailed information can be found in the latest editions of the Agency's *Nuclear Safety Review*, *Nuclear Security Report*, *Nuclear Technology Review*, *Technical Cooperation Report* and the *Safeguards Statement and Background to the Safeguards Statement*.
- Additional information covering various aspects of the Agency's programme is available, in electronic form only, on [iaea.org](http://iaea.org), along with the *Annual Report*.
- 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 Treaty on the Non-Proliferation of Nuclear Weapons (NPT). The term 'nuclear-weapon State' is as used in the NPT.
- All the views expressed by Member States are reflected in full in the summary records of the June Board of Governors meetings. On 4 June 2018, the Board of Governors approved the Annual Report for 2017 for transmission to the General Conference.

# Abbreviations

AFRA	African Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology
ALMERA	Analytical Laboratories for the Measurement of Environmental Radioactivity
ANENT	Asian Network for Education in Nuclear Technology
AP	additional protocol
ARASIA	Co-operative Agreement for Arab States in Asia for Research, Development and Training related to Nuclear Science and Technology
ARCAL	Co-operation Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean
ARTEMIS	Integrated Review Service for Radioactive Waste and Spent Fuel Management Decommissioning and Remediation
CLP4NET	Cyber Learning Platform for Network Education and Training
CNS	Convention on Nuclear Safety
COP23	23rd session of the Conference of the Parties (UNFCCC)
CPF	Country Programme Framework
CPPNM	Convention on the Physical Protection of Nuclear Material
CRP	coordinated research project
CSA	comprehensive safeguards agreement
DSRS	disused sealed radioactive source
EduTA	Education and Training Appraisal
ENEN	European Nuclear Education Network
EPR	emergency preparedness and response
EPREV	Emergency Preparedness Review
Euratom	European Atomic Energy Community
FAO	Food and Agriculture Organization of the United Nations
GNSSN	Global Nuclear Safety and Security Network
HEU	high enriched uranium
IACRNE	Inter-Agency Committee on Radiological and Nuclear Emergencies
ICERR	IAEA-designated International Centre based on Research Reactors
ICTP	Abdus Salam International Centre for Theoretical Physics
INIR	Integrated Nuclear Infrastructure Review
INIS	International Nuclear Information System
INLEX	International Expert Group on Nuclear Liability
INPRO	International Project on Innovative Nuclear Reactors and Fuel Cycles
INSARR	Integrated Safety Assessment of Research Reactors
IPPAS	International Physical Protection Advisory Service
IRRS	Integrated Regulatory Review Service

## ABBREVIATIONS

ISCA	Independent Safety Culture Assessment
ITDB	Incident and Trafficking Database (IAEA)
JCPOA	Joint Comprehensive Plan of Action
LANENT	Latin American Network for Education in Nuclear Technology
LEU	low enriched uranium
NESA	Nuclear Energy System Assessment
NGSS	next generation surveillance system
NPCs	National Participation Costs
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
OECD	Organisation for Economic Co-operation and Development
OECD/NEA	OECD Nuclear Energy Agency
OMARR	Operation and Maintenance Assessment for Research Reactors
ORPAS	Occupational Radiation Protection Appraisal Service
OSART	Operational Safety Review Team
PACT	Programme of Action for Cancer Therapy (IAEA)
RANET	Response and Assistance Network (IAEA)
RCA	Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology
ReNuAL	Renovation of the Nuclear Applications Laboratories
RSA	Revised Supplementary Agreement Concerning the Provision of Technical Assistance by the IAEA
SALTO	Safety Aspects of Long Term Operation
SDG	Sustainable Development Goal
SEED	Site and External Events Design
SIT	sterile insect technique
SMR	small and medium sized or modular reactor
SQP	small quantities protocol
TCF	Technical Cooperation Fund
UNDAF	United Nations Development Assistance Framework
USIE	Unified System for Information Exchange in Incidents and Emergencies
VETLAB Network	Veterinary Diagnostic Laboratory Network
WHO	World Health Organization