

Advancing the AGENDA



IAEA
Technical Co-operation
in Support of the
Earth Summit's Agenda 21



**International
Atomic Energy Agency**

Taking Stock of Progress

When the Earth Summit moves to the global stage in September 2002 in Johannesburg, South Africa, the world will take stock of the record of progress towards the far-reaching goals of Agenda 21 — an ambitious and comprehensive plan of action covering all spheres of social, economic, and human development affecting our environment. The Summit — officially named the World Summit on Sustainable Development — is expected to attract more than 60 000 national and international delegates, including heads of State and leaders of major organizations and institutes. Agenda 21 was among the documents that governments adopted nearly a decade ago — at the first Earth Summit in 1992,

officially known as the UN Conference on Environment and Development, held in Rio de Janeiro, Brazil.

The Rio Conference ten years ago represented a watershed in understanding the links between poverty and environmental degradation. Among the major linkages it highlighted is that if there is widespread poverty, the environment often suffers; and if natural resources are damaged and the environment impaired, a country's economy and its citizens are adversely affected.

Rio further set the lofty goal of achieving "Sustainable Development", a term that speaks to the careful integration of environmental and socio-economic issues to meet the needs of humans today, without sacrificing the resources of future generations. The Agenda 21 action plan charges the United Nations system, national governments and the civil society to

reach a delicate balance between environment and development at the global, national and local levels.

The Earth Summit in 2002 will take a close look at what has been accomplished since 1992. What have countries done so far to implement Agenda 21? Have they adopted National Sustainable Development Strategies? Have they ratified conventions relative to Agenda 21's goals? What obstacles have they encountered? What lessons have they learned about what works and what does not? What new factors have emerged to change the picture? What mid-course corrections need to be made to reach the goals? Where should further efforts be concentrated?

While the Summit will not open Agenda 21 for revision, it will seek consensus on the general assessment of current conditions, and on priorities for further action in

What is Agenda 21?

Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by organizations of the United Nations System, governments, and major groups in every area in which humans impact the environment. The document contains 40 chapters and covers four major aspects of sustainable development: social and economic dimensions; conservation and management of resources for development; strengthening the role of major groups; and means of implementation. Related topics are thematically grouped in "clusters".

Agenda 21 — along with the Rio Declaration on Environment and Development, and the Statement of Principles for the Sustainable Management of Forests — was adopted by more than 178 Governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, 3 to 14 June 1992.

The UN Commission on Sustainable Development (CSD) was created in December 1992 to ensure effective follow-up of UNCED, to monitor and report on implementation of the agreements at the local, national, regional and international levels. It was agreed that a five-year review of Earth Summit progress would be made in 1997 by the UN General Assembly meeting in special session.

The 55th General Assembly session decided in December 2000 that the CSD would serve as the central organizing body for the 2002 World Summit on Sustainable Development, which will be held in Johannesburg, South Africa, in September 2002.

More information about Agenda 21 is available on the United Nations web site at <http://www.un.org>. More information on the Earth Summit is at <http://www.earthsummit2002.org>. More information about the IAEA Technical Co-operation Programme and Nuclear Sciences and Applications is on the IAEA's WorldAtom Website at <http://www.iaea.org/worldatom>.

new areas or issues. Decisions will aim to strengthen commitments of all parties to achieving the goals of Agenda 21. Topics covered seek to foster discussion of findings in particular environmental sectors — for example, forests, oceans, climate, energy, and freshwater — as well as in cross-sector areas such as economic conditions, new technologies, and globalization. The gathering also will consider more fully the impact of the revolutions in technology, biology and communications over the past decade, and the important roles of international financial institutions and changing markets. In short, the Summit seeks to reconfirm global commitments, to reinvigorate efforts, and to refocus strategies for achieving sustainable development.

In diverse and catalytic ways, the IAEA is contributing to progress toward the achievement of Agenda 21's goals. Important benefits for advancing sustainable development and for improving the quality of life can derive from the peaceful application of nuclear energy and nuclear techniques. The IAEA, therefore, has an important role in assisting developing countries to improve their scientific, technological, and regulatory capabilities. As part of its work, the IAEA assembled a task force late in 2000 to review its contributions to the UN Commission on Sustainable Development, which is the lead organization for the 2002 Earth Summit. One outcome was a detailed review of the IAEA's Technical Co-operation activities in support of Agenda 21. The report — featured on the follow-

ing pages — was prepared according to UN System guidelines and corresponds to "Thematic Clusters", a grouping of related topics drawn from Agenda 21's various chapters.

IAEA Technical Co-operation and Agenda 21

Fighting acid rain in Poland. Supporting malaria prevention in Zambia, and controlling the life-threatening tsetse fly in Tanzania. Promoting child nutrition in communities of Peru and Senegal. Teaching farmers how to produce crops on saltlands in Morocco, Pakistan, and Egypt. Curbing air pollution in Thailand and China. Investigating water resources in Mali. Strengthening radiation safety in Panama.

These are just some of the ways in which the IAEA's Technical Co-operation activities are helping countries to achieve progress toward Agenda 21 objectives. The activities augment the leading roles the Agency plays worldwide to strengthen capabilities for safe and peaceful uses of nuclear and radiation technologies, and they illustrate the targeted ways in which nuclear science and technology can be applied at the ground level of sustainable development to solve practical problems. A method known as the "sterile insect technique", for instance, is a key component of integrated pest management programmes; nuclear analytical techniques

are instrumental to scientific assessments of pollution in the marine environment; and forms of chemical elements called isotopes play vital roles in hydrological studies of freshwater resources deep inside the Earth's crust.



At the core of the IAEA's Technical Co-operation programme — which today serves 132 Member States — is the commitment to build national capacities that address the priority needs of sustainable development. Over the past decade — from 1993 to 2001 — the IAEA has supported more than 800 technical co-operation projects, valued at over US \$200 million related to various Thematic Clusters of Agenda 21.

IAEA supported projects have helped more than 850 national institutes strengthen their capabilities to meet their priority goals under Agenda 21.



Highlights of Selected Technical Co-operation Activities

Agenda 21, Cluster 5: Human Health

Agenda 21 highlights that health and sustainable development are inter-related. The IAEA's capacity-building activities related to the human health cluster of Agenda 21 have focused on, in particular, radiation safety and protection as well as combating communicable diseases. Other activities are related to improving nutrition and the monitoring of pollution. Illustrating the work were 180 technical co-operation projects valued at US \$51 million, and 184 training courses with over 2600 participants from over 400 institutes.

One key element of efforts addresses the risks to human health associated with radiation. Assisting countries to develop the appropriate legal and regulatory

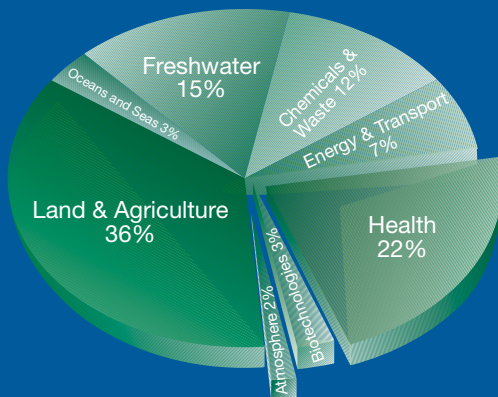
framework, management practices and safety procedures for radiation safety and protection, are central to many IAEA projects. Examples include a regional project that assisted Bolivia, Costa Rica, the Dominican Republic, El Salvador, Guatemala, Jamaica, Nicaragua, Panama and Paraguay in upgrading their radiation protection infrastructures. Based on individual country assessments, the IAEA assisted national authorities and institutes to improve the legal and regulatory framework; the occupational, medical and environmental exposure control; the system of radioactive waste management; and to establish a plan for handling radiation emergencies involving radioactive materials.

Another important programme area includes, for example, the goals of rolling back malaria and fighting the resurgence of tuberculosis. The IAEA has increased efforts that support both of these goals. Molecular techniques using radionuclide tracers have become sensitive and rapid methods of infection diagnosis and drug-resistant pathogen detection. One regional project — involving Kenya, Sudan, Tanzania, Zambia and Zimbabwe — provided assistance to strengthen the capacity of national health centres to utilize these cost-effective techniques for better patient management and to lower treatment costs for malaria and tuberculosis.



Agenda 21, Cluster 10: Environmentally Sound Technologies Including Biotechnologies

This cluster combines Agenda 21 chapters on the "Transfer of Environmentally Sound Technology" and on "Biotechnology". According to Agenda 21, "Environmentally sound technologies in the context of pollution are 'process and product technologies' that generate low or no waste, for the prevention of pollution. They also cover 'end of the pipe' technologies for treatment of pollution after it has been generated." The IAEA support of these aims includes enhancing capacities to use radiation techniques for treating air pollution (notably industrial emissions) and wastes. Altogether 21 projects (valued at US \$15.7 million) have supported 74 national institutions. They included eight training courses for 83 participants; and longer term training for 80 scientific fellows.



Overview of IAEA Technical Co-operation Projects (1993–2001)

Cluster	Subject	No. of Projects	% of Total Projects	Budget in US \$	% of Total Budget	Africa	Latin America
5	Health	180	22	51,051,600	24	42	51
10	Biotechnologies	21	3	15,733,670	7	2	6
11	Atmosphere	14	2	2,318,370	1	2	5
12	Land & Agriculture	294	36	83,364,870	40	91	62
13	Oceans & Seas	27	3	5,931,738	3	5	1
16	Freshwater	121	15	28,878,268	14	41	39
18	Chemicals & Wastes	98	12	17,225,396	8	16	14
19	Energy & Transport	58	7	5,478,491	3	7	13
Total*		813	100	209,982,403	100	206	191

* Information on number of projects and budgets based on approved projects 1993-2001. Information on institutions, training courses, participants, and interns based on implementation through 15 January 2001.



Nuclear technologies provide key medical information for improving health.

Included in the IAEA's activities is an innovative project in Poland that has provided national counterparts with the ability to utilize electron beam dry scrubbing technologies to clean flue gases from coal burning power plants. This has reduced the SO₂ and NO_x emissions that have previously caused significant environmental damage.

Agenda 21, Cluster 11: Atmosphere

The primary objective for this cluster is to improve the understanding of processes that influence and are influenced by the Earth's atmosphere; it includes the assessment of atmospheric pollution. The IAEA's projects related to atmosphere have concentrated on the monitoring and assessment of air pollutants. Of special concern is air particulate matter, a potential serious

threat to health, and the identification of pollution sources (source apportionment). To date, 14 IAEA projects (total of US \$2.3 million) have involved 41 institutions and eight training courses for 68 specialists.

These activities included a joint project with the United Nations Development Programme that provided 13 countries in East Asia with the capacity to monitor and assess air particulate matter, and helped them to identify sources of pollution. This will strengthen the ability of governments to determine necessary policy and regulatory measures and will eventually allow for the monitoring of the transboundary movement of pollutants.

Agenda 21, Cluster 12: Land and Agriculture

This cluster includes chapters that focus on an integrated management of land resources,

managing fragile ecosystems, in particular, combating desertification and drought, and the promotion of sustainable agriculture and rural development. From 1993 to 2001, the IAEA built capacity through partnerships with over 500 institutes participating in 294 projects (valued at US \$83 million) related to this cluster. Of these projects, 173 have focused on strengthening capacities to utilize the sterile insect technique as a component of integrated pest management, or on radiation technology for plant breeding to improve the productivity of crops. Other activities have helped to prevent or reverse land degradation, for example by enriching soil organic matter and increasing soil fertility, or by fostering the appropriate use of fertilizers and better irrigation. Just over 100 training courses have benefited 1240 participants. Additionally, more than 1000 scientific fellows will utilize their newly gained knowledge to address



that Support Agenda 21

Inter-regional	Europe	East Asia	West Asia	Model Projects	No. of Institutions	No. of Training Courses	Participants in Training	No. of Fellows
6	37	27	20	11	489	184	2657	834
0	6	4	3	2	74	8	83	83
0	1	5	0	1	41	8	68	24
10	20	81	30	16	569	102	1243	1085
1	10	6	2	2	82	14	157	79
1	9	19	12	11	298	34	467	265
8	46	9	5	4	194	31	607	607
7	18	10	4	2	106	23	505	105
33	147	161	76	49	1853	381	5787	3082



their national land management and sustainable agriculture issues.

Included in this group of activities was a project that assisted the Tsetse and Trypanosomiasis Research Institute in Tanzania to establish the facilities and capacities needed to undertake a tsetse fly eradication campaign. Efforts focused on the eradication programme for Zanzibar Island. Surveillance and quarantine procedures were also introduced to prevent the re-establishment of the tsetse after eradication was achieved. The result is leading to greater agricultural productivity.

Another example is a project that is assisting seven countries (Morocco, Tunisia, Syria, Iran, Egypt, Pakistan, and United Arab Emirates) to utilize saline groundwater to grow plants on salt affected lands and produce forage and food on a sustainable basis. National institutes were enabled to assist farmers to use land productively that

Through partnerships with hundreds of institutes, IAEA projects are contributing to goals of food security and agricultural productivity.

was previously marginal, and the project is contributing to national efforts to combat the advance of desertification.

Agenda 21, Cluster 13: Oceans and Seas

This cluster focuses on the "protection of the oceans, all kinds of seas, and coastal areas as well as the protection, rational use and development of their living resources". Recognizing the transboundary nature of many marine issues, one IAEA technical co-operation project worked to enhance the capabilities of Black Sea countries to monitor and assess pollutants of greatest priority. National laboratories in participating Black Sea countries were supported with training courses, scientific

Agenda 21, Cluster 16: Freshwater

Agenda 21 supports the "protection of the quality and supply of freshwater resources, in particular through the application of integrated approaches to the development, management and use of water resources." The IAEA's activities in isotope hydrology offer important tools to water resource managers for assessing key resource parameters (such as groundwater recharge and water balances) and conditions (such as tracing pollution or analyzing sediments) One example of the IAEA's 121 projects (valued at US \$28.9 million) provided national counterparts in Ethiopia with the ability to assess the sustainable use of groundwater



sampling missions and data evaluation exercises so they could more accurately monitor and assess radionuclide pollution. Nuclear and isotopic techniques were also used to assess major marine pollutants. This was one of 27 projects (valued at US \$5.9 million) that were carried out. They included 14 training courses for 120 marine scientists and other specialists, while 79 scientific fellows received longer term training.

resources as part of an effort to develop a national water plan.

The sustainable management of water resources is often a transboundary issue requiring regional co-operation. One of the IAEA's regional projects has provided six African countries with the capacity and technology to more accurately assess water recharge rates, water balances, flow and source measurements. This support provided decision

Working together, the IAEA and UN Food and Agriculture Organization have developed scientific kits to combat health threats posed by the tsetse fly. The kits detect trypanosomes in cattle and support surveys of intervention strategies. They were used during and after the successful tsetse eradication campaign on Zanzibar Island, and will be used in other major campaigns to eradicate this disease and its insect vector.





makers with key data about the use of resources. IAEA support in this cluster included 34 training courses for over 400 participants.

Agenda 21, Cluster 18: Chemicals and Waste

Cluster 18 combines three chapters of Agenda 21 dealing with the Management of Toxic Chemicals, Hazardous Wastes and Radioactive Wastes. A cornerstone of the IAEA's activities relate to Chapter 22, "Safe and Environmentally Sound Management of Radioactive Wastes", for which the IAEA is the task manager. The objective of this programme area "is to ensure that radioactive wastes are safely managed, transported, stored and disposed of, with a view to protecting human health and the environment, within a wider framework of an interactive and integrated approach to radioactive waste management and safety." From 1993 to 2001, the IAEA supported 98 projects (valued at US \$17 million) that strengthened the ability of countries to properly manage waste from nuclear power plants as well as from other sources, such as hospitals and research

centers. For example, an inter-regional project involving 20 countries assisted national authorities in evaluating their waste management needs and then provided requisite training to specialists on the selection and utilization of the appropriate waste management technologies. IAEA support in this cluster involved 31 training courses (607 participants) and over 600 scientific fellows engaged in research activities.

Agenda 21, Cluster 19: Energy and Transport

In its various chapters, Agenda 21 states that all energy sources need to be used in ways that protect the atmosphere, human health, and the environment as a whole. This cluster relates to key interlinkages between energy and sustainable development as highlighted in the UN Programme for the Further Implementation of Agenda 21. Among its 58 projects in this area, the IAEA has assisted countries with increased capacities to assess sustainable energy options and to plan for a sustainable energy mix. One example is a project that helped national counterparts in Poland to establish an energy planning framework in order to assess the economic competitiveness and environmental impact of different energy options including nuclear power and natural gas.

In this cluster, the IAEA supported 23 training courses (for altogether 505 participants) and 105 scientific fellowships. Some of these courses were related to renewable energy projects that provided capabilities to use isotope

hydrology techniques to assess geothermal energy resources. A project in El Salvador taught counterparts how to obtain necessary technical information for evaluating the feasibility of proposed investments. It also provided key data for developing environmentally benign operational procedures for existing geothermal fields.

Advancing the Agenda

Today many nuclear technologies are contributing to sustainable development in countless, and often unheralded, ways. Their safe and peaceful use underscores the key roles that science and technology play in advancing the achievement of the Agenda 21's ambitious and inter-related goals.

On a global scale, the world's agenda for securing sustainable development rests in many ways upon the more effective transfer of scientific and technological tools and knowledge to developing countries, where most of the poor live and where populations are projected to grow the fastest.

Through its technical co-operation and research programmes, the IAEA is supporting the efforts of countries and partner organizations to achieve measurable and lasting progress. As examples of IAEA supported projects illustrate, nuclear technologies provide preferred solutions — and sometimes the only solutions — to many problems of social, economic and environmental development.



The IAEA Marine Environment Laboratory in Monaco is the only marine laboratory in the UN system, supporting efforts to protect the world's oceans and seas.

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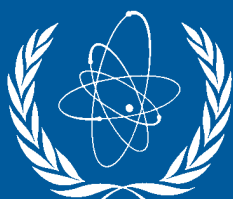
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