ISLAMIC REPUBLIC OF IRAN

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1. ENERGY, ECONOMIC AND ELECTRICITY INFORMATION

1.1. General Overview

The Islamic Republic of Iran is situated in the Middle East and has an area of 1,648,195 square kilometres with a population of about 63 million, which has doubled over the last three decades (Table 1). It is bordered by Armenia, Azerbaijan and Turkmenistan Republics and Caspian Sea in the north, Afghanistan and Pakistan in the east, Turkey and Iraq in the west and Kuwait, Persian Gulf and Gulf of Oman in the south. Mountain chains like Zagros and many other mountains make Iran's feature a mountainous country.

TABLE 1. POPULATION INFORMATION

							Growth rate (%/yr)
	1970	1980	1990	2000	2001	2002	1990 To 2002
Population (millions)	28.4	39.3	56.3	66.4	67.2	68.1	1.6
Population density (inhabitants/km²)	17.3	23.8	34.2	40.3	40.8	41.3	

Predicted population growth rate (%) 2002 to 2010	18.6
Area (1000 km²)	1648.0
Urban population in 2002 as percent of total	65.5

Source: IAEA Energy and Economic Database.

From north to the south of the country, climate and temperature change abruptly (-20°C, +50°C). Central and Southern Iran is dry and hot with low precipitation. On the whole, it has four distinct seasons. The southern part, nearby Persian Gulf, where Bushehr Nuclear Power Plant is situated has long, hot and humid summers and moderate winters. It has a fairly high seismic activity.

It is one of the world's main oil producers. The country holds large reserves and has many potential reservoirs. Within Iran there are three geographic areas of oil production (north, central, southwest) and one of gas (southeast) but geologically most of the country's vast oil and gas reserves are located along the fold and thrust belt of the Zagros Mountains. These mountains rise in southeast Turkey and run along the entire length of Iran until they terminate in the southeast at the Gulf of Oman at a distance of almost 1,800 km. The country has also coal and Uranium resources.

1.1.1. Economic Indicators

Table 2 shows the Gross Domestic Product (GDP) statistic.

[1] The profile has been updated by the Secretariat, mainly by replacing the statistical information in the Tables with EEDB and arranging contents according to the revised table of contents.

TABLE 2. GROSS DOMESTIC PRODUCT (GDP)

	1980	1990	2000	2001	2002	Growth rate (%/yr) 1990 To 2002
GDP (millions of current US$)	93,923	92,959	329,880	412,561	523,902	15.5
GDP (millions of constant 1990 US$)	81,274	92,960	787,828	818,454	852,666	20
GDP per capita (current US$/capita)	2,393	1,651	4,965	6,135	7,696	13.7

Source: IAEA Energy and Economic Database.

1.1.2. Energy Situation

On the supply side, more than 98% of primary energy is derived from oil and gas resources and only less than 2% is in from of hydro, coal and non-commercial energies. Likewise, in electrical sector, more than 92% of the present installed capacity (26,000 MW(e)) is based on oil and gas fired turbines and less than 8% of it (about 2,000 MW(e)) is hydro power (Table 3 shows the energy reserves according to EEDB).

TABLE 3. ESTIMATED ENERGY RESERVES

	Estimated energy reserves in (Exajoule)					
	Solid	**Liquid**	**Gas**	**Uranium (1)**	**Hydro (2)**	**Total**
Total amount in place	52.16	532.01	938.29	0.27	35.48	1558.21

(1) This total represents essentially recoverable reserves.

(2) For comparison purposes a rough attempt is made to convert hydro capacity to energy by multiplying the gross theoretical annual capability (World Energy Council - 2002) by a factor of 10.

Source: IAEA Energy and Economic Database.

According to the latest statistics issued by Ministry of Power, the proven and exploitable reserves of oil are about 89.7 billion barrels. Despite of the rapid expansion of the gas sector, in recent years, oil still plays a very important role in energy system as well as economy of the country. Petroleum products constitute more than 55% of the Iran's primary energy supply. The share of oil sector in GDP is about 20% and more than 80% of the country's foreign exchange earnings comes from export of this commodity.

The proven and exploitable gas reserves of Iran are estimated to be 35.4 and 24.5 trillion cubic meters, respectively (about 222 and 154 billion barrels of oil equivalent). These reserves theoretically give Iran a lead-time of more than 400 years to exploit them at the existing production level.

The proven reserves of coal in Iran are estimated to be approximately 13.1 milliard tons. But in regard to the existing technologies, only 10 percent of these resources are exploitable and at much higher cost than that of the international level. That is why coal plays only a minor role in Iran's energy supply mix and it is not regarded a viable option in foreseeable future.

Theoretically, the whole potentials of hydro power in Iran is estimated to be approximately 42,000 MW(e). According to the latest information released by Ministry of Power, the practical hydro potential of the country is projected to be only 23,000 MW(e). Up to now around 2,000 MW(e) has been exploited and another 9,000 MW(e) is in process of execution, about 1,700 MW(e) is under consideration and more than 7,000 MW(e) is at the sage of recognition.

Uranium resources of Iran are not considered a rich one. The results of the Atomic Energy

Organization of Iran (AEOI) exploration activities have shown proven reserves of about 3,000 tons of Uranium so far. According to the discovered indices (more than 350 anomalies) and the results of the field discoveries, the expected resources of Iran could be at the range of 20,000-30,000 tons of U_3O_8, throughout the country. Therefore Iran's domestic reserves might be sufficient enough to supply the raw material for needed nuclear power plants in future.

According to all the surveys performed in power sector of Iran, nuclear option is the most competitive to fossil alternatives if the existing low domestic fuel prices are gradually increased to its opportunity costs at the level of international prices.

There are ample potentials of renewable energies in Iran. The annually average daily solar radiation is about 2,000 kW·h per m^2. There are also good potentials of wind and geothermal energies in some parts of the country. However, because of the limitation of the existing technologies for steady and reliable supply of energy and much higher unit cost of electricity generated by these resources, it is not expected that renewable play a major role in Iran's electricity system in near future.

Due to a very cheap price of primary energy and the increase in population, the final energy consumption has increased more than 7% annually and electricity production has risen 10% per year in the last two decades.

In another words, while the size of population is nearly doubled, the final energy consumption is quadrupled and electricity production is more than six folded to meet the existing demand. These figures show a very high level of consumption and an incremental trend of energy intensity. Historical energy statistics are shown in Tables 4a and 4b.

TABLE 4. ENERGY STATISTICS

							Average annual growth rate (%)	
	1970	1980	1990	2000	2001	2002	1970 To 1990	1990 To 2002
Energy consumption								
- Total (1)	0.90	1.50	3.00	4.83	4.90	4.93	6.21	4.22
- Solids (2)	0.03	0.05	0.07	0.07	0.07	0.07	4.22	-0.89
- Liquids	0.43	1.12	1.98	2.25	2.22	2.19	7.91	0.82
- Gases	0.42	0.27	0.88	2.48	2.58	2.64	3.82	9.53
- Primary electricity (3)	0.02	0.05	0.06	0.04	0.03	0.04	6.68	-3.87
Energy production								
- Total	8.54	3.46	7.80	10.30	10.58	10.85	-0.45	2.78
- Solids	0.03	0.05	0.06	0.04	0.05	0.05	2.83	-1.33
- Liquids	8.04	3.08	6.74	7.87	7.90	7.96	-0.87	1.39
- Gases	0.45	0.28	0.94	2.35	2.60	2.81	3.75	9.51
- Primary electricity (3)	0.02	0.05	0.06	0.04	0.03	0.04	6.68	-3.87
Net import (Import - Export)								
- Total	-7.41	-1.86	-4.46	-5.32	-5.17	-4.87	-2.50	0.73
- Solids	0.00	0.00	0.02	0.02	0.03	0.04	33.13	6.89
- Liquids	-7.37	-1.85	-4.42	-5.47	-5.52	-5.70	-2.52	2.13
- Gases	-0.03	-0.01	-0.06	0.13	0.32	0.79	2.80	-24.20

(1) Energy consumption = Primary energy consumption + Net import (Import - Export) of secondary energy.

(2) Solid fuels include coal, lignite and commercial wood.

(3) Primary electricity = Hydro + Geothermal + Nuclear + Wind.

(*) Energy values are in Exajoule except where indicated.

Source: IAEA Energy and Economic Database.

1.2. Energy Policy

Iran's government has given priority to hydropower in the first and second 5 years development plans. This policy will continue in future development programmes. But due to the limitations of hydro potentials and the rapid growth of electricity demand, other options are also need to be considered for diversification purpose.

The policy of the government is to use different energy potentials for conservation measures at present time. To improve the situation the government has decided to increase gradually the price of energy carriers to their opportunity costs within 10-15 years from the beginning of the second development plan (1995).

Moreover, some conservation and energy management measures have been implemented to control growth of demand in recent years. In supply side, the government has seriously launched a programme for substitution of gas by oil as well as more exploitation of hydro power in electricity system of the country. Completion of Bushehr nuclear power project and implementation of a project to install 100 MW(e) from wind turbine is regarded to be a part of this diversification programme.

1.3. The Electricity System

1.3.1. Structure of the Electricity Sector

The main producer of electricity in Iran is the Ministry of Power. The electricity system of Iran (production, transmission and distribution) is centralized and owned by the government. Recently, the government has started to study about the privatization in small-scale to assess its benefits and outcomes for future programmes.

1.3.2. Decision-making process

The Ministry of Power is responsible for the development of power sector based on the energy programmes, and concepts, which are approved by the Government of the Islamic Republic of Iran in its 5 years development programmes.

1.3.3. Main Indicators

In 1999, the maximum exploitable power was 23,592 MW(e) with 54.5% share of steam power plants, 13.5% share of gas power plants, 21.5% share of combined cycle power plants, 8.5% share of hydro power plants and 2% for diesel power plants (Table 5). Table 6 shows the historical electricity production and installed capacity and Table 7 the energy related ratios.

TABLE 5. PRODUCTION CAPACITY AND PRODUCED POWER IN THE POWER PLANTS OF THE MINISTRY OF POWER IN 1999.

Power Plants Group	Nominal Power	Practical Power		Average	Maximum Exploited Power
		Maximum	Minimum		
Steam	13,115	12,862	12,822	12,842	12,862
Combined Cycle&Gas	9,565	8,651	7,420	8,035.5	8,261
Diesel	593	478	427	452.5	471
Hydro	1,999	1,998	1,998	1,998	1,998
Total	25,272	23,989	22,667	23,328	23,592

Source: Country Information.

TABLE 6. ELECTRICITY PRODUCTION AND INSTALLED CAPACITY

							Average annual growth rate (%)	
	1970	1980	1990	2000	2001	2002	1970 To 1990	1990 To 2002
Electricity production (TW.h)								
- Total (1)	6.76	22.38	59.10	116.33	124.40	129.82	11.45	6.78
- Thermal	5.09	16.76	53.02	112.65	120.77	126.03	12.43	7.48
- Hydro	1.67	5.62	6.08	3.68	3.62	3.79	6.68	-3.87
- Nuclear								
- Geothermal								
Capacity of electrical plants (GWe)								
- Total	2.20	11.23	17.95	30.63	31.03	31.61	11.07	4.83
- Thermal	1.68	9.42	16.00	28.63	29.03	29.60	11.93	5.26
- Hydro	0.52	1.80	1.95	2.00	2.01	2.01	6.87	0.24
- Nuclear								
- Geothermal								
- Wind								

(1) Electricity losses are not deducted.

Source: IAEA Energy and Economic Database.

TABLE 7. ENERGY RELATED RATIOS

	1970	1980	1990	2000	2001	2002
Energy consumption per capita (GJ/capita)	32	38	53	73	73	72
Electricity per capita (kW.h/capita)	230	550	998	1,669	1,765	1,818
Electricity production/Energy production (%)	1	6	7	11	11	12
Nuclear/Total electricity (%)						
Ratio of external dependency (%) (1)	-824	-124	-149	-110	-105	-99
Load factor of electricity plants						
- Total (%)	35	23	38	43	46	47
- Thermal	35	20	38	45	47	49
- Hydro	37	36	36	21	21	22
- Nuclear						

(1) Net import / Total energy consumption.

Source: IAEA Energy and Economic Database.

2. NUCLEAR POWER SITUATION

2.1. Historical Development and current nuclear power organizational structure

2.1.1 Overview

In the mid 1970s, a major nuclear power programme was planned and construction of two nuclear power plants, two 1,200 MW(e) PWR units started at Bushehr by KWU. In 1979, this nuclear power plant construction programme was suspended and construction activities halted, at a fairly advanced stage of the civil work for the two units.

The Islamic Republic of Iran resumed the nuclear power programme in 1991 with a bilateral agreement with China for the supply of two 300 MW(e) PWR units of Chinese design, similar to the Qinshan power plant. The agreement was confirmed in 1993 (but never realized).

In 1994, the Ministry of Atomic Energy of the Russian Federation (MINATOM) and the Atomic Energy Organization of Iran (AEOI) agreed on the scope of work for completing the Bushehr nuclear power plant unit 1 (BNPP-1) with a 1000 MW(e) PWR unit of WWER-1000 type. The contract was signed in 1995. The Russian designed reactor will be constructed using mostly the infrastructure already in place.

2.1.2 Current Organizational Chart(s)

The National Nuclear Safety Department (NNSD) accomplishes the regulatory tasks of nuclear facilities in Iran. The up-dated organizational chart of NNSD is shown in Figure 1.

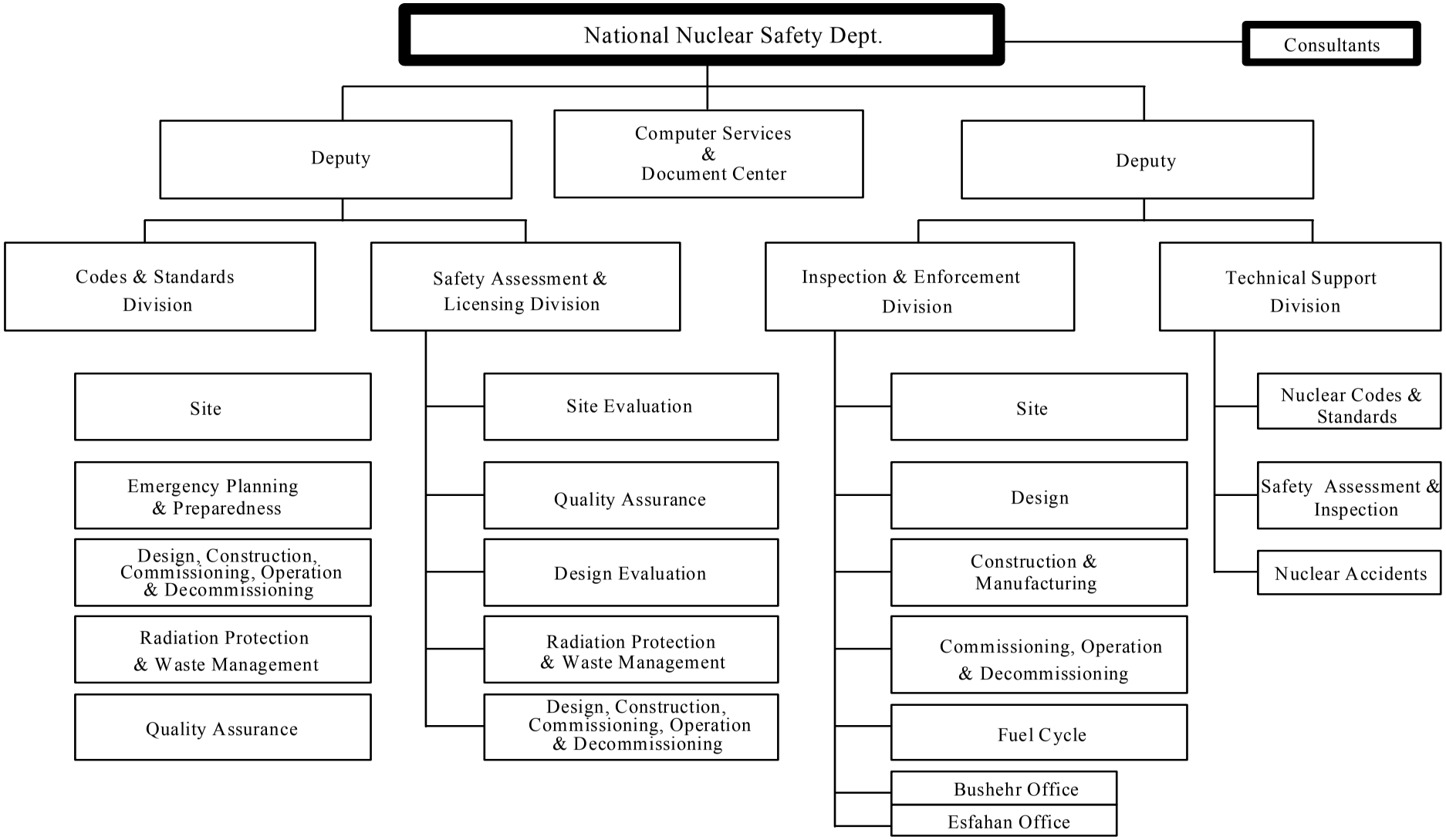

FIG. 1. Organizational Structure of NNSA.

2.2. Nuclear Power Plants: Status and Operations

Completion of Bushehr Nuclear Power Plant is the only on-going nuclear power plant project in Iran, which will provide 1000 MW(e) to the national electrical grid. In fact, it will share about 4% in the total national electricity generation (Table 8). Besides the completion of BNPP-1, work-plan of Unit number 2 is being envisaged.

TABLE 8. STATUS OF NUCLEAR POWER PLANTS

Station	Type	Net Capacity	Description	Operator	Reactor Supplier
BUSHEHR-1	PWR	915	Under Construction	AEOI	ASE
BUSHEHR-2	PWR	1196	Suspended since 1979	AEOI	KWU

Station	Construction Date	Criticality Date	Grid Connection Date	Commercial Date	Shutdown Date
BUSHEHR-1	01-May-75	01-Jun-03	01-Jul-03	01-Dec-03	
BUSHEHR-2					

Source: IAEA Power Reactor Information System as of 31 December 2001.

2.3. Supply of NPPs

The contractor (Russians) will deliver all supplies and services necessary to complete and operate the BNPP-1 on a turnkey basis.

2.4. Operation of NPPs

Performance of the unit commissioning (initial fuel loading, initial criticality, low power tests; power generating start up; and trial operation) and performance of the training of the AEOI's personnel (to such an extent that they will be able to operate the unit safely, properly, efficiently, reliably and economically) will be the responsibility of contractor (Russians).

The responsibility for the management and the operation of the unit will be passed on to the AEOI on provisional acceptance of the unit.

Upon request by the AEOI, the contractor will make available and keep at the unit site, for a period and conditions to be agreed upon, a number of specialists to assist the unit operation personnel. For a period of two years, beginning on the date of provisional acceptance of the unit, the contractor (Russians) will make available to the AEOI maintenance specialists who will assist the unit operation personnel in all maintenance work for the unit. The said period may be extended (upon AEOI request). Furthermore, during the period of provisional acceptance until final acceptance of the unit, the contractor may provide additional specialists for additional maintenance and repair services for the unit if it is needed.

2.5. Fuel Cycle and Waste Management

The Uranium Conversion Facility (UCF) is a complex for production of some stages of nuclear fuel materials, which can be utilized for nuclear power and research reactors. At present, the facility is under construction.

The transfer of spent fuel to Russia or storage at the unit site, is discussed between the Principal and the Contractor.

Waste management services are under the responsibility of the AEOI. The international practice is envisaged for supply of such services. Relevant measures for storage of wastes are to be considered in the unit design.

2.6. Research and Development

The AEOI is the main institute in Iran for research and development activities in the field of nuclear technology.

2.7. International Co-operation and Initiatives

Iran has been participating in some conferences, technical committee meetings, general meetings, advisory group meetings, training and fellowship programmes under the sponsorship of the IAEA or in the frame-work of its Technical Co-operation projects.

The International Atomic Energy Agency enhances the peaceful use of nuclear energy in Iran by means of the following Technical Co-operation projects:

- Developing Technetium-99m Labeled Radio pharmaceutical Kits Based on Monoclonal Antibodies and Peptides (IRA/2/006) (new);
- Treatment of Low & Intermediate Level Radioactive Wastes (IRA/4/028) (continuation);
- Strengthening Owner's Functions for BNPP Project (IRA/4/029) (extension);
- Cyclotron Production of Palladium-103 and Cobalt-57 (IRA/4/032) (new);
- Development of National Waste Management Strategy (IRA/4/033) (new);
- Preparation of Elisa Kits for Diagnosis of Foot and Mouth Disease (IRA/5/012) (continuation);
- Improvement of Clinical Brachytherapy for Cancer Management (IRA/6/007) (new);
- Radiation Processing of Polymeric Materials by Electron Beam (IRA/8/015) (new- Model Project);
- Regulatory Infrastructure for Licensing of BNPP Project (IRA/9/015) (extension- Model Project);
- Feasibility of Upgrading the Research Reactor (IRA/9/016) (new).

To improve better implementation of these projects, the AEOI has organized some workshops, meetings and regional training courses through IAEA missions and assistance in Iran.

3. NATIONAL LAWS AND REGULATIONS

According to the Atomic Energy Act of the Islamic Republic of Iran a License is required for construction, commissioning, operation and decommissioning of nuclear facilities in Iran.

The National Nuclear Safety Department (NNSD) of Iranian Nuclear Regulatory Authority (INRA) has prepared and issued nuclear safety standards for regulating activities to assure safety in nuclear power plants since 1975. The NNSD of INRA issues the regulations, in particular to ensure that the facility is designed in accordance with the latest state-of the art and technology, and there shall be adequate assurance that the erection and operation of the facility will be accomplished without undue risk to the health and safety of the general public and personnel.

With the conclusion of a turnkey contract between Nuclear Power Plant Department of Atomic Energy Organization of Iran (NPPD-AEOI) and ZAO Atomstroyexport of Russian Federation to complete BNPP-1, utilizing the existing structures and equipment at BNPP-1 to the extent feasible and safe, it has become necessary that a specific licensing procedure be developed by the NNSD for Unit completion.

In the licensing procedure, the specific regulatory process is provided for granting license and permits for activities related to the reconstruction of BNPP-1. In preparing this procedure, due account has been given for Iranian regulatory requirements, international recommendations such as those issued by the IAEA, and of safety standards prevalent in the Russian Federation. In addition, specific features of the design and operating characteristics, unusual or novel design measures, and principal safety considerations of the BNPP-1 have been considered. In the said document, special attention has been paid to the existing equipment and structures and their associated quality and performance requirements for completion of the BNPP-1.

This document governs licenses and permits for all activities affecting safety in BNPP-1. It is mandatory for all organizations involved in the safety concerned activities in BNPP-1 completion to comply with the relevant provisions of requirements licensing procedure. The NNSD will supervise the implementation of the requirements of the said document.

3.1. Safety Authority and the Licensing Process

3.1.1. The Iranian Nuclear Regulatory Authority

The Iranian Nuclear Regulatory Authority (INRA) of AEOI is an independent national body authorized for issuing rules and regulations and conducting the licensing and supervisory processes for issuing licenses and thereby regulating nuclear and radiation safety for siting, design, manufacturing, construction, operation, and decommissioning of the nuclear industry facilities or specific aspects thereof. The INRA is also responsible for national radiation protection and national system of accountancy and control of nuclear materials (safeguards).

3.1.2. National Nuclear Safety Department (NNSD)

The regulatory and supervisory functions of the INRA for BNPP-1 are performed by NNSD, which is a subdivision of INRA.

3.2. Main National Laws and Regulations in Nuclear Power

- Atomic Energy Act of Iran

In 1974 the Atomic Energy Act of Iran was promulgated. The Act covers the activities for which the Atomic Energy Organization of Iran was established at that period. These activities included using atomic energy and radiation in industry, agriculture and service industries, setting up atomic power stations and desalination factories, producing source materials needed in atomic industries, creating the scientific and technical infrastructure required for carrying out the said projects, as well as co-ordinating and supervising all matters pertaining to atomic energy in the country.

After final decision of the government to start completion activities at Unit 1 of Bushehr Nuclear Power Plant, this Act could not cover and satisfy the new requirements. Since 1998, AEOI has started to up-grade this Act, which is at the stage of the final draft.

- Radiation Protection Act of Iran

In view of the ever increasing development of radiation applications in different areas and protection of workers, public, future generations, and environment against harmful effects of radiation, the Radiation Protection Act of Iran was ratified in public session of April 9, 1989 by the Parliament and was approved by the Council of Law-Guardians on April 19, 1989.

Provisions of this Act govern all the affairs related to radiation protection in the country including the following:

1. Radiation sources.
2. Working with radiation.
3. Construction, establishment, commissioning, operation, decommissioning and being in charge of any unit in which, work with radiation is carried out.
4. Any activity connected with radiation sources including imports and exports, customs clearance, distribution, procurement, production, manufacturing, possession, acquirement, exploration, mining, transportation, transactions, contracting, transfer, application and /or waste management.
5. Protection of workers, public and future generation in general and the environment against the harmful effects of radiation.

Financing for decommissioning and waste disposal is the responsibility of the Government of the Islamic Republic of Iran.

4. CURRENT ISSUES AND DEVELOPMENTS ON NUCLEAR POWER

4.1. Energy Policy

Pursuant to the Agreements signed between the Government of the Islamic Republic of Iran and the Government of the Russian Federation on co-operation in the field of peaceful applications of nuclear energy, dated 24 August 1992, and co-operation in the field of construction of nuclear power plants in Iran dated 25 August 1992, the contract was made on a turnkey basis and signed on January 1995. The contractor (Russians) with the conditions of the partly completed unit 1 and the scope of works required for its completion, will use the equipment and the technology of WWER-1000 model V-392 type to fulfil the tasks.

4.2. Privatisation and deregulation

At the present time, there is no privatization in the field of electricity and nuclear sector. But the Government of the Islamic Republic of Iran is considering new plans and programmes in this respect. In the beginning and as a starting point, the programmes will be launched in other industries to assess the results, advantages and disadvantages in the whole economy system of the country. By means of these achievements, the idea of privatization might be expanded to other branches such as electricity and nuclear sector.

REFERENCES

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[5] Middle East Well Evaluation Review, Iran Special Supplement, 1991.

[6] Options for Electric Power Generation and Distribution in Developing Countries, Proceedings of the GTDC Symposium, 1995.

[7] Licensing Procedures for Bushehr Nuclear Power Plant Unit 1, Construction and Operation (Version 1), July 1999.

[8] Contract for Completion of Unit 1 of Bushehr Nuclear Power Plant, January 1995.

[9] Data & Statistics/The World Bank, www.worldbank.org/data.

[10] IAEA Energy and Economic Data Base (EEDB).

[11] IAEA Power Reactor Information System (PRIS).

Appendix 1

INTERNATIONAL, MULTILATERAL AND BILATERAL AGREEMENTS

AGREEMENTS WITH THE IAEA

• IAEA Statute	Signature: Ratified:	26 October 1956 16 May 1958
• Amendments to Articles VI and XIV of the Agency Statute	Ratified	1 October 2002
• Agreement on privileges and immunities	Entry into force:	21 May 1974
• NPT related agreement INFCIRC No: 214	Entry into force:	15 May 1974
• Additional Protocol	Not signed	
• Project related safeguards agreement INFCIRC No: 97	Entry into force:	10 May 1967
• Other multilateral safeguards agreement IRAN/USA; INFCIRC No: 127	Entry into force:	20 August 1969
• Supplementary agreement on provision of technical assistance by the IAEA	Entry into force:	12 February 1990

MAIN INTERNATIONAL TREATIES

• NPT	Entry into force:	2 February 1970
• Convention on the physical protection of nuclear material	Non-Party	
• Convention on early notification of a nuclear accident	Entry into force:	9 November 2000
• Convention on assistance in the case of a nuclear accident or radiological emergency	Entry into force:	9 November 2000
• Vienna convention on civil liability for nuclear damage	Non-Party	
• Paris convention on third party liability in the field of nuclear energy	N.A.	
• Joint protocol relating to the application of Vienna and Paris conventions	Non-Party	
• Protocol to amend the Vienna convention on civil liability for nuclear damage	Not signed	

• Convention on supplementary compensation for nuclear damage	Not signed	
• Convention on nuclear safety	Non-Party	
• Joint convention on the safety of spent fuel management and on the safety of radioactive waste management	Not signed	

OTHER RELEVANT INTERNATIONAL TREATIES

• Improved procedures for designation of safeguards inspectors	Accepted on:	24 August 1991
• Partial nuclear test ban treaty (PTBT)	Signature: Ratified:	9 August 1963 23 December 1963
• Treaty on prohibition of the emplacement of nuclear weapons and other weapon of mass destruction on the sea bed and ocean floor and in the subsoil thereof	Signature: Ratified:	11 February 1971 6 June 1971
• CTBT	Signature:	24 September 1996
• ZANGGER Committee	Non Member	
• Nuclear suppliers group	Non Member	
• Nuclear Export Guidelines	Not adopted	
• Acceptance of NUSS Codes	No reply	

BILATERAL AGREEMENTS

• Agreement between the Islamic Republic of Iran and the Russian Federation in the peaceful uses of nuclear energy	1992
• Agreement between the Islamic Republic of Iran and the People's Republic of China for co-operation in the peaceful uses of nuclear energy	1993

Appendix 2

DIRECTORY OF THE MAIN ORGANIZATIONS, INSTITUTIONS AND COMPANIES INVOLVED IN NUCLEAR POWER RELATED ACTIVITIES

NATIONAL ATOMIC ENERGY AUTHORITIES

Atomic Energy Organisation of Iran (AEOI) End of North Karegar Ave P.O.Box : 14155-1339 Tehran	Tel: (+98 21) 8003590 Fax: (+98 21) 8003590 http://www.iranbooks.com/atomener.htm
Iranian Nuclear Regulatory Authority (INRA) End of North Karegar Ave P.O.Box : 14155-1339 Tehran	Tel: (+98 21) 8020905 Fax: (+98 21) 8009298
National Nuclear Safety Department (NNSD) End of North Karegar Ave P.O.Box : 14155-1339 Tehran	Tel: (+98 21) 8008948 Fax: (+98 21) 8009379
Nuclear Energy Plant Bushehr	http://www.sedona.net/pahlavi/atomic.html

UNIVERSITIES

Amirkabir University of Technology	http://www.aku.ac.ir/
Bouali-Sina University	http://www.basu.ac.ir/
Guilan University	http://kadous.gu.ac.ir/
Isfahan University	http://www.iut.ac.ir/
Khajeh-Nasir-Toosi University of Technology	http://www.kntu.ac.ir/
Shiraz University	http://www.shirazu.ac.ir/
Shiraz University of Medical Sciences	http://pearl.sums.ac.ir/
Tehran University	http://www.ut.ac.ir
University of Mashhad (Ferdowsi University)	http://www.um.ac.ir/
Iran University of Science and Technology	http://www.iust.ac.ir/IUSTEntry/Default.asp