



International Atomic Energy Agency

**Multilateral/Regional Cooperation
in the development of
Nuclear Infrastructure**

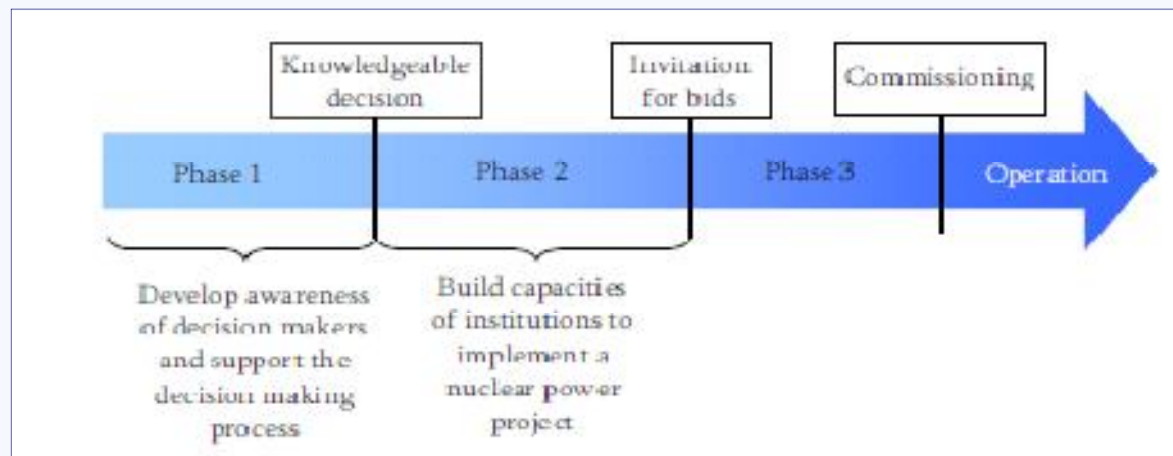
**Masahiro AOKI, INIG
INPRO Dialogue Forum on Nuclear Energy
Innovations, 4-7 October 2010**

International Atomic Energy Agency



Integrated Nuclear Infrastructure Group (INIG)

- Created by the DG, effective July 1, in the Nuclear Power division
- Tasked to manage Nuclear Energy Department's activities related to the introduction of nuclear power and to improve coordination within the Agency of integrated services
- Focus on phase 1 and 2 activities



Contents

- **Why re-consideration of regional/ multi-lateral cooperation**
- **Benefits and threats**
- **Opportunities for sharing**
- **Examples of sharing infrastructure**
- **Sharing the Nuclear Power Project**
- **The IAEA's Role**



Why re-considering Regional Cooperation?

Increase in the number of countries considering the nuclear power introduction

- **Newcomers in the same regional have similar challenges at the same time**
- **Regional Cooperation can;**
 - **Reduce the initial investment through regional cooperation**
 - **Have potential to share the infrastructure, as most of them starts the development of the infrastructure**
 - **Utilize the IAEA TC regional project**



Status of Member States

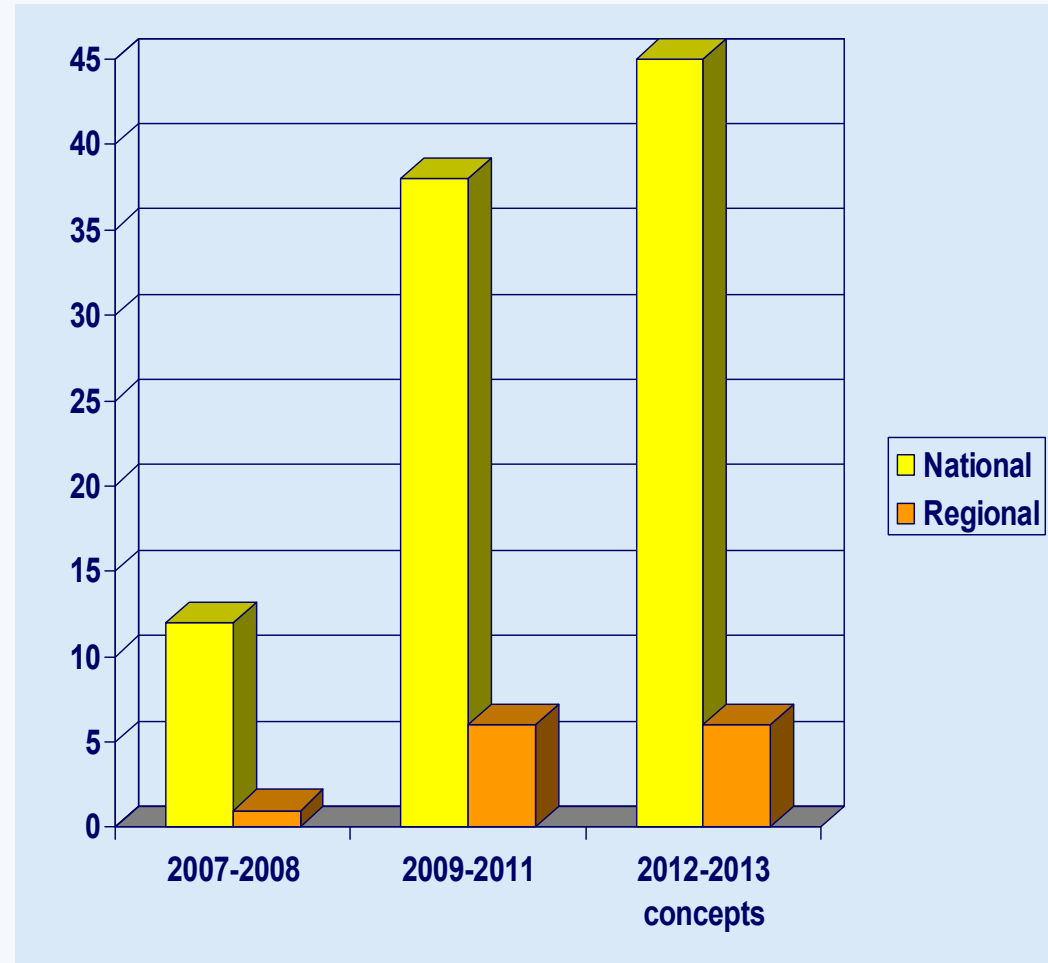
Description	Number in 2008	Number in 2010
Not planning to introduce nuclear power plants, but interested in considering the issues associated with a nuclear power programme	16	31
Considering a nuclear programme to meet identified energy needs with a strong indication of intention to proceed	14	14
Active preparation for a possible nuclear power programme with no final decision	7	7
Decided to introduce nuclear power and started preparing the appropriate infrastructure	4	10
Invitation to bid to supply a nuclear power plant prepared	1	
New nuclear power plant ordered		2
New nuclear power plant under construction	1	1
Total	51	65

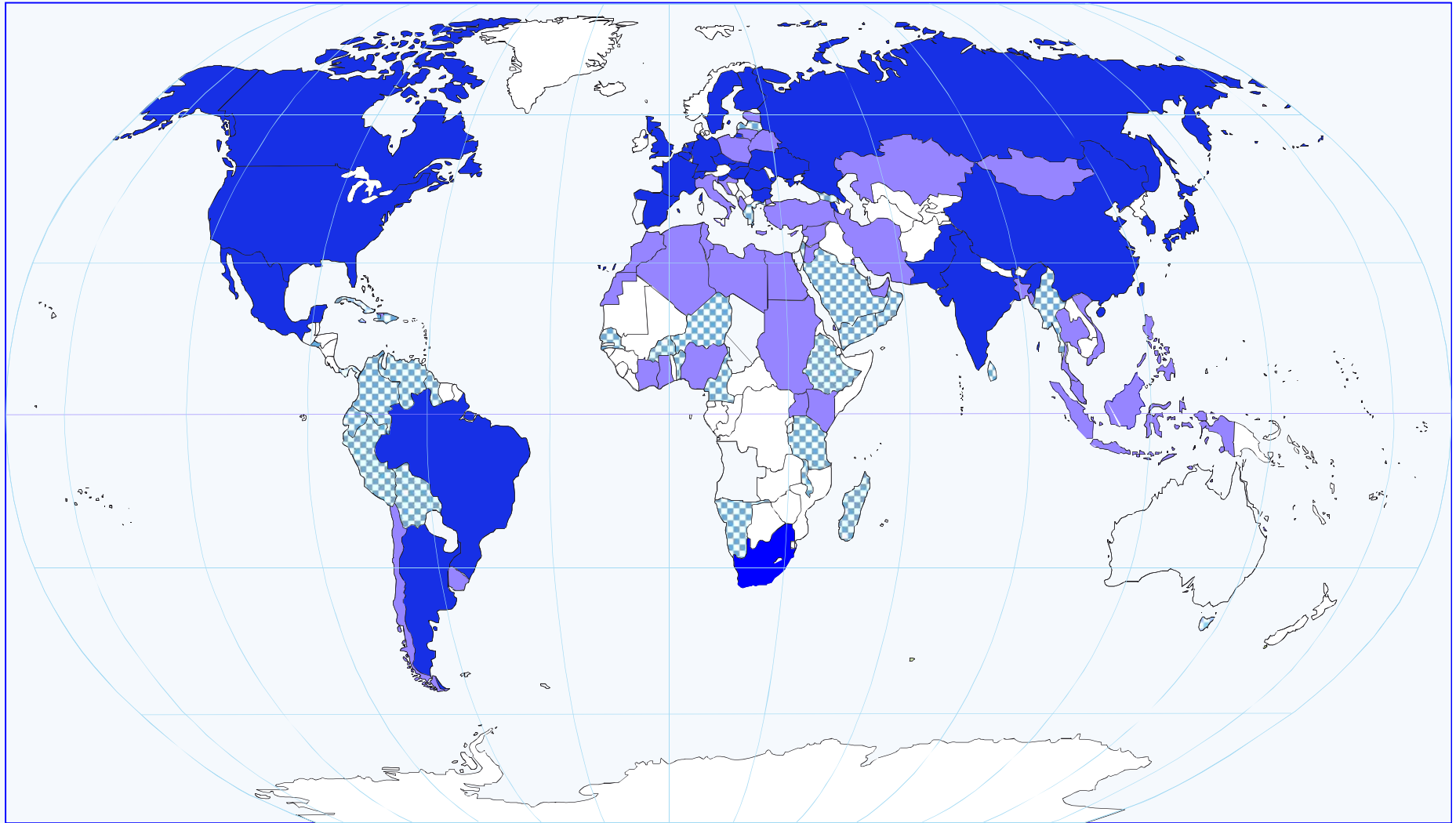
From *“International Status and Prospects” 2008 and 2010*



TC projects – nuclear power infrastructure

- Main means for delivering Agency assistance
- Concepts for 2012-2013 in review indicate an increase from current cycle in national projects





30 countries with operating reactors



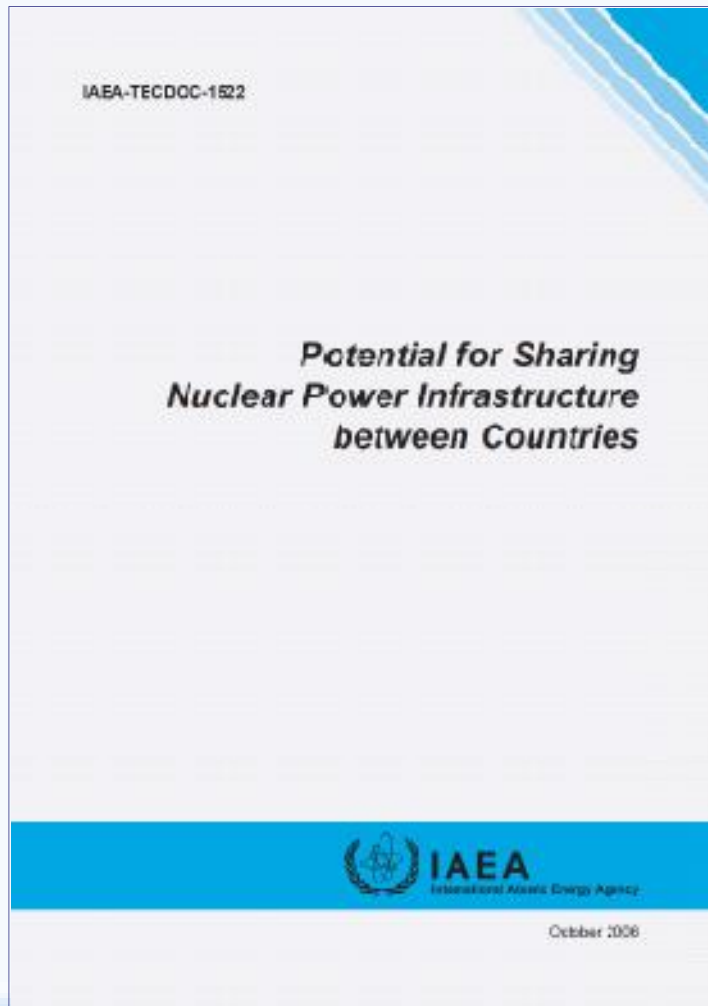
34 Countries considering or preparing for nuclear power



31 Countries having expressed interest in nuclear power



IAEA documents on Sharing Nuclear Power Infrastructure, TECDOC-1522, Oct. 2006



Contents

- Characterization of Sharing Nuclear Power Infrastructure
 - Opportunities of sharing infrastructure
 - Government Infrastructure
 - Utility Infrastructure
 - Industries and vendors Infrastructure
 - Implementation of Infrastructure Sharing
- Annex: Case Study

Types of Sharing

- **Sharing of similar technology**
The same reactor technology
- **Sharing of physical facilities**
Manufacturing facilities, Major erection equipments, R&D, etc.
- **Sharing of common programmes**
Environment Impact Assessment, etc.
- **Sharing of knowledge**
Education, Codes, Operational experience, etc.



Opportunities of sharing infrastructure

For Government

Research and development, Human resources, Education and training, Finance, Economics of Nuclear Power, Grid system...

For Operator/ Owner

Plant operation and maintenance, Operational experience feedback, Spare part management, Fuel management, Radioactive waste management

For Industries and Vendors

Engineering and safety assessment, Manufacturing, Construction and erection, Commissioning, ISI, Procurement, Vendor qualification



Sharing Nuclear Infrastructure

- Benefits-

- **Savings in infrastructure cost by sharing of Human Resources, Knowledge and erection/transportation resources**
- **Reduction in O&M cost by sharing of O&M spares, Workers for maintenance, training programmes, etc.**
- **Harmonization of safety standard and regulatory framework**



Sharing Nuclear Infrastructure

- Potential weakness and threats -

- *Possible delay of the project due to the coordination between partners, or conflict of requirements of common services or resources*
 - *Possible adverse effect by political or economic instability in the region*
 - *Possibility of partner's withdrawal*
 - *Public resistance*
 - *Political strings*
 - *Limited access to the information due to the sensitive and strategic nature of nuclear technology*
 - *Additional transportation of SF/ RW and associated issue for sharing SF/RW related activities*
- Etc.*



Prerequisites for Regional Cooperation

Common understandings on:

- International Issues on that infrastructure
- Pros and cons on sharing infrastructure
- Lessons learned in other regions or other infrastructure

Understanding on:

- Status and expectation of partner

Setting the Common Goal

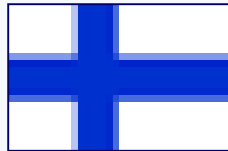
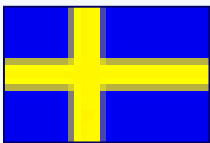


Examples of sharing Nuclear Infrastructure

- **Sharing of commissioning and operation services of NPPs between Utilities in Brazil and Argentina**

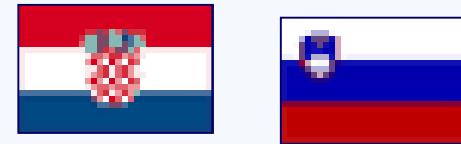


- **Sharing of R&D Projects for Spent Fuel Disposal between Sweden and Finland**



Examples of sharing Nuclear Infrastructure

- Sharing of NPP operation (Krsko) between Slovenia and Croatia



- Regional approach for the introduction of NPP

- Cooperation among Baltic countries



- Gulf Cooperation Council (GCC) Project



The IAEA's Role for regional/ multilateral cooperation for nuclear infrastructure

- Share the lessons learned from the previous experiences: IAEA Document**
- Provide an opportunity to share interests and concerns on regional cooperation: Workshop**
- Encourage MS to consider the idea of “sharing” in developing nuclear power programme: IAEA Document**



Workshop for Information Exchange & Developing Network for Nuclear Infrastructure in South East Asia

- Date: 13-15 Oct 2010, Jakarta

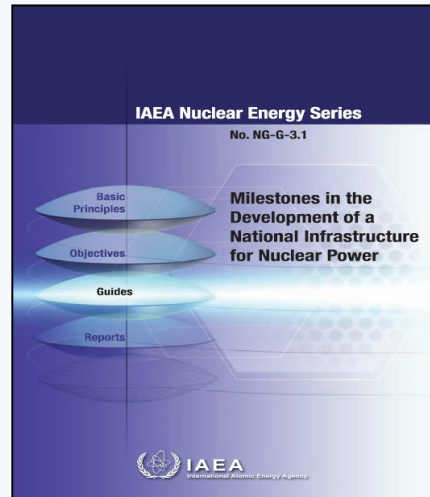
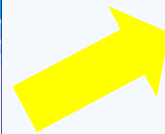
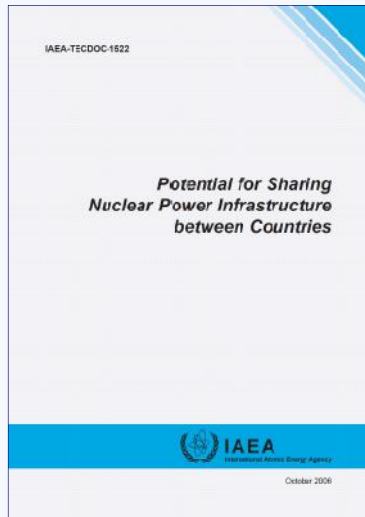
- Objective:

- Follow-up on the annual workshop on nuclear infrastructure
- Focus on the discussion among newcomers, rather than dialogues between experienced and newcomers
- Develop the platform to networking the persons responsible for planning and coordinating
- the overall activities for NPP

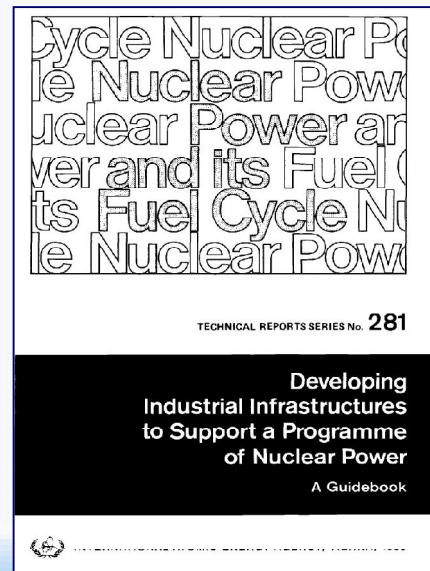
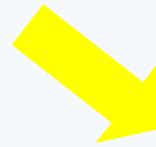
Many of South east Asian countries are seriously Considering NPP and have existing human networks



Documents to encourage the consideration of 'sharing infrastructure'

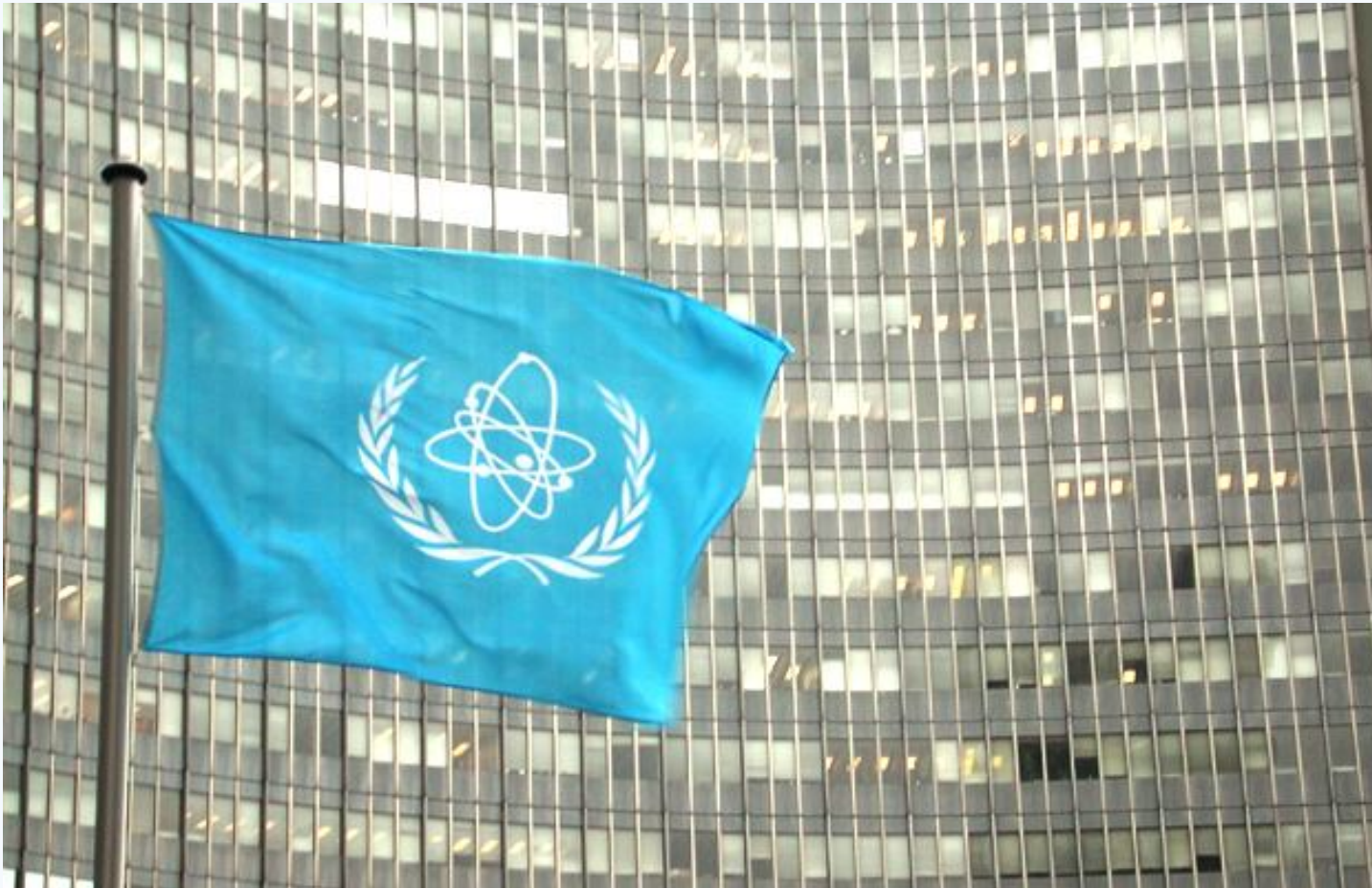


Milestones Document,
2007



Developing Industrial
Infrastructure...
under revision

IAEA



...atoms for peace.

