

THE ROLE OF REGULATORY AUTHORITY IN LICENSING OF THE FIRST NUCLEAR POWER PLANT IN A COUNTRY

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Introduction

Role of regulatory authority

- supervision of safety and radiological protection
- transposition of international documents
(e.g. Safety Guides and Regulations of IAEA,
Code of Conduct for Research Reactors,
Directives of EU etc.)
to everyday practice
- issuing different licences and permissions
- performing regular inspections of usage radioactive sources in medicine and industry
and operation of MARIA research reactor

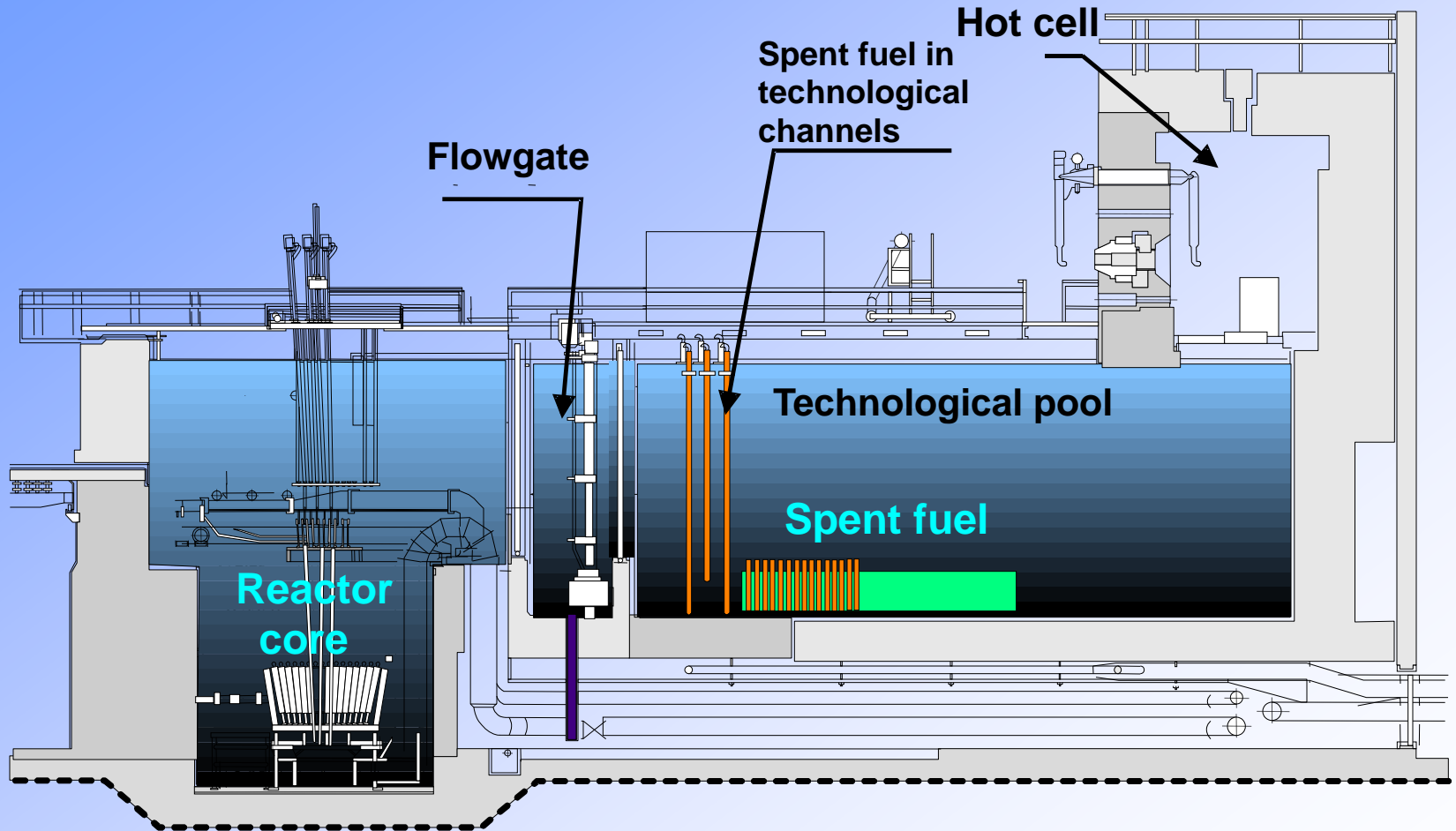
History of nuclear energy in Poland

- 1958 first research reactor (EWA, 2 - 10 MW)
- 1972 decision about nuclear power plant
- 1974 second research reactor (MARIA, 30 MW)
- 1982 start of construction of Zarnowiec NPP
(type VVER-440 with one turbine, 2 blocks)
- 1989 discussion about continuation of construction
- 1990 construction cancelled
- 2005-2008 discussions about revival (government level)
- 2009 (January) statement of government
(May) nomination of Commissioner
(August) roadmap



General view of MARIA reactor

VERTICAL CROSS SECTION OF MARIA REACTOR



Atomic Energy Law in Poland

(new version in force since January 1, 2002; last time updated in 2009, very detailed regulations, 16 chapters)

- Licences pertinent to nuclear safety
- Nuclear safety and radiological protection
- Ionizing radiation application for medical purposes
- Nuclear facilities
- Nuclear material and technologies
- Ionizing radiation sources
- Radioactive waste and spent fuel
- Transport on nuclear materials
- Supervision and inspection
- Assessment of national radiation situation
- State owned public utility „Radioactive Waste Management Plant”

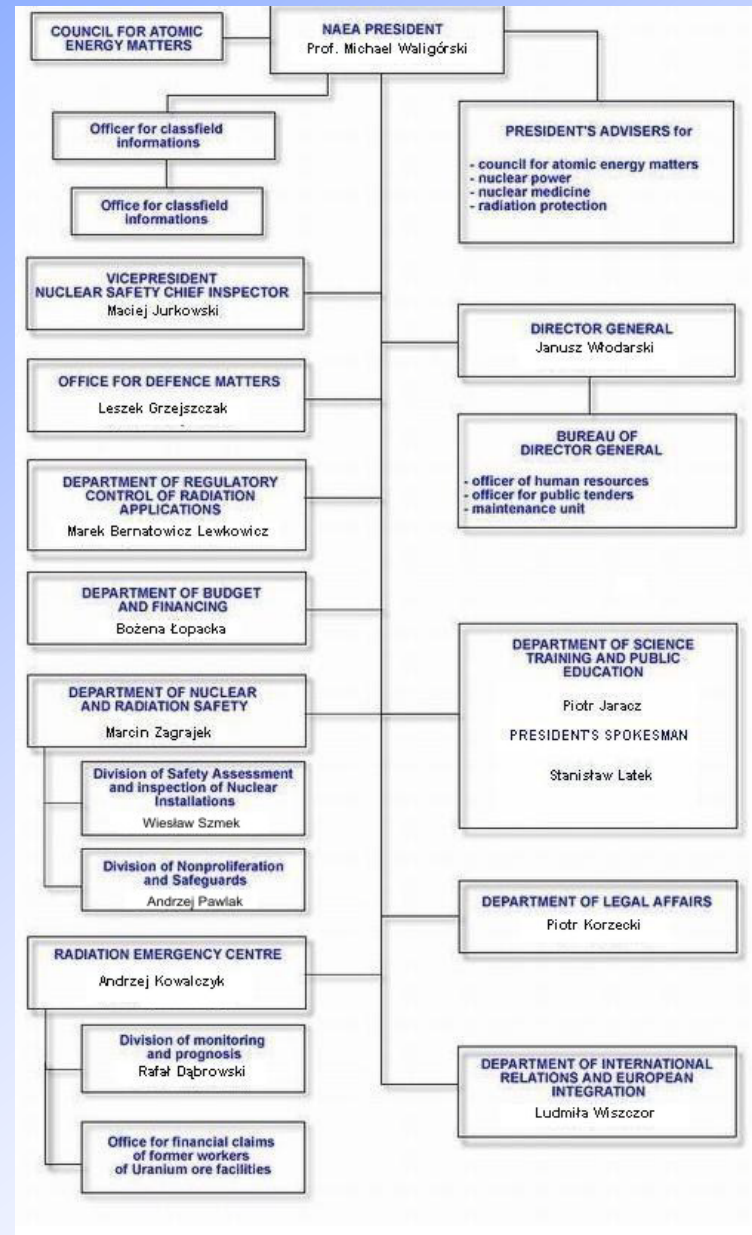
Atomic Energy Law in Poland

(new version in force since January 1, 2002
last time updated in 2009)

defines:

- structure of National Atomic Energy Agency (NAEA)
- duties and responsibility of the President of NAEA
- relation to other governmental bodies
- act as a basis for several governmental decrees and regulations
- provides regulatory infrastructure
- defines licensing procedures for nuclear installations

National Atomic Energy Agency Organizational chart



Present regulatory body activity

(in reference to research reactor)

Regular activities

(1) review of quarterly reports of reactor operation

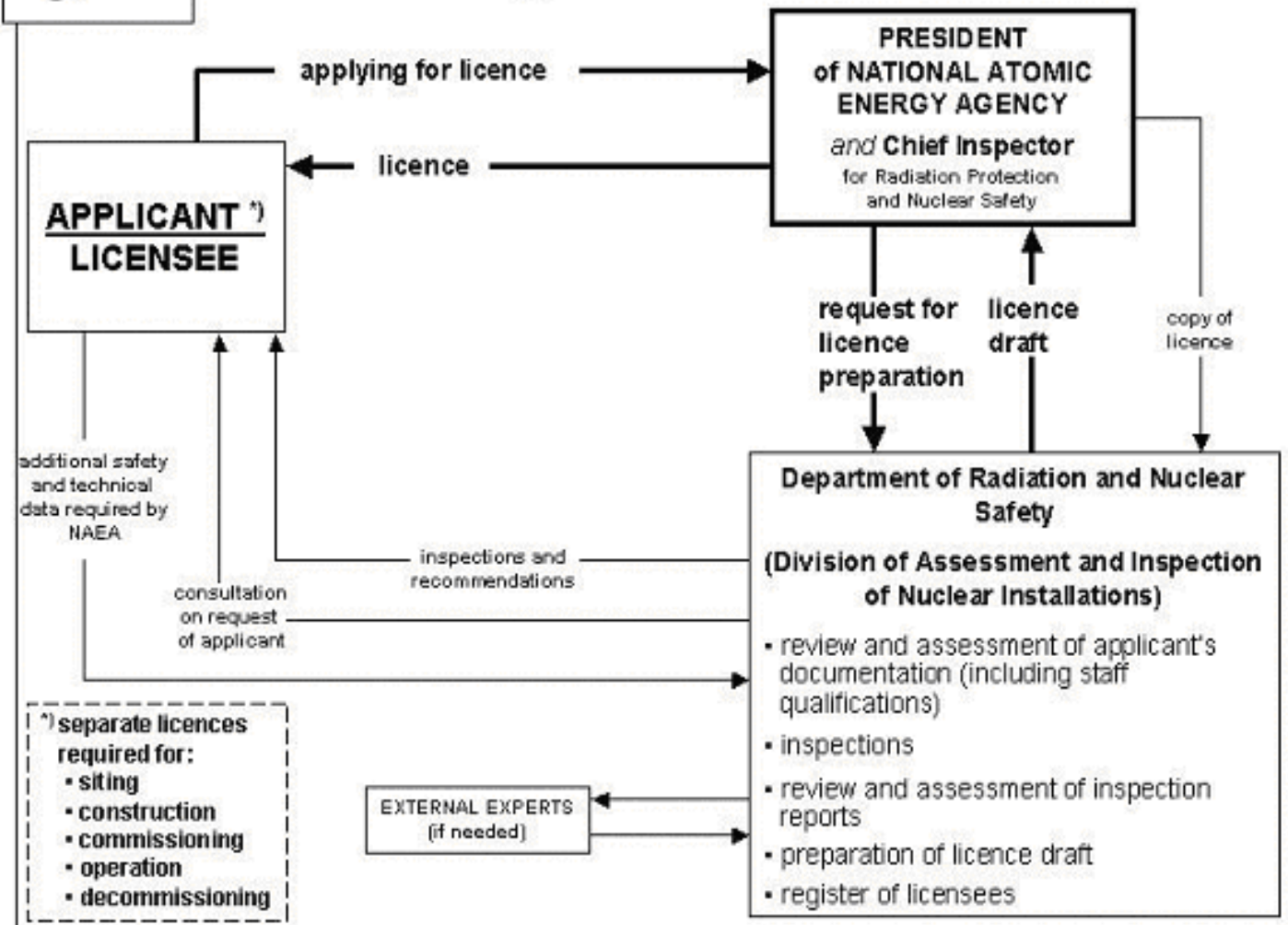
(2) perform regular inspection

(3) granting permission for

- Reactor operation (now 6 years until 2015)
- change of reactor configuration
- performing any experiments (operational safety related)
- non-typical irradiations
- permission for fuel conversion
- refurbishment of equipment
(new systems: dosimetric, fuel tightness, technological parameters)



Licensing procedure for nuclear installations



Licensing issue procedure for nuclear installations and radiation applications

Present energy situation in Poland

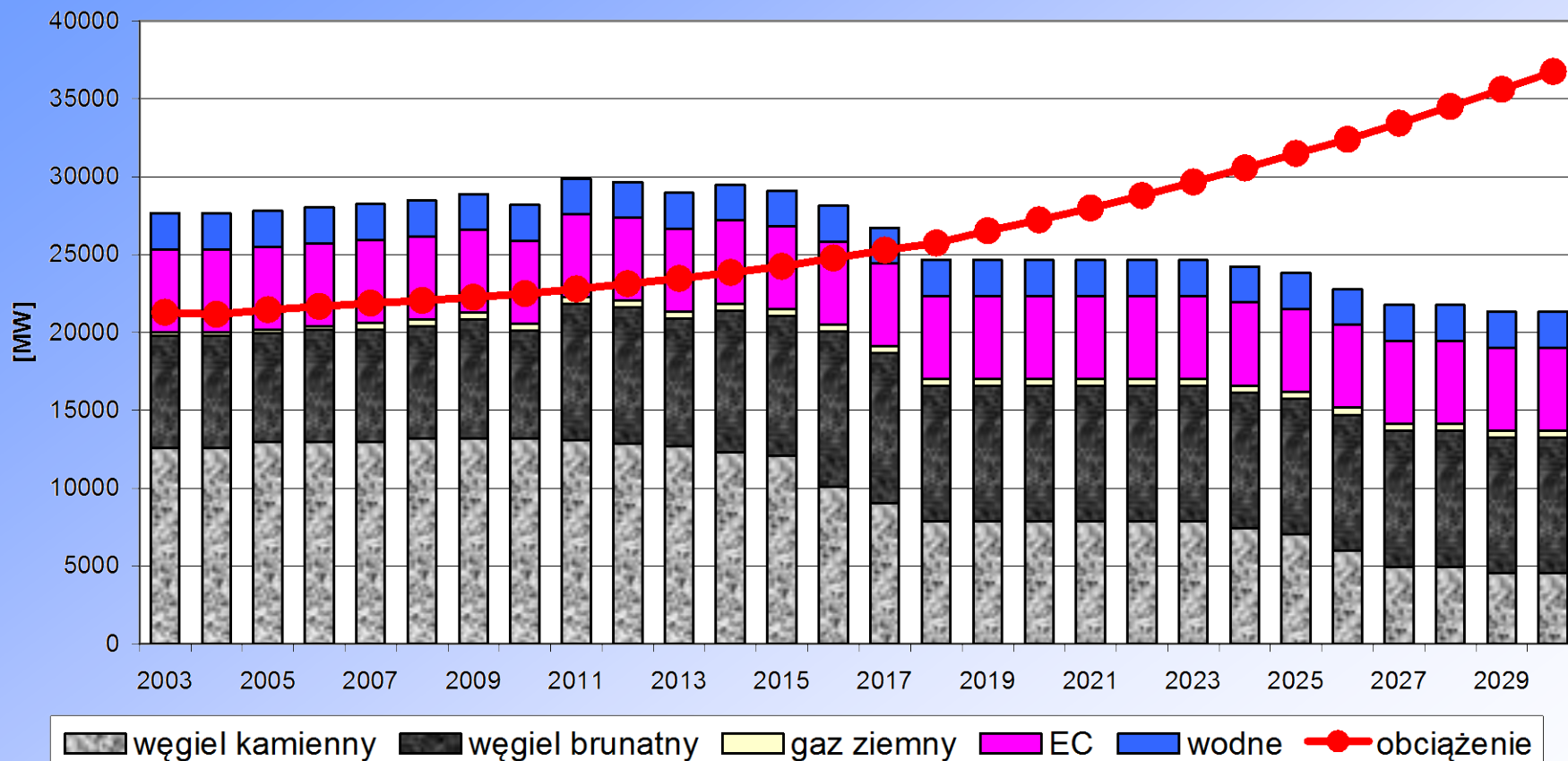
- lack of installed power about 2018
- very old conventional power plants
(45% plants more than 30 years old)
- lignite (brown coal) for 15 years (without new mines)

Solutions:

- refurbish of conventional power plants
 - new technologies => increase of thermal efficiency 33 to 44 %
 - problems of getting hard coal from Polish mines
 - CO₂ restrictions in EU
- construction of new plants for lignite
- construction of gas fired plants
- **nuclear energy**
 - investment cost
 - public acceptance

Present energy situation in Poland

Demand and production prognosis



hard coal

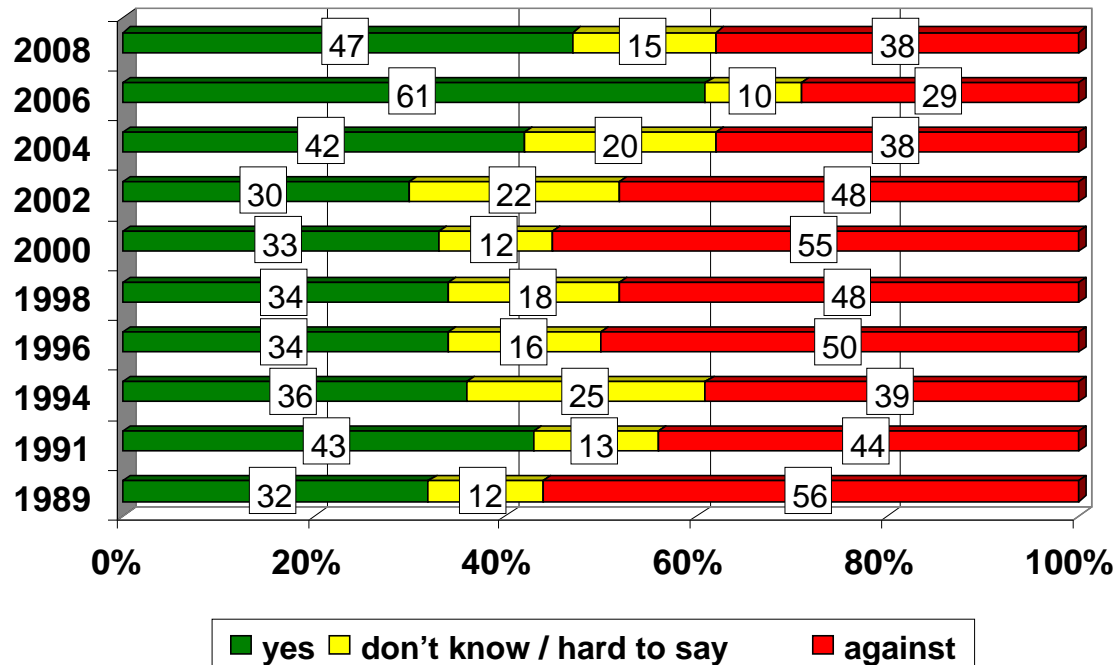
lignite

natural gas

heat & hydro plants

demand

Acceptance of nuclear energy by in Poland in years 1989 - 2008



Remark: the high acceptance in 2006 may be explained as follows:
in general question was added phrase:
if it will decrease the country dependence of oil and gas
and will reduce of CO₂ emission

Steps taken by Polish government in 2009:

- January general statement

Taking into account:

- national energy security
- economic development

Polish nuclear power program shall developed and implemented

Program shall determined:

- nuclear power plants' number
- size and
- possible sites

Government obligates National Ministry of Treasury to ensure that Polish Energy |group shall cooperate on the program's development and implementation

Steps taken by Polish government in 2009:

(cont.)

Program specify that:

At least two nuclear power plant will be built and operation at least one other then should be started by 2020

- May nomination of Commissioner
(person with good nuclear background)
- August acceptance of the roadmap

Roadmap for nuclear energy in Poland

(four stages - general activity)

- (1) From now until December 31, 2010
Set-up and acceptance by government of
„Program for development of nuclear energy in Poland”
- (2) January 1, 2011 until December 31, 2013
Localization and signing agreement for construction of the first NPP
- (3) January 1, 2014 until December 31, 2015
Preparation of design project and gaining all agreements
- (4) January 1, 2016 until December 31, 2020
Construction of the first NPP

Roadmap for nuclear energy in Poland

(stage one from now until December 31, 2010)

Detailed activity:

- 1) Adaptation of Atomic Law
 - 2) Analysis of costs of electric energy production
 - 3) Analysis of possible localization of the first NPP
 - 4) Analysis of localization of low and medium radiological waste repository
 - 5) Setting-up of plan for spent fuel management
 - 6) Setting-up of plan for future staff education
 - 7) Promotion campaign and education of society
 - 8) Development of technical support organizations (TSO)
- (to be cont.)

Roadmap for nuclear energy in Poland

(stage one from now until December 31, 2010)

(cont.)

Detailed activity:

- 9) Assurance of Polish industry participation in construction of NPP
- 10) Recognize of uranium deposits in Poland
- 11) Program of National Atomic Energy Agency to be regulatory authority
- 12) Preparing of the „Program for development of nuclear energy in Poland” and its acceptance by the government

Roadmap for nuclear energy in Poland

(stage one from now until December 31, 2010)

(two points directly connected with regulatory authority)

1) Adaptation of Atomic Law

11) Program of National Atomic Energy Agency
to be regulatory authority

Regulatory authority in a country

1) Position

- independent from any other institution
- own budget

3) Responsibility

- nuclear safety
- radiological protection (*policeman in respect to radiation*)

2) Duties

- establishing law
- giving licences for operation of nuclear facilities, transport of nuclear material etc.
- supervision and inspections
- radiation emergency management

(point from Roadmap)

1) Adaptation of Atomic Law in Poland

(a) adequate to present situation

- operation of nuclear facilities
(research reactor and radiological waste repository)
- use of radioactive sources in medicine and industry

(b) missing regulations

- scheme for granting licences/permissions
 - type of licence:
 - + individual (sitting, design, construction, start-up, trial operation, permanent operation, decommissioning)
 - + combined
- specification who will give final decision about NPP
(government, regulatory body , ministry of environment, local authority etc.)
- criteria for sitting of NPP
- granting licences for operators

(point from Roadmap)

11) Program of National Atomic Energy Agency to be regulatory authority

(controversial statement)

NAEA is a regulatory body in criteria accepted by
IAEA and EU

NAEA has already taken following steps to increase its
ability to be regulatory authority:

- since 2006 at least one person per year started working
as an nuclear inspector
- intensive training of inspectors is performed in Poland and abroad
- inspectors passed internal examinations (some of them on two levels)

(point from Roadmap)

11) Program of National Atomic Energy Agency to be regulatory authority

(cont.)

NAEA has already taken following steps to increase its ability to be regulatory authority:

- exchange of information during bilateral meeting with regulatory authorities from neighbouring countries
- agreements with regulatory authorities in other countries are in preparation

But NAEA needs substantial support for:

- continuing recruiting new staff
- training of new inspectors
- adequate financing to its duties

Conclusions

Development of nuclear energy in Poland requires
(from the position on regulatory authority):

- Changes in Atomic Law
- Transfer of activity to power reactors
- Intensive exchange of information with regulatory bodies in countries constructing new power plant (Finland, Slovakia, France etc.)

THANK YOU FOR YOUR ATTENTION !