



Comparison among different decommissioning funds methodologies for nuclear installations

Final Report

Country Report Italy

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funds methodologies for nuclear installations**

Final Country Report (WP 1/WP 3)

Italy

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Summary

In Italy, the only operating nuclear facilities today are research and waste management facilities which do not set up any decommissioning plans, cost estimates or provisions. For the already shut down JRC facilities at Ispra, decommissioning cost estimates and EC budget lines exist.

Italy has had four operating nuclear power plants, all of different technologies, but shut the last two down following the Chernobyl accident. Furthermore, other plants of the nuclear fuel chain were shut down, too. Decommissioning of the NPPs and of the fuel cycle installations will be completed by 2024, if a repository is available on time.

With regard to financing of decommissioning, there is the special situation of an early shut down of these plants. In the context of privatisation and liberalisation, between 2000 and 2005, liabilities of former ENEL, FN and ENEA facilities were transferred to the company SOGIN which in turn has been transferred 100% to the Italian Ministry of Treasury. This means that today the state, respectively a state-owned organisation is responsible for decommissioning of these plants. Only one pilot fuel fabrication facility has been already completely dismantled.

Total costs of decommissioning of all the facilities SOGIN is responsible for sum up to 4.03 billion Euro. Until 1999, i. e., before liabilities and funds were transferred to SOGIN, ENEL had accumulated provisions amounting to about 800 million Euro. FN and ENEA had not set up any provisions at all. About 80% of total decommissioning costs have to be paid by today's and future generations and not by the former generations who were benefiting from the nuclear power produced.

Funds for these payments are collected by the electricity distribution companies via a surcharge on the electricity price to be paid by some of the customer groups. The distribution companies transfer the money to CCSE, which is an internal unrestricted fund of the state. CCSE then distributes funds to SOGIN according to SOGIN's needs to cover decommissioning expenditures.

Uncertainties and intransparent methodologies with regard to decommissioning costs and financing include:

- Costs and dates of final disposal of high level waste and spent fuel are unknown and not really calculated yet.
- In how far the surcharges on the electricity price are sufficient to pay for future decommissioning costs, and in how far the total sum of surcharges will be equal, less or more than total decommissioning costs, remains intransparent and unclear.

These intransparent methodologies and uncertainties should be reduced as soon as possible.

1 Introduction and overview

Italy has had four operating nuclear power plants, all of different technologies, but shut the last two down following the Chernobyl accident. Furthermore, other plants of the nuclear fuel chain were shut down, too. The only operating nuclear facilities today are research and waste management facilities (cf. Table 1). The decision to shut down the plants was taken by the Interministerial Committee for the Econmical Planning (CIPE), a governmental body in charge of the strategic decisions on NPPs. CIPE then instructed the licensee at this time, i.e. the national electricity company ENEL, to start decommissioning actions according to the safe enclosure strategy. In 2004, Italy has changed its decommissioning strategy due to several reasons (cf., e.g., OECD/NEA 2006). **Decommissioning of the NPPs and of the fuel cycle installations will now be completed by 2024**, if a repository is available on time.

With regard to financing of decommissioning, there is the special situation that the above-mentioned CIPE decision, in fact, meant an **early shut down** of some of the NPPs and nuclear fuel chain plants. In the context of privatisation and liberalisation, between 2000 and 2005, liabilities of former ENEL, FN and ENEA facilities were transferred to the company **SOGIN** which in turn has been transferred 100% to the Italian Ministry of Treasury.

The Italian legislation regulating nuclear safety and radiation protection is centered on the following **laws and regulations** (OECD/NEA 2006):

- Law no. 1860 issued in 1962, which is the Basic Act on the peaceful uses of nuclear energy, amended in 1965 and 1975. Excluded from the scope of the law are the nuclear installations for the generation of electricity, which are governed by the procedure laid down in Legislative Decree no. 230/95.
- Legislative Decree no. 230, issued in 1995 and amended in 2000, applies to all practices involving an ionising risk, including the construction, operation and decommissioning of nuclear power plants.
- In addition, the safety authority publishes technical guidelines.

Decree no. 230/95, particularly article 55 to 57, describes the **licensing procedures for decommissioning**. The applicant has to present a global decommissioning plan and a detailed one for the first decommissioning phase. The licenses are granted by the Ministry for Productive Activities (MAP, basically the Ministry of Industry), looking for compliance with existing strategic guidelines, after consultation with the Ministries of Environment, Internal Affairs, Labour, and Health, together with the interested Regional Government, and on the basis of technical positions of the National Agency for Environmental Protection and Technical Services (APAT, previous ANPA). APAT carries out technical and scientific, regulatory and inspection activities related to environmental and resource matters. It has operational and administrative autonomy under the directives and the control of the Ministry of Environment. The advisory body of APAT is the Technical Commission for Nuclear Safety and Health Protection from Ionising Radiations (Technical Commission). The advisory body of the Ministry of Environment is the

EIA Commission (Commissione VIA), giving technical advices on the environmental compatibility of the projects. For the decommissioning of NPPs, the implementation of an **EIA procedure** including an Environmental Impact Study is required.

In fact, every year SOGIN has to submit to the National Authority for the Electricity and Gas an updated **report** on the technical and economic plan of the global decommissioning project.

The present inventory of Italian **radioactive waste** can be summarised as follows (OECD/NEA 2006):

- Low and Intermediate Level Wastes:
 - about 25,000 m³, stored at the sites of origin, and mainly not conditioned;
 - about 500 ton/year, annual generation;
 - about 50,000 to 60,000 m³ to be shipped to the national repository, including waste from dismantling.
- High level wastes:
 - about 9,000 m³ produced by dismantling;
 - about 75 to 150 m³ vitrified wastes back from the reprocessing of spent fuel;
 - about 60 to 70 dry storage casks.

Until now, there is **neither any site for final waste disposal nor a centralised interim storage facility for spent fuel and high level waste**.

After the political decision to stop nuclear power activities, shipments of **spent fuel** to reprocessing facilities abroad were practically suspended. At present, the inventory of spent fuel present in Italian nuclear installations, can be summarised as follows:

- about 230 ton U-Pu from NPPs;
- about 60 ton U-P from ENEL's participation to "Superphenix";
- about 4 ton U-Pu-Th from ENEA installations of various origins.

The remaining fuel will be covered by a new reprocessing contract currently under negotiation. The only fuel that will not be reprocessed is the Uranium/Thorium fuel which has been shipped from the US NPP Elk River in the 1970s. SOGIN is looking to its transfer abroad or, as an alternative, to store it on-site in dry casks.

Table 1 Overview on nuclear installations in Italy (Status: February 2006)

Nuclear facility	Short name	Country	Kind of facility ⁺	Output (Power in MW _{el} for NPP)	First criticality (in case of reactors)	Operational period	Operating company	Name of quoted companies holding shares in the nuclear facility, if any ^{**}	Percentage of shares held ^{***} [%]	De-comm. started in year	De-comm. stage ^{****}	Analysed in this report
Garigliano		IT	NPP	150 MWe	05.06.1963	1964-1978	ENEL -> SOGIN				-2	x
Latina		IT	NPP	153 MWe	27.12.1962	1964-1987	ENEL -> SOGIN				-2	x
Caorso		IT	NPP	860 MWe	31.12.1987	1981-1986	ENEL -> SOGIN				-1	x
Trino		IT	NPP	260 MWe	21.06.1964	1965-1987	ENEL -> SOGIN				-1	x
Bosco Marengo	FN	IT	Industrial scale plant for LWR			1973 - 1995	FN -> SOGIN					x
Saluggia	EUREX	IT	Pilot reprocessing facility			1970 - 1974 1980 - 1983	ENEA -> SOGIN					x
Saluggia	IFEC	IT	Pilot fuel fabrication facility			Early 1960s – late 1980s	ENEA				3	
Trisaia	ITREC	IT	Pilot reprocessing facility			1970s	ENEA -> SOGIN					x

Cassacia	Plutonio	IT	Pilot MOX fuel fabrication facility			1968 - 1974	ENEA -> SOGIN					x
Cassacia	OPEC 1	IT	Hot cells			1962 – 1990 1992 - 1998	ENEA -> SOGIN					x
Ispra-1 (EU; JRC site)		IT	RR			1958 - 1974					-2	x
Essor Ispra (EU)		IT	RR			1967 - 1983					-2	x
LENA Triga II		IT	RR	250 kW		1965 – today	University of Pavia					x
Tapiro, Casaccia		IT	RR	5 kW		1971 – today	ENEA					
Triga RC-1, Casaccia		IT	RR	1 MW		1960 – today	ENEA					
AGN Constanza		IT	RR			1960 – today						
Avogadro Compes		IT	Small reactor plant			1959 - 1971					2	
Galileo Galilei, Pisa	CISAM	IT	Small reactor plant			1963 - 1980	University of Pisa				2	
<i>This list might not be exhausted since there might be further small research facilities not on the lists of installation collected in the course of this project.</i>												

* Kind of facility: NPP = Nuclear Power Plant RR = Research Reactor

** Quoted: quoted on the stock exchange. Quoted companies directly or indirectly owning the nuclear installation or at least a part of it.

*** Percentage of direct or indirect shares held by companies quoted on the stock exchange.

**** Decomm. = Decommissioning. Decommissioning stages:

Operating: Still in operation; not shut down yet

1 Decommissioning to stage 1

3 Decommissioning to stage 3

0 Decommissioning announced

2 Decommissioning to stage 2

3* Decommissioning to stage 3 without civil engineering

-x Decommissioning in progress towards stage x

Complementary information:

- | | | | |
|---|---|---|--------------------------------------|
| a | partly converted into a museum | b | converted into a spent fuel facility |
| c | Equipment dismantled, building to be reused | d | Contains damaged fuel elements |
| e | Chimney being partly dismantled | f | used as radioactive waste store |

Source: Diverse sources, among others, www.nea.fr (7 May 2006), www.uic.com.au (14 July 2006), SOGIN, the Colenco/Iberinco questionnaire, and OECD/NEA 2006.

2 Decommissioning strategies and costs

2.1 Current and past decommissioning activities

IFEC, a pilot fuel fabrication facility located at Saluggia, which was operated by ENEA, is the **only facility completely dismantled**. All other facilities besides the still operating research facilities mentioned in Table 1 are in the process of decommissioning.

When CIPE decided the definitive closure of all NPPs and the other facilities of the nuclear process chain, and to start decommissioning according to the **safe enclosure** strategy, consequent acts to support this strategy, clearance levels for the management and disposal of very low level waste, and specifically funding mechanisms were not in place. In this situation, decommissioning operations underwent significant **delays** (OECD/NEA 2006).

Due to

- the lack of significant occupational dose advantages in further deferring decommissioning,
- the risk of losing the necessary specific competences, and
- the possibility of site reuse for industrial purposes

a **change in strategy** occurred. At the end of 2004, SOGIN mission and technical directives issued by MAP have been updated and currently cover, among others, the **decommissioning of the NPPs and of the fuel cycle installations by 2024**. Since the end of 2004, it is furthermore possible to choose between the reprocessing option and interim storage of spent fuel. All decommissioning programmes and cost estimates have been revised by SOGIN respectively, and with a view to optimise societal costs and resources of the whole nuclear system.

As it can be seen in Table 2, **total costs of decommissioning of all the nuclear facilities SOGIN** is liable for sum up to **4,029 million Euro₂₀₀₃** (estimate was made in 2004). Between 1 Jan 2001 and 31 Dec 2004, 514 million Euro of these total decommissioning costs already occurred. The more than 4 billion Euro do not yet include final disposal costs relevant to high level waste and spent fuel, which are still uncertain as well as the date of the actual availability of a final disposal site. About 10,000 Euro per cubic meter has been considered as costs for a final disposal site (OECD/NEA 2006). However, the mentioned 4 billion Euro include final disposal costs relevant to low and intermediate level waste, as well as the interim storage costs of HLW and spent fuel waiting for the availability of an appropriate geological repository. It has to be noticed that at the time of closure of the plants, total decommissioning costs were estimated at 2 billion Euro for the four NPPs and 1 billion Euro for the four nuclear fuel cycle pilot plants.

The **National Authority for Electricity and Gas**, regularly examines the overall adequacy of cost and controls the economic efficiency of the decommissioning activities and their project management.

The cost estimates are carried out using **deterministic methods** and with the help of a specific tool, the Primavera Enterprise software for specific projects. Cost estimates are constantly updated, on the basis of design features and relative cost analyses for each of the nuclear installations, including spent fuel management. Budgetary estimates are used for calculating overheads.

For the **JRC facilities** at Ispra, decommissioning cost estimates and EC budget lines exist (European Commission 2004). Several decommissioning activities have been carried out already, main activities are expected to take place between 2005 and 2010, further activities until reaching “green field” status in 2020. Discussions with the Italian authorities, mainly MAP and APAT, are ongoing, mainly focusing on reaching an agreement on the specifications for the conditioning of waste intended to be stored in the future Italian interim storage facility and on the transfer of the ultimate ownership of the waste and of the interim storage facility to a public entity. Between 1999 and 2003, decommissioning expenditures for the JRC facilities at Ispra amounted to 42 million Euro. In recent years, there have been different evaluations of expected total decommissioning costs, partly based on studies by external companies. While the JRC’s 1998 evaluation based on two studies by external German and French consultants, estimated total decommissioning costs at 236 million Euro, the latest evaluation made in 2003 by a consortium of four companies arrived already at 595 million Euro (**645 million Euro** including the “green field” option; not including JRC’s staff costs)(all figures in Euro 2003). The latter cost estimate was initiated by the Court of Auditors.

2.2 Future decommissioning strategies

According to information by the University of Pavia (LENA Triga II), for the **operating research facilities** neither a decommissioning plan, nor any estimate of decommissioning costs or any provision for these costs exists. The research facilities expect the government to pay from its **current budget** when decommissioning activities have to be carried out.

Table 2 Expected total costs of future decommissioning of nuclear installations in Italy (in prices of 2004)

Short name of nuclear facility	Kind of facility: NPP = nuclear power plant RR = Research reactors Others: please specify	Years decommissioning activities are expected to take place	Total decommissioning costs estimated [Mio. Euro]	Annuity of estimated decommissioning costs in relation to output over lifetime [ct/kWh for NPP; 4%]	Remarks
Garigliano	NPP	< 2024	265	2.8	Costs of closure of the fuel chain and costs of final disposal of high level waste and spent fuel are not yet included here.
Latina	NPP		661	3.9	Costs of closure of the fuel chain and costs of final disposal of high level waste and spent fuel are not yet included here.
Caorso	NPP		451	1.7	Costs of closure of the fuel chain and costs of final disposal of high level waste and spent fuel are not yet included here.
Trino	NPP		270	1.6	Costs of closure of the fuel chain and costs of final disposal of high level waste and spent fuel are not yet included here.
New reprocessing procedure			322		Storage of irradiated fuel, which was previously placed in temporary dry storage, but which is now to be sent to reprocessing plants abroad under new contracts that have yet to be finalised, with the return of the resulting by-products to the not yet existing national repository not before 2025.
Creys-Malville			139		Storage of part of the fuel from the Creys-Malville plant allocated to SOGIN, which calls for direct transfer of the fuel from France to the not yet existing national repository.
Former reprocessing procedure			432		Storage of irradiated fuel which, under previously negotiated contracts, has already been sent for reprocessing in the UK and whose by-products will be transferred directly to the not yet existing national repository.
FN	Industrial scale plant for LWR		47		
EUREX	Pilot reprocessing facility		396		

ITREC	Pilot reprocess- ing facility		280		
OPEC 1	Hot cells		319		
Plutonio	Pilot MOX fuel fabrication facil- ity				
SOGIN Decommissioning Programme Management Costs			447		
SOGIN FACILITIES – TOTAL COSTS			4,029		Not yet including costs of final disposal of high level waste and spent fuel. Between 1 Jan 2001 and 31 Dec 2004, 514 million Euro of these total decommissioning costs already occurred.
Ispra-1 (EU; JRC site)	RR	Until about 2015	645		Uncertainties because costs of conditioning and final disposal in Italy can increase since a solution for this part of the back-end has not been found yet and since it is not clear when there will be a repository and how much JRC’s contribution to its costs will be.
Essor Ispra (EU)	RR				
LENA Triga II	RR	Not known yet	Not calcu- lated yet		

Source: European Commission 2004; Ministry of Economy; SOGIN; University of Pavia.

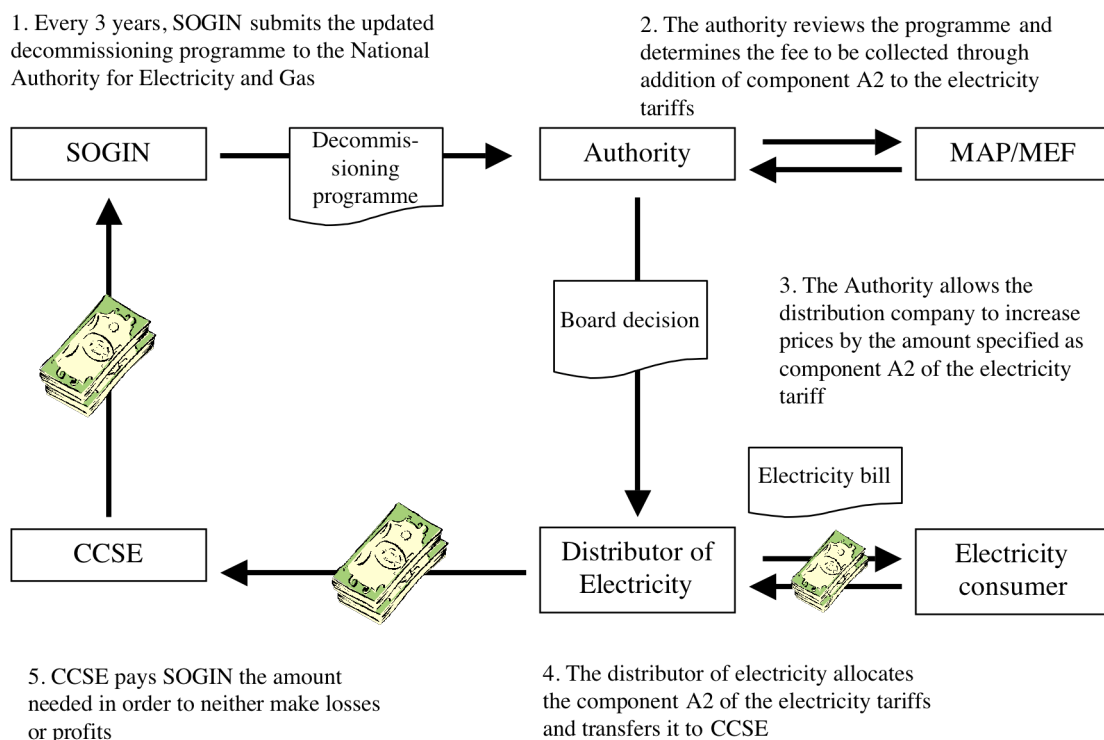
3 Funds and fund management

3.1 Setting aside funds

During NPP operation, ENEL accumulated internal, unrestricted funds, but the early closure of these plants has prevented the reaching of the total amount of money necessary for the decommissioning. According to information by the Ministry of Industry, in total, decommissioning funds available to ENEL before SOGIN was created in 1999 amounted to around 800 million Euro, which were part in cash and assets and part in credits from CCSE, and which were totally transferred to SOGIN when liabilities were transferred, too. ENEA has not accumulated any fund for decommissioning.

A Decree of the Ministry of Industry issued on 26 January 2000 states that decommissioning funds shall be complemented by a levy on the price of the sold kWh. This levy is the component “A2” of the electricity tariff, which is one of several surcharges, of which only its sum is visible on the electricity bill.

Figure 1: How today's and future electricity customers pay for remaining future decommissioning costs which cannot be covered by SOGIN on its own means in order to appropriately decommission its already shutdown facilities in Italy.



Source: www.sogin.it (11 July 2006), translated by Wuppertal Institute.

Figure 4 shows how the levy is allocated by the distribution companies, and bimonthly transferred to a national fund called 'La Cassa conguaglio per il settore elettrico' (CCSE). CCSE pays for all decommissioning costs which occur at SOGIN. SOGIN's

accounting of payments from CCSE and decommissioning expenditures, of assets and liabilities follows national and international accounting standards. SOGIN has to regularly set up decommissioning programmes, which have to be approved by the national authority for electricity and gas. The authority also decides on the size of the component A2 of the electricity price: Currently, depending on the customer type, electricity customers in Italy pay between 0.00 and 0.05 ct/kWh electricity sold and between 0.00 and 371.85 ct for each point of supply to CCSE to cover remaining decommissioning costs of SOGIN. The decommissioning programmes as well as the size of the levy are reviewed every three years.

How much money has been paid to CCSE in total is not transparent. CCSE does not separate budgets for the different kind of surcharges. It is an internal, unrestricted fund of the state. The state is free in using the money being paid to CCSE for any purpose. According to the Ministry of Industry, the money has been partly used for other purposes of public interest that are not possible to identify analytically.

However, the state remains responsible for guaranteeing the pertinent cost coverage during all phases of decommissioning. Until now, all needed activities for which SOGIN is called to fulfil on the basis of its mandate, have been executed in the appropriate time, the Ministry of Industry claims. Between 2001 and 2004, distribution of funds from CCSE to SOGIN has been around 568 million Euro in total.

For the JRC facilities, and for the operating research facilities, no provisions are set up. For the JRC facilities, budget planning of the European Commission exists (European Commission 2004).

3.2 Management of funds

While there is not more information available on the management of funds by CCSE, management of funds at SOGIN is well-documented in SOGIN's annual report. However, since SOGIN has already partly used the funds transferred to them from ENEL, and since the yearly contributions from CCSE, on average, will not be more than needed for yearly decommissioning activities, the funds which have to be managed are limited in size.

Table 6 presents some information on the investment of the funds at SOGIN:

- About 74% have been invested into secure (mostly short-term) state bonds or other financial assets with fixed interest rates;
- Interest received before taxes was about 3.0% in 2004.

3.3 Special cases: Fall-back option and transfer of ownership

The Italian situation is characterised by an early shut down of nuclear facilities, followed by a transfer of ownership of liabilities from ENEL and ENEA to the company SOGIN which is now 100% state-owned. Therefore, except for the still operating re-

search facilities and the JRC facilities, the government is finally responsible and paying for all decommissioning activities.

Of the 4.03 billion Euro estimated costs of decommissioning the nuclear installations SOGIN is liable for, 2.66 billion Euro (i. e. about two thirds) have to be paid by future generations who do not directly benefit from operation of the plants (via a surcharge on the electricity bill), and 568 million Euro (i. e. about 14%) have been paid by electricity customers in the years 2001 to 2004. This means, that, in total, about 20% of decommissioning costs have been paid by the generation who did directly benefit from operation of the plants.

Table 3 Base for decommissioning funds required in Italy

Short name of nuclear facility	Kind of facility: NPP = nuclear power plant RR = Research reactors Others: please specify	Please check if decommissioning funds are based on overnight / undiscounted decommissioning costs	Please check if decommissioning funds are based on net present value / discounted decommissioning costs	Discount rate used for discounting, if any	Reference date used for discounting	Remarks
SOGIN facilities	Diverse	X				
ISPRA – JRC facilities	RR	X				
LENA Triga II	RR	Not calculated yet				

Source: European Commission 2004; Ministry of Economy; SOGIN; University of Pavia.

Table 4 Decommissioning funds accumulated in relation to expected total costs of future decommissioning of nuclear installations in Italy (in prices of 2004)

Short name of nuclear facility	Kind of facility: NPP = nuclear power plant RR = Re-search reactors Others: please specify	Total decommissioning costs estimated [Mio. Euro]	Provisions accumulated by 31-12-2004 [Mio. Euro]	Provisions accumulated in relation to expected costs [%]	Years of operation until 31-12-2004 in relation to total expected lifetime [%]	Remarks
SOGIN facilities	Diverse	4,029 (w/o costs of final disposal)	570 still in the balance sheet, 800 in total transferred from ENEL (SOGIN) n.a. (CCSE)	ca. 20% (ENEL->SOGIN) n.a. (CCSE)	100.0%	For ENEA facilities, ENEA had not made any provisions. In 1999, ENEL transferred assets to SOGIN representing the provisions made by ENEL for its facilities ('nuclear-related allowances/advances'). In order to cover remaining future decommissioning costs of SOGIN facilities, electricity customers in Italy pay between 0.00 and 0.05 ct/kWh electricity sold and between 0.00 and 371.85 ct for each point of supply to CCSE. This surcharge is collected by the distribution companies and transferred to CCSE. Every year, out of these provisions, SOGIN receives from CCSE as much money as needed to cover its cost, so that SOGIN will neither make any profit nor any loss.
ISPRA – JRC facilities	RR	645	Paid out of the EC budget, therefore 0	0.0%	100.0%	
LENA Triga II	RR	No decommissioning plan, no cost calculations, no provisions yet.				The government is expected to pay for decommissioning in the end.

Source: European Commission 2004; Ministry of Economy; SOGIN; University of Pavia.

Table 5 Management of decommissioning funds in Italy

Short name of nuclear facility	Kind of facility: NPP = nuclear power plant RR = Research reactors Others: please specify	Provisions accumulated by 31-12-2004 [Mio. Euro]	... of which has been accumulated within the own assets of the operator of the facility or its mother company [Mio. Euro]	... of which has been accumulated by the operator of the facility or its mother company within a separated account / segregated fund [Mio. Euro]	... of which has been accumulated in an external fund under public control [Mio. Euro]	... of which has been accumulated in an external fund under mixed private-public control [Mio. Euro]	Share of funds the operator of the facility can access for other activities until the funds are needed for their original decommissioning purpose [%]	Remarks
SOGIN facilities	Diverse	n.a. (ENEL/SOGIN+CCSE)	570 still in the balance sheet, 800 in total transferred from ENEL (SOGIN)		n.a. (CCSE)		as much as needed to SOGIN neither making any loss nor any profit	
ISPRA – JRC facilities	RR	Paid out of the EC budget, therefore 0	Paid out of the EC budget, therefore 0					
LENA Triga II	RR	0	0	0	0	0		

Source: European Commission 2004; Ministry of Economy; SOGIN; University of Pavia.

Table 6 Investment of decommissioning funds until they are used for their original purpose

Short name of nuclear facility	Kind of facility: NPP = nuclear power plant RR = Research reactors Others: please specify	Provisions accumulated by 31-12-2004 [Mio. Euro]	... of which have been invested in secure state bonds [Mio. Euro]	... of which have been invested in other assets with fixed interest rates [Mio. Euro]	... of which have been lent to associated or joined companies or to third parties [Mio. Euro]	... of which have been invested in other means (shares, mergers & acquisitions, etc.) [Mio. Euro]	Interest on invested financial means from decommissioning funds in 2004 [%]	Interest on invested financial means from decommissioning funds in period 2000-2004 [%]	Remarks
SOGIN facilities	Diverse	570 still in the balance sheet, 800 in total transferred from ENEL (SOGIN)	ca. 423 (including receivables from SICN)		ca. 2	ca. 145	ca. 3.0% (before taxes)		Rough own estimate based on SOGIN's balance sheet: Definite links between assets on the left side and liabilities/provisions on the right side of the balance sheet cannot be drawn
		n.a. (CCSE)							
ISPRA – JRC facilities	RR	Paid out of the EC budget, therefore 0							
LENA Triga II	RR	0	0	0	0	0	0%	0%	

Source: European Commission 2004; Ministry of Economy; SOGIN; University of Pavia.

4 Transparency of the funding schemes to the public

In principle, the funding scheme is transparent to the public. SOGIN regularly publishes annual reports including decommissioning cost estimates, expenditures and provisions. For the decommissioning of NPPs, the implementation of an EIA procedure including a Public Inquiry is required, whose comments are taken into account by the EIA Commission in making its advice.

However, what is hidden to the customer is the exact surcharge A2 paid as part of the electricity bill, and the funds accumulated by the state or used already for other purposes at CCSE.

5 Stakeholder analysis

Main stakeholders are

- the Italian ministries, particularly the Ministry of Productive Affairs (Ministry of Industry) and the Ministry of Environment,
- the Regional Governments where the sites are located,
- the Parliament,
- the National Authority for the Electricity and Gas (AEEG),
- the National Agency for Environmental Protection and Technical Services (APAT, previous ANPA),
- the Technical Commission for Nuclear Safety and Health Protection from Ionising Radiations (Technical Commission) advising APAT,
- the EIA Commission (Commissione VIA) as the advisory body of the Ministry of Environment,
- the CCSE,
- the state-owned decommissioning company SOGIN,
- the not-for-profit organisation Associazione Italiana Nucleare (AIN, Italian Nuclear Association),
- the National Agency for New Technology, Energy and Environment (ENEA),
- environmental NGOs,
- consumer organisations,
- the universities still operating research facilities, and
- the European Commission's JRC.

In general, when the "A2" levy is defined or modified, there are different stakeholders taking an attitude for complaining about supposed negative consequences for their interests. Except such kind of debate, according to the Ministry of Industry, there is not any pending contentious or formal objection about the present decommissioning financing system in Italy.

The Italian government sees the **need for European level harmonisation** of decommissioning financing insuring that the single nuclear installation operators are responsible for collecting the needed financial amounts to be accumulated in segregated funds.

6 Conclusions and recommendations

Due to the stop of nuclear activities after Chernobyl besides some research activities, the Government has taken over responsibility for decommissioning via SOGIN. However, although plants are shut down and decommissioning activities are ongoing, there are still some uncertainties and intransparent methodologies with regard to decommissioning costs and financing:

- Costs and dates of final disposal of high level waste and spent fuel are unknown and not really calculated yet.
- In how far the A2 surcharges are sufficient to pay for future decommissioning costs, and in how far the total sum of A2 surcharges will be equal, less or more than total decommissioning costs, remains intransparent and unclear.

These intransparent methodologies and uncertainties should be reduced as soon as possible.

Furthermore, it has to be stated that the early shut down meant a clear cross-subsidy from today's and future generations paying for about 80% of the decommissioning costs of nuclear installations to former generations who were benefiting from the nuclear power produced.

7 References

Annual company reports and balance sheets.

Oral and written information by stakeholders.

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