El Interrogante Nuclear

Situación, perspectivas y retos para un “renacimiento nuclear”

Universidad Complutense, Cursos de Verano
El Escorial, julio de 2009

Marcel Coderch Collell

ÍNDICE

¿Por qué hicimos nucleares?

David Eli Lilienthal (July 8, 1899 - January 13, 1981) was a capable and controversial American public official. Appointed by President Franklin D. Roosevelt as one of three directors of the Tennessee Valley Authority in 1933, Lilienthal served as the Authority's chairman from 1941 to 1946 and was known as "Mr. TVA."

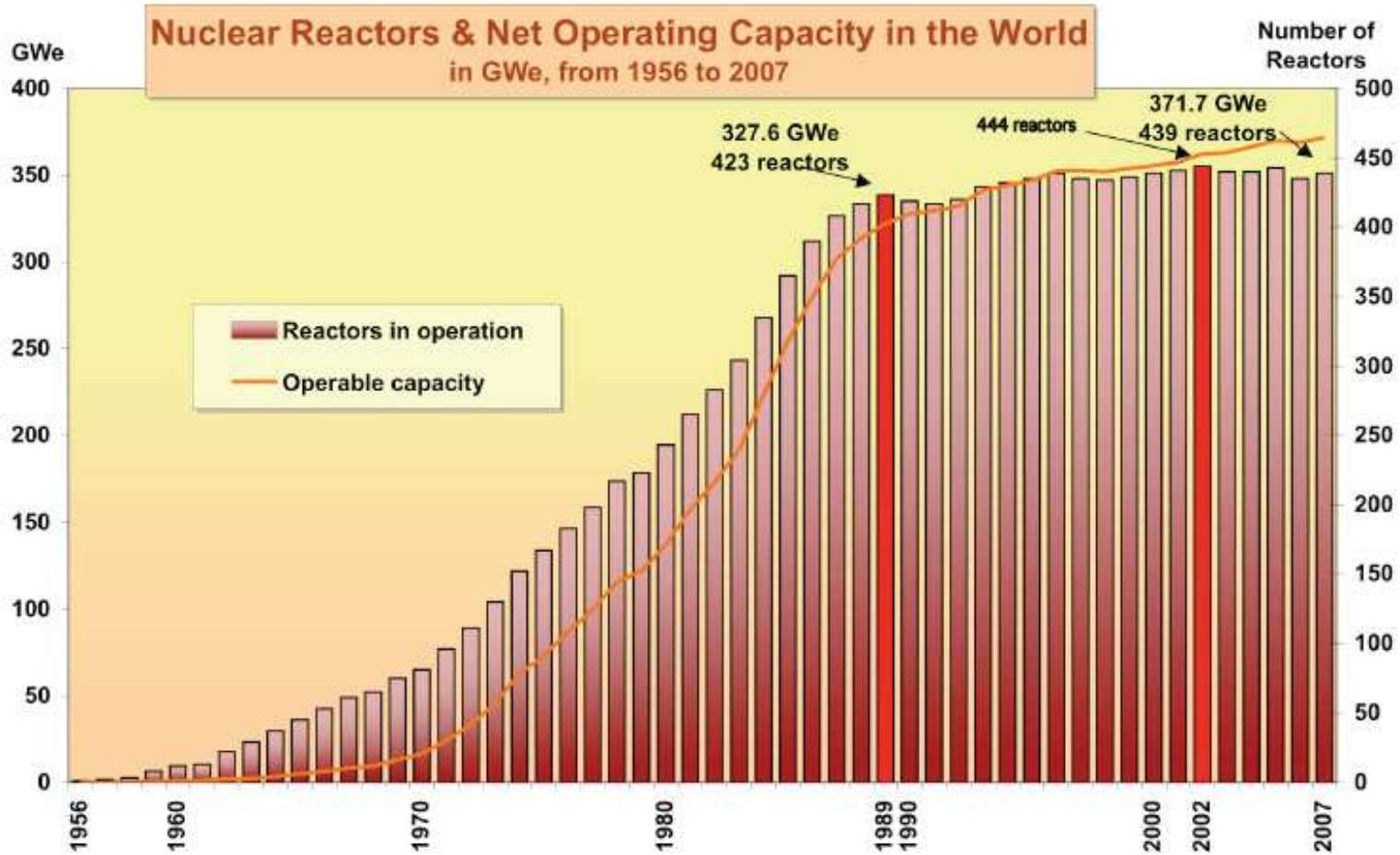
From 1947 to 1949, Lilienthal chaired the U.S. Atomic Energy Commission (AEC), and was one of the pioneers of civilian control in the American atomic energy program. He hoped to administer a program which would "harness the atom" for peaceful purposes, principally atomic power. This might have been a legacy even more dramatic than the introduction of hydroelectric power to the Tennessee Valley.

"I do not believe that God created man and endowed him with the capacity to unlock the energy within the very heart of matter in order that he should use that knowledge to destroy this beautiful world, which is the handiwork not of man, but of God."

Change, hope and the bomb, 1963

Ese y no otro es el origen de todos los programas de desarrollo de la energía nuclear para aplicaciones civiles; un origen que explica las dificultades económicas que le acompañaron desde su nacimiento: **el desarrollo de la industria nuclear civil nunca fue el resultado de decisiones económicas empresariales sino consecuencia de una determinación política y militar.**[15]

¿Por qué dejamos de hacerlas?



¿Por qué dejamos de hacerlas?

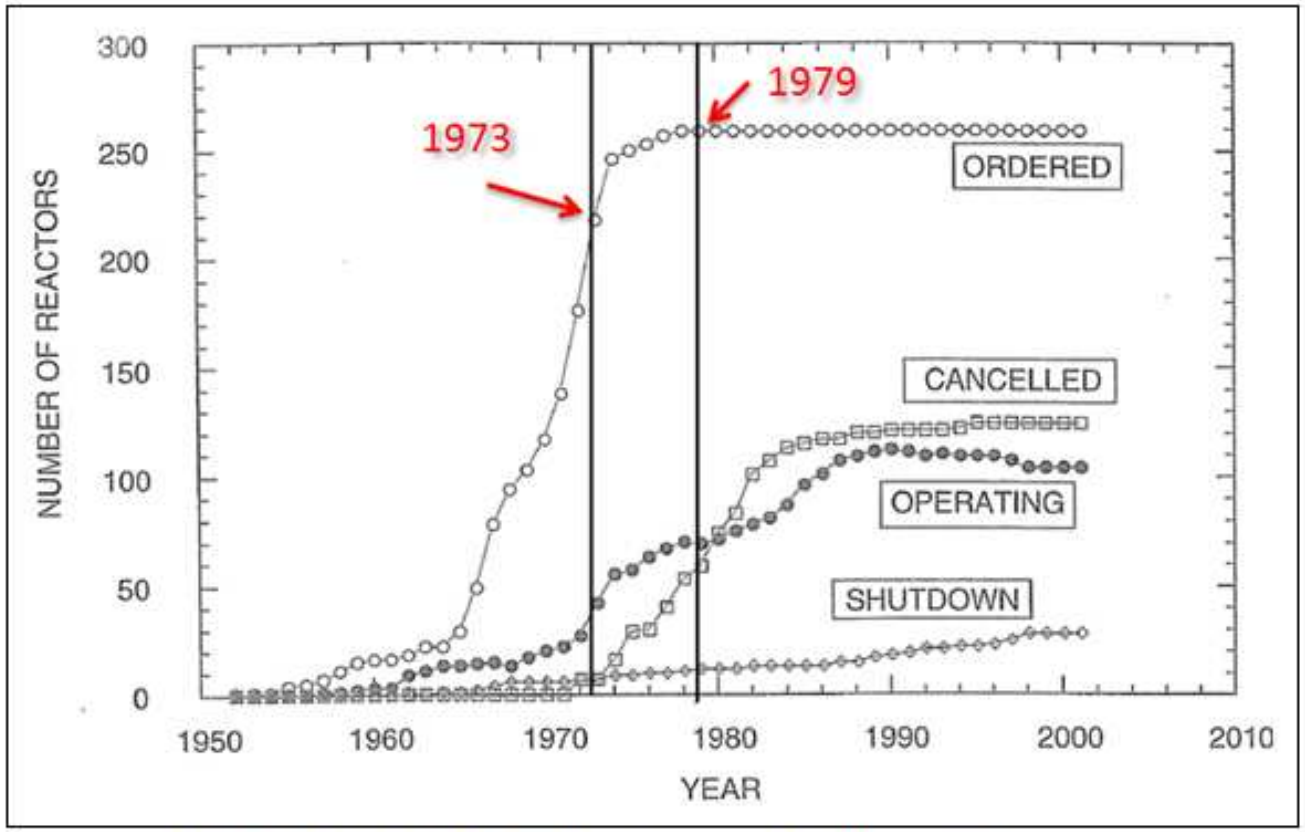
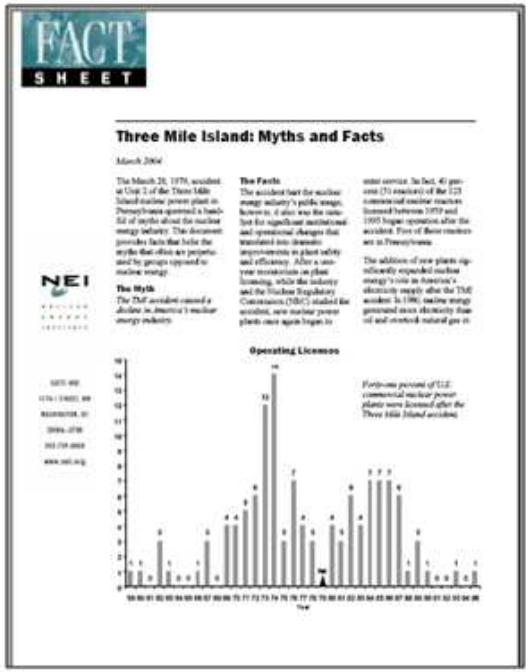


Figura 3. Evolución de los pedidos de centrales nucleares en EE.UU.

Fuente: David Bodansky, *Nuclear Energy: Principles, Practices and Prospects* [17]

¿Por qué dejamos de hacerlas?



FACT SHEET

Three Mile Island: Myths and Facts

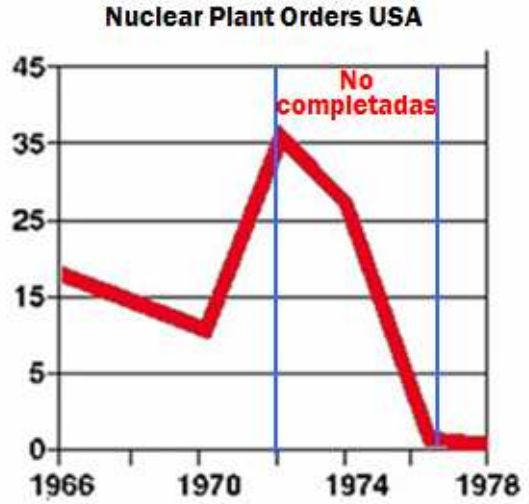
March 2004

NEI

Operating Licenses

Most plant cancellations can be traced to the 1973 oil embargo, which led to high interest rates and low economic growth—and in turn halved growth in electricity demand from an average annual increase of 7 percent to less than 3 percent.

Source: Nuclear Energy Institute



It is a myth that the accident at Three Mile Island in 1979 caused the demise of the nuclear industry. As can be seen here, the number of new nuclear plants ordered reached a high of 35 in 1972, and then collapsed to zero after the "oil crisis" of 1973.

Source: Atomic Industrial Forum

¿Y en España?

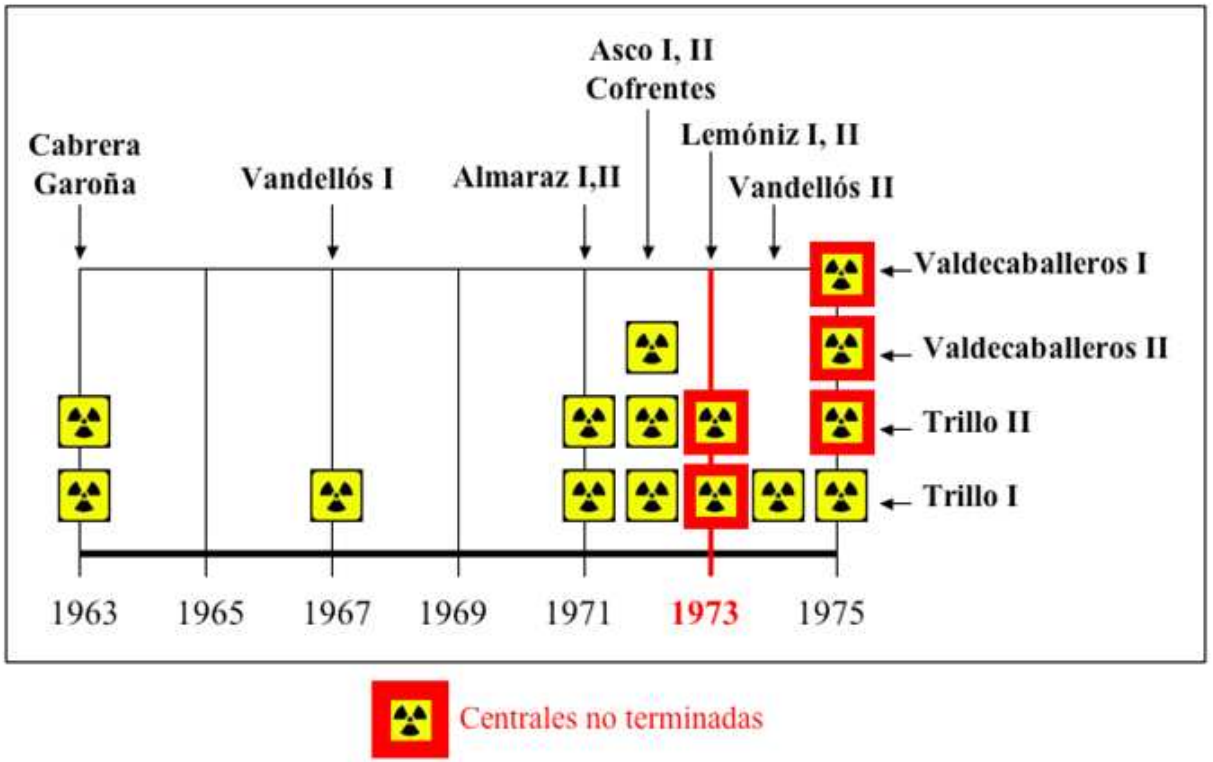


Figura 4. Evolución de los pedidos de centrales nucleares en España

Fuente: Marcel Coderch y Núria Almirón, *El Espejismo Nuclear* [21]

¿Por qué hubo una moratoria?

"Es conocido que en pleno proceso de transición democrática el sector público tuvo que rescatar financieramente a las empresas eléctricas del país, que se habían embarcado en un proceso de inversión faraónico, derivado de una planificación delirante, en absoluta contradicción con las necesidades constatadas de la demanda eléctrica en España. La preferencia por la energía nuclear contenida en aquellos planes puso en marcha la construcción de más grupos nucleares de los razonablemente necesarios, lo que llevó, por razones mucho más financieras que de cualquier otro tipo, a la llamada moratoria nuclear a partir de 1982. Los costes de la paralización de proyectos de construcción en curso, así como el saneamiento financiero de las empresas, recayeron sobre los consumidores durante largos años, mediante recargos pagados en el recibo de la luz." [22]

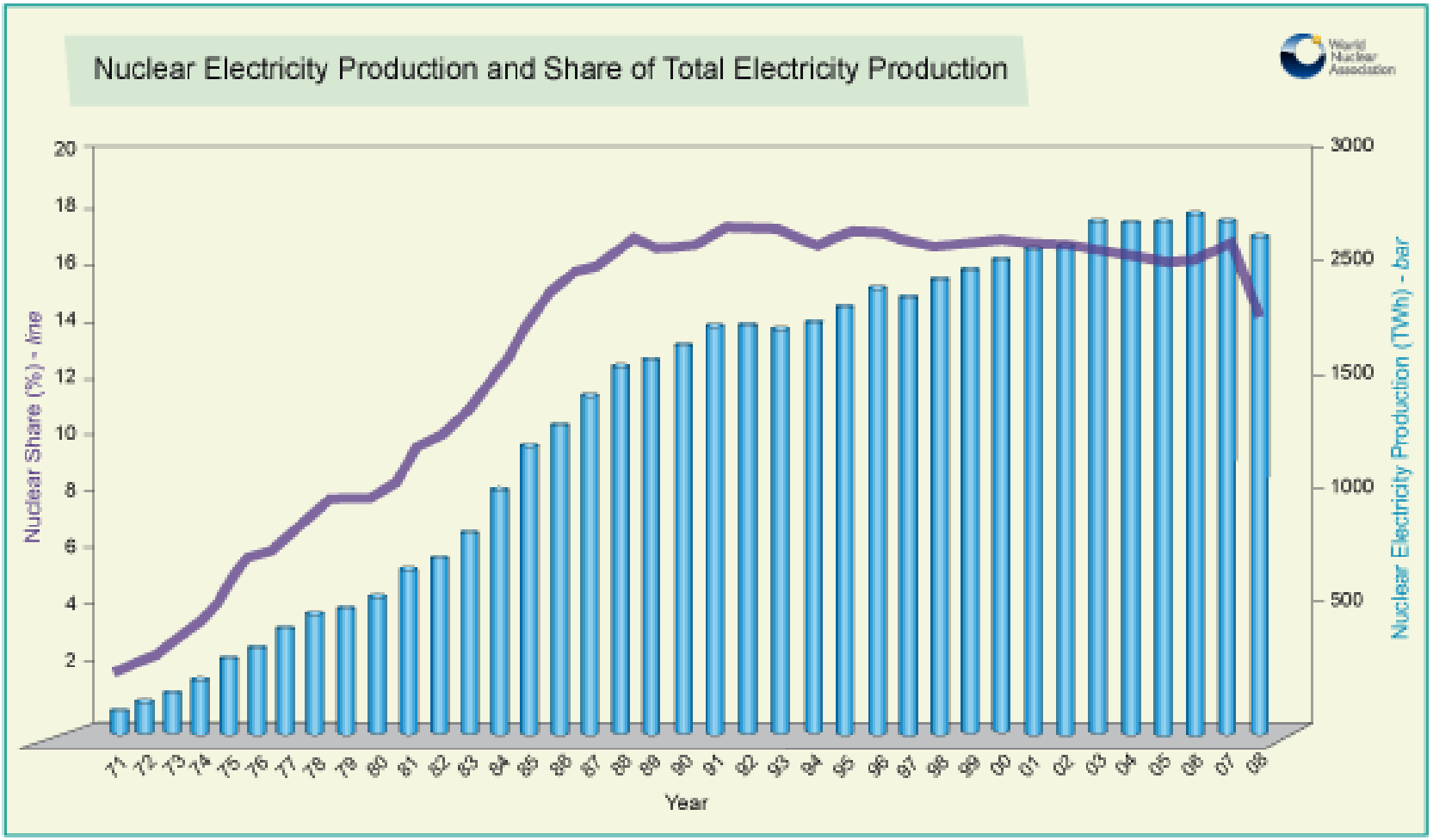
700.000 mPts de 1991

Juan Manuel Eguigaray, Cuadernos de la Energía, 2008

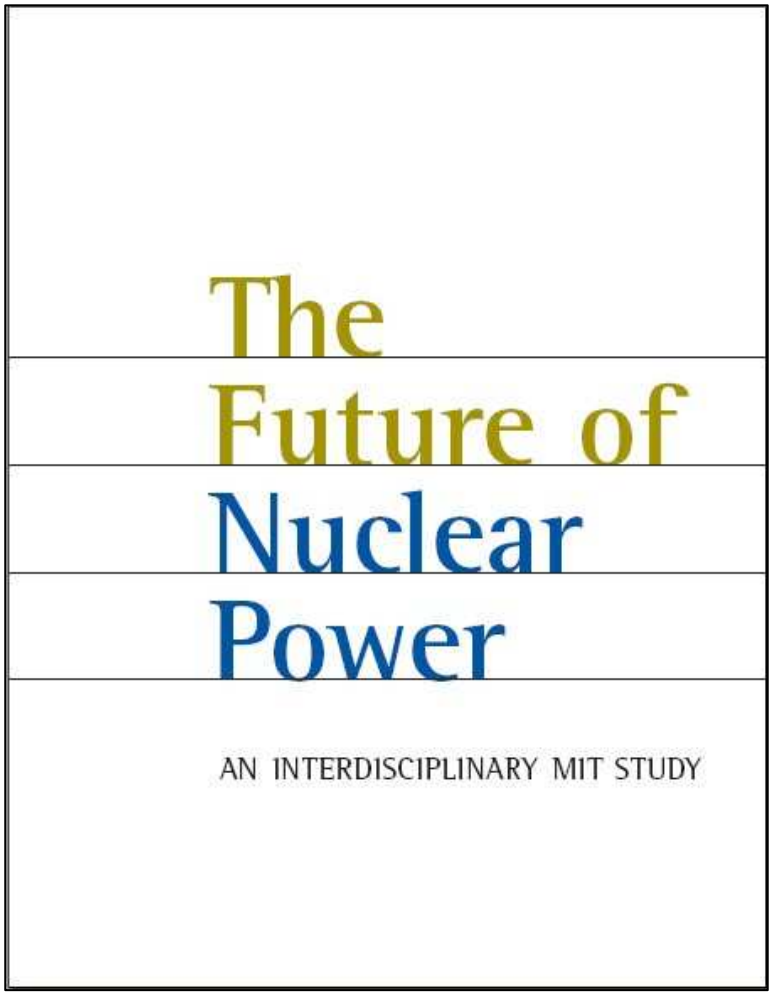
"El 6 de Mayo de 1983, el gobierno del PSOE firmó el Protocolo de Acuerdo de las Empresas Eléctricas ... se introdujo y se valoró todo el sistema de bonificaciones ... y se decidió que el 50% de aumento en las tarifas se habría de dedicar al **saneamiento financiero del sector que, sencillamente, estaba quebrado**."

Carlos Solchaga, El Siglo, 25/9/2005

Producción y cuota nuclear



MIT: El Futuro de la Energía Nuclear (2003)



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ERIC S. BECKJORD
Executive Director

Student Research Assistants
Nathan Hottle
Christopher Jones
Etienne Parent

http://web.mit.edu/nuclearpower/

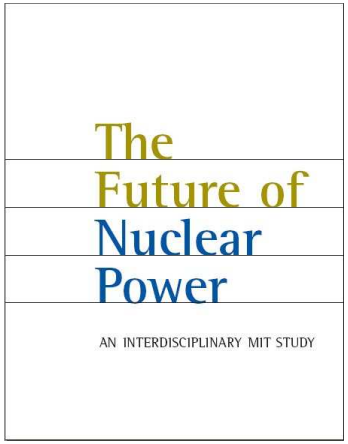
El dilema energético-climático

Examination for an inter-connected set of issues that will challenge nations individually and collectively over the next century. The issues are:

- reducing atmospheric pollution and emissions of greenhouse gases;
- meeting dramatically increased energy, and especially electricity, demand throughout the industrialized and developing world; and
- assuring security and minimizing conflict associated with energy supply.

There are few realistic options to reduce significantly carbon emissions from electricity generation (besides lowering standards of living):

- increased efficiency in electricity end-use and generation;
- increased use of renewable energy technologies (e.g., wind, solar, biomass, and geothermal);
- introduction of carbon capture and sequestration at fossil-fueled (especially coal) power plants on a massive scale; and
- increased use of nuclear fission power reactors (and possibly fusion at a later date).



If current policies continue, however, nuclear power is likely to decline gradually and conceivably disappear in this century from the world's electricity supply portfolio. We believe removing nuclear power as a supply option would be a mistake at this time. The primary reason is that nuclear power is an important source of electricity that does not rely on fossil fuel and hence does not produce greenhouse gas emissions.

Cuatro problemas críticos a resolver

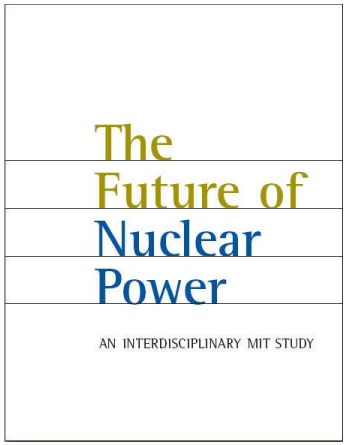
STUDY FINDINGS

For a large expansion of nuclear power to succeed, four critical problems must be overcome:

- Cost. In deregulated markets, nuclear power is not now cost competitive with coal and natural gas. However, plausible reductions by industry in capital cost, operation and maintenance costs, and construction time could reduce the gap. Carbon emission credits, if enacted by government, can give nuclear power a cost advantage.
- Safety. Modern reactor designs can achieve a very low risk of serious accidents, but "best practices" in construction and operation are essential. We know little about the safety of the overall fuel cycle, beyond reactor operation.
- Waste. Geological disposal is technically feasible but execution is yet to be demonstrated or certain. A convincing case has not been made that the long-term waste management benefits of advanced, closed fuel cycles involving reprocessing of spent fuel are outweighed by the short-term risks and costs. Improvement in the open, once through fuel cycle may offer waste management benefits as large as those claimed for the more expensive closed fuel cycles.
- Proliferation. The current international safeguards regime is inadequate to meet the security challenges of the expanded nuclear deployment contemplated in the global growth scenario. The reprocessing system now used in Europe, Japan, and Russia that involves separation and recycling of plutonium presents unwarranted proliferation risks.

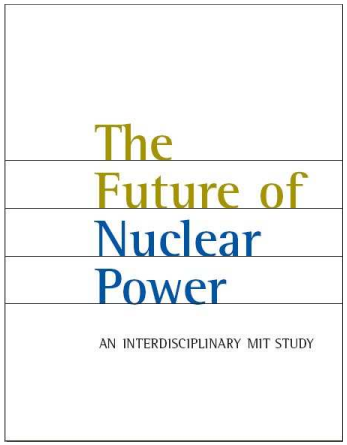
We conclude that, over at least the next 50 years, the best choice to meet these challenges is the open, once-through fuel cycle. We judge that there are adequate uranium resources available at reasonable cost to support this choice under a global growth scenario.

Public acceptance will also be critical to expansion of nuclear power. Our survey results show that the public does not yet see nuclear power as a way to address global warming, suggesting that further public education may be necessary.



Que requerirán un gran esfuerzo ...

To preserve the nuclear option for the future requires overcoming the four challenges described above—costs, safety, proliferation, and wastes. These challenges will escalate if a significant number of new nuclear generating plants are built in a growing number of countries. The effort to overcome these challenges, however, is justified only if nuclear power can potentially contribute significantly to reducing global warming, which entails major expansion of nuclear power. In effect, preserving the nuclear option for the future means planning for growth, as well as for a future in which nuclear energy is a competitive, safer, and more secure source of power.



Global Growth Scenario

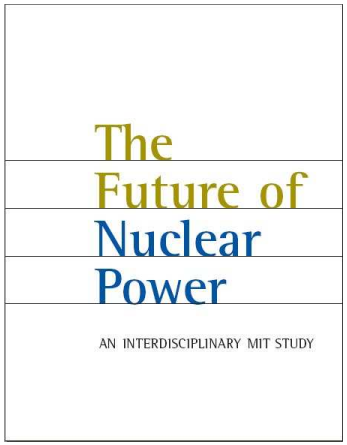
REGION	PROJECTED 2050 GWe CAPACITY	NUCLEAR ELECTRICITY MARKET SHARE 2000	2050
Total World	**1,000**	**17%**	**19%**
Developed world	625	23%	29%
U.S.	300		
Europe & Canada	210		
Developed East Asia	115		
FSU	50	16%	23%
Developing world	325	2%	11%
China, India, Pakistan	200		
Indonesia, Brazil, Mexico	75		
Other developing countries	50		

14% 2008

Sólo hay dos opciones ...

From a public policy perspective, the scenarios that merit analysis are either a large-scale deployment or a phase-out of nuclear power over the next half-century. We stress that our approach is to evaluate expansion of nuclear energy as an *option* possibly needed in the future to meet a significant fraction of world electricity demand while addressing global environmental challenges. We are *not* declaring a specific goal for a particular time. Our evaluation criteria are:

- favorable economics;
- effective waste disposal;
- high proliferation resistance; and
- safe operation of all aspects of the fuel cycle.



Grandes interrogantes ...

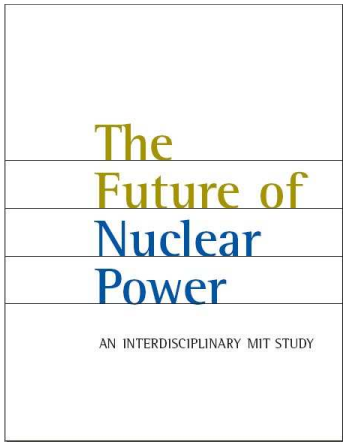
We have not found, and based on current knowledge do not believe it is realistic to expect, that there are new reactor and fuel cycle technologies that simultaneously overcome the problems of cost, safety, waste, and proliferation.

The difficulties facing nuclear power should not, at this time, rule it out as one of a small number of options that may be attractive to exercise in the future,

Given these difficulties, it is fair to ask whether nuclear energy can ever recapture its attractiveness as a major energy supply option.

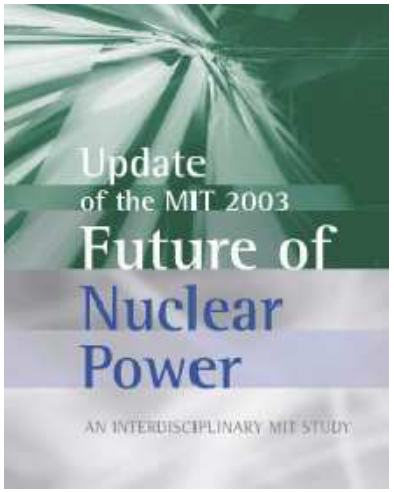
Whether it

is an option that will eventually be exercised will depend on many unknown contingencies.



Grandes interrogantes ... que siguen sin despejarse

Update of the MIT 2003 Future of Nuclear Power Study

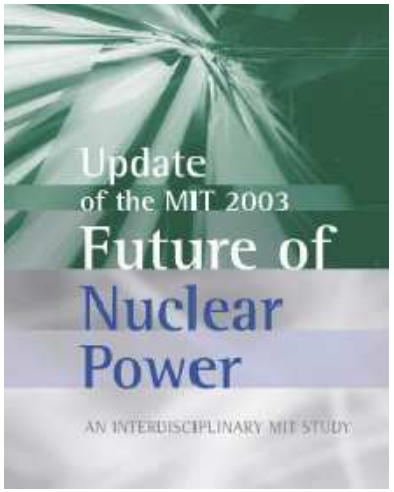


This report presents an update on the 2003 study. Almost six years have passed since the report was issued, a new administration in Washington is formulating its energy policy, and, most importantly, concern about the energy future remains high. We review what has changed from 2003 to today with respect to the challenges facing nuclear power mentioned above.

With regard to nuclear power, while there has been some progress since 2003, increased deployment of nuclear power has been slow both in the United States and globally, in relation to the illustrative scenario examined in the 2003 report. While the intent to build new plants has been made public in several countries, there are only few firm commitments outside of Asia, in particular China, India, and Korea, to construction projects at this time. Even if all the announced plans for new nuclear power plant construction are realized, the total will be well behind that needed for reaching a thousand gigawatts of new capacity worldwide by 2050. In the U.S., only one shutdown reactor has been refurbished and restarted and one previously ordered, but never completed reactor, is now being completed. No new nuclear units have started construction.

Grandes interrogantes ... que siguen sin despejarse

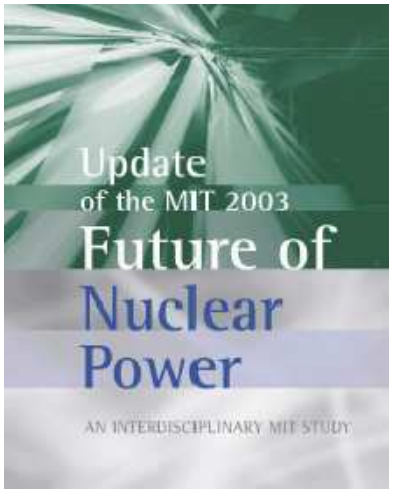
Table 1: Costs of Electric Generation Alternatives					
			LCOE		
	Overnight Cost	Fuel Cost	Base Case	w/ carbon charge $25/ tCO_2	w/ same cost of capital
	$/kW	$/mmBtu	¢/kWh	¢/kWh	¢/kWh
	[A]	[B]	[C]	[D]	[E]
MIT (2003)					
$2002					
[1] Nuclear	2,000	0.47	6.7		5.5
[2] Coal	1,300	1.20	4.3	6.4	
[3] Gas	500	3.50	4.1	5.1	
Update					
$2007					
[4] Nuclear	4,000	0.67	8.4		6.6
[5] Coal	2,300	2.60	6.2	8.3	
[6] Gas	850	7.00	6.5	7.4	



Grandes interrogantes ... que siguen sin despejarse

CONCLUSIONS

The central premise of the 2003 *MIT Study on the Future of Nuclear Power* was that the importance of reducing greenhouse gas emissions, in order to mitigate global warming, justified reevaluating the role of nuclear power in the country's energy future. The 2003 study identified the challenges to greater deployment and argued that the key need was to design, build, and operate a few first-of-a-kind nuclear plants with government assistance, to demonstrate to the public, political leaders, and investors the technical performance, cost, and environmental acceptability of the technology. After five years, no new plants are under construction in the United States and insufficient progress has been made on waste management. The current assistance program put into place by the 2005 EPACT has not yet been effective and needs to be improved. The sober warning is that if more is not done, nuclear power will diminish as a practical and timely option for deployment at a scale that would constitute a material contribution to climate change risk mitigation.



"The sober warning is that if more is not done, nuclear power will diminish as a practical and timely option for deployment at a scale that would constitute a material contribution to climate change risk mitigation."

El panorama estadounidense

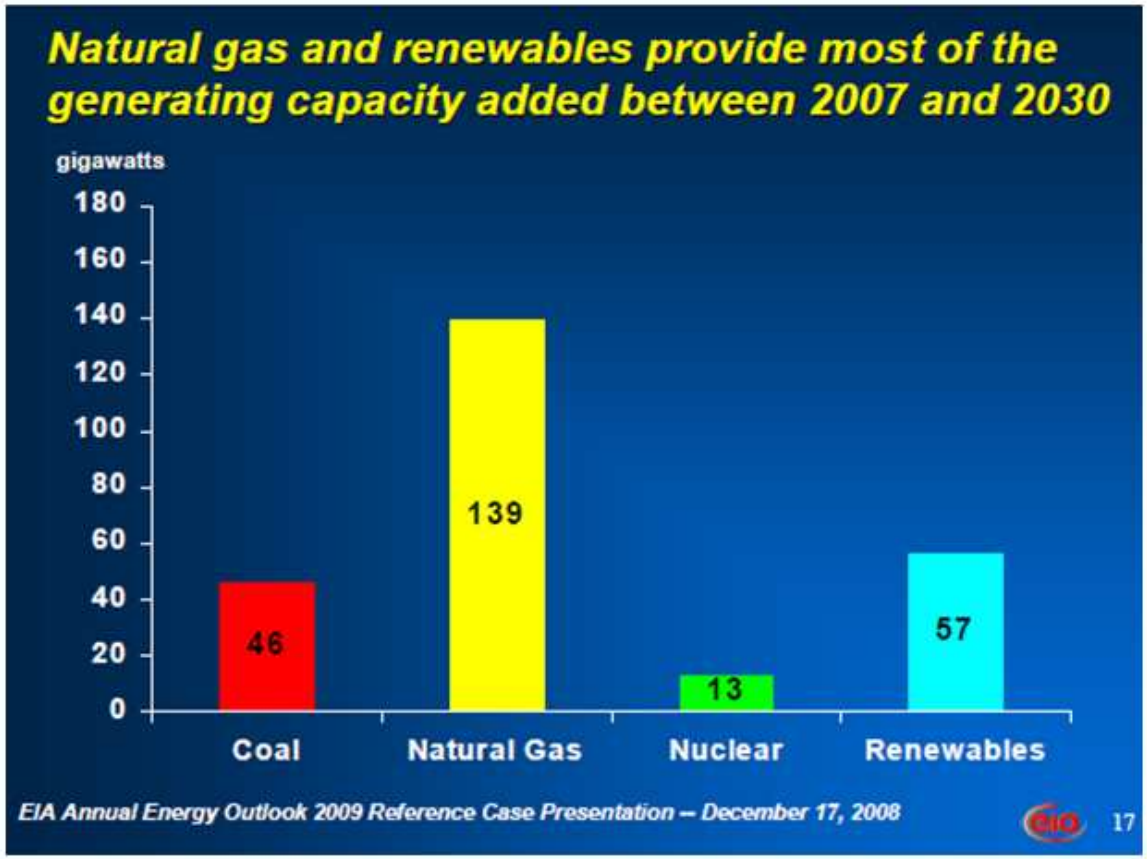


Figura 5. Previsión del incremento de generación 2007-2030 en EE.UU.

Fuente: EIA Annual Energy Outlook 2009 (early release) [39]

¿Qué dice la industria?

John Rowe
President and Chief Executive Officer, Exelon Corp
and Chairman of the Board, Nuclear Energy Institute

"Nuclear Energy 2008: State of the Industry"
Nuclear Energy Assembly,

Chicago
May 6, 2008

Remarks as prepared for delivery

Many of our companies – mine included – are considering construction of the first new nuclear power plants in the United States in several decades.

We are doing so because the energy needs of our nation demand it.

The need for new baseload generating capacity is unmistakable.

The electric sector's dependence on natural gas exposes our customers to unacceptable price volatility, and our companies to political and regulatory stress.

Nuclear power is an essential part of any workable response to the climate change issue.

¿Qué dice la industria?

NUCLEAR ENERGY INSTITUTE

I am emotionally biased but economically objective about this.

Excellent progress has been made, but the renaissance is not yet here

I am 63 years old, and not likely to get rich from the next nuclear unit

And I know that we cannot afford to let ourselves be carried away on the enthusiasm of press releases.

We must not misjudge the challenges facing companies developing new nuclear projects.

We must create realistic expectations.

Realistic expectations about the "renaissance" of nuclear power suggest that it will unfold slowly over time

Perhaps four to eight new plants in commercial operation as early as 2016 or so.

If those first plants are working to schedule…

within budget estimates
without licensing difficulties
with continued public policy support,

A second wave could be under construction as the first wave reaches commercial operation.

¿Qué dice la industria?

NUCLEAR ENERGY INSTITUTE

No reactor vendor is offering solid price certainty. -- and even the rough preliminary estimates are increasing rapidly.

Nothing will chill the rebirth of nuclear power more quickly than finding ourselves 18 months into construction on a project and 18 months behind schedule.

We must acknowledge that new nuclear plants are high-cost, capital-intensive plants -- especially compared to the book equity or market capitalization of the companies building them.

These costs are daunting, by any measure, and clearly represent a financing challenge for the electric power industry.

Companies are not willing to bet the farm on the success or failure of a single project.

We need to find new and innovative ways to share the risks.

But we still face a challenge in turning the Department of Energy's loan guarantee program into a stable financing platform.

We have been encouraged by the recent staff additions to the DOE Loan Guarantee Office, and expect the solicitation for new nuclear plants to be issued soon.

However, we anticipate that the request for loan guarantee coverage will far exceed the limited authorization available.

Public policy on the issue of spent fuel also remains unsettled.

Yucca Mountain is stalled and there has been no progress on an alternative.

It is our responsibility, along with the federal government, to consider our legacy to future generations, and get this issue resolved.

¿Van a poder reemplazar su parque?

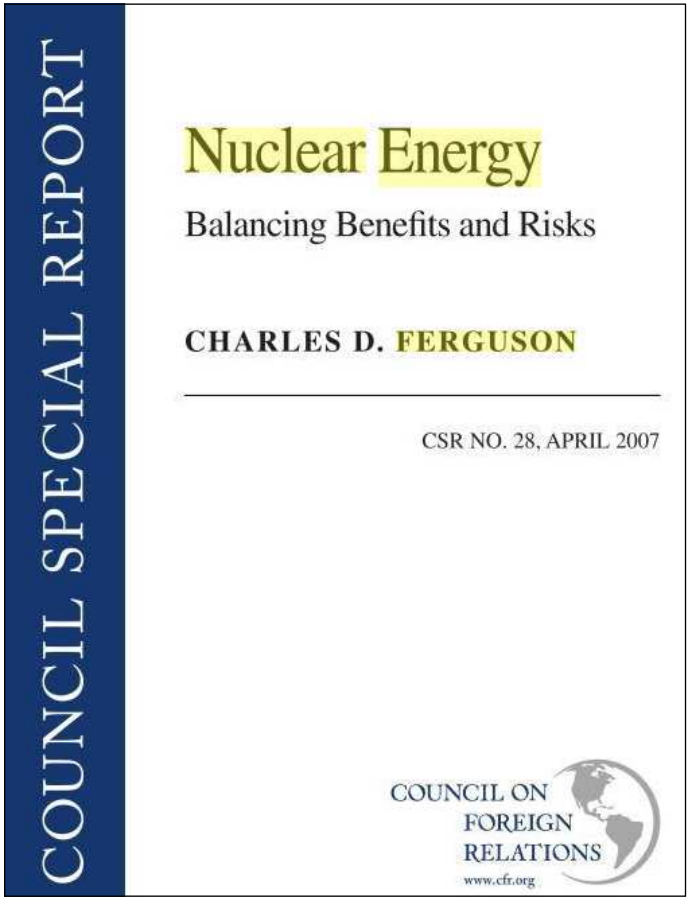
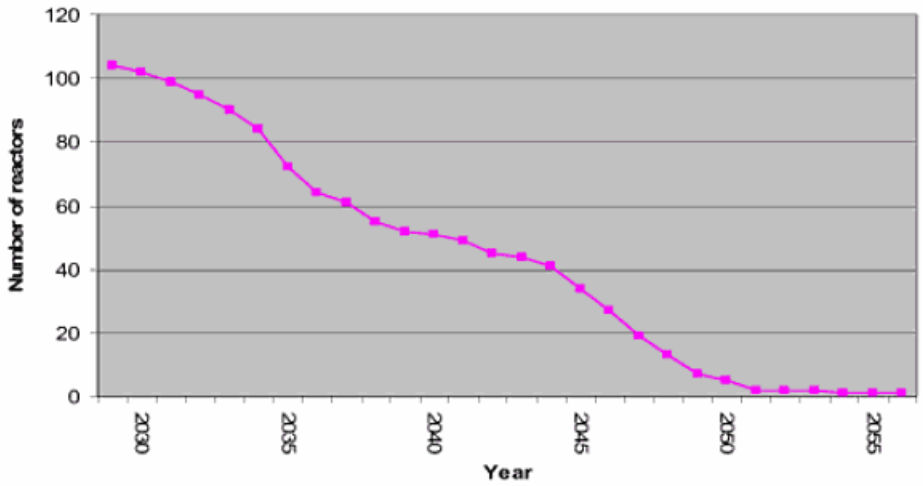


Figure 1: U.S. Nuclear Reactor Fleet with Twenty-Year License Renewal and No New Reactor Construction



Source: Data from the Energy Information Administration, http://www.eia.doe.gov/cneaf/nuclear/page/nuc_reactors/operational.xls.

The replacement rate would be on the order of one new reactor every four to five months over the next forty years. Based on the periods of the 1960s and 1970s, when most of the current fleet was built, this construction rate appears feasible. However, based on the past thirty years, in which reactor orders and construction ground to a halt, this replacement rate faces daunting challenges. For this reason alone, nuclear energy is not a major part of the solution to U.S. energy insecurity for at least the next fifty years.

Noticias recientes ...

Nuke plant price triples

Progress Energy's planned plant costs $17-billion.

By Asjyln Loder, Times Staff Writer
Published March 11, 2008

Progress Energy tripled its estimate for its new nuclear power plant in Levy County, saying Monday that the new price is $17-billion.

Customers could start paying for it next year, with the average residential customer facing an increase of about $9 a month.

"You can't avoid the notion that nuclear has an upfront cost for the customer," said Jeff Lyash, president and chief executive of Progress Energy Florida. "It does."

Gov. Charlie Crist said he'll continue to support nuclear power. It will make a critical contribution to the state's fuel diversity and energy independence, he said. It's worth the rising cost.

Noticias recientes ...

Nuclear Costs Explode

By RUSSELL RAY, The Tampa Tribune

Published: January 15, 2008

Progress Energy Florida is going to have to spend more than originally planned to build two nuclear reactors in Levy County, the utility's top executive said.

RELATED LINKS

Follow Up: Progress Energy Seeks OK For New Nuclear Power Plant

The St. Petersburg-based utility won't disclose how much more expensive the project will be until it's presented to state regulators within 90 days. Based on new industry estimates, the revised cost could be two to three times more expensive than the projection Progress issued more than a year ago.

That's because the cost of concrete, steel, copper, labor and reactor technology has soared as energy companies move forward with plans to build more than 30 new reactors nationwide. Also, Progress Energy's initial estimate excluded the cost of land, inflation, interest payments and new transmission lines.

"Yes, it will be higher," Jeff Lyash, president and CEO of Progress Energy Florida, said of the project's cost. "The price of any construction project you undertake today is going to escalate based on commodity prices. That's not a nuclear issue."

Lyash wouldn't provide a specific estimate because of ongoing negotiations with vendor Westinghouse Electric.

But based on new industry estimates, the tab for Progress Energy's project could surpass $10 billion, well above the company's initial estimate of $5 billion to $7 billion.

Information from Florida Power & Light, the state's largest electric utility, has shed new light on the potential expense of Progress Energy's project and others like it.

FPL, based in Juno Beach, said recently that the "overnight cost" of its two-reactor project would range from $12 billion to $18 billion, more than twice as high as Progress Energy's December 2006 estimate. Overnight estimates exclude the interest paid on the loan and are based on commodity prices when the estimate is made.

Warren Buffett rejects Nuclear Plant in Idaho due to high cost

By Andrea Shipley, Snake River Alliance Executive Director

Tuesday, January 29, 2008

MidAmerican Nuclear Energy Company Agrees with the Snake River Alliance that Nuclear Energy is Too Expensive

Advocates of a nuclear power â€œrenaissanceâ€ are basing their appeals on the notion that nuclear power will be an inexpensive way to get new baseload capacity and to combat global warming. However, MidAmerican Nuclear Energy Company, owned by leading businessman Warren Buffett, has ended its pursuit of a nuclear energy facility in Payette County after the company spent $13 million researching the viability of the location.

Noticias recientes ...

Entergy suspends two nuclear plant applications

Fri Jan 9, 2009 4:14pm EST

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HOUSTON, Jan 9 (Reuters) - Entergy Corp's (ETR.N) nuclear unit said on Friday it will suspend activity on two applications to build new nuclear reactors, one in Mississippi and one in Louisiana.

In a release, New Orleans-based Entergy said it asked the Nuclear Regulatory Commission to halt review of its applications to build two reactors based on GE Hitachi's Economic Simplified Boiling Water Reactor, citing "unsuccessful attempts" to come to terms with GE Hitachi. (Reporting by Eileen O'Grady)

Ameren suspends new nuclear plant plans

24 April 2009

US generator AmerenUE has announced it is suspending its efforts to build a new nuclear power plant at Callaway in Missouri, saying that state policies are making it too difficult to finance the project. Meanwhile, the chairman of a US energy regulator has publicly questioned whether the country needs any new nuclear plants.

Ameren has asked legislative sponsors to withdraw a new act currently before the state government, the Missouri Clean Air and Renewable Energy Construction Bill, saying that changes to the bill mean it would no longer achieve the original intention of allowing regulators to authorize funding mechanisms for construction of clean energy plants in the state including nuclear.

Callaway (Image: NRC)

Noticias recientes ...

REUTERS

Progress delays Florida nuclear project 20 months

Fri May 1, 2009 6:18pm EDT

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MARKET NEWS

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HOUSTON, May 1 (Reuters) - Progress Energy's (PGN.N) Florida utility will delay the construction timeline for its $14 billion nuclear plant in Levy County and scale back early charges to pay for the plant, the company said on Friday.

Florida's second-largest utility said a 20-month delay in the construction schedule for two 1,105-megawatt, AP1000 reactors will push commercial operation of the first unit to 2018, rather than 2016 as currently envisioned. A second reactor at the site could begin operation about 2020.

The schedule change follows a ruling by the U.S. Nuclear Regulatory Commission that prevents certain excavation and foundation work until Progress receives a license to construct and operate the plant, the utility said in a statement.

Noticias recientes ...

CHARLOTTE BUSINESS JOURNAL

Friday, June 5, 2009

Duke Energy exec: Lee nuclear project hinges on change in N.C. law

Charlotte Business Journal - by John Downey Senior staff writer

Related News

Duke Energy to bring 'smart grid' to Indiana

Duke Energy rate hike causing a stir

Public staff OK with Duke Energy's Greenwood deal

Duke Energy eyes sales to Greenwood

Telecoms seek relief on directory assistance rules

Duke Energy Corp. executives raised the ante on N.C. legislators and regulators Wednesday night, saying the company won't build its $11 billion Lee Nuclear Station unless the state makes major changes in utility law.

The biggest change would be to allow utilities to charge customers for the costs of nuclear plants without a full state review of their rates. That would reverse the current practice in North Carolina. The state now conducts a general rate proceeding before letting a utility charge customers for any power plant.

Duke wants N.C. legislation patterned on South Carolina's Baseload Review Act. That law calls for regulators to approve costs quarterly as a utility builds a plant. Once the plant starts commercial production, the utility adds the costs into its base rates after a final expedited proceeding. There is no full review of the company's rates.

Noticias recientes ...

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A nuclear power renaissance? Maybe not.

Don't expect more than three new plants to be built in the next 10 years, experts at a session on nukes at Fortune's Brainstorm: Green conference agree.

By David Whitford, editor-at-large
April 22, 2009: 12:32 PM ET

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Laguna Niguel, Calif. (Fortune) -- Three new nuclear power plants in the next ten years, max. That was the consensus among the experts attending Tuesday's morning session on nuclear power at Fortune's Brainstorm: Green conference. Maybe five, said one lonely voice. Either way, that's far from the nuclear renaissance we were reading about just a couple of years ago. What happened?

No. 1, the global recession. As economic activity slows, so does demand for energy. More cars with batteries would help. "The electric car," says NRG Energy CEO David Crane, "is the air conditioner of the 21st century." Maybe later. For now the market's way too small to spark big demand.

More from Fortune

Noticias recientes ...

DOE narrows list of projects for nuclear loan help

By H. JOSEF HEBERT – May 15, 2009

WASHINGTON (AP) — The Energy Department has narrowed its list of the most likely recipients of $18.5 billion in government loan guarantees for building the first new nuclear power plants.

The department recently informed four companies planning new reactors in Maryland, Georgia, South Carolina and Texas that their applications have been elevated for closer scrutiny, department and industry officials said Friday.

Energy Department spokeswoman Stephanie Mueller said the applications were singled out for closer review because they are furthest along in obtaining a license from the Nuclear Regulatory Commission. She said the department has made no decision on who will get the loan guarantees "and has not eliminated any applications."

The proposed projects singled out for "due diligence" review, often the final phase of the review process, are: Constellation Energy for a reactor at its Calvert Cliffs nuclear plant near Lusby, Md.; NRG Energy for two new reactors at its South Texas Project near Bay City, Texas; Southern Company for two new reactors at its Vogtle power plant near Waynesboro, Ga.; and South Carolina Electric & Gas, for two new reactors at its V.C. Summer power plant near Columbia, S.C.

Last October, the department received 19 applications from 17 electric power companies seeking a total of $122 billion in loan guarantees to build new reactors, far more than the $18.5 billion Congress has provided in loan guarantee authority for nuclear power plants.

It's not clear how the department plans to divide the loan guarantees or how many projects will end up being approved.

With the cost of a new nuclear power plant now at more than $9 billion and credit markets reluctant to commit to such projects in the current economic climate, utilities have virtually ruled out construction of a new plant without government loan guarantees.

On Friday, John Rowe, chairman of Exelon Corp., which operates 17 nuclear reactors, told reporters after a speech at the National Press Club that he had no intention of proceeding with the construction of two new reactors near Victoria, Texas, without government loan guarantees.

Noticias recientes ...

REUTERS UK

Economy to slow U.S. nuclear power growth: NRC head

Wed Mar 11, 2009 12:16am GMT

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LOS ANGELES (Reuters) - An "excessive exuberance" for expansion in the U.S. nuclear power industry has calmed because of the global credit and economic crisis, the head of the U.S. Nuclear Regulatory Commission said on Tuesday.

Separately, a GE Hitachi Nuclear Energy official warned that the lack of credit will slow the pace of U.S. nuclear power development.

U.S. Nuclear Regulatory Commission Chairman Dale Klein said in the past two years he worried whether there would be enough NRC staff to review an avalanche of licenses for new nuclear power plants, none of which have been ordered since the 1970s.

"Today, of course, the picture looks a little different ... it seems like the global economy has resolved the issue of what I referred to as an 'excessive exuberance' to be in line for the first new reactor builds," Klein said in a speech to NRC staff in Washington.

Also on Tuesday, in response to question from Reuters, an official with reactor builder GE Hitachi said financing will slow U.S. nuclear power development.

"Recent market developments are influencing the pace of new power plant projects in the U.S. industry-wide," said Danny Roderick, senior vice president for nuclear plant projects.

"The global financial climate is causing some U.S. customers, primarily ones that are relying on the capital markets to finance their projects, to reprioritize needs and consider options for the construction of new nuclear power plants," he added.

Noticias recientes ...

SCIENTIFIC AMERICAN

May 21, 2009 | 38 comments

Will the Nuclear Power "Renaissance" Ever Reach Critical Mass?

Despite an abundance of plans and applications, new nuclear reactors outside of Asia are few and far between, which puts nuclear's contribution to fighting greenhouse gas emissions at risk

NEW NUCLEAR: An MIT report cautions that nuclear power has not yet been effectively employed to cut back on greenhouse gas emissions--and time is running out.
©ISTOCKPHOTO.COM / HANS F. MEIER

This month, Finland's Olkiluoto 3 nuclear reactor was supposed to begin generating power, a tangible sign of the revival of the nuclear industry outside of Asia after nearly 30 years of no new construction because of accidents, cost-overruns and other issues. Instead, the reactor won't be completed for more than three more years, its price is nearly 60 percent more than anticipated, and it is mired in costly legal squabbles between the builder, Areva, and the Finnish utility, Pohjolan Voima.

In the U.S., since 2003, 17 applications for 26 new reactors have been filed with the U.S. Nuclear Regulatory Commission, but not one is yet under construction.

Despite dozens of new nuclear plants ordered or built in Asia in recent years, "increased deployment of nuclear power has been slow both in the United States and globally," wrote the authors of a new Massachusetts Institute of Technology review of the state of nuclear power.

Noticias recientes ...

SCIENTIFIC AMERICAN

Jun 19, 2009 02:00 PM in Energy | 47 comments | Post a comment

Nuclear power could cost trillions over renewables

By Brendan Borrell in 60-Second Science Blog

Nuclear power plants may not emit greenhouse gases, but they sure could suck in the tax dollars.

An analysis by economist Mark Cooper at the Vermont Law School claims that adding 100 new reactors to the U.S. power grid would cost taxpayers and customers between $1.9 and $4.1 trillion over the reactors' lifetimes compared with renewable power sources and conservation measures.

The analysis factors in studies from Wall Street and independent energy analysts estimating the efficiency of renewable energy at 6 cents per kilowatt hour versus 12 to 20 cents per kilowatt hour for nuclear. Cooper says those costs will fall on either ratepayers through higher electric bills or on taxpayers through large subsidies.

"It is telling that in the few short years since the so-called 'Nuclear Renaissance' began there has been a four-fold increase in projected costs," Cooper said in a statement. "The original low-ball estimates were promotional, not practical; they were based on hope and hype intended to promote the industry."

Cooper's study comes on the heels of a recent review of the state of nuclear power by a team from the Massachusetts Institute of Technology. The researchers concluded that nuclear power was not the most cost-effective way to reduce greenhouse gases and that waste management and safety issues must be addressed for it to remain a viable option. In 2003, the MIT team expressed similar skepticism in a report co-authored by John Holdren, now President Obama's science advisor.

Indeed, any new nuclear plants are a long way from fruition. Although 17 applications for 26 new reactors have been filed with the U.S. Nuclear Regulatory Commission, not one is under construction.

Image of the cooling tower from the Trojan nuclear plant in Oregon courtesy tobo via Flickr

Finlandia: del escaparate a la trastienda

FT.com
FINANCIAL TIMES

Finland's symbol of resurrection becomes showcase for hassles, delays and cost-overruns

By Robert Anderson
Published: November 3 2008 02:00 | Last updated: November 3 2008 02:00

Finland's Olkiluoto power station was meant to symbolise the resurrection of nuclear power after the 1986 Chernobyl disaster and to act as a showcase for Areva of France's new EPR reactor technology.

The first nuclear power station to be built in western Europe since Chernobyl, Olkiluoto 3 would demonstrate that nuclear energy was the obvious solution to growing concerns about CO 2 emissions, high fossil fuel prices and dependence on imported energy sources.

It would also advertise that Areva had an efficient technology that could be rolled out to all the countries now considering building nuclear plants. To meet safety fears, Olkiluoto's outer shell is designed to withstand the impact of an airliner and nuclear waste will be stored underground on site.

Instead, Olkiluoto has become a showcase for the hassles, delays and cost-overruns that critics say always bedevil nuclear projects. Finland's fifth nuclear plant is now only expected to start operation in 2012 - three years late - and to cost €4.5bn, 50 per cent more than originally planned.

If it remains any kind of showcase for Areva, it will be an expensive one. Since Areva and Siemens of Germany (which supplies the turbine unit) agreed to deliver the plant as a turnkey project, they will have to cover the bulk of the cost overruns, although they are likely to try to dispute the final amount.

The Finnish side is adamant that Areva and Siemens will have to foot the bill.

"They have to take all the responsibility," insists Jorma Aurela, senior engineer of the Finnish ministry of employment and the economy.

Areva: del matrimonio al divorcio y la ruina

Siemens to pull out from Areva nuclear joint venture
By Peggy Hollinger in Paris and Daniel Schäfer in,Frankfurt
Published: January 24 2009 02:00 | Last updated: January 24 2009 02:00

Finlande : TVO réclame 2,4 mds EUR à Areva et Siemens pour le retard de l'EPR
AFP - 28 janvier 2009 –

Le Figaro - 29/01/2009

Areva cherche 2,7 milliards pour boucler son budget

Anne Lauvergeon négocie avec les pouvoirs publics pour trouver rapidement une solution

Les Echos - 30 janvier 2009
L'Etat met Anne Lauvergeon, présidente du directoire d'Areva, sous pression

L'actionnaire public a refusé d'approuver en décembre le budget 2009. Un conseil de surveillance extraordinaire a lieu jeudi prochain, alors que le groupe tente d'obtenir une augmentation de capital de l'Etat.

Areva: del matrimonio al divorcio y la ruina

February 25, 2009 – Consolidated results for 2008

- **The Reactors and Services division recognized an operating loss of 687 million euros**, compared with a loss of 179 million euros in 2007. This change is mainly due to an additional provision of 749 million euros on the OL3 project in Finland.

  The project made significant headway with manufacturing of the primary cooling system complete and civil engineering more than 60% complete and set to be largely finished in 2009. The pace of the project is nonetheless penalized by TVO, which has not implemented the bulk of the acceleration measures mutually agreed upon and announced in June 2008. Under these circumstances, the schedule is no longer dependent on the AREVA-Siemens consortium alone.
  Consequently, AREVA is obliged to recognize supplemental costs for additional resources mobilized to offset the customer's intervention practices (project direction, engineering and procurement) and those related to civil engineering, which together represent more than 30% of the provision amount, and to set aside an additional provision for general risk.

  After recognition of the provision set aside in 2008, the estimated loss on completion comes to 1.7 billion euros at December 31, 2008. This amount does not include all of the claims addressed to TVO and which are now part of arbitration proceedings launched by the AREVA-Siemens consortium to exercise its rights; this amount also does not include the claim presented by TVO, for the AREVA-Siemens consortium and its advisors consider the allegations made in that claim to be groundless and invalid in terms of the contract and Finnish law.

¿Seguirá Anne Lauvergeon?

Economist.com

Power struggle

May 7th 2009

From *The Economist* print edition

Will Anne Lauvergeon, the nuclear-energy industry's most tireless cheerleader, keep her job as boss of Areva?

Reuters

WHEN Anne Lauvergeon arrived in 1999 as the new boss of COGEMA, a French state-owned uranium-mining and fuel-recycling firm, it was at a low point. Nuclear power was so unpopular that some employees would not admit to working for the company. A friend told her taking the job would be professional suicide. When she first visited its headquarters, with decor unaltered since the 1970s—all chrome and dark-wood furniture, and long corridors of orange-laminated cupboards—she realised it would take a huge effort to drag the firm into the 21st century.

But Ms Lauvergeon believed in nuclear power and was convinced that it could be done. COGEMA became Areva after a merger with Framatome, a maker of nuclear reactors, in 2001. There was pressure to shut Framatome's main factory, but Ms Lauvergeon refused and it continued to operate "against the opinion of the world", as she puts it. Areva is now the only company to supply all stages of the nuclear-energy cycle, and it has expanded into America, Britain, China and elsewhere. It is in a unique position to benefit from nuclear's expected revival as a desirable low-carbon source of electricity.

El regulador finlandés avisa ...

Safety threat to planned nuclear power stations

THE INDEPENDENT

Devastating blow as leaked letter shows regulator could pull plug on proposed UK reactors because of 'design errors'

By Geoffrey Lean, Environment Editor

Sunday, 10 May 2009

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Britain's plans to build a new generation of nuclear power stations have been thrown into jeopardy by startling official safety fears. The nuclear regulatory body in Finland, where the first of the reactors is being built, has taken the extraordinary step of threatening to halt its construction because it has not been satisfied that key safety systems will work.

AP

Construction of the first EPR at the Olkiluoto site in Finland is already three years behind schedule

ENLARGE

STUK, the Finnish government's Radiation and Nuclear Safety Authority, says that "evident errors" have not been corrected more than a year after it raised its concerns and condemns the "lack of professional knowledge" of people working for the firm responsible for its design and construction.

This is an unexpected, and potentially devastating, blow because one of the main selling points of the new European Pressurised Reactor (EPR) has been that its safety systems will work far better than those in current reactors. It is particularly important that they do because, as The Independent on Sunday reported in February, they will produce many times as much radiation that could be rapidly released in the event of an accident.

EDF, the French electricity generator, plans to build at least four EPRs in Britain; two each are expected for existing nuclear sites at Sizewell in Suffolk and Hinkley Point in Somerset. It plans to let the first construction contracts this year and to have the first power station in operation by 2017. However, the first EPR, called Olkiluoto 3 – which is being built on an island in the Gulf of Bothnia, off western Finland – has already been plagued with problems. It was supposed to begin operating this year but its construction is now three years behind schedule, vastly exceeding its original cost of €3bn.

Areva: del matrimonio al divorcio y la ruina

The New York Times

In Finland, Nuclear Renaissance Runs Into Trouble

By JAMES KANTER
Published: May 28, 2009

OLKILUOTO, Finland — As the Obama administration tries to steer America toward cleaner sources of energy, it would do well to consider the cautionary tale of this new-generation nuclear reactor site.

Enlarge This Image

Henna Aaltonen for The International Herald Tribune

After four years of construction and thousands of recorded defects and deficiencies, the price tag on the reactor in Olkiluoto, Finland, has climbed at least 50 percent.

Multimedia

The massive power plant under construction on muddy terrain on this Finnish island was supposed to be the showpiece of a nuclear renaissance. The most powerful reactor ever built, its modular design was supposed to make it faster and cheaper to build. And it was supposed to be safer, too.

But things have not gone as planned.

After four years of construction and thousands of defects and deficiencies, the reactor's 3 billion euro price tag, about $4.2 billion, has climbed at least 50 percent. And while the reactor was originally meant to be completed this summer, Areva, the French company building it, and the utility that ordered it, are no longer willing to make certain predictions on when it will go online.

While the American nuclear industry has predicted clear sailing after its first plants are built, the problems in Europe suggest these obstacles may be hard to avoid.

Areva: del matrimonio al divorcio y la ruina

Washington MONTHLY

Bad Reactors

Rethinking your opposition to nuclear power? Rethink again.

By Mariah Blake

Washington Monthly, January/February 2009

On the other end of the spectrum is Finland. Because residents believed the new reactor in Olkiluoto would drastically cut emissions, there was little effort to promote renewable energy or boost efficiency, with the result that the country is now lagging behind its neighbors. Despite its long, windswept coast, Finland has less wind power capacity than any central European state except the tiny, landlocked countries of Luxembourg and Switzerland. It also ranks near the bottom on energy efficiency, and its record on greenhouse gas emissions is dismal: between 1990 and 2006 (the most recent year for which data is available) the nation's carbon output leapt by ten million tons a year, or 13 percent, one of the largest spikes in any developed nation. This means that to meet the European Union goals of cutting greenhouse gas emissions by 20 percent from 1990 levels by 2020, Finland will have to either resort to austerity measures or shell out hundreds of millions more dollars for emissions credits.

"We concentrated so much on nuclear that we lost sight of everything else," says Oras Tynkynnen, a climate policy adviser in the Finnish prime minister's office. "And nuclear has failed to deliver. It has turned out to be a costly gamble for Finland, and for the planet."

¿Y en Francia ?

Le programme des infrastructures énergétiques de la France à l'horizon 2020

[03/06/09 - 16H55 - actualisé à 16:55:00] 1 commentaire(s)

Jean-Louis Borloo, ministre de l'Ecologie et de l'Energie, a présenté le 3 juin 2009 le programme des infrastructures énergétiques de la France à l'horizon 2020.

LesEchos.fr
Energie / Environnement

Synthèse 2009

Programmations pluriannuelles des investissements de production d'électricité et de chaleur
Plan indicatif pluriannuel dans le domaine du gaz

L'objectif d'optimisation de l'exploitation du parc nucléaire et la mise en service de 2 EPR.

Dans une perspective économique et sous réserve de toute exigence en terme de sûreté, la PPI électricité privilégie un scénario central de prolongation au-delà de 40 ans du parc nucléaire actuel. Toutefois, c'est l'Autorité de Sûreté Nucléaire qui est la seule compétente et habilitée à se prononcer sur la fermeture ou la prolongation de chaque réacteur. La PPI doit donc intégrer une marge de sécurité en termes de capacité de production électrique correspondant aux incertitudes qu'entraîne cette primauté absolue conférée à la sûreté nucléaire. Cette préoccupation, alliée à la nécessité de lisser l'effort d'investissement de renouvellement du parc nucléaire existant et de maintenir les compétences industrielles de cette filière, justifient la mise en service déjà décidée de deux réacteurs de nouvelle génération, le premier à Flamanville étant prévu en 2012, le deuxième à Penly en 2017.

¿Y en Francia ?

Libération.fr

TERRE 03/06/2009 À 17H54

Pas de 3e réacteur EPR en France d'ici à 2020

Selon Jean-Louis Borloo, ministre de l'Ecologie et de l'Energie, les réacteurs de Flamanville (Manche) et Penly (Seine-Maritime) seront suffisants car la consommation d'électricité devrait rester stable dans les dix prochaines années.

37 réactions

Jean-Louis Borloo, ministre de l'Ecologie et de l'Energie. (REUTERS)

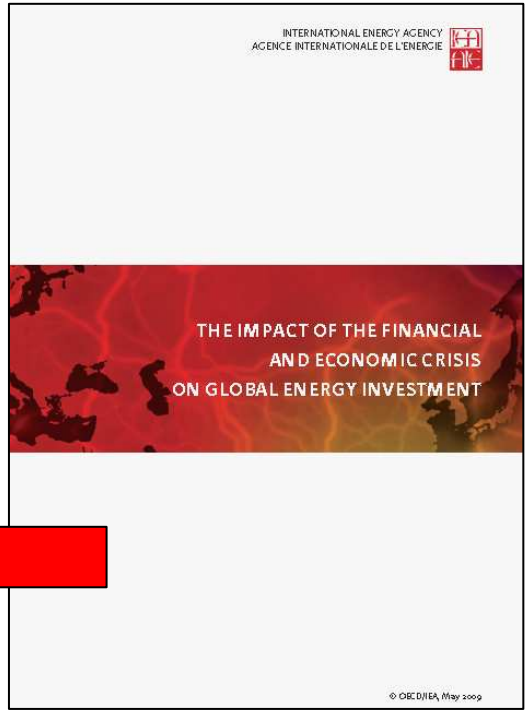
La construction en France d'un troisième réacteur nucléaire de type EPR, évoqué en janvier par Nicolas Sarkozy, ne devrait pas intervenir d'ici à 2020, le gouvernement privilégiant les économies d'énergie et le développement des énergies renouvelables.

¿Y en Rusia ?

Table 7: **Electricity demand growth rates for selected countries**

	Quarterly growth rates (year-on-year)*					Annual growth rates		
	Q1-08	Q2-08	Q3-08	Q4-08	Q1-09	2007*	2008*	2009**
Canada	-0.1%	-0.5%	-1.1%	-1.9%	-3.3%	1.0%	-0.9%	n.a.
France	5.1%	6.3%	1.4%	-1.4%	2.6%	0.4%	2.7%	n.a.
Germany	0.8%	4.0%	1.7%	-2.3%	-4.9%	-0.5%	0.9%	n.a.
Italy	1.2%	-0.8%	2.4%	-5.4%	-8.0%	0.4%	-0.7%	n.a.
Japan	8.5%	1.0%	-1.1%	-4.6%	-10.2%	2.9%	0.9%	n.a.
Korea	8.8%	4.3%	5.9%	2.5%	-9.5%	5.8%	5.4%	n.a.
UK	1.8%	1.1%	0.5%	-3.0%	-6.8%	-0.9%	0.0%	n.a.
USA	2.1%	0.4%	-3.2%	-2.2%	-4.2%	2.4%	-0.8%	n.a.
Russia	6.6%	4.3%	5.1%	0.5%	-3.7%	4.0%	4.0%	-8.8%
China	13.1%	10.4%	6.2%	-7.1%	-4.0%	14.8%	5.2%	-2.9%
India	8.5%	4.8%	11.1%	4.0%	0.3%	7.1%	7.0%	0.9%
OECD	3.4%	1.5%	-1.0%	-2.5%	-4.9%	2.0%	0.3%	-4.8%
World	n.a	n.a	n.a	n.a	n.a.	4.7%	2.5%	-3.5%

*Actual data.
**IEA estimate.
Source: IEA databases and analysis.



NEI Nuclear Notes

News and commentary on the commercial nuclear energy industry.

Kiriyenko did say, however, that Rosatom would postpone until 2014 a program to build two reactors per year because of a drop in Russian demand for electricity.

UK: el test “de mercado”

Foreword by the Prime Minister

Climate Change is quite simply the biggest challenge facing humanity. The latest report from the Inter-Governmental Panel on Climate Change leaves little doubt that human activity, and in particular greenhouse-gas emissions, is changing the world's climate, with potentially devastating consequences. But we have choices and decisions to make about how we move towards a low-carbon economy.

I am determined that the Government will provide strong leadership in meeting not only the challenge of climate change, but in addressing the imperative of ensuring secure energy supplies. This means having reliable access to the energy we need to power our economy, at affordable prices.

To meet this challenge we need to take determined long-term action to reduce carbon emissions in every aspect of the way we live, the way we use energy and the way we produce energy, including the way we generate electricity. That is why the Government has today concluded that nuclear should have a role to play in the generation of electricity, alongside other low-carbon technologies. We have therefore decided that the electricity industry should, from now on be allowed to build and operate new nuclear power stations, subject to meeting the normal planning and regulatory requirements.

Nuclear power is a tried and tested technology. It has provided the UK with secure supplies of safe, low-carbon electricity for half a century. New nuclear power stations will be better designed and more efficient than those they will replace. More than ever before, nuclear power has a key role to play as part of the UK's energy mix. I am confident that nuclear power can and will make a real contribution to meeting our commitments to limit damaging climate change.

Gordon Brown

January 2008

UK: el test “de mercado” ... una vez hecha la limpieza

http://www.nda.gov.uk/documents/nda_final_strategy,_published_7_april_2006.pdf

Nuclear Decommissioning Authority

Appendix 4: Estimated Life Cycle Financials Per Site

£m Sites		Decom & Clean-up costs A (£m)	Total Operations Costs: Running Cost B	Total Operations Costs: Capex C	Total Cost D (A + B + C)	Commercial Revenue E	Other Income* F	NET COST G (D - E - F)	Total Costs Discounted at 2.20%
Magnox	Berkeley	773.7			773.7	0.0	4.2	769.5	327.7
	Bradwell	1,086.6			1,086.6	0.0	0.0	1,086.6	544.7
	Chapelcross	1,332.1			1,332.1	0.0	0.0	1,332.1	535.0
	Dungeness	1,001.4	135.9	20.5	1,157.8	0.0	0.2	1,157.6	584.1
	Hinkley	1,213.7			1,213.7	0.0	0.0	1,213.7	545.6
	Hunterston	1,071.7			1,071.7	0.0	0.0	1,071.7	522.7
	Oldbury	1,076.6	271.6	11.7	1,359.9	0.0	0.0	1,359.9	743.6
	Sizewell	870.6	113.7	17.4	1,001.7	0.0	0.0	1,001.7	475.4
	Trawsfynydd	1,116.0			1,116.0	0.0	0.0	1,116.0	431.4
	Wylfa	1,006.5	591.1	15.0	1,612.6	0.0	0.0	1,612.6	862.6
	ES & T	0.0	216.6	0.0	216.6	1,326.8	0.0	-1,110.2	206.0
UKAEA	Culham	198.5			198.5	0.0	0.2	198.3	165.2
	Dounreay	2,949.5			2,949.5	0.0	76.6	2,872.9	2,228.6
	Harwell	956.7			956.7	0.0	41.1	915.6	788.0
	Windscale	693.9			693.9	0.0	38.7	655.2	432.0
	Winfrith	477.5			477.5	0.0	5.0	472.5	412.3
British Nuclear Group	LLWR	1,053.6			1,053.6	148.0	443.4	462.2	545.9
	Calder Hall	1,073.9			1,073.9	0.0	0.0	1,073.9	341.8
	Sellafield	29,534.9	9,163.2	1,286.4	39,984.5	7,924.1	1,733.1	30,327.3	21,929.6
	Capenhurst	562.9			562.9	0.0	147.9	415.0	309.7
Westinghouse	Springfields	445.4	2,294.2	80.9	2,820.5	2,371.0	74.1	375.4	2,429.8
TOTAL		48,495.7	12,786.3	1,431.9	62,713.9	11,769.9	2,564.5	48,379.5	35,361.7

* Other income includes receipts from tenants and property, services provided by the NDA to external customers, etc
Note: ES&T (Electricity Sales and Trading) includes the electricity generation income from the operating Magnox power stations it is not a separate site. Source: Figures above based on 2005/6 Life Cycle Baseline (LCBL)

page no.115

THE INDEPENDENT ONLINE EDITION

70 billion pounds
=
100.000 millones €

Cost of cleaning up after nuclear power stations are closed down rises to £70bn

By Andy McSmith
Published: 03 January 2006

The projected cost of cleaning up the sites of Britain's old nuclear power stations is likely to leap to more than £70bn when new figures are published early this year.

The Nuclear Decommissioning Authority (NDA), set up last April to supervise state-owned nuclear plants, said it was "almost certain" that its initial estimate of £56bn - itself the equivalent of a charge of £800 for every adult and child in the country - would have to be revised upwards.

Cost of nuclear clean-up is £9bn more than predicted

By Andy McSmith
Published: 30 March 2006

Cleaning up Britain's old nuclear power plants will cost at least £9bn more than previous estimates, the Government will announce today.

Robot submarines have uncovered vast deposits of radioactive sludge that was left in underground storage tanks at Sellafield, in Cumbria, decades ago and forgotten. It has pushed up the bill now facing taxpayers to £65bn - but that could rise higher if more forgotten deposits are uncovered. The previous estimate for cleaning up after the civil nuclear industry was £56bn.

UK: el test “de mercado” ... una vez hecha la limpieza

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Business › British Energy

What a waste: dream of free energy turns into £3bn-a-year public bill

Terry Macalister
The Guardian, Thursday 29 May 2008
Article history

Britain's nuclear complex at Sellafield is Europe's biggest single industrial site and home to what was meant to be a huge fuel reprocessing system that would produce power while reducing the legacy of radioactive waste.

It was built amid enthusiasm that atomic power would be "too cheap to meter" and yet, 52 years on, its catalogue of failures has left it with one of the world's largest stockpiles of plutonium and a bill to the taxpayer of about £3bn a year, a new report says.

Paul Brown, author of Voodoo Economics and the Doomed Nuclear Renaissance, says: "The nuclear dream has turned into an economic and security nightmare for the British taxpayer. The extent of the problems at Sellafield has not been fully explained to the public; nor have the potential knock-on effects for the whole nuclear industry. But research shows the situation is getting rapidly worse."

Details of its failures are kept under wraps by ministers keen to persuade the public that the answer to both energy security and climate change lies in more nuclear plants. Yet it has always been the most expensive way of producing electricity and has been given huge public subsidies, the report argues.

THE INDEPENDENT

'Shambolic' Sellafield in crisis again after damning safety report

By Geoffrey Lean, Environment Editor

Sunday, 3 February 2008 SHARE | PRINT | EMAIL | AAA TEXT SIZE

Britain's most notorious nuclear installation was plunged into crisis last week, when vital equipment broke down just as it was recovering from an accident that shut it for two years. Sellafield's Thorp reprocessing plant has been closed again, while starting only its second job since the shutdown.

And the Cumbrian complex's crisis is compounded by an excoriating report which shows that its facilities for handling nuclear waste are a shambles and that its safety procedures for preventing accidents – which could kill hundreds of thousands of Britons – are "not fully adequate".

The latest incident, which took place on Monday, could not have happened at a worst time for Sellafield or for the nuclear industry as a whole as it tries to generate the confidence needed to persuade investors to build a new generation of atomic power stations.

Thorp was only just limping back into production after being closed in the summer of 2005 after – as The Independent on Sunday exclusively reported at the time – a highly radioactive liquid was discovered to have been leaking undetected for at least eight months. The firm was fined £500,000 for safety breaches.

So far it has processed only one batch of spent nuclear fuel after going back into production. It was just starting the second when an underwater lift that takes the fuel for reprocessing broke down. Operations had to be stopped, and no one knows when they will restart. Sellafield admits that production was slow even before the incident, because of problems with waste reprocessing facilities.

The stinging report, by the Nuclear Installations Inspectorate, reveals the extent of the mess. After reprocessing, highly dangerous radioactive liquid waste is concentrated through evaporation and stored above ground in 21 giant steel tanks before being "vitrified" – bound into glass for disposal. But the report shows that every stage of this process is in crisis.

UK: el test “de mercado” ... y sin mucho tiempo

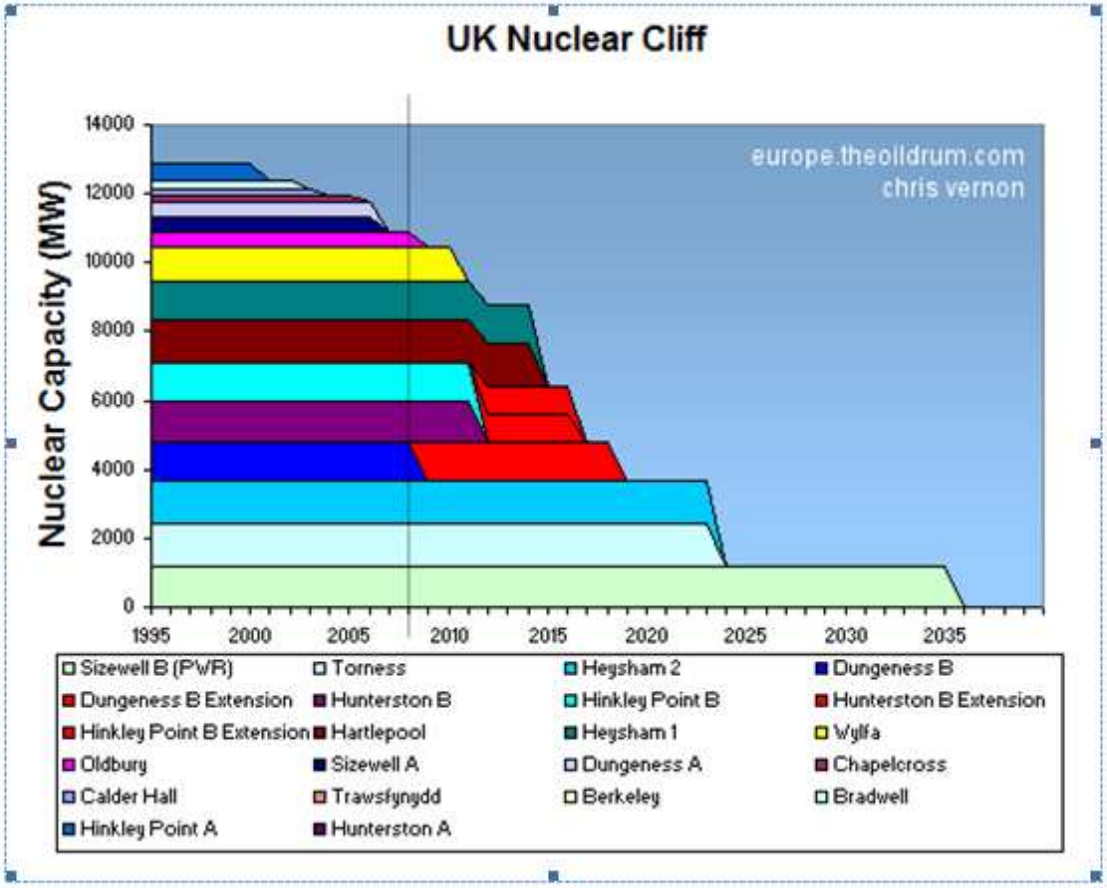


Figura 8. Evolución de la capacidad de generación nuclear en el Reino Unido sin nuevas construcciones

Fuente: Nuclear Britain, The Oil Drum Europe[93]

UK: el test “de mercado” ... y sin mucho tiempo

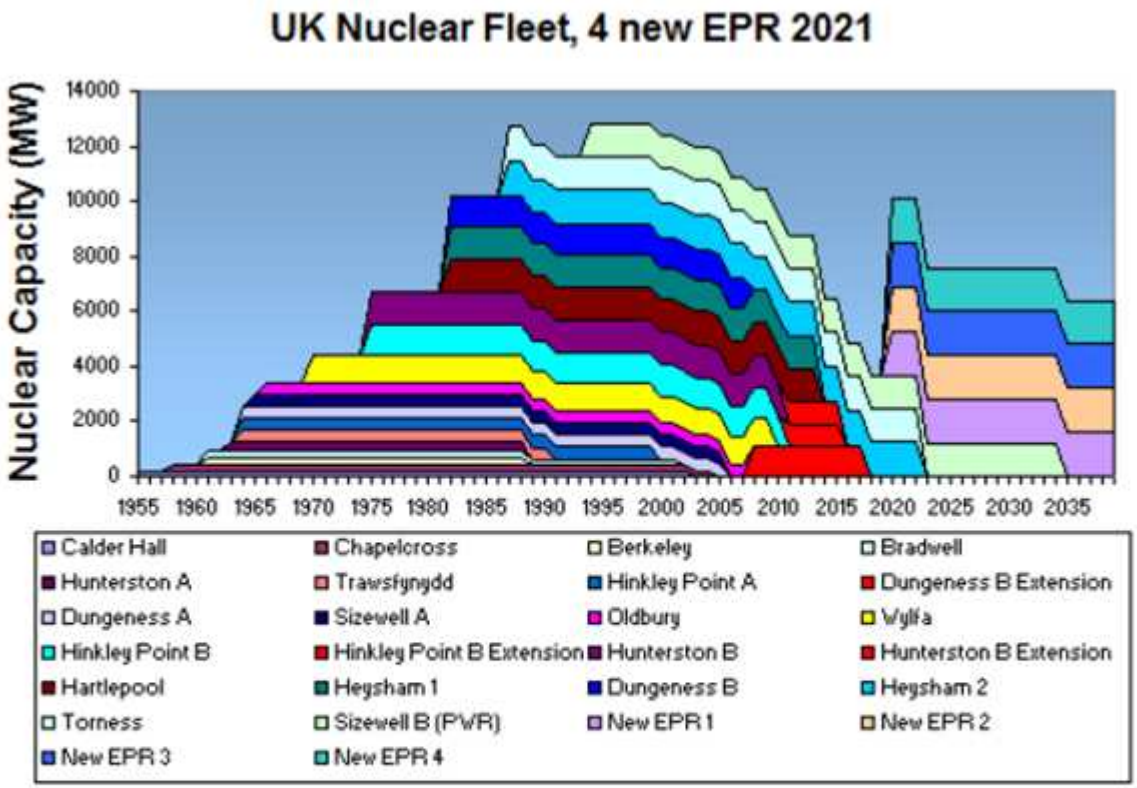


Figura 9. Evolución de la capacidad de generación nuclear en el Reino Unido suponiendo que se construyen 4 EPR en 2021

Fuente: Nuclear Britain, The Oil Drum Europe[93]

UK: el test “de mercado” ... y sin mucho tiempo

TIMESONLINE

April 16, 2009

All-clear for nuclear plants ‘too late to plug power gap’

Robin Pagnamenta, Energy and Environment Editor

The rebirth of Britain's nuclear power industry moved closer yesterday after the Government announced a list of sites for new reactors.

Each of the 11 proposed nuclear power stations, which will be built on sites from West Cumbria to the Kent coast, will cost nearly £4.5 billion and have a capacity of up to 1,600 megawatts of electricity, enough to supply two million homes for up to 60 years.

But energy experts warned that the first plant would not be operational before 2017 at the earliest, too late to plug a gap opening up in Britain's energy supplies as ageing coal and nuclear power stations close.

The gap is likely to be filled by the rapid construction of gas-fired power stations, which are powerful and relatively quick and cheap to build.

EDF advierte que sin ayudas no invertirá ...

Lack of support threatens future of UK nuclear power, EDF warns

By Ed Crooks in London
Published: May 26 2009 03:00 | Last updated: May 26 2009 03:00

New nuclear power stations will not be built in Britain unless the government provides financial support for the industry, the head of the country's biggest nuclear generator has warned.

Vincent de Rivaz, chief executive of the UK subsidiary of EDF, told the Financial Times a "level playing field" had to be created that would allow the nuclear industry to compete with other low-emissions electricity sources such as wind power.

His comments call into question the government's plans for a new generation of nuclear power stations, which ministers have insisted can be delivered without any additional subsidy.

In recent months, the government has promised more generous subsidies for offshore wind power and new support for "clean coal" power stations that can capture and store their carbon dioxide emissions. But it continues to resist the idea of similar assistance for nuclear power.

EDF, which last year paid £12.5bn (€14.2bn) to buy British Energy, the nuclear generator, plans to build at least four reactors in Britain at a cost of up to €5bn each.

However, Mr de Rivaz said the company still needed to assure its investors, which include the French government with an 85 per cent stake, that the investment made commercial sense.

"We have a final investment decision to make in 2011 and, for that decision to give the go-ahead, the conditions need to be right," he said.

Mr de Rivaz suggested the best way to support the nuclear industry would be to make sure penalties paid by rival fossil fuel power generators under the European Union's emissions trading scheme were kept high enough to make nuclear investment attractive.

He said such a move would be necessary before companies were confident enough to invest tens of billions of pounds in new reactors.

Since the emissions trading scheme began operating in 2005, however, the price of the permits has proved highly volatile and has fallen sharply in the past year. Mr de Rivaz said: "We will not deliver decarbonised electricity without the right signal from carbon prices."

Ed Miliband, the UK energy secretary, recently told the Financial Times the government's policy was not to subsidise nuclear power. "I think we are right not to subsidise new nuclear power stations because we have an obligation to get to a low-carbon future at the lowest cost to the billpayer," he said.

Y Vattenfall se echa atrás ...

NUCLEAR ENGINEERING INTERNATIONAL

Vattenfall opts out of UK nuclear market, for now

Thursday, June 04, 2009

The Swedish firm Vattenfall has said that it is opting out of the race to build new plants in the UK for 12-18 months due to the "economic recession and market conditions."

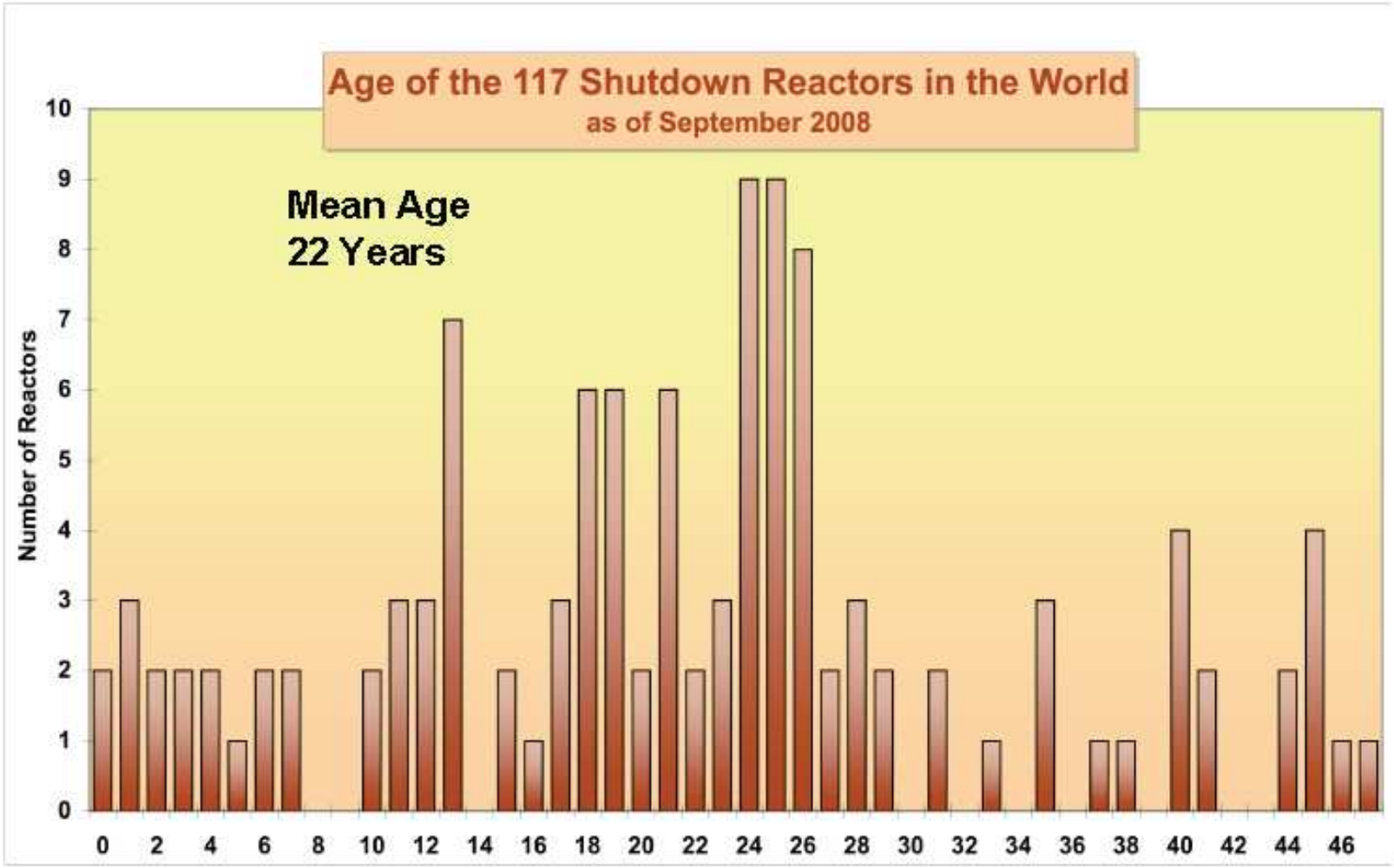
Vattenfall's chief executive Lars Josefsson told the Reuters Energy Summit that the recession and sharp fall in energy prices had left investment decisions related to Britain's plans to let private companies build new plants more uncertain. But the company said that it "retains a significant interest in the UK energy market, and will continue to monitor developments in UK new build."

Meanwhile French energy giant EDF has been calling for financial support from the UK government, even though it won't make a final decision on whether to go ahead with its planned fleet of EPRs until at least 2011. In a May interview with the UK Financial Times, chief executive of the UK subsidiary of EDF Vincent de Rivaz called for "a level playing field" for nuclear, to allow it to compete with other low-carbon energy sources. In the article he warned that unless the government provides financial support for the industry new nuclear power stations will not be built.

¿Y España, qué?

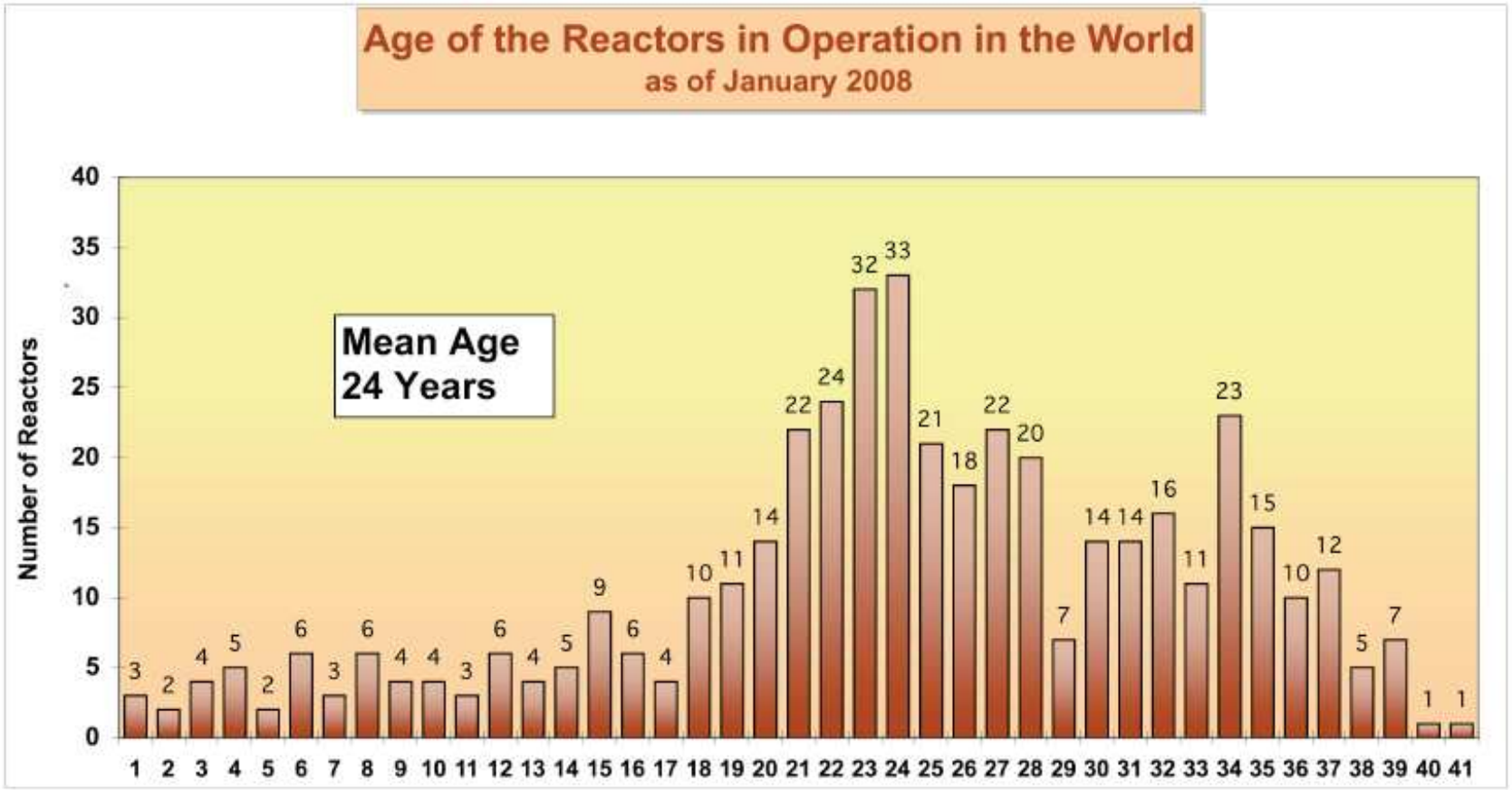
CENTRAL NUCLEAR	FECHA DE AUTORIZACIÓN ACTUAL	PLAZO DE VALIDEZ	FECHA DE PRÓXIMA RENOVACIÓN	CUMPLEN 40 AÑOS
Santa María de Garoña	5/07/1999	10 años	julio 2009	mayo 2011
Almaraz I	8/06/2000	10 años	junio 2010	mayo 2021
Almaraz II	8/06/2000	10 años	junio 2010	octubre 2023
Ascó I	1/10/2001	10 años	octubre 2011	diciembre 2024
Ascó II	1/10/2001	10 años	octubre 2011	marzo 2026
Cofrentes	19/03/2001	10 años	marzo 2011	marzo 2025
Vandellós II	14/07/2000	10 años	julio 2010	marzo 2028
Trillo	16/11/2004	10 años	noviembre 2014	agosto 2028

¿Cuál es la vida razonable de una central?



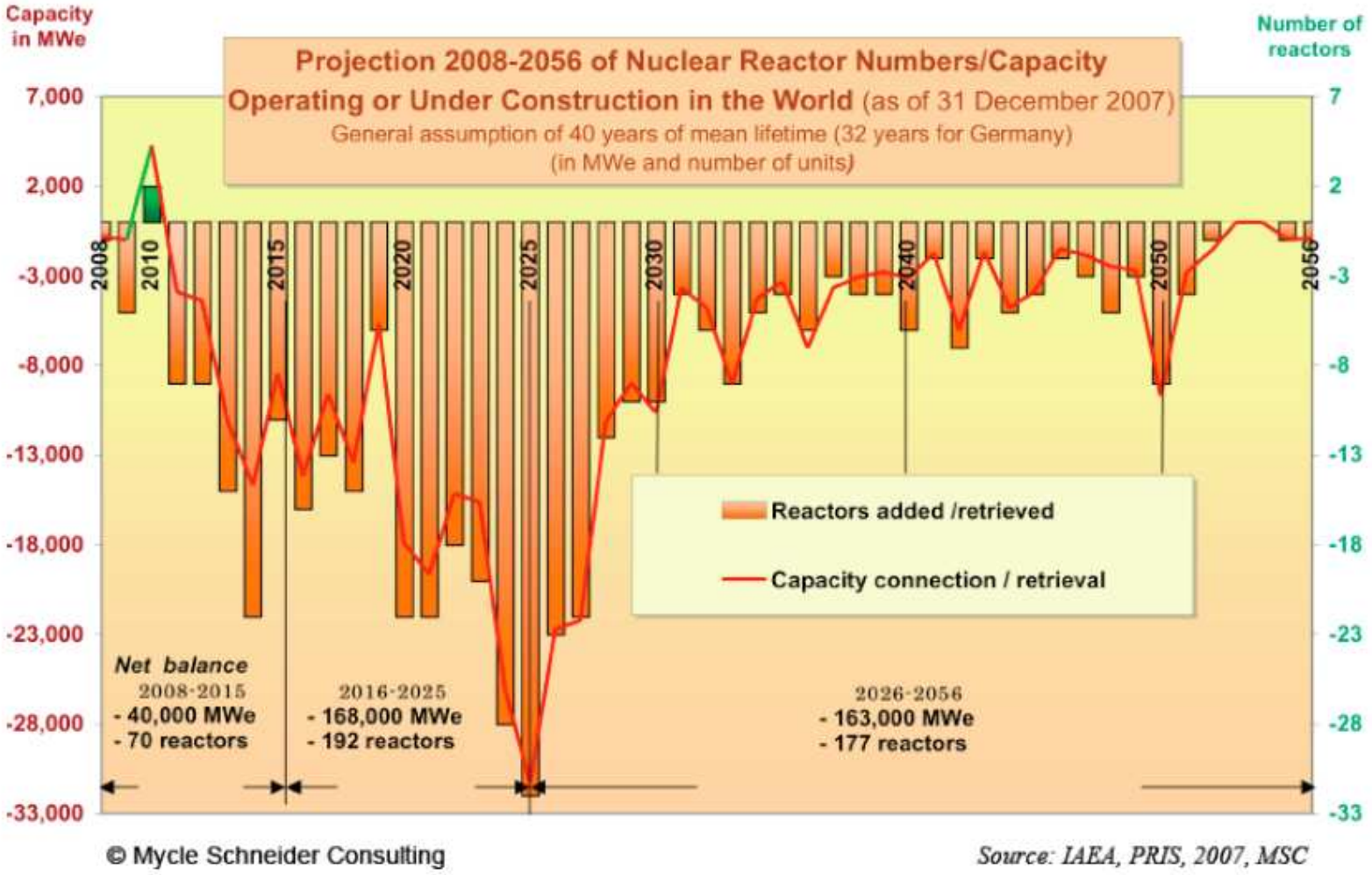
Source: IAEA PRIS

¿Cuál es la vida razonable de una central?



Sources: IAEA-PRIS 2008

¿Cuál es la vida razonable de una central?



Las Propuestas del Foro Nuclear

La Razón, 25 de Abril de 2006

"Creo que en España lo que tendremos que hacer, más pronto que tarde es construir centrales nucleares.

La opción nuclear **no es una opción de empresas**. **Es una opción de país**. [Y] si se quiere que se hagan instalaciones nucleares [...] la sociedad española tendrá que establecer los **mecanismos de pago, de seguridad jurídica [y] de compensación de esas decisiones**."

Eduardo González, El Nuevo Lunes, 5/12/2005

Ley 54/1997, de 27 de noviembre del Sector Eléctrico

No se considera necesario que el Estado se reserve para sí el ejercicio de ninguna de las actividades que integran el suministro eléctrico. Así, se abandona la noción de servicio público

En la generación de energía eléctrica, se reconoce el derecho a la **libre instalación** y se organiza su funcionamiento bajo el principio de **libre competencia**.

Las Propuestas del Foro Nuclear

Mª Teresa Domínguez. Presidenta del Foro Nuclear

"La liberalización del sistema eléctrico ha traído el caos"

Domínguez pide diez centrales nucleares más para racionalizar el mapa energético

Fede Durán / SEVILLA

María Teresa Domínguez preside el Foro Nuclear desde abril de 2008. Su misión es ingrata: combatir la mala imagen de una energía instalada entre los peores fantasmas del subconsciente colectivo y convencer a todos –ciudadanos, Gobierno– de que más centrales implican también más fortaleza para España.

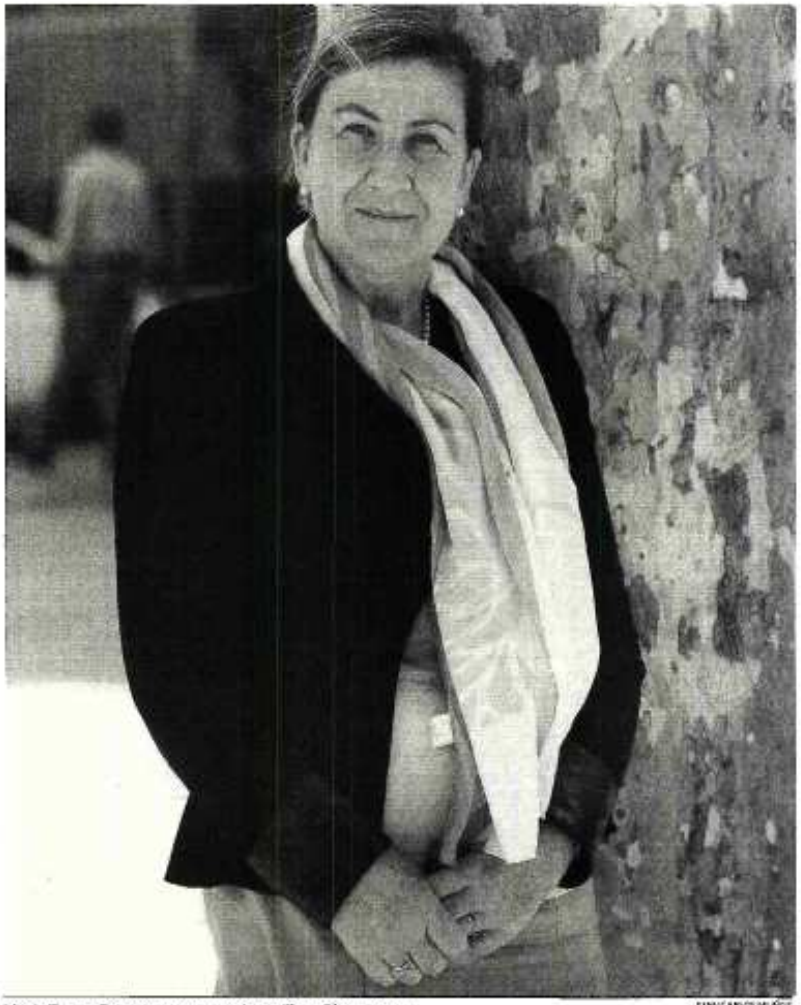
–La nuclear asusta porque es invisible. Lo dice la presidenta del Consejo de Seguridad.

–No somos conscientes de que estamos inmersos en una pura radiación. Tenemos radiaciones internas y unas 12.000 desintegraciones por segundo. La radiación es la gran desconocida y por eso a la gente le da miedo. Con más información, la consideraríamos más natural. Al igual que con la temperatura y el viento, podrían poner

te de dónde cree que viene la energía eléctrica, muchos responden que del sol. En el fondo, no hemos explicado los grandes beneficios que tiene la nuclear y el brillante programa emprendido en España. Los medios y los políticos han sido mucho menos problemáticos.

–Cuénteme su hoja de ruta.

–En 1988, al acabar la última central, la situación era óptima. Teníamos un 30% de nuclear; un incremento de potencia por encima de la demanda con un margen del 30% (no había problemas de suministro); un *mix* muy confortable con nuclear, hidráulica, sin problemas de emisiones. Con la liberalización del sistema eléctrico ha llegado el caos. Había gas y hemos instalado 22.000 Mw. Hubo primas para las renovables y hemos instalado renovables. La situación del sistema eléctrico es un poco inestable desde varios puntos de



María Teresa Domínguez posa en la sevillana Plaza Nueva.

La propuesta del Foro Nuclear

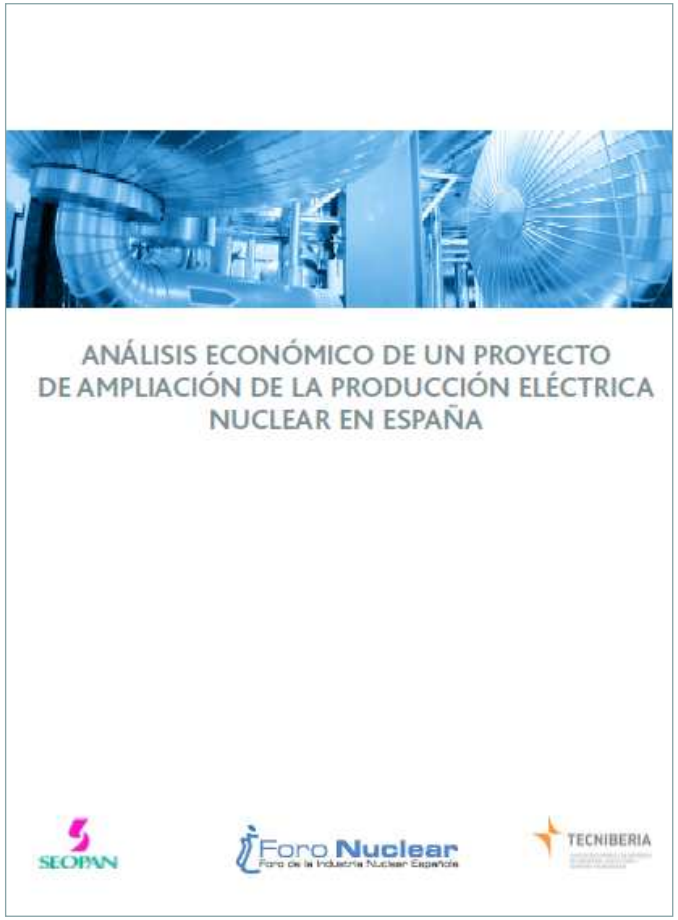
Este informe analiza las características de un proyecto de construcción de centrales nucleares en España, que supondría el aumento del actual parque de generación eléctrica en 11.000 MW.

Otro asunto relevante, que atañe a la hipótesis planteada, se refiere a la dinámica de la competitividad relativa de la electricidad generada por centrales nucleares. En este estudio no se profundiza en tal cuestión, toda vez que la competitividad de la generación nuclear dependerá en el futuro de muchas variables de difícil determinación (tipo de interés, subvenciones, precio de los derechos de emisión, costes de inversión y de combustible de otras alternativas, principalmente el gas y el carbón, etc.). Por otro lado, en el orden interno, el coste de generación nuclear ha estado condicionado por el elevado peso de la inversión en las centrales (extensión de los períodos de licenciamiento y construcción de las centrales) lo que ha significado una carga financiera elevada para el precio final de la electricidad producida por esta tecnología. Sin entrar en el detalle cuantitativo de la cuestión, el Informe entiende que los cambios que se auguran para un futuro inmediato pueden modificar sustancialmente tanto las condiciones relativas externas como las internas, al compás de la significativa innovación que se está produciendo en las tecnologías nucleares.

Para realizar la primera estimación, se supone un coste de inversión (es decir sin incluir *intereses intercalarios* ni una asignación de *overhead costs*), en euros corrientes, de 3.000 millones por cada grupo de 1.000 MW. En consecuencia, el coste corriente total del hipotético plan de construcción es de 33.000 millones de euros, que, en términos actualizados a 31/12/2007, resultarían en 24.150 millones de euros (descontados al 2,5%). El componente nacional del programa de construcción nuclear sería aproximadamente del 59%.

Desde el punto de vista económico, la electricidad de origen nuclear tiene un coste variable reducido, de hecho el resto de las tecnologías, exceptuando la energía hidráulica, tienen un coste de producción superior. Solo los avatares de los factores que pueden incidir en el coste fijo, como pueden ser los tipos de interés, o los precios relativos de otras fuentes de energía primaria, alterarían esta conclusión inicial. En consecuencia, la energía nuclear puede contribuir a abaratar el coste de generación de la energía eléctrica del país, lo cual repercute en la competitividad de la economía española.

La propuesta del Foro Nuclear



4.1. Escenarios político-institucionales

El primer escenario a tener en cuenta, en orden cronológico, consiste en considerar que tras las elecciones de 2008 desaparezcan las barreras institucionales de todo orden que sostienen el parón nuclear,

Remover obstáculos político-institucionales y cambiar (rediseñar) un nuevo marco regulatorio para el sector eléctrico en general y para la producción con combustible nuclear, en particular, constituye, por tanto, el primer paso para la activación de la hipótesis energética sobre la que aquí se trabaja.

Esto significa que los sujetos políticos asuman la necesidad del desarrollo de la energía nuclear, otorgando carácter estratégico, como política de Estado, tanto a la seguridad de suministro eléctrico como al combate contra el cambio climático y, en particular, contra las emisiones de gases de efecto invernadero en la producción de energía eléctrica.

Sin duda, este paso previo requerirá de modificaciones en las opiniones ciudadanas que, en proporciones aún elevadas, se muestran contrarias a la expansión de la energía nuclear, bloqueando así la decisión política.

4.2. Escenario internacional

Resulta difícil concebir una reactivación de los programas nucleares en España sin un paso previo de puesta en marcha de proyectos nucleares en el mundo occidental, particularmente en Estados Unidos, pero también en Europa occidental[9]. En estos momentos hay proyectos en marcha en diferentes lugares del mundo, aunque en el entorno de mayor influencia política y económica de España los proyectos nucleares están sujetos a situaciones o bien de moratoria o bien parados, con escasas excepciones[10].

La propuesta del Foro Nuclear

Reflexionando en esta perspectiva cabe interrogarse si en el horizonte temporal en el que se mueve esta hipótesis existe "hueco" para producir, dado que en el momento actual está definido un plan de inversiones que, obviamente, las empresas implicadas desean y necesitan rentabilizar[13]. Algunos analistas del mercado señalan que las inversiones en el sector estarán comprometidas, en poco tiempo, en cuantía suficiente para abordar la demanda del año 2016 o incluso más allá. Por ello el retraso en el desbloqueo a la situación actual, en materia de uso de expansión de la tecnología nuclear, puede dificultar la toma de decisiones de inversión en centrales de este tipo. La hipótesis que aquí se baraja no contempla entrar a producir antes del año 2019, tras un lapso de tiempo en el cual se habrían clarificado los escenarios futuros para la energía nuclear y, con tiempo suficiente para alterar decisiones inversoras con otras fuentes energéticas, con criterios de rentabilidad de por medio. El ciclo inversor de otras fuentes de producción es más reducido que el nuclear, lo que permitiría a las entidades inversoras modificar planes, antes de comprometer inversiones en otras fuentes, en tanto el entorno internacional definiera situaciones competitivas para la electricidad nuclear.

[13] "Hay una potenciación muy fuerte de los ciclos combinados y de las energías renovables de aquí a 2016. En la *Estrategia Española para el Cambio Climático y Energía Limpia 2012* se propone el 37% de energías renovables, mientras UNESA cree un 30-33%. Es decir, entran otras tecnologías, por lo que no ven huecos claros para rellenar antes del 2020-2022" (UNESA). Y además, "el gas habrá encontrado dentro de 15-20 años otros mercados donde sea más valioso y para la electricidad resultará más caro quemarlo. Entonces habrá hueco para otras energías: renovables y nuclear" (UNIÓN FENOSA).

A (very) Simple EROEI Analysis

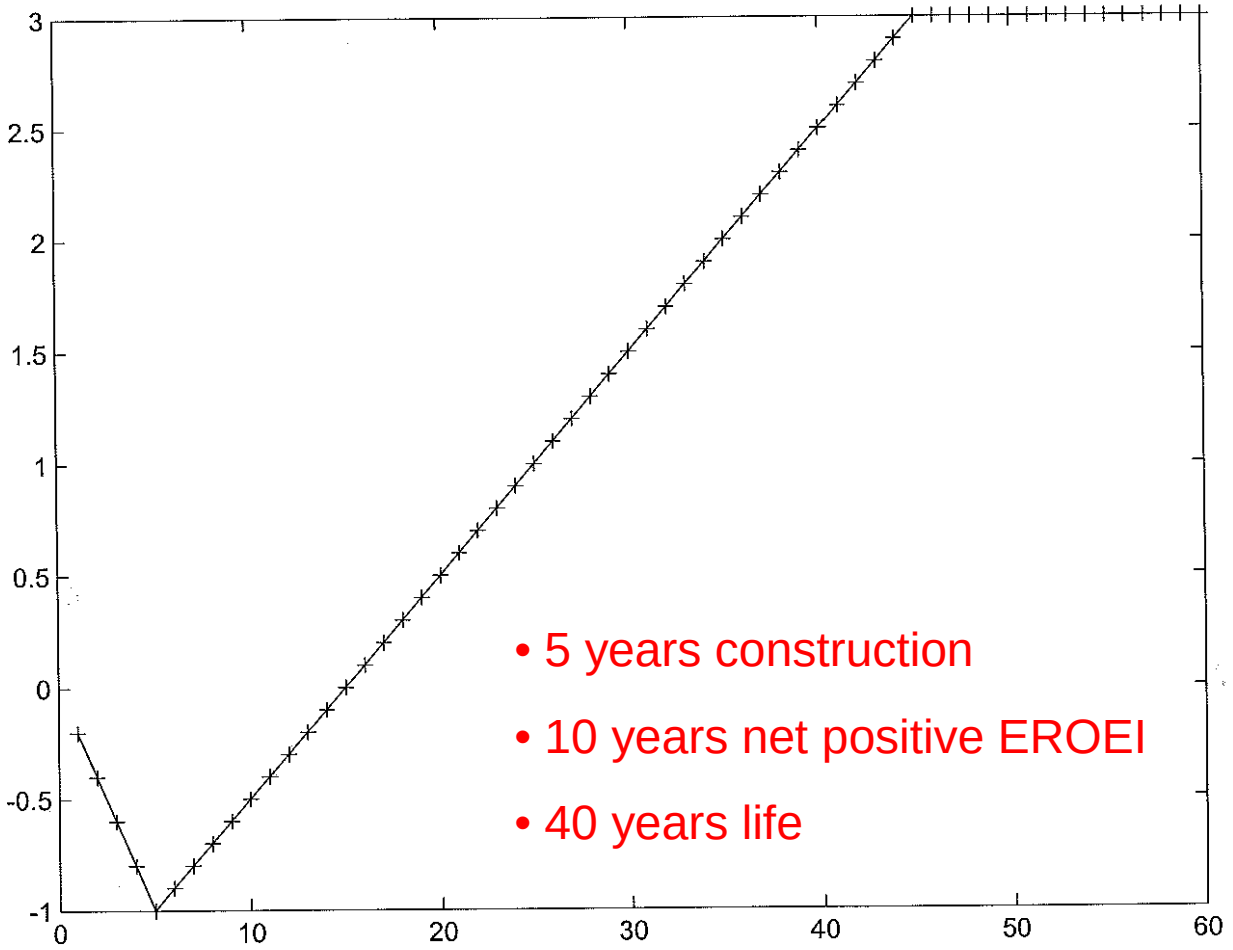
Recovering energy investment

BGSE, February 2009

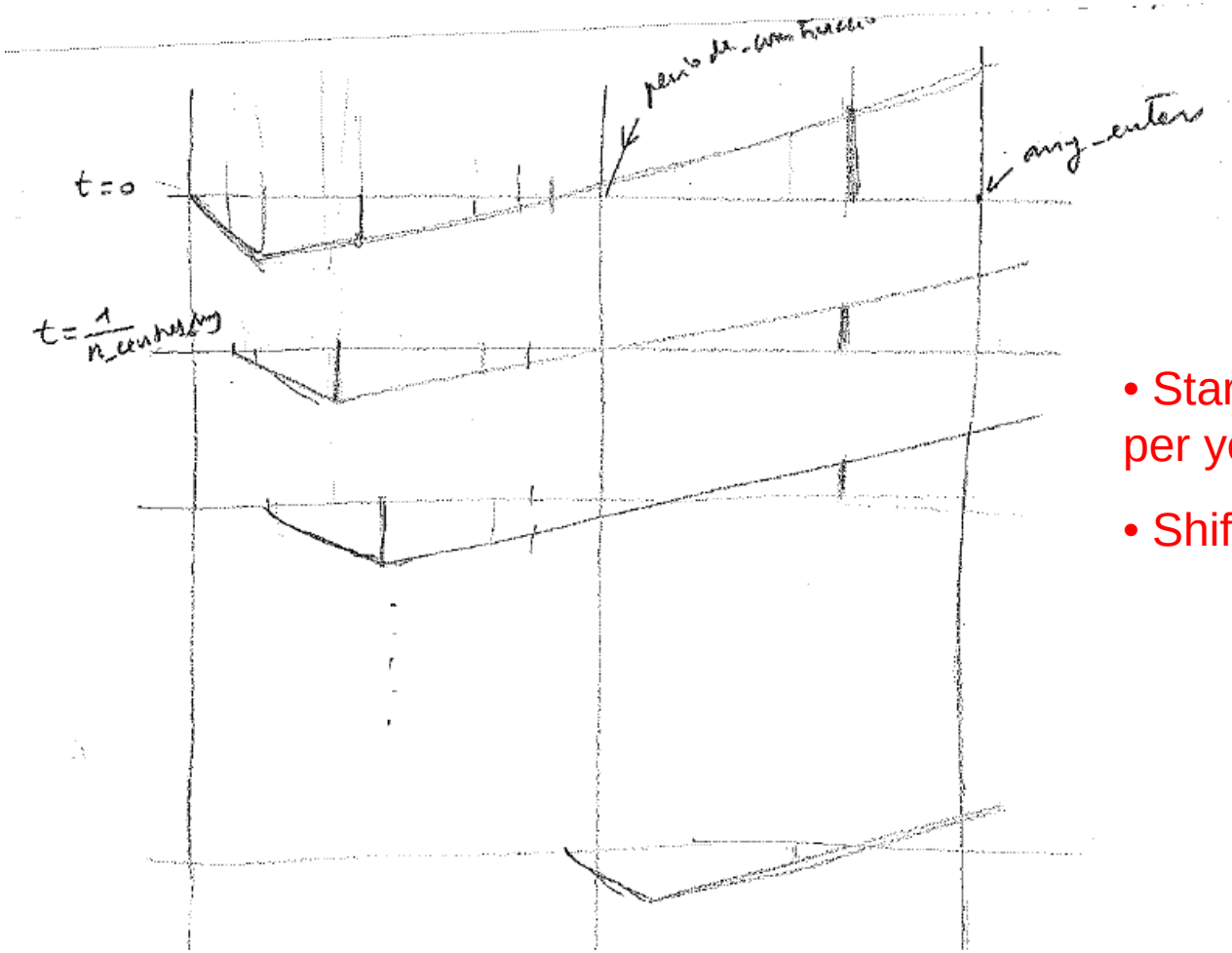
Marcel Coderch

barcelona gse
graduate school of economics

Simple dynamic EROEI analysis

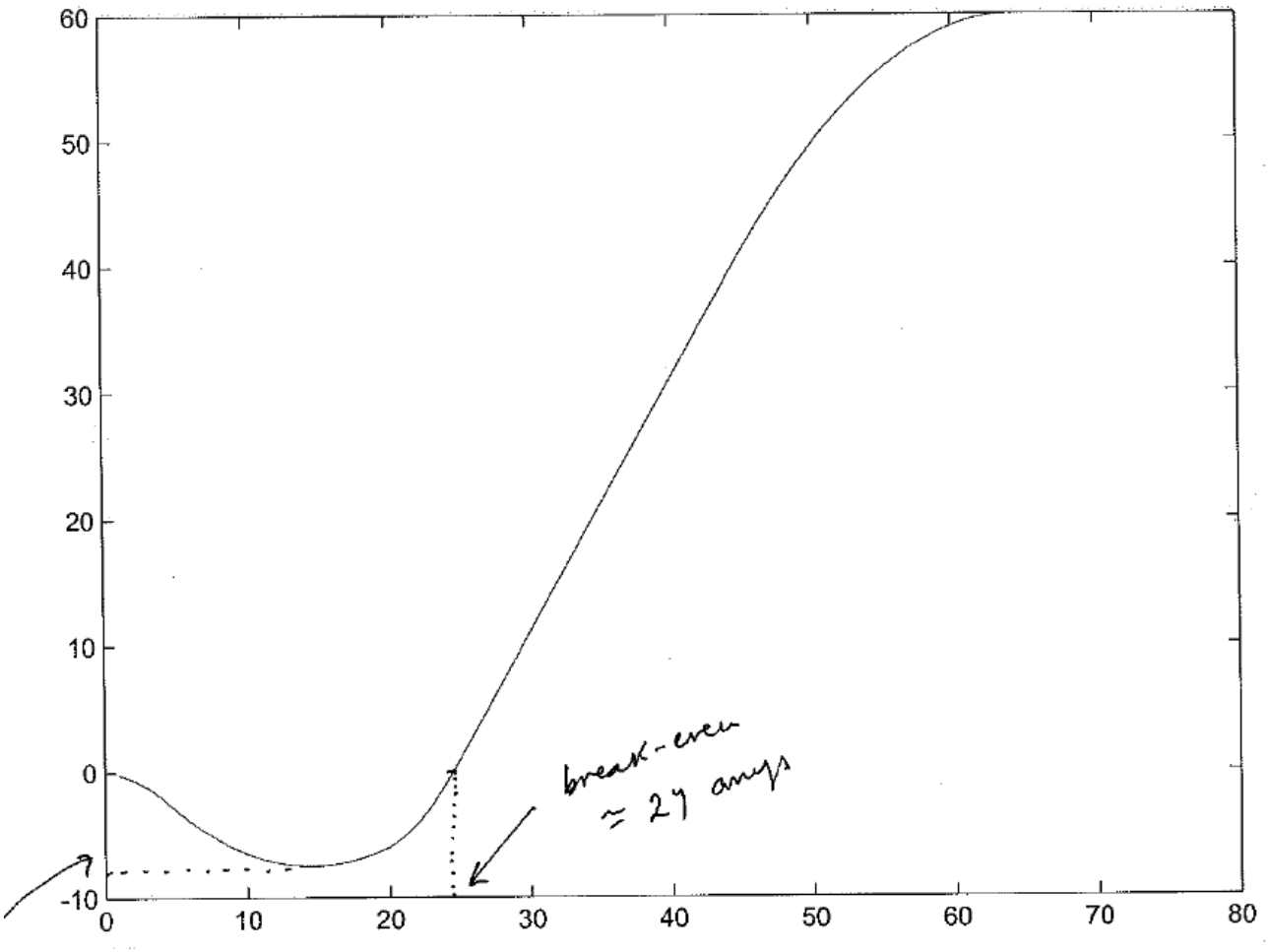


Simple dynamic EROEI analysis



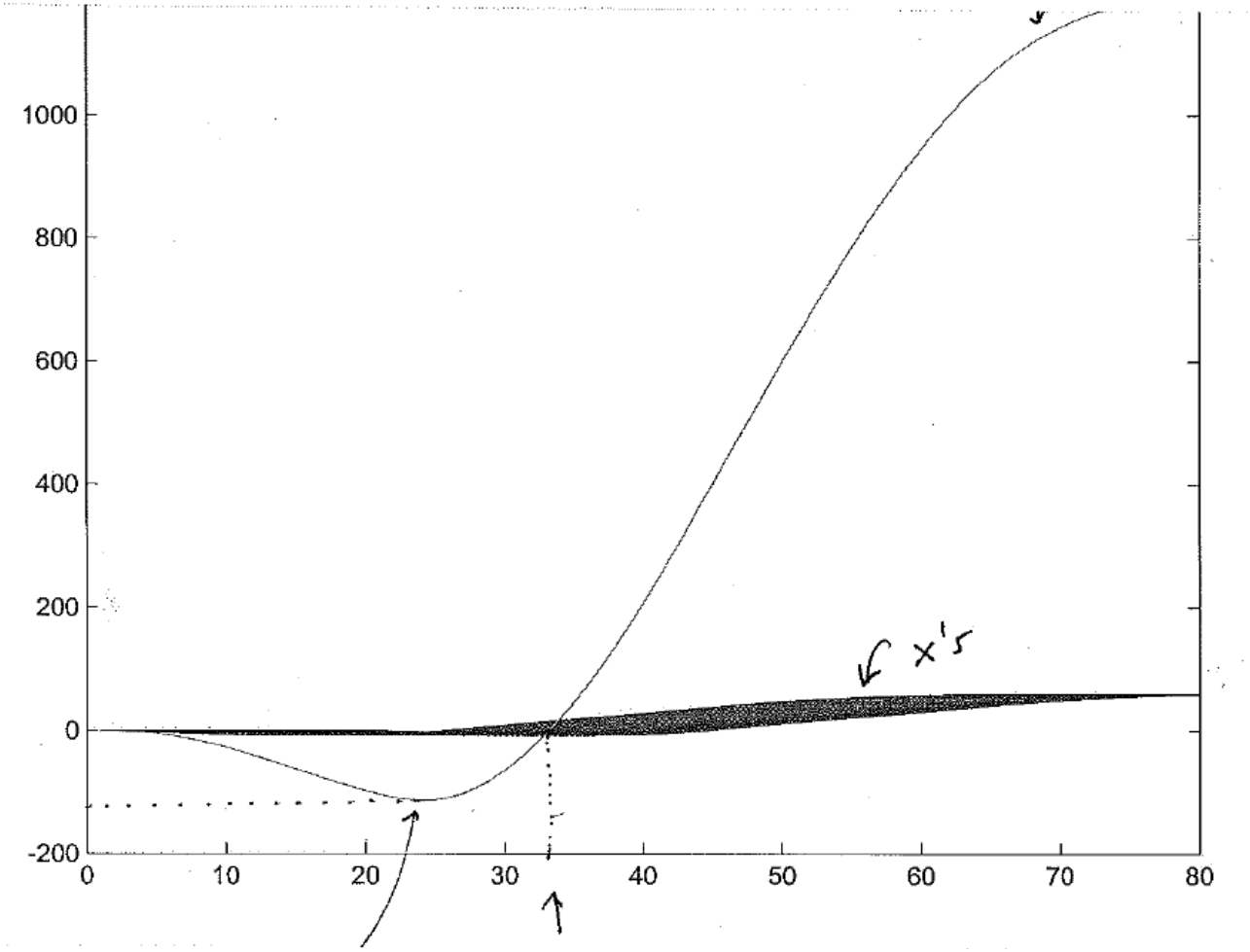
- Start one construction per year
- Shift net energy and add

Simple dynamic EROEI analysis



- Build 20 nuclear reactors during next 20 years
- Break-even year 24

Simple dynamic EROEI analysis



- Build 400 nuclear reactors
- 20 programs os 20 reactors, one per year
- Break-even year 32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Assessor
per al
Desenvolupament
Sostenible