Company report

Nat Resources & Energy
Electric Utilities
Equity – France

HSBC Global Research

EDF (EDF FP)

UW: French EPR (Evolutionary Pressurised Reactor): forced to back the wrong horse?

- **High cost and initial teething problems for the French EPR jeopardise its place in the nuclear revival, to EDF's detriment**
- **Positive potential from new electricity law is discounted in the share price**
- **Underweight rating and target price EUR37 retained**

Event: The new CEO of EDF, Henri Proglio, wants France to achieve better leverage of its nuclear expertise and has called for a 're-think' of the industry. The French bidding consortium putting forward the EPR for a USD20bn nuclear project in UAE lost to a South Korean consortium US-derived technology on grounds of cost. Following damaging delays to the first EPR in Finland, the French press (*Le Figaro*, 19 January 2009) suggests that the flagship Flamanville project is two years late. The united front of French nuclear companies is under strain with Proglio's implied criticism of Areva plus a dispute between EDF and Areva over waste storage. Meanwhile, the French electricity law process has just started but in our view will not become official before 2011.

Impact: Central to EDF's industrial strategy is full participation in the ongoing nuclear revival through the French EPR, to which it is inextricably linked, in our view. Although rival nuclear reactor models have also experienced problems, we believe that recent events fail to enhance the prospects of the EPR both in and outside Europe. We are also sceptical that the draft electricity law, due to be presented to Parliament this spring, will be passed before early 2010 and, given Proglio's dislike of this law's proposal that EDF sell power to third parties without a profit margin, see a conflict between the interests of the Government as a shareholder (84.8%), as a negotiator (the Government agreed with Brussels to push through the French electricity law) and as a tariff-setter.

Valuation: We retain our target price of EUR37 and our Underweight rating. Our valuation is based on a combination of sum-of-parts (EUR43.6, using DCF for generation, RAB multiples for regulated assets, and per-customer EVs for supply) and DCF (EUR43.9, WACC 6.5%, with terminal growth at 2%). To each of these we apply a 15% discount to reflect the various strategic and financial uncertainties EDF still faces.

Catalysts: Delays in tariff reform in France, delays at Flamanville and setbacks for the EPR, setback in UK disposals following Ofgem's (in our view) harsh pricing decision.

Index^	SBF-120
Index level	2,920
RIC	EDF.PA
Bloomberg	EDF FP

Source: HSBC

Enterprise value (EURm)	156131
Free float (%)	13
Market cap (USDm)	109,296
Market cap (EURm)	76,525

Source: HSBC

Underweight

Target price (EUR)	**37.00**
Share price (EUR)	**41.39**
Potential total return (%)	**-10.6**

Dec	2008a	2009e	2010e
HSBC EPS	2.36	2.01	2.11
HSBC PE	17.5	20.6	19.7

Performance	1M	3M	12M
Absolute (%)	3.5	2.1	8.1
Relative^ (%)	-2.2	-0.4	-20.1

Note: (V) = volatile (please see disclosure appendix)

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Financials & valuation

Financial statements

Year to	12/2008a	12/2009e	12/2010e	12/2011e
Profit & loss summary (EURm)				
Revenue	64,279	68,644	70,790	74,087
EBITDA	15,435	17,002	18,138	19,189
Depreciation & amortisation	-6,239	-7,469	-7,899	-7,968
Operating profit/EBIT	9,196	9,533	10,240	11,220
Net interest	-370	-1,564	-1,521	-1,672
PBT	5,096	5,420	5,746	6,539
Taxation	-1,561	-1,596	-1,693	-1,935
Net profit	3,400	3,675	3,897	4,440
Cash flow summary (EURm)				
Cash flow from operations	7,572	11,972	12,933	13,718
Capex	-9,489	-12,667	-12,667	-10,333
Cash flow from investment	-15,100	-30,716	-15,667	-12,133
Dividends	-2,528	-1,330	-2,369	-2,498
Change in net debt	8,207	20,074	5,103	914
FCF pre dividends	3,804	984	2,163	5,105
Balance sheet summary (EURm)				
Intangible fixed assets	9,883	9,883	9,883	9,883
Tangible fixed assets	107,415	133,701	142,022	146,550
Current assets	59,154	55,550	57,241	58,983
Cash & others	19,119	13,005	13,462	13,308
Total assets	200,288	230,970	240,981	247,252
Operating liabilities	85,772	88,091	89,231	90,983
Financial liabilities	37,451	51,411	56,971	57,730
Total liabilities	175,446	201,135	209,462	213,628
Net debt	24,476	44,550	49,653	50,566
Shareholders funds	23,058	25,494	27,192	29,319

Ratio, growth and per share analysis

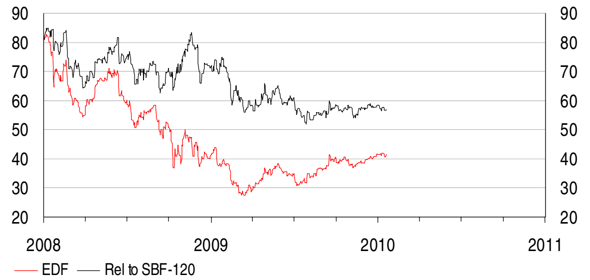
Year to	12/2008a	12/2009e	12/2010e	12/2011e
Y-o-y % change				
Revenue	7.8	6.8	3.1	4.7
EBITDA	1.5	10.2	6.7	5.8
Operating profit	1.3	3.7	7.4	9.6
PBT	-33.2	6.4	6.0	13.8
HSBC EPS	-7.9	-14.8	4.5	14.0
Ratios (%)				
ROE	17.1	15.1	14.8	15.7
ROCE	7.9	7.7	7.0	7.4
EBITDA margin	24.0	24.8	25.6	25.9
Operating profit margin	14.3	13.9	14.5	15.1
Net debt/equity	98.5	149.3	157.5	150.4
CF from operations/net debt	30.9	26.9	26.0	27.1
Per share data (EUR)				
EPS reported (fully diluted)	1.87	2.01	2.11	2.40
HSBC EPS (fully diluted)	2.36	2.01	2.11	2.40
DPS	1.28	1.28	1.35	1.45
Gross CFPS	4.27	6.67	7.04	7.49

Valuation data

Year to	12/2008a	12/2009e	12/2010e	12/2011e
EV/sales	2.1	2.3	2.3	2.2
EV/EBITDA	8.6	9.2	8.9	8.4
P/CF	9.7	6.2	5.9	5.5
PE*	17.5	20.6	19.7	17.3
FCF yield (pre div) (%)	3.5	0.9	1.9	4.6
Dividend yield (%)	3.1	3.1	3.3	3.5

Note: * = Based on HSBC EPS (fully diluted)

Price relative



Source: HSBC

Note: price at close of 19 Jan 2010

Safe but sorry

- Safety costs, project delays and (in our view) lack of unified French front jeopardise prospects for the EPR reactor, which is central to EDF's strategy
- EDF risks suffering the impact of Areva's problems: a French nuclear re-think is required
- Underweight rating and EUR37 target price retained: share price discounts new Electricity Law and ignores strategic headaches

Negative newsflow dogs Areva's EPR, impacting EDF

After a 20-year-plus pause, many countries want to build nuclear reactors again. So-called late third generation or III+ generation units are being designed by, amongst others, Areva (Evolutionary Pressurised Reactor or EPR), Westinghouse (AP1000), GE Hitachi and Mitsubishi, capable of at least 60 years of operation with better fuel efficiency, simpler design, higher safety specifications and shorter required maintenance times than their predecessors.

UAE rejects EPR, chooses the APR1400

UAE has chosen a South Korea-led consortium employing an APR1400 reactor design derived from Westinghouse (US-based, Japan-owned) as builder/operator of nuclear reactors for a contract worth potentially up to USD20bn, ahead of a French consortium comprising EDF, GDF Suez, and Total employing Areva's EPR nuclear model. This raises questions about the longer-term industrial prospects for EDF.

EDF, as a company majority-owned by the French state, appears to be inextricably linked with the EPR of Areva, also majority-owned by the French state. These companies essentially are responsible for France's leading reputation in the nuclear world with Areva, the designer and builder of the reactors, and EDF, the operator and architect. Currently, France, the US, Canada, Japan and Russia are the biggest exporters of atomic generators and dominate the global nuclear market with Areva ranking as leader with a market share of 25%.

Areva, to a much greater degree than EDF, has suffered the major problems: Finnish delays and cost over-runs, changes in financial and operating structure.

Headaches in Finland and now France

The UAE decision follows:

- the very public difficulties Areva has experienced in its first new EPR at Olkiluoto in Finland (EUR2.3bn cost over-runs, set to open at least three years late in 2013);

- safety concerns raised by regulators in the UK and France;
- delays in the flagship Flamanville project in France (running 'at least two years late and maybe more' according to 'sources' quoted by *Le Figaro*, 19 January 2010): *Le Figaro* quotes a project cost of EUR5bn versus EDF's estimate of just EUR2bn in 2006;
- France being "poorly represented" in the reactor bid according to the (at-the-time) EDF CEO-designate Proglio in *Les Echos* in November. President Sarkozy, in mid-2009, insisted that EDF must be part of the French consortium bidding in the UAE – previously it had been absent – but clearly this was not enough to sway the UAE against the APR1400 of the South Korean consortium.

Behind the curve in China

Meanwhile, Westinghouse's first four AP1000 reactors being built in China (Haiyang, Sanmen), at an early stage, are on schedule for opening in 2013, and the Taishan EPR project (EDF, Areva, CGNPC) was inaugurated in December 2009.

We believe one reason that eight further AP1000s are proposed (in contrast to no EPRs) in China, which wants to build at least 50GW of capacity by 2010, is that Westinghouse, unlike Areva, is willing to transfer technology.

EPR: high-cost within an industry of rising costs

Another major debating point is cost. Such is the weight of the upfront costs of building a reactor (discussed in recent EDF reports) together with back-end costs of treating nuclear waste and de-commissioning the reactor, that financing expense makes up around two-thirds of the total production cost of a nuclear reactor, just as the cost of gas takes up around two-thirds the production cost of a CCGT.

As noted in our 9 November 2009 company report on EDF, the estimated cost of nuclear reactors has risen strongly over recent years, perhaps not a

Main advanced (or late 3rd generation, or 3+ generation) nuclear reactors being marketed

Country and developer	Reactor (size MWe)	Design progress	Construction projects
US-Japan (GE-Hitachi, Toshiba)	ABWR (1300)	Commercial operation in Japan since 1996. In US: NRC certified 1997, FOAKE.	First two ABWRs operational in Japan since 1996, two more started in 2004 and 2005. Several of the 1350MWe units are under construction and planned in Japan and Taiwan.
USA (Westinghouse)	AP600 AP1000 (PWR)	AP600: US NRC certified 1999. AP1000 US NRC certification 2005	First units being built in China, coming during 2013-15, and many more planned. Also under active consideration for building in Europe and US.
France-Germany (Areva NP)	EPR US-EPR (PWR) 1600	Future French standard. French design approval. Being built in Finland and France, planned for China. US version developed.	Two EPR reactors are under construction, one each in France and Finland, and are both facing time and cost over-runs.
Japan (utilities, Mitsubishi)	APWR 1530 US-APWR 1700 EU-APWR 1700	Basic design in progress, planned for Tsuruga. US design certification application 2008.	TXU has selected the US-APWAR for use at multiple sites.
Canada (AECL)	ACR-1000	Design approved by Canadian nuclear Safety Commission, Sept 2009	Two Enhanced CANDU-6 (Generation iii) reactors being constructed in Romania, on-stream 2015/2016
South Korea (KHNP, derived from Westinghouse)	APR1400 (PWR)	Design certification 2003	First units expected to be operating in 2013 in Korea. Recently chosen by the UAE for its nuclear programme

Source: World Nuclear Association, HSBC estimates surprise in a sector with an established track record of over-runs and the difficulty in finding turnkey contract operators after a long period during which there was negligible nuclear new-build. Such a trend substantially diminishes the cost advantages of nuclear vis-a-vis its carbon-emitting peers CCGT and coal.

Nuclear per-MW estimates for new-generation reactors: on the up

	CURm/MW
Olkiluoto value of contract at signature, Dec 2003	EUR1.9m
MIT 2003	EUR1.5m
EDF 2006 estimate of Flamanville cost	EUR2.0m
Keystone Center, US, 2007	EUR2.2m
EDF 2008 cost estimate	EUR2.5m
UK estimates for new-build (Platts)	EUR2.9m
Olkiluoto EPR cost for Areva to Sep 09	EUR2.9m
MIT update mid-2009	EUR3.0m
Flamanville cost, *Le Figaro*, 19 January 2010	EUR3.1m
Moody's October 2007	USD3-6m
Standard & Poor's, October 2008	USD5-8m

Source: HSBC, MIT, Platts, Moody's, EDF, Standard & Poor's, Keystone Center

EPR: Excessively Pricey Reactor, due to safety specifications?

The South Korean Government, quoted via the local media in Platts (12 January 2010) following the news of the contract award in the UAE, cited the difference in the underlying cost between the APR1400 (USD2.3m/MW) and the EPR (USD2.9m/MW) resulting in a 25% advantage in production cost for the APR1400. In addition, the South Koreans stated their view that the Japanese ABWR was also 25% more expensive than the APR1400.

The main factor behind such a difference appears to be security factors, which have, according to Areva, been set to higher specifications for the EPR. These include a structure capable of withstanding a commercial aircraft impact as well as containing molten nuclear fuel that might have penetrated the reactor vessel after a serious accident). The reason for such high-level specifications is, essentially, the impact of the 1986 Chernobyl disaster on Europe. Total's CEO stated in a newspaper interview (*Journal du Dimanche*, 10 January 2010) that the EPR was 'the safest therefore the most expensive'.

But does the EPR get the balance between safety and cost right? So far, the answer may appear to be negative. Accepting this, will Areva work on reducing the cost of the EPR? The company has suggested vaguely (11 January 2010) that it may look to change 'the structure of its industrial partnerships' and 'civil engineering, assembly, or components like the turbine', but that there will not be a re-design. According to Platts (12 January 2010) the APR1400 has two large steam generators whereas the EPR has four; the APR1400 does not have the capability of the EPR to contain molten nuclear fuel that might have penetrated the main reactor after an accident.

Europe: there will be competition

Westinghouse: realistic future competitor

Westinghouse itself, although cheaper than the EPR, also promotes the safety features of its AP1000 as comfortably meeting the criteria of the US nuclear inspectorate (NRC), and undoubtedly is hoping to emerge as a realistic competitor to Areva's EPR.

UK: regulatory safety concerns

We have mentioned that the UK regulator has voiced safety concerns regarding the EPR. In addition, it criticised the AP1000. According to the *Guardian* (27 November 2009), the Health & Safety Executive (HSE) has identified 'a significant number of issues with the safety features of the design … if these are not progressed satisfactorily then we would not issue a design acceptance confirmation'. E.ON and RWE, which have announced GBP20bn of investment on new nuclear in the UK, have yet to decide which model they will use. Similarly, the third UK consortium intending to build new reactors (GDF Suez, Iberdrola, Scottish & Southern) has yet to make a decision.

Italy: not just EDF-Enel

Although EDF and Enel have established a joint venture to build nuclear reactors in Italy, it is worth pointing out that Italy and the US in September 2009 signed a declaration for nuclear co-operation.

Early days; time for France to re-group

Of course, it is still early days:

- the AP1000 has also had design problems (in Canada, with the shield surrounding the containment structure of the core),
- frequent regulatory voicing of safety concerns is in our view a normal part of this type of process
- we are talking of the first commercial units operating new nuclear technology after a 20+ year period of virtually no new nuclear build
- there is a large number of projects at various stages of planning in Europe, Asia and the US. The World Nuclear Association estimates a requirement of 430 new nuclear power plants worth over USD1 trillion by 2030.

Proglio wants to better leverage French nuclear expertise – changes needed

EDF's new CEO Henri Proglio has stated that he wants France to capitalise better on its nuclear expertise as the nuclear renaissance gathers pace, calling for a 're-think' of the industry even before he was officially appointed CEO in late November 2009.

EDF will remain reliant on the EPR

This is easier said than done, however. EDF and Areva's working relationship can best be described as erratic, with implied criticism by Proglio in his 'judgement that the creation of Areva was a mistake' (*Le Figaro*, 18 November 2009) plus an ongoing dispute over volumes and prices meaning that EDF is storing nuclear waste at its own sites rather than sending it for re-processing at Areva's La Hague site.

Areva: restructuring first, after its Finnish nightmare

It can be debated whether France would not better leverage its nuclear know-how with closer and more harmonious links between Areva and EDF or a complete restructuring of Areva. Areva is 87% owned by the State, EDF 85%. But Areva's financial and industrial performance in the last three years, badly damaged by the Finnish EPR, has altered its priorities, the first being getting its own financials in order by selling its T&D business.

Risk that other models make inroads

EDF can dissociate itself from Areva's Finnish headache, but the two companies are nonetheless inextricably linked in France (where EDF is the architect of Flamanville), and wherever EDF wants to expand, due to its seeming obligation to use the EPR. European countries such as the UK and Italy, if convinced that the safety specifications of other reactor models (AP1000, the APR1400, GE-Hitachi's new ESBWR, which it states is more innovative and cheaper to build than its existing ABWR model) are acceptable, they may well be willing to accept non-EPR reactors on the grounds that they are cheaper. Other countries where EDF would hope to play a major role, China and the US in particular, may also prioritise the AP1000 or the APR1400 on cost grounds. There could also be some impact of EDF's own less than stellar output from its existing fleet of PWR (pressurised water reactor) units.

Pressure is building

In our view, pressure is building towards a re-organisation of the French nuclear industry.

- It is unlikely that President Sarkozy, who shoe-horned EDF into the French EPR consortium in the UAE tender, appreciated the eventual fruitlessness of his efforts.

- Proglio appears, from the combativeness of his initial statements, also unwilling to accept the *status quo*.
- Areva is negotiating the sale of its transmission/distribution activities to Alstom/Schneider. The bid value of EUR4.1bn is not the highest offer (source: Reuters, 30 November 2009) but is French, supported by the French Government, due to be completed by the end of H1 2010. This will allow Areva to concentrate fully on nuclear, as well as to be considerably better placed to fund its EUR11bn expansion plan. It will also give Areva a structure better suited for moves, desired by Proglio, to restructure the French nuclear industry. But such moves, for France to succeed, must be perceived to boost the attractions of the EPR vis-à-vis its new generation nuclear competitors.

A political decision

It will be up to politicians, as usual, to decide how best to maximise France's (and by implication, EDF's) participation in the nuclear revival. Barring freedom for EDF to choose which reactor model to use, the obvious moves are

- much closer co-ordination and co-operation between Areva and EDF to create an integrated operation and
- efforts by Areva to reduce the cost differential between its EPR and the reactors of its competitors.

Both of these targets are achievable to a greater or lesser extent, in our view, but neither is straightforward.

New French Electricity Law: process now under way

Although we are Underweight on EDF, we acknowledge that only in France can one construct a bullish case for a share based on visibility for tariff rises. But in our view, such a scenario is now amply discounted in the share price. Our application of a discount to fair DCF and sum-of-parts value is based on the company's strategic problems, of which the EPR is just one, and high gearing.

Slippage inevitable, but eventual passing of law in little doubt

A milestone has been achieved with the start on 20 January 2010 of consultations between the Government and industry on the new electricity law, news of which boosted the shares by 3% on that day.

The Environment minister Francois Borloo (14 January) has indicated that the new law, which is likely to follow the main thrust of the Champsaur commission's recommendations of April 2009 (following French assurances regarding competition to Brussels in September 2009 in order to meet the European Commission's anti-trust concerns), faces a delay of at least 6-12 months to around mid-2011. However, such slippage is not surprising for the market as its impact is more than balanced by the potential long-term improvement in tariffs.

The draft bill should be presented to Parliament after the March regional elections, following which we estimate a vote may take place around the middle of this year. A technical text pursuant to the law must then be drawn up, which is likely to take some time.

The law implies above-inflation tariff rises for non-regulated customers, with EDF selling base-load nuclear to its would-be competitors at cost.

We forecast average tariff rises of around 3.5% per year

We estimate average selling prices for EDF rising from EUR35/MWh in 2009 to EUR41/MWh by 2013 and EUR50/MWh around 2020, which we believe is within the consensus range.

We expect only modest increases in residential and small commercial tariffs (ie the current 'tarif bleu', around 40% of volumes) which will remain fully regulated, at around 2.0-2.5% annually (or less than EUR1/MWh).

For industrial and other business tariffs, rises will be on average 4-5% per year, we estimate. We note that the Government (under EU pressure and aware that industrial power prices were rising rapidly in neighbouring countries) pushed through inflation-beating tariff rises in August 2008 and August 2009.

For major bilateral contracts such as that between EDF and the Exeltium consortium (13TWh annually), we see a price in the low EUR40s/MWh, at least initially. EDF has offered to limit the length of such contracts to five years (the Exeltium contract was originally 24 years in length) and to open up to competition more of what it supplies large industrial customers, which we believe could be positive for prices.

Proglio's position: unlikely to bring higher tariff rises

The new EDF CEO Proglio, in the interests of EDF's 'shareholders', has pronounced himself against a law that obliges the company to sell power, in which it assumes all the financial and operational risk, at cost. EDF's 85% shareholder the State thus finds itself with a potential conflict between its interests as a shareholder (EDF to sell output but at a profit to its would-be competitors implying steeper tariff increases) and as a Government (non-regulated tariffs to rise more rapidly than may be politically acceptable). Will Proglio's opposition further delay the implementation of a law which the Government has committed itself to pushing through? We do not believe so to any great extent. But the targeting of more aggressive tariff rises could create a more turbulent debate in the spring months.

Forecasts and valuation

Our 2010 estimates, unchanged and set out below, do not assume two potentially negative elements:

- an extension of the TaRTAM tariff cap for industrial users beyond July 2010, inevitable in some form if the energy law is delayed (impact of EUR300-350m per year, we estimate)

EDF forecasts

EURm	2008a	2009e	2010e	2011e	2012e	2013e
Revenues	64,279	68,644	70,790	74,087	76,532	78,564
EBITDA (ex- TarTAM provision for 2008)	**15,435**	**17,002**	**18,138**	**19,189**	**20,260**	**21,086**
France	*10,215*	*9,643*	*10,690*	*11,450*	*12,231*	*13,224*
UK – EDF Energy	*944*	*3,130*	*2,680*	*2,686*	*2,659*	*2,679*
Germany – EnBW	*1,114*	*1,143*	*1,167*	*1,222*	*1,279*	*1,105*
Italy – Edison	*911*	*809*	*882*	*918*	*943*	*960*
Rest of Europe	*2,045*	*1,998*	*2,177*	*2,341*	*2,468*	*2,518*
Rest of the world	*206*	*278*	*542*	*571*	*590*	*600*
EBIT	**9,196**	**9,533**	**10,240**	**11,220**	**11,972**	**12,466**
Financial charges, net	-3,167	-4,383	-4,777	-4,979	-5,118	-5,249
Pre-tax profit	3,836	5,150	5,462	6,241	6,855	7,217
Net profit	**3,535**	**3,823**	**4,053**	**4,604**	**5,042**	**5,308**
Group share of net profit	3,400	3,675	3,897	4,440	4,870	5,127
Ordinary net profit	**4,308**	**3,675**	**3,897**	**4,440**	**4,870**	**5,127**
EPS (EUR)	**2.36**	**2.01**	**2.11**	**2.40**	**2.63**	**2.77**
Dividend (EUR)	1.28	1.28	1.35	1.45	1.55	1.65

Source: Company data, HSBC estimates

- the disposal of the UK grid operations, the selling process of which is ongoing and where a final decision is likely around the end of Q1, around 4% dilutive to EPS if sold at a 10% premium to RAV of GBP3.8bn, although the harsh Ofgem price controls announced in early December plus noises from the Conservatives regarding the potential splitting up of distribution monopolies in the event of their winning the upcoming election, imply that a successful sale is not in the bag.

UW; target price EUR37

We retain our target price of EUR37 and our Underweight rating. Our target price is based on a combination of sum-of-parts (EUR43.6) and DCF (EUR43.9; WACC 6.5%, terminal growth rate 2%) set out below. To each of these we apply a 15% discount to reflect the various strategic and financial uncertainties EDF still faces. Potential catalysts include delays in implementing tariff reform in France, plus lack of newsflow on disposals following Ofgem's harsh final pricing decisions.

DCF: EUR43.9

We base our DCF valuation of EDF on a cost of capital of 6.5%, as shown below:

EDF WACC: 6.5%

Risk-free rate	4.0%
Country risk premium	4.5%
Beta	0.92
Cost of equity	**8.1%**
Gross cost of debt	5.25%
Corporate tax rate	30%
Cost of debt, post tax	**3.68%**
Weight of debt	37%
Weight of equity	63%
WACC, post tax	**6.5%**

Source: HSBC estimates

In HSBC's standard DCF model, three separate stages are used:

- Stage 1: explicit forecasts for four years, to 2013: 7% of our EDF DCF value
- Stage 2: semi-explicit forecasts for a further 10 years, to 2023: 2.5% annual revenue growth reflecting the better outlook power prices over the long term: 32% of our EDF DCF value
- Stage 3: terminal: 2% annual free cash flow growth reflecting cash inflows from new nuclear builds and lower capex needs after a heavy investment phase: 61% of our EDF

DCF split

Stage	EURm	Split
Stage 1 (4-yr explicit forecast)	12,024	7%
Stage 2 (10-yr semi-explicit period with 2.5% revenue growth)	58,537	32%
Terminal (2% FCF growth)	111,923	61%
DCF value	**182,484**	**100%**

Source: HSBC estimates

EDF DCF valuation: EUR43.9 (EUR37.3 post 15% discount)

	EURm
DCF value (core operations)	182,484
Value of ST marketable assets, associates	2,819
EV asset side	**185,303**
Net debt, 2009e	-49,653
Quasi-debt (nuclear, pension, other provisions), minorities	-54,337
Total liabilities	**-103,990**
Value of equity	81,313
No. of shares (m)	1,851
Value per share (EUR)	**43.9**
Value per share with 15% discount (EUR)	**37.3**

Source: HSBC estimates

Below, we set out a sensitivity table illustrating the effect of different terminal FCF growth rates and WACC on EDF's DCF valuation.

DCF sensitivity to WACC and terminal growth (EUR per share)

	1.50%	1.75%	2.00%	2.25%	2.50%
4.5%	107.7	118.9	132.2	148.6	169.1
5.0%	82.6	90.1	99.0	109.4	122.0
5.5%	63.8	69.1	75.3	82.4	90.7
6.0%	49.2	53.2	57.6	62.7	68.5
6.5%	37.6	40.6	43.9	47.7	51.9
7.0%	28.1	30.5	33.0	35.8	39.0
7.5%	20.3	22.1	24.1	26.3	28.7
8.0%	13.7	15.1	16.7	18.4	20.3
8.5%	8.0	9.2	10.5	11.9	13.4

Source: HSBC estimates

HSBC

Sum-of-parts: EUR43.6

Below we summarise our sum-of-parts valuation for EDF. We still assume a 50-year operating life for EDF's French nuclear reactors. The average age of EDF's French nuclear is 25 years, implying a further 25 years of operating life, on average. This compares with an average of 14 remaining years for German nuclear reactors, for which we assume 40-year operating lives in our model. We use a DCF model to value EDF's nuclear business, which gives an equivalent per-MW EV of EUR1.15m.

Conclusion: EUR37 target price, Underweight

Taking the average of our two valuation techniques, we reach our valuation and target price for EDF of EUR37.

Summary of EDF valuations: EUR37 target

Valuation technique	EUR before discount	EUR (post discount)
DCF, 15% discount	43.9	37.3
Sum-of-the-parts, 15% discount	43.6	37.1
EDF target price (rounded)		**37**

Source: HSBC estimates

Under our research model, for stocks without a volatility indicator such as EDF, the Neutral band is 5 percentage points above and below the hurdle rate for Europe ex-UK stocks of 8.5% (ie between 3.5% and 13.5%). Our 12-month target price of EUR37 implies a potential total return of -10.6%, which is below the Neutral range and therefore justifies our Underweight rating.

Risks to our rating and valuation

The key risks to our rating are: Better tariff visibility: the Champsaur conclusions will be adopted without parliamentary dissent; EDF progresses well on its EUR5bn disposals and achieves a good exit price for UK networks.

EDF – Sum-of-parts EUR43.6 (EUR37.1 after 15% discount)

Activity	Valuation methodology	EURm	EUR per share	% gross SOP
France				
France Generation	*92.7GW at c.EUR1.0m/MW - Nuclear 59.6GW at EUR1.15m/MW, Hydro 20.1GW at EUR0.89m/MW, Thermal 13.0GW at EUR0.45m/MW*	*92,387*	*49.9*	*50.0%*
France supply (EDF sa)	*24.8m retail customers at EUR150*	*3,720*	*2.0*	*2.0%*
France distribution (EDF sa)	*RAV*	*28,525*	*15.4*	*15.4%*
France transmission (RTE)	*RAV*	*11,166*	*6.0*	*6.0%*
France - total		**135,798**	**73.4**	**73.5%**
UK: EDF Energy, BGY	Generation: DCF/per-MW, regulated: RAV, supply: per account	17,580	9.5	9.5%
Germany: EnBW	46.1% of sum-of-parts plus debt and share of nuclear provisions	8,276	4.5	4.5%
Italy: Edison (after takeover)	Edison: Assumes 50% pro rata consol @ 7.5x 2010e EBITDA	6,013	3.2	3.3%
EDF Trading	4x 2010e EBITDA	1,585	0.9	0.9%
US: Constellation's nuclear assets	49.9% stake in 3.9GW at USD2.4m/MW	3,471	1.9	1.9%
Other Europe, Rest of world	Dalkia, Hungary, Poland, Slovakia, Fenice, Belgium	9,216	5.0	5.0%
Other businesses		**46,140**	**24.9**	**25.0%**
Core assets		**181,938**	**98.3**	**98.5%**
Associates and other assets	Book value 2010e	2,819	1.5	1.5%
Total assets		**184,757**	**99.8**	**100.0%**
Net debt	Book value 2010e	-49,653	-26.8	
Pension, nuclear and other provisions	Book value 2010e, provisions less of dedicated assets	-50,011	-27.0	
Minorities	Book value 2010e	-4,327	-2.3	
Total claims		**-103,990**	**-56.2**	
Sum-of-parts value	**1,850.7m shares**	**80,767**	**43.6**	
Sum-of-parts value	**With 15% discount**		**37.1**	

Source: HSBC estimates

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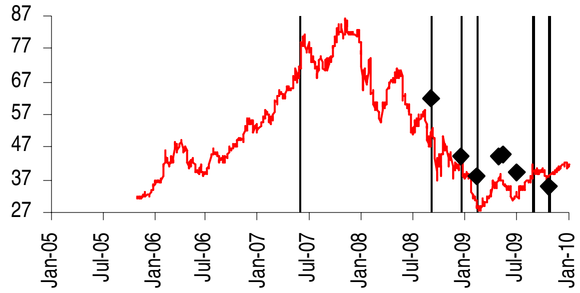
Share price and rating changes for long-term investment opportunities

EDF (EDF.PA) Share Price performance EUR Vs HSBC rating history



Source: HSBC

Recommendation & price target history

From	To	Date
Underweight	N/A	11 June 2007
N/A	Overweight	19 September 2008
Overweight	Neutral (V)	05 January 2009
Neutral (V)	Overweight (V)	27 February 2009
Overweight (V)	Neutral (V)	14 September 2009
Neutral (V)	Underweight (V)	09 November 2009
Target Price	**Value**	**Date**
Price 1	N/A	11 June 2007
Price 2	N/A	30 August 2007
Price 3	62.00	19 September 2008
Price 4	44.00	05 January 2009
Price 5	38.00	27 February 2009
Price 6	44.00	18 May 2009
Price 7	45.00	05 June 2009
Price 8	39.00	23 July 2009
Price 9	35.00	09 November 2009

Source: HSBC

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