

Valuation criteria for nuclear power – Swiss utilities market

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Content of presentation

Introduction & Scope of speech

Highlights Swiss utilities: Profitable 'Clean generators'

(Nuclear) generation costs & power price forecasts

Summary & Outlook

SECTION 1

Introduction & Scope of speech

SECTION 2

Highlights Swiss utilities: Profitable ‘Clean generators’

Investment case Swiss utilities:

CO2-free, premium assets, geographic hub position

1. **Premium, flexible generation assets...**

- generation c95% CO2-free, fossil independent
- c30% share of flexible peakload, sold at c40-45% premium

2. **... ideally located: Geographic hub position in Europe**

- allows for arbitrage, reinforces trading opportunities
- decreasing importance, as (1) European prices to converge; (2) Assets to Swissgrid

3. Positive **earnings sensitivity** to rising central European power prices

- fix cost driven assets (c55% hydro, c40% nuclear) → higher prices drive higher EBIT

4. **Liberalization** process to release full value potential only after 2013

- quasi-tariffs for retail customers (c40-50% below intl. market prices)
- Short term: higher complexity and setup costs

5. **Virtually ungeared** companies, strong consolidation potential

- c900 Swiss distributors → liberalization to trigger consolidation (c3-5 years)
- mostly debt free, cash position to put at work for consolidation, new assets

UBS: Call on clean European generators – Swiss utilities as a prototype

European Utilities – UBS sector themes

- (1) Commodity prices remain high
- (2) Environmental concerns, CO2 reduction
- (3) Liberalization triggers upside price pressure

Favorites / Beneficiaries

- (1) Long producers which opportunity to increase position
- (2) Clean generators (low CO2 exposure)
- (3) Favor regions / companies where liberalization just starting

Swiss Utility sector

- (Integrated) generators
- Swiss utilities / sector 95% CO2 free
- Switzerland: Liberalization to start 2009; retail level 5y later

Winners

- Short/Mid-term: Swiss long generators with international sales & trading exposure
- Mid/Long-term: Swiss retail price convergence to international levels

Supportive driver: Challenging FY07

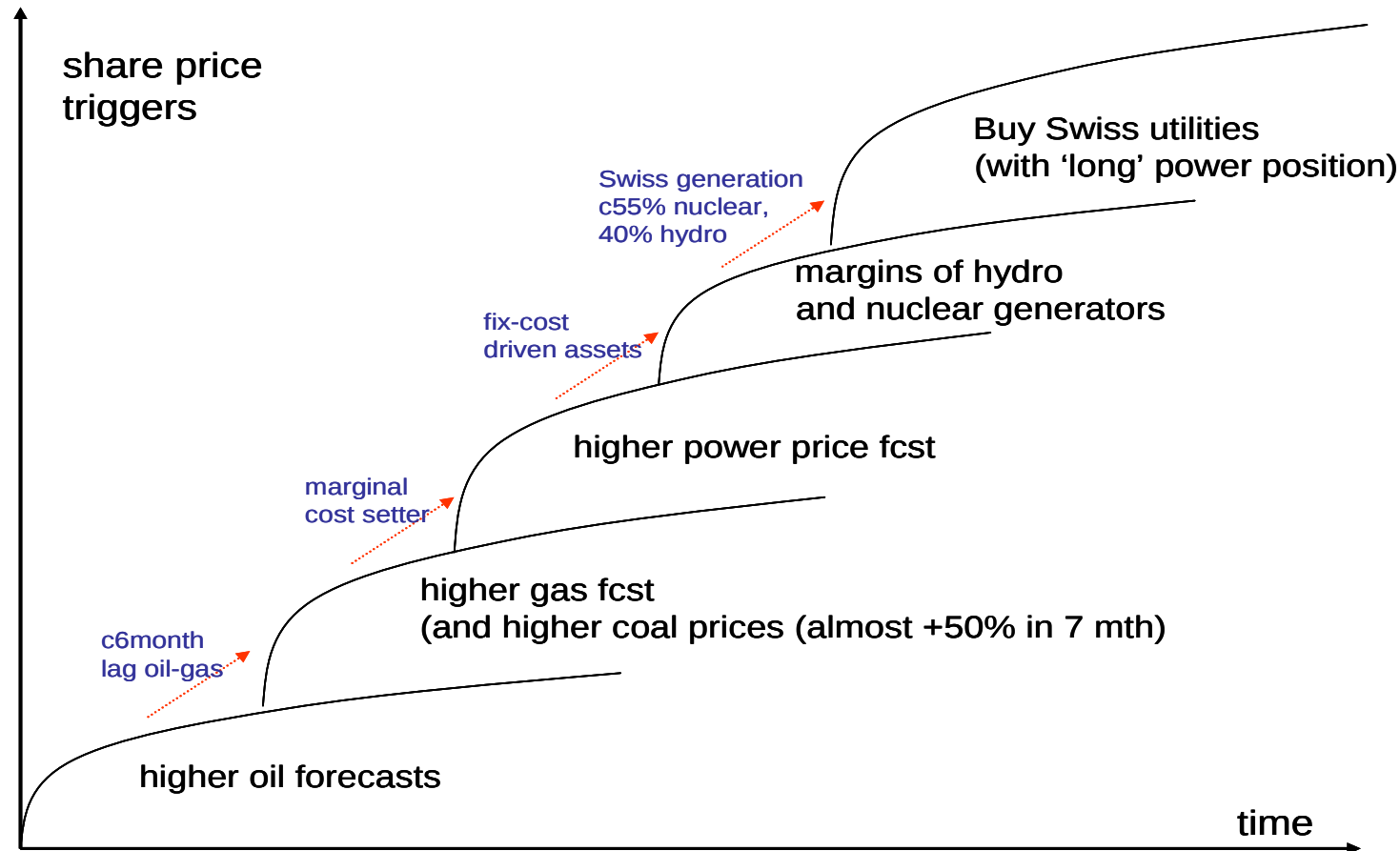
- mild weather triggered low demand (-5%)
- pressure on spot prices (-40%) driven from CO2 (phase I collapse)

Trend reversed Winter 07/08

- Forward prices up c40% yoy
- c20% more heating days in Switzerland
- stability from CO2 (phase II until 2012), EU strives for stricter allocation scheme

Source: UBS

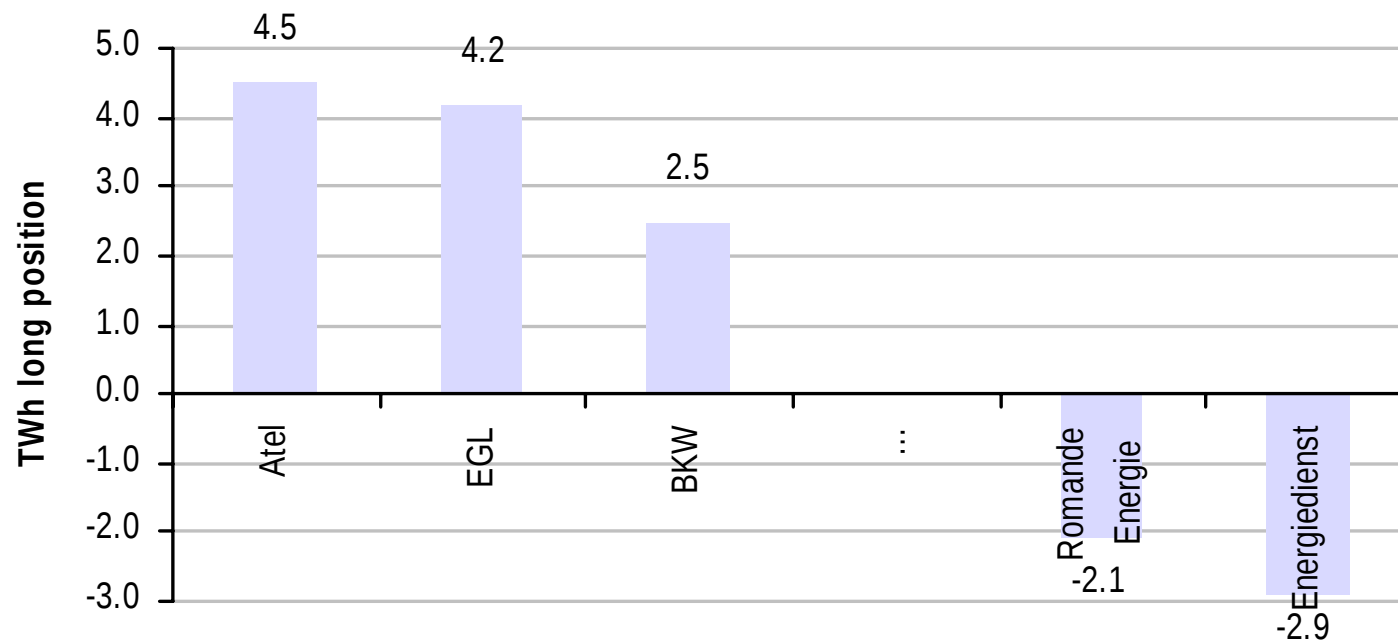
Drivers and impact of long, 'clean generation' theme



Source: UBS

- Fix cost driven assets (c55% hydro, c40% nuclear)
- Higher international prices (driven by carbon, gas, oil) increase gross margins

International long position: Attractive in the short-term



Source: UBS estimates

- Long position can be sold at c40% higher international power prices, at stable costs due to fix-cost nature
- Short companies face c40% higher purchasing costs

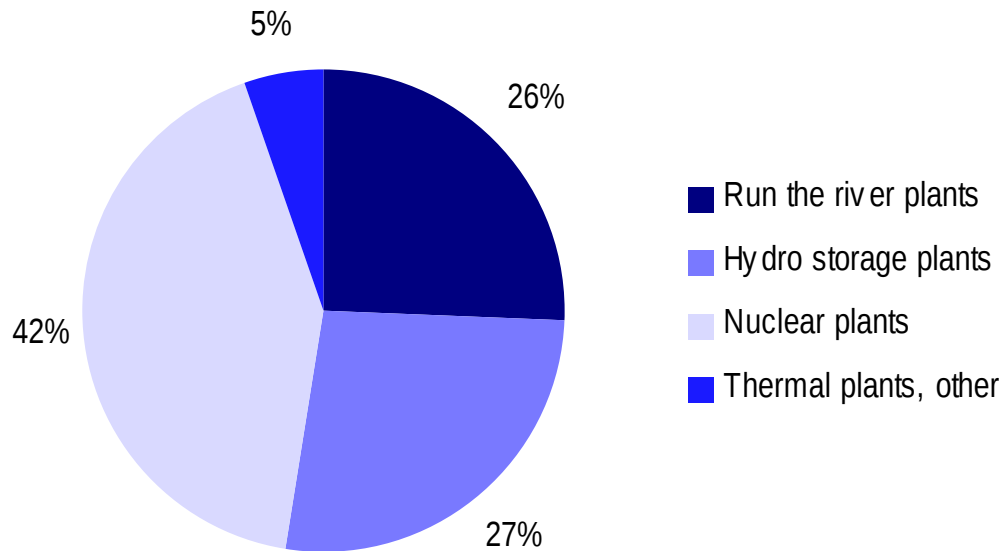
SECTION 3

Generation costs and power price forecasts

Investment case (1): Great assets - CO₂-free, independent on fossil fuels; c30% of flexible peak share (hydro storage)

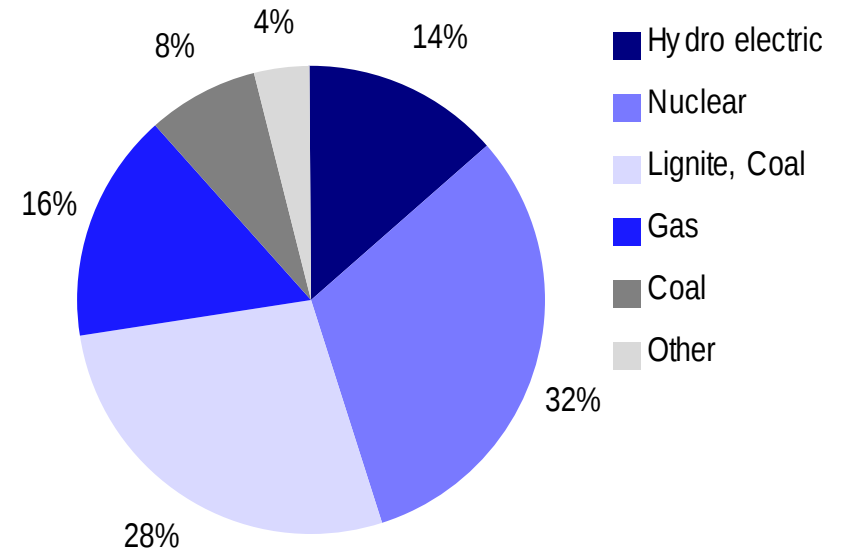
Total Swiss generation output in 2006: cTWh62

Swiss generation split, 2006



Source: BFE

European generation split, 2005

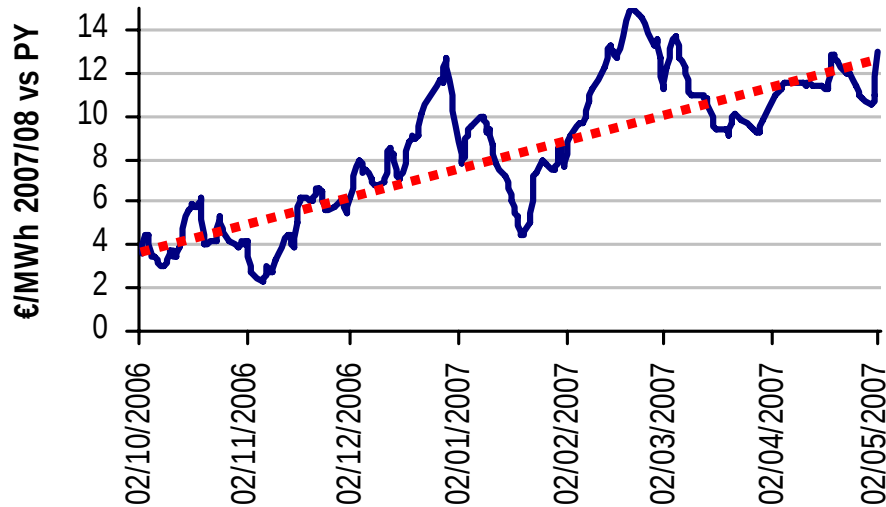


Source: UCTE

- High exposure to hydro power (c55% of output)
- c25-30% flexible, valuable peak power from storage lakes ('tap function')
- Increasing share of renewables (wind, sun) reinforces value of flexibility

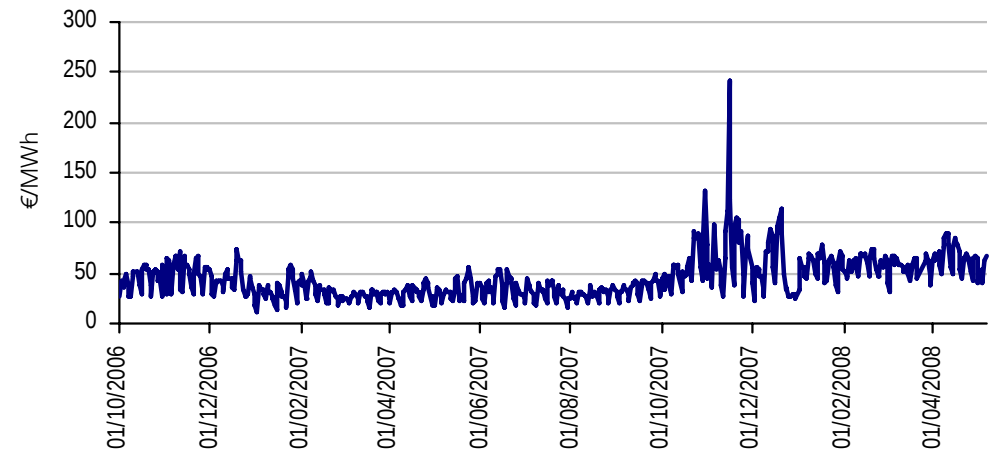
European power prices in 2006/07: Forward prices remained high, despite climate triggering 40% lower spot prices

Forward prices remained at high levels



Source: Platts

Spot prices are 40% down vs. previous year

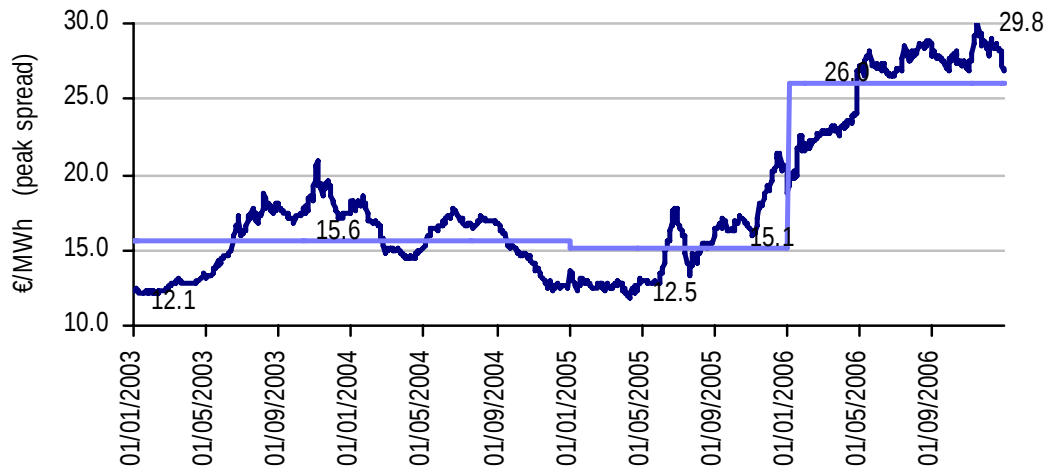


Source: Platts

- Forward prices remained at c€55/MWh (until Aug. 2007), despite low spot; then rise until Jul 08; status Sep 2008: €77/MWh (+c40%)
- Sep 07: Oil started to increase to historically high levels, power price followed
- Low spot prices in 2007, driven by:
 - Carbon price phase I (until 2007) collapsed to c€0
 - low demand (warmer winter, moderate summer)
 - high wind production Scandinavia, Germany

30% peakload share of Swiss generation (to be further expanded): Premium paid for valuable peakload virtually doubled vs. 2004/05

Spread of peak load vs base load central European power prices



Source: DataStream

Weather effect 2007: positive base effect likely

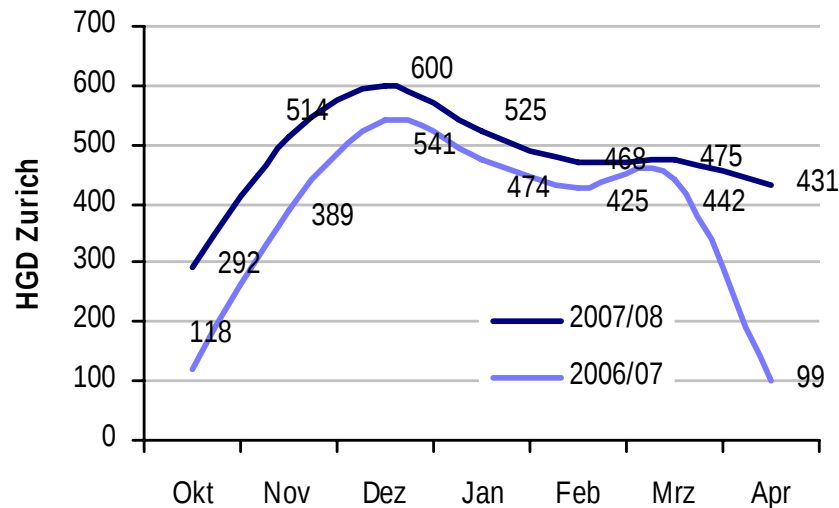


Source: DataStream

- Increasing use of renewables (wind, solar) increases variability of output
- Premium for flexible balancing power set to increase further
- Significant investment projects envisaged at all major groups
- Spread can decline temporarily: eg, 2007 due to low demand (warm winter, moderate summer) and high wind availability (Scandinavia, Germany)
- Status spread June 12, 2008: c43% premium

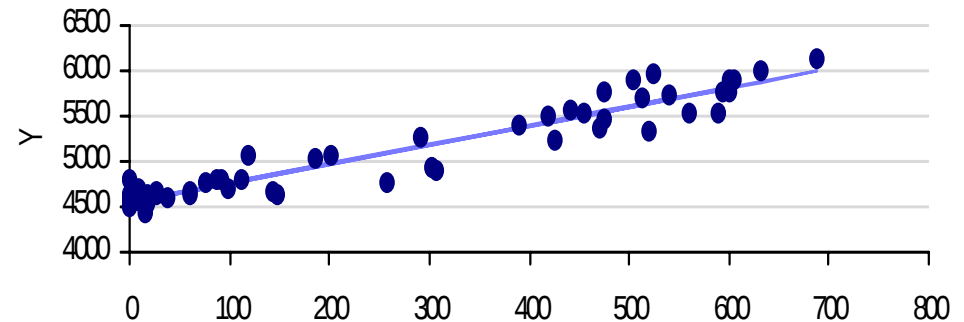
Q4 2007: Heating days up c35% vs. Q4 2006

2006/07 with c28% less heating days negatively impacted demand on retail level



Source: Meteosuisse, UBS estimates

Cold start into winter season coincidences with high oil and power prices



Source: UBS estimates

- 2006/07 with very low base effect for demand and pricing
- Oct 07 to Apr 08: every single month colder; c20% more heating days over winter
- triggers higher domestic sales for vertically integrated companies but: reduces external opportunities (at higher international prices!)

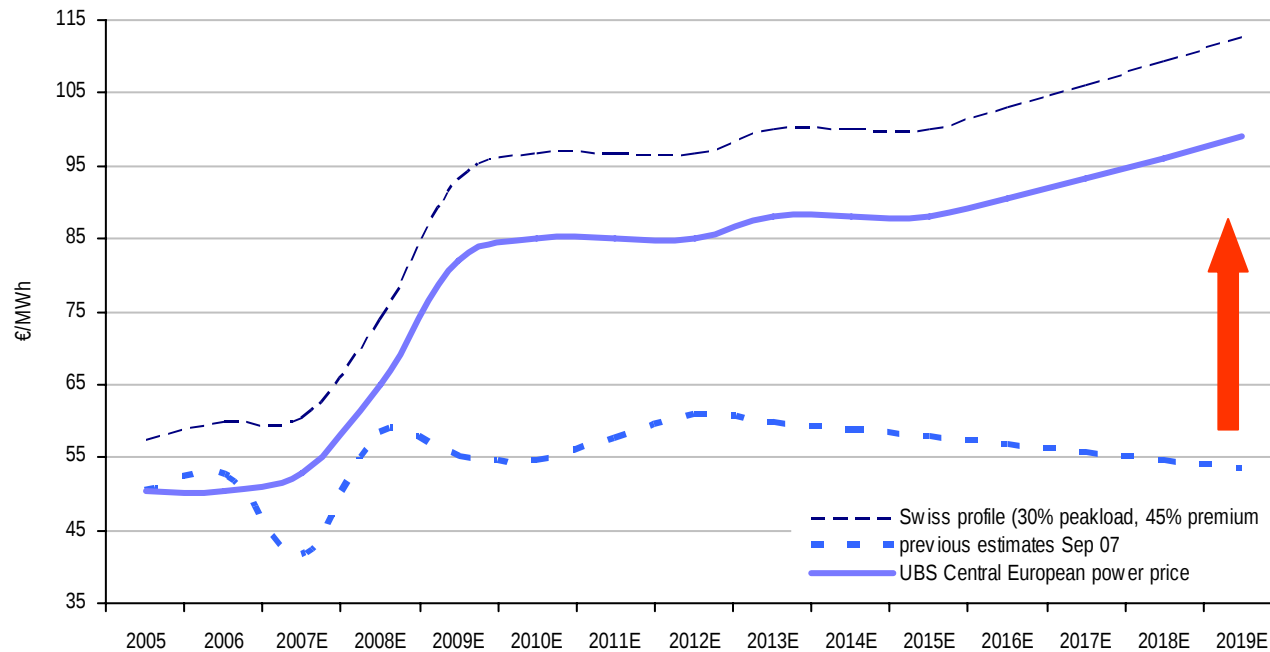
		Heating day	yoy growth	Energy consumption	yoy growth	Source
2008	Jan	525	10.8%	5981	3.6%	Historic
	Feb	468	10.1%	5535	5.7%	Estimate
	Mar	475	7.5%	5549	-0.2%	Estimate
Q1 predicted average growth (year on year):					3.0%	UBSe
	Apr	431	335.4%	5457	16.1%	Estimate

Source: UBS estimates

Investment case (3): Higher international power prices drive asset values; Sensitivity to international power price increases

UBS Swiss output 95% CO2-free and independent of fossils (hydro, nuclear)

UBS electricity price forecasts for Central Europe

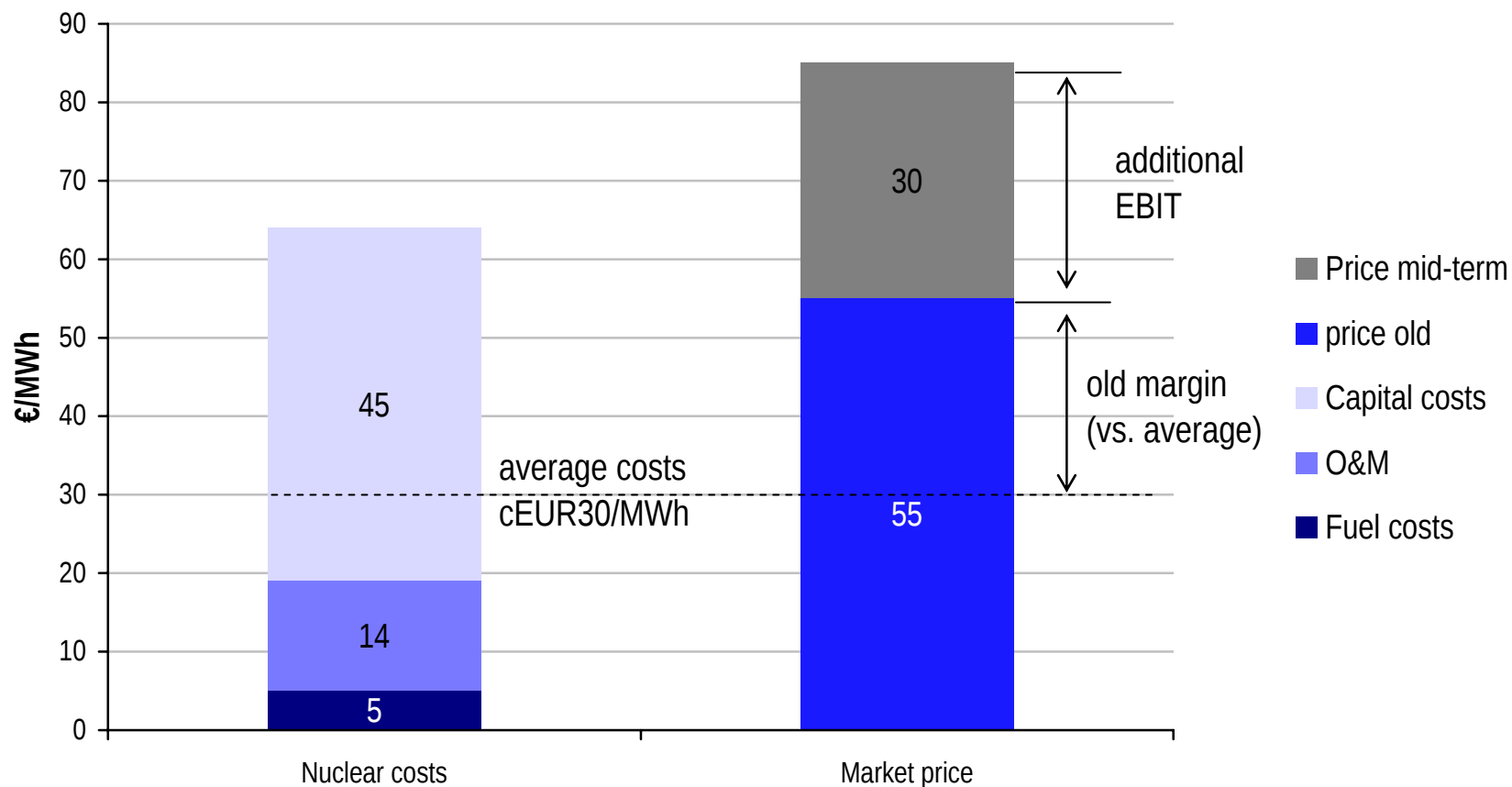


Source: UBS estimates

	2005	2006	2007E	2008E	2009E	2010E	2011E	2012E	2013E	2014E	2015E
Swiss profile (30% peakload, 45% premium)	57.3	59.7	60.2	73.8	93.1	96.5	96.5	96.5	99.9	99.9	99.9
UBS Central European power price	50.5	50.5	53.0	65.0	82.0	85.0	85.0	85.0	88.0	88.0	88.0
previous estimates Nov 07	50.5	52.6	51.1	70.8	69.6	67.8	69.4	71.0	74.7	74.9	75.0

Source: UBS estimates

Nuclear generation: Positive sensitivity to rising power prices



- Power prices driven by gas (ie, oil), coal and CO2 prices
- Projected power supply gap reinforces upside price pressure
- Higher power prices (driven by fossils, CO2) directly inflate hydro & nuclear margins

Mechanics: EPS enhancement from higher power prices

- **Assumptions:**

- Long position: 4.0 TWh (4m MWh)
- Price increase: €5/MWh

Assumptions:

- FX rate EUR/CHF: 1.6
- Additional sales CHF32m (= 4 x 5 x 1.6)
- Additional EBITDA CHF32, as cost base $\approx$ const., fix-cost driven
- Valuation multiple EV/EBITDA09
- Fair multiple 10.0x
- Add. target EV CHF320m
- Implied target price
 - adjustment for net debt, provisions, minorities;
 - division by nb. of shares

SECTION 3

Generation cost & power price forecasts

Bullish Outlook on Power Price drivers

1

Coal

To remain expensive due to supply chain squeeze.

2

Gas

Linked to oil with 6 months lag.

3

CO2

Price to be set by coal-to-gas fuel switching.

4

Capital costs

40% cost inflation since 2005
(eg. now €3000/kW for new nuclear)

5

Supply/Demand

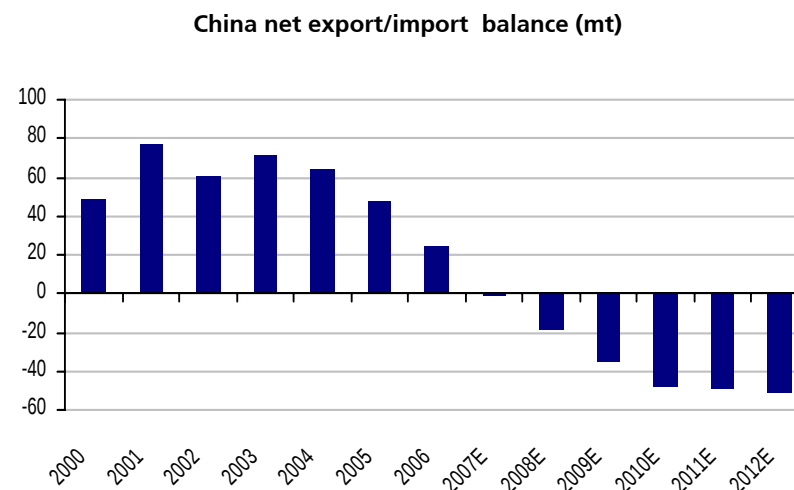
Central Europe and Nordic region tight,
other regions balanced or oversupplied

1. Coal: China likely to keep coal prices high

Doubling of coal price over last year



China likely to sustain coal prices



Source: AME, McCloskey's, UBSe

UBS Utilities coal price assumptions (\$/t, nominal)

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Coal price (\$/t, FOB Richard Bay)	82	115	115	115	115	115	117	119	121
Freight rates (\$/t, RB to Rotterdam)	50	35	35	30	25	25	25.5	25.9	26.4
Total ARA	132	150	150	145	140	140	143	145	148

Source: UBS estimates

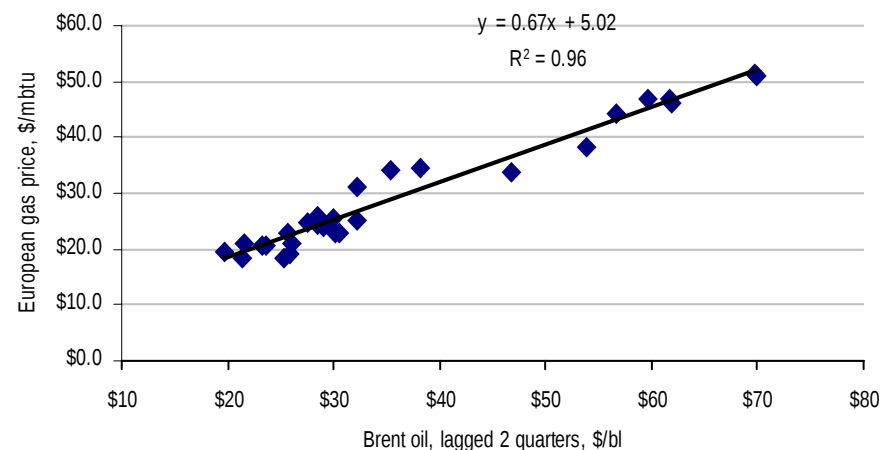
2. Gas: Oil price will determine gas price

Doubling of gas price over 6 months



Source: Bloomberg

2/3 of oil price movement reflected in gas



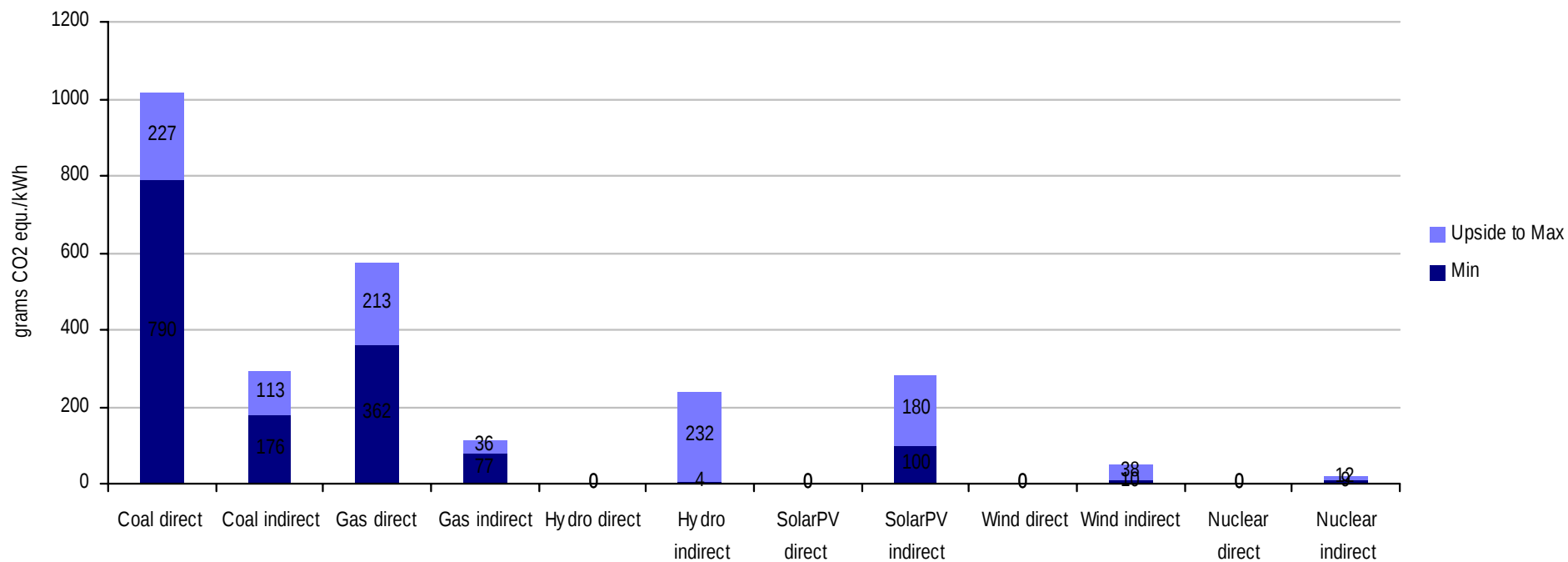
Source: Based on Statoil unit gas revenues. UBS, Statoil, Bloomberg

UBS Utilities gas price assumptions

	2008	2009	2010	2011	2012	2013	2014	2015
Oil price (\$/bbl)	120	122	121	120	119	119	119	119
Gas price								
\$/boe	85.4	86.8	86.1	85.4	84.8	84.8	84.8	84.8
\$/MMBTU	14.7	15.0	14.8	14.7	14.6	14.6	14.6	14.6
p/therm	74.8	76.7	76.1	75.5	74.9	74.9	74.9	74.9
€/MWh	32.4	33.0	32.7	32.5	32.2	32.2	32.2	32.2

Source: UBS estimates

Greenhouse Gas Emissions from Electricity Production



Source: OECD NEA & IAEA, Uranium 2005: Resources, Production and Demand

4.Capital costs: New build cost inflation continues

Estimated new build costs (€/kW)

	2003	2005	2007	2008	2003-05	2005-07	2007-08
CCGT	450	500	700	720	11%	40%	3%
Coal	900	1100	1500	1600	22%	36%	7%
Nuclear	1900	2150	2500	3000	13%	16%	20%
Wind	800	1000	1250	1350	25%	25%	8%

Source: UBSe

Nuclear generation cost: 1) Assumptions

Nuclear										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Capacity (MW)	800	800	800	800	800	800	800	800	800	800
Investment costs (€/kW)	2,250	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Plant life (years)	50	50	50	50	50	50	50	50	50	50
Load factor (%)	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
O&M (€/MWh)	8.7	8.9	9.1	9.2	9.4	9.6	9.8	10.0	10.2	10.4
Interest pre-tax (%)	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
ROE (%)	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Debt ratio (%)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Equity ratio (%)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Tax rate (%)	32.5%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
ROIC	9.9%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%
USD / Eur	1.43	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56

Source: UBS estimates

Nuclear generation cost: 2) Calculation Nuclear fuel cost

Fuel Costs										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Uranium pre enrichment (\$/pound)		80	82	83	85	87	88	90	92	94
Uranium pre enrichment (\$/kg) [*2.6]		208	212	216	221	225	230	234	239	244
Uranium after enrichment 4% to U235 (\$/kg) [*8.1]		1685	1718	1753	1788	1824	1860	1897	1935	1974
Conversion to UF6 and fuel manufacturing (\$/kg)		1180	1204	1228	1252	1277	1303	1329	1355	1383
Tot. Uranium - adj for energy content (\$/kg)		2865	2922	2981	3040	3101	3163	3226	3291	3357
GWh per kg uranium after enrichment		1200	1200	1200	1200	1200	1200	1200	1200	1200
Uranium (\$/MWh)		2.4	2.4	2.5	2.5	2.6	2.6	2.7	2.7	2.8
Uranium (€/MWh)		1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8
Thermal efficiency		33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%
Uranium (€/MWh)	3.9	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4
Fuel reprocessing, storage & decomiss.	4.5	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3

Source: UBS estimates

Nuclear generation cost: 3) Full generation and short-run marginal cost

Costs (ex-fuel and O&M) in € million

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Operating & Maintenance (€mn)	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Depreciation (€mn)	36	48	48	48	48	48	48	48	48	48
ROIC	178	231	231	231	231	231	231	231	231	231

Unit Costs (€/MWh)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Electricity produced (GWh)	6,307	6,307	6,307	6,307	6,307	6,307	6,307	6,307	6,307	6,307
Fuel cost		4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4
Fuel reprocessing, storage & decomiss.		4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3
Operating & Maintenance		8.9	9.1	9.2	9.4	9.6	9.8	10.0	10.2	10.4
Depreciation		7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
ROIC		36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7
Full generation cost (€/MWh)		62.4	62.7	63.1	63.5	63.9	64.2	64.6	65.0	65.5
Short run marginal cost (€/MWh)		18.1	18.4	18.8	19.2	19.5	19.9	20.3	20.7	21.2

Source: UBS estimates

UBS financial model for new nuclear

- Financial model for large (1,000–2,000MW) PWR nuclear reactor
- Base case assumes one of a series of plants (c4 or more)

		Unit	Mid case	Comment
High sensitivity	Electricity price	€/MWh	85	♦ Mid case based on UBS research
	Construction costs (overnight)	€/kWe	3000	♦ Based on consensus ranges for construction cost ♦ Areva claims €1,043/kW for series of 10 plus c. €250kW other costs
	Construction period	years	6	♦ Olkiluoto construction time expected to be five years ♦ Flamanville 3 estimate is 57 months
	Load factor	% year	90-95	♦ Mid case based on EPR design load factor of 91% ♦ Areva data shows >90% achieved on German reactors
	Leverage (debt/overnight costs)	%	50-70	♦ UBS Investment Bank working assumption ♦ Will depend on power price risk and structure
	Debt amortisation (straight line; bullet)	years	20-40	
Medium sensitivity	Debt spread (vs swap rate)	bps	50	♦ Assumes investment grade credit rating ♦ Will depend on business model
	Other O&M costs	€/MWh	10	♦ UBS Investment Bank estimate; based upon a study by the Royal Academy of Engineering; adjusted for the increase in uranium price
	Front-end fuel price	€/MWh	4.8	
	Back-end fuel price	€/MWh	4.5	
	Total O&M costs	€/MWh	19	
Low sensitivity	Operating life	years	50-60	♦ Areva estimate for EPR is 60 years
	Decommissioning (real 2006)	€/kWe	250	♦ Based upon the estimate for decommissioning costs for Germany, France and Spain ♦ EDF estimate €280/kWe for PWR

European new entry price heading towards €85-90/MWh

Estimated new entry costs and other technology parameters

	CCGT	Coal	Nuclear
IC / kW (€)	725	1,600	3,000
(2005-2008 cost inflation %)	44%	45%	40%
Useful life (yrs)	30	40	50
O&M (€/MWh, 2010)	3.9	5.2	14.0
Pre tax ROIC	10%	10%	10%

Source: UBSe

Assumptions highlight
>40% cost inflation
during past four years

Conservative pre-tax
ROIC 10%

New entrant cost calculation

(2010), data in €/MWh	CCGT	Coal	Nuclear
Fuel cost	59.1	33.4	4.8
Carbon	11.0	22.5	0.0
Operating & Maintenance	3.9	5.2	14.0
Depreciation	3.4	5.7	7.6
ROIC	10.0	22.0	36.7
CCGT New entrant (€/MWh)	87.3	88.8	63.1

Source: UBSe

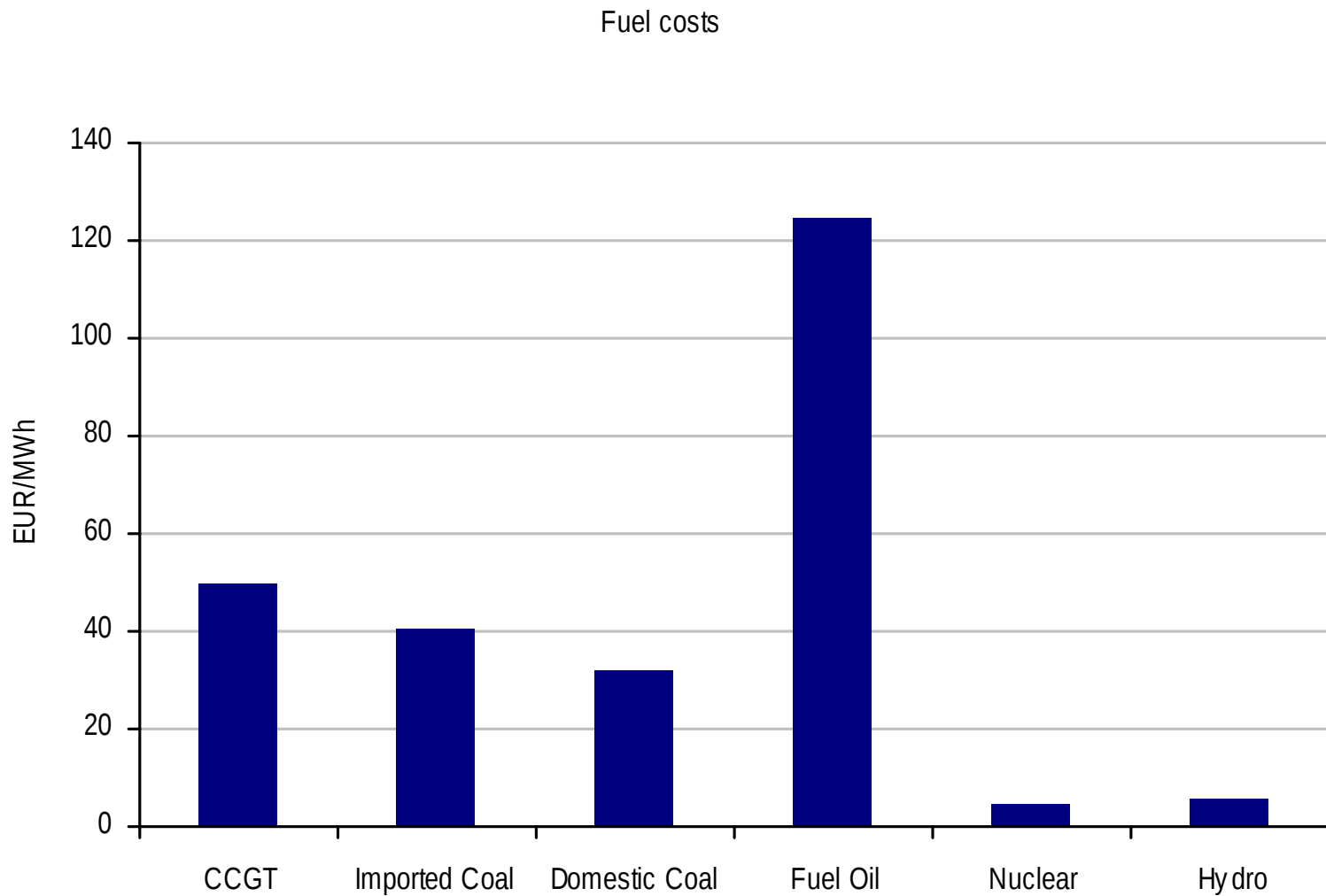
CCGT / Coal new
entrant c€88/MWh

Nuclear new entrant
now at C€63/MWh

Overview of different generation technologies

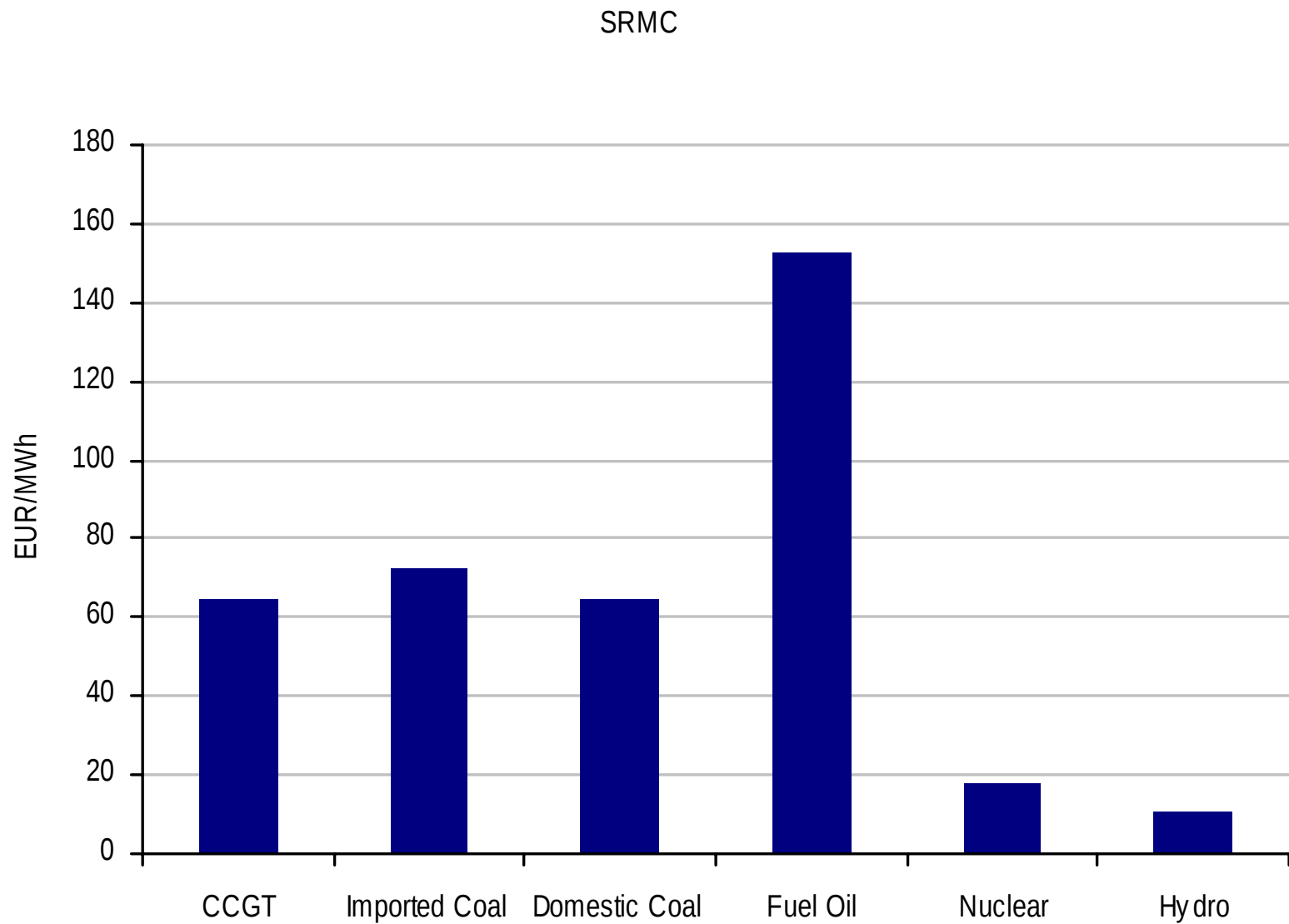
ROIC												
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Interest pre-tax (%)	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
ROE post-tax (%)	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Debt ratio (%)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Equity ratio (%)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Tax rate (%)	35.0%	35.0%	32.5%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
ROIC pre tax	10.2%	10.2%	9.9%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%
Fuel Costs												
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Oil price (\$/bbl)	55.0	65.7	74.5	120.0	122.0	121.0	120.0	119.0	119.0	119.0	119.0	119.0
Coal - Commodity (\$/t)	52.5	53.0	82.0	115.0	115.0	115.0	115.0	115.0	117.1	119.2	121.3	123.5
Coal - Shipping (\$/t)	11.0	11.0	50.0	35.0	35.0	30.0	25.0	25.0	25.5	25.9	26.4	26.8
Coal - Transfer (\$/t)	15.0	15.0	15.0	15.0	15.3	15.5	15.8	16.1	16.4	16.7	17.0	17.3
Coal - Total (\$/t)	63.5	64.0	147.0	165.0	165.3	160.5	155.8	156.1	158.9	161.8	164.7	167.7
CO2 (€/tonne)	22.0	22.0	2.0	30.0	30.0	30.0	32.5	35.0	40.0	40.7	41.5	42.2
Free carbon allocations	85%	83%	81%	75%	50%	50%	50%	50%	0%	0%	0%	0%
Fx \$/€	1.43	1.43	1.43	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56
Electricity demand growth			3.0%	2.5%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Generation Costs Summary												
LRMC (€/MWh)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
CCGT	52.1	59.5	57.5	78.0	82.4	87.3	88.0	88.6	90.5	90.9	91.2	91.6
Imported Coal	55.6	57.6	65.5	100.1	99.6	100.3	101.5	103.9	109.3	110.7	112.2	113.8
Domestic Coal	60.4	62.4	54.3	90.5	92.4	94.1	96.8	99.4	105.1	106.6	108.1	109.6
Fuel Oil	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Nuclear	0.0	0.0	0.0	62.4	62.7	63.1	63.5	63.9	64.2	64.6	65.0	65.5
Hydro	73.2	74.1	75.5	75.0	76.0	76.9	77.9	78.9	78.9	78.9	78.9	78.9
Short run marginal cost (€/MWh)												
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
CCGT	42.5	48.0	45.2	64.6	69.0	73.9	74.5	75.1	77.1	77.4	77.8	78.2
Imp. Coal	39.3	39.5	44.3	72.3	71.9	72.6	73.8	76.2	81.5	83.0	84.5	86.0
Domestic Coal	44.1	44.3	33.0	64.6	66.4	68.1	70.8	73.4	79.1	80.6	82.1	83.6
Fuel Oil	73.5	89.8	81.9	152.9	155.0	154.0	155.0	156.1	160.4	161.0	161.6	162.2
Nuclear	0	0.0	0.0	18.1	18.4	18.8	19.2	19.5	19.9	20.3	20.7	21.2
Hydro	8.7	8.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
Fuel costs (€/MWh)												
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Gas	31.2	36.6	41.0	50.0	54.3	59.1	58.6	58.1	58.1	58.1	58.1	58.1
Imported Coal	17.4	17.5	40.3	40.3	39.8	40.4	39.2	39.3	40.0	40.7	41.5	42.2
Domestic Coal	19.9	20.1	28.8	32.2	34.0	35.7	35.8	35.9	36.5	37.2	37.9	38.6
Fuel Oil	51.9	68.2	77.3	124.6	126.6	125.6	124.6	123.5	123.5	123.5	123.5	123.5
Nuclear	0.0	0.0	0.0	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4
Hydro	3.5	3.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5

Comparison generation alternatives: 1) Fuel costs



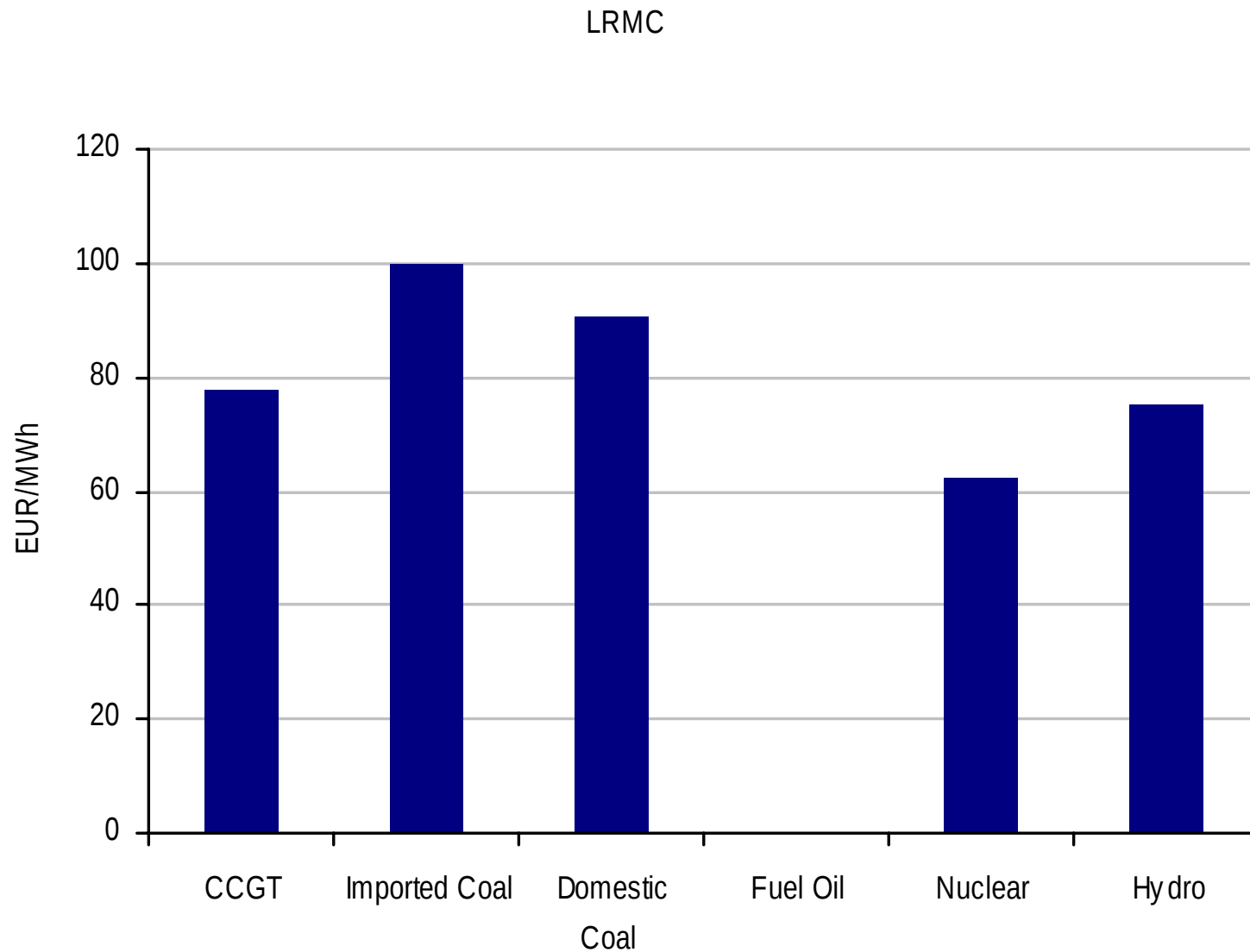
Source: UBS estimates

Comparison generation alternatives: 2) SRMC



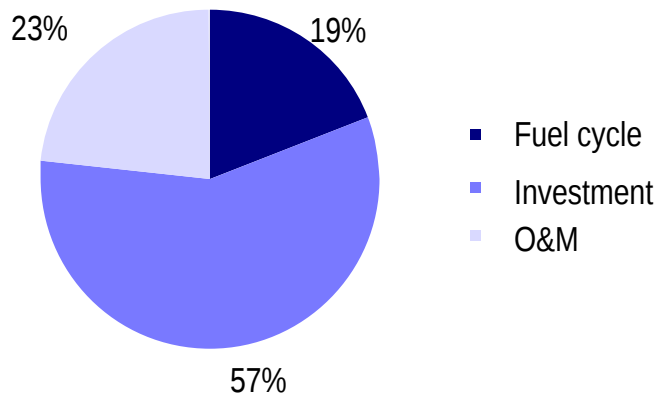
Source: UBS estimates

Comparison generation alternatives: 3) LRMC

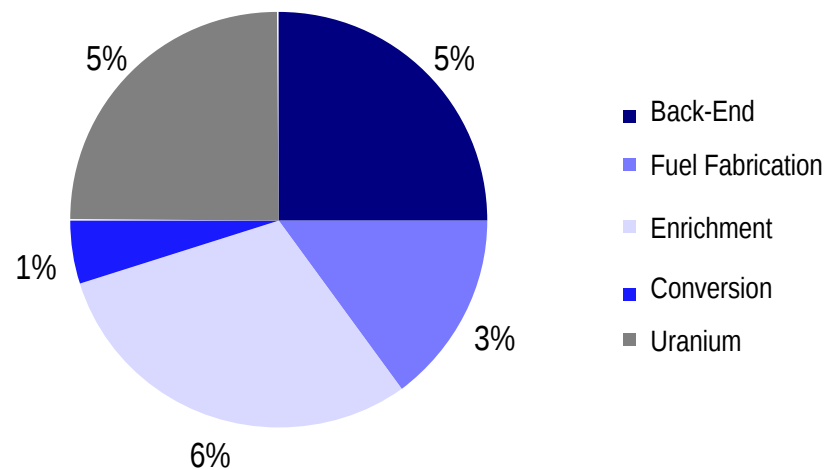


Source: UBS estimates

Impact of fuel costs on generation costs



Detailed split fuel costs



Source: OECD/NEA 2001

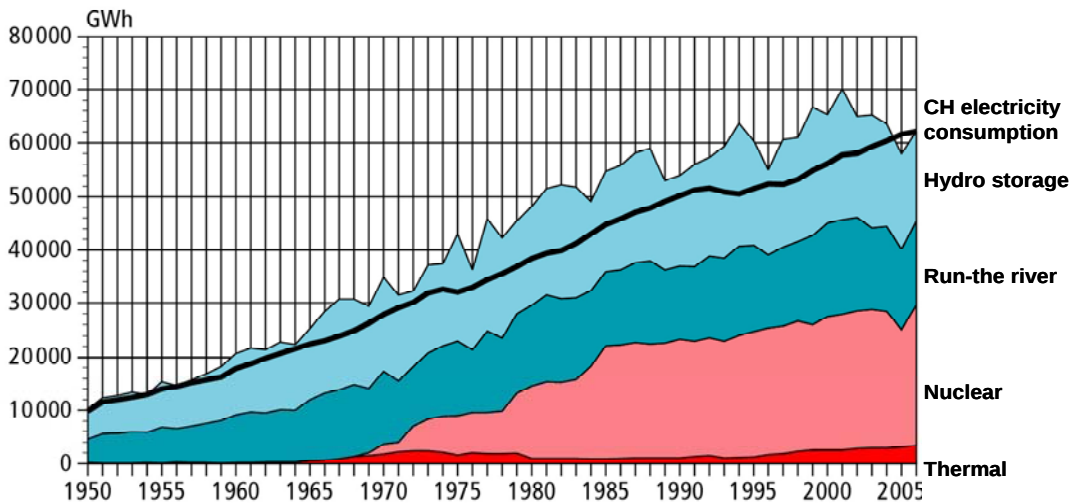
Kostenannahmen für ein neues Kernkraftwerk

	Einheit	Referenz	Bandbreite	Bemerkungen
Typ	-	EPR	-	Druckwasser
Leistung	MW _{el}	1600	-	Bei anderen Typen: 1000-1500
Gesamtwirtschaftlicher Zinssatz	%	2.5	-	
Lebens- und Abschreibungsdauer ¹⁾	a	60	-	
Volllaststunden	h/a	7600	7400-8000	
Investitionskosten	CHF ₂₀₀₇ /kW _{el}	3350	2750-3750	
Betriebskosten	CHF ₂₀₀₇ /kW _{el} /a	100	70-120	Exkl. Nachrüstung
Stilllegungskosten	CHF ₂₀₀₇ /kW _{el}	575	350-1100	
Nachrüstungskosten	CHF ₂₀₀₇ /kW _{el}	840	300-1300	
Brennstoffkosten (vollständiger Brennstoffzyklus)	CHF ₂₀₀₇ /MWh _{el}	14.5	13-16	Ohne Wiederaufbereitung
1) Bei der hier verwendeten gesamtwirtschaftlichen Betrachtung ist die Abschreibungsdauer mit der technischen Lebensdauer bzw. Laufzeit identisch				

Source: Prognos, 2008

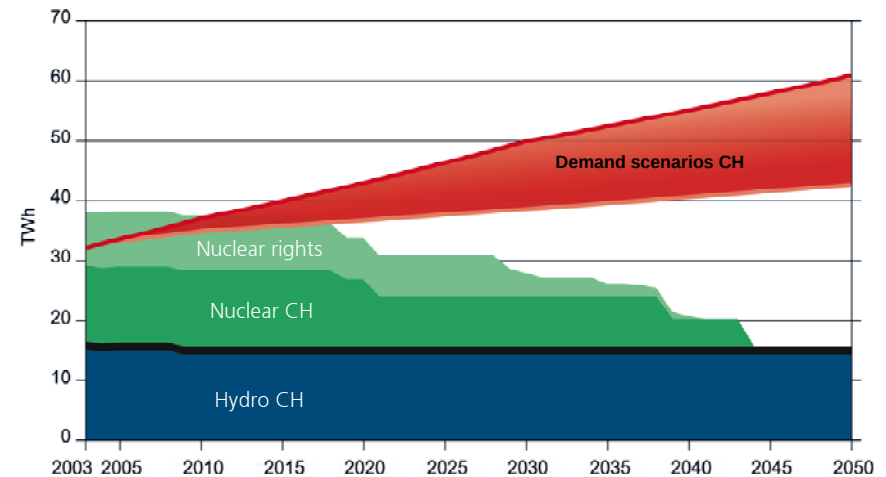
Electricity gap in Switzerland could come in 2012+ (depending on source of study)

Swiss capacities to decline as of 2018



Source: BFE

Projected supply gap as of 2012 (winter)



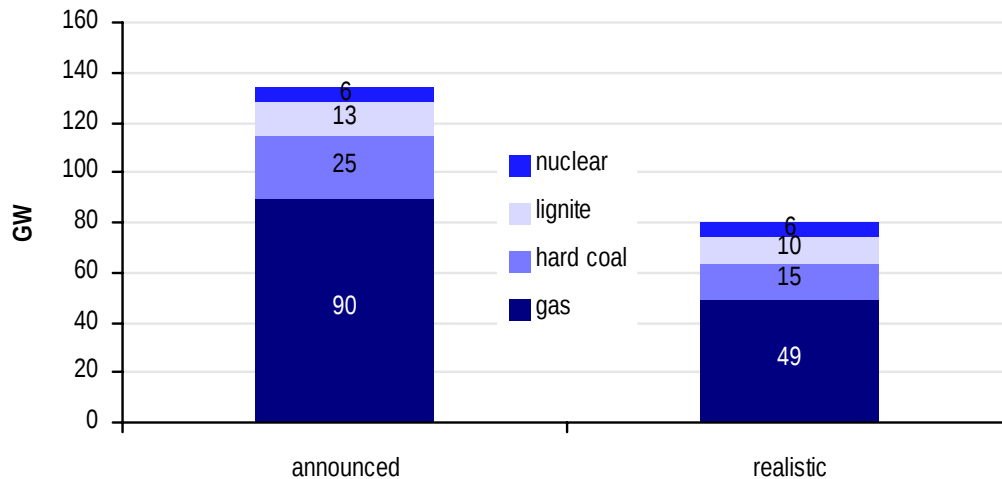
Source: Axpo Holding

Demand and supply imbalances in Switzerland:

- Old capacities to be substituted
- Long set-up and planning times for new nuclear plants (15-20 years)
- Limited potential to increase hydro power
- Increasing EU antitrust efforts
- CCGT (gas) in Switzerland still unattractive due to CO₂ costs
- Electricity demand to grow further (c0.5-2% p.a.)

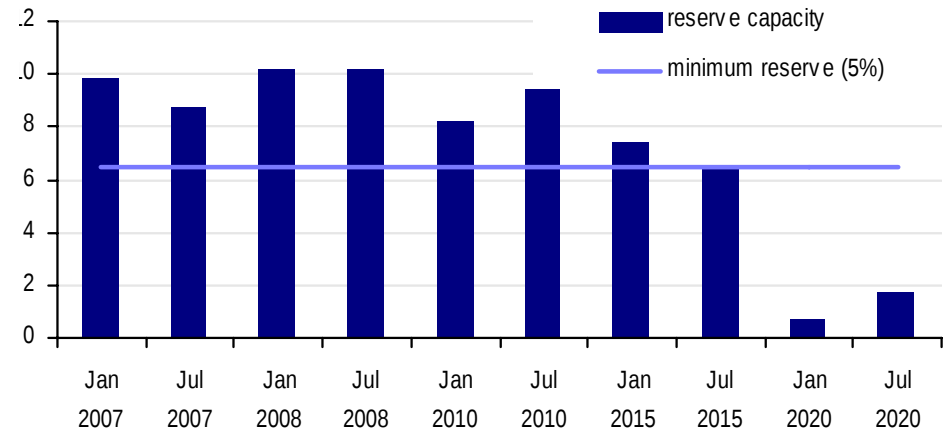
‘NIMBY’ phenomenon & (political) constraints: Shortage projected

Half of projects won't be realized



Source: RWE, BCG 2006

Sharply declining reserve capacities in Europe predicted



Source: UCTE (Jan. 2007), basis third Wed 11am, capacity as of Jan 2007: GWh123

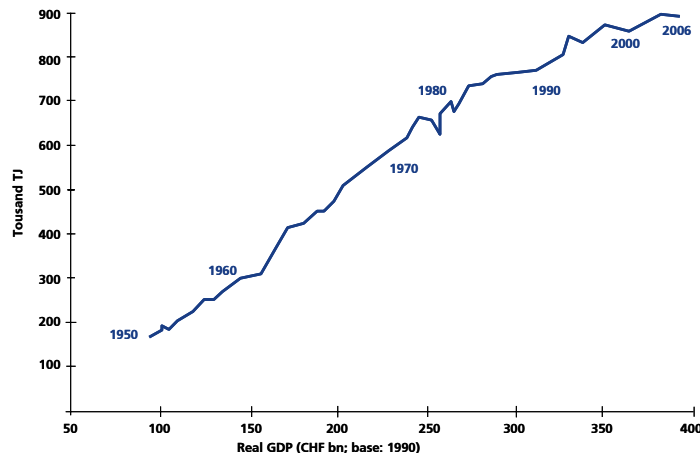
Constraints & political risks for new capacities

- Emissions Trading: reduction of NAP (phase II, 2008-12), full auctioning post 2012?
- Unbundling discussion: Network and generation
- Increasing EU antitrust efforts
- Future of nuclear plants (Germany, Mühleberg)
- New markets in Eastern Europe: uncertainty ref. liberalization, privatization and facilitations for new entrants
- c50% higher investment cost (component prices, lead-times, shortage of engineers, raw materials, Asia)
- NIMBY – ‘Not In My Backyard’ – remains key bottleneck

Swiss electricity demand highly correlated to GDP...

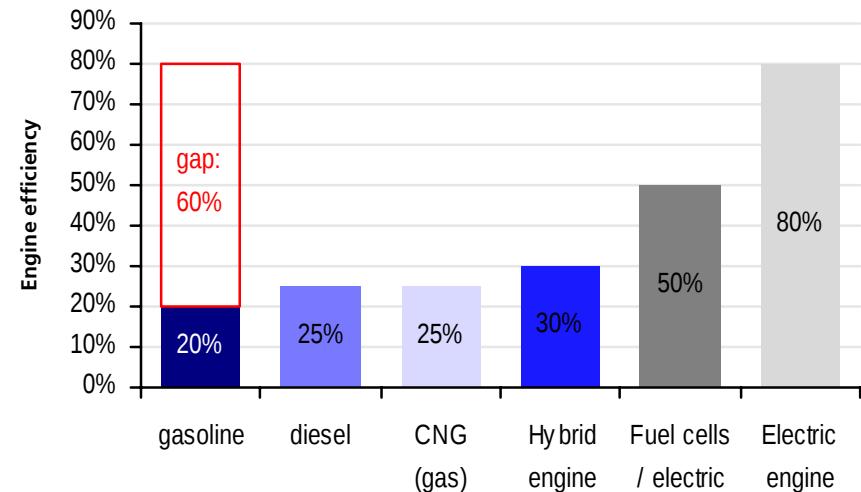
Climate with short-term volatility, power substitutes fossils

Electricity consumption vs. real GDP (base year 1990)



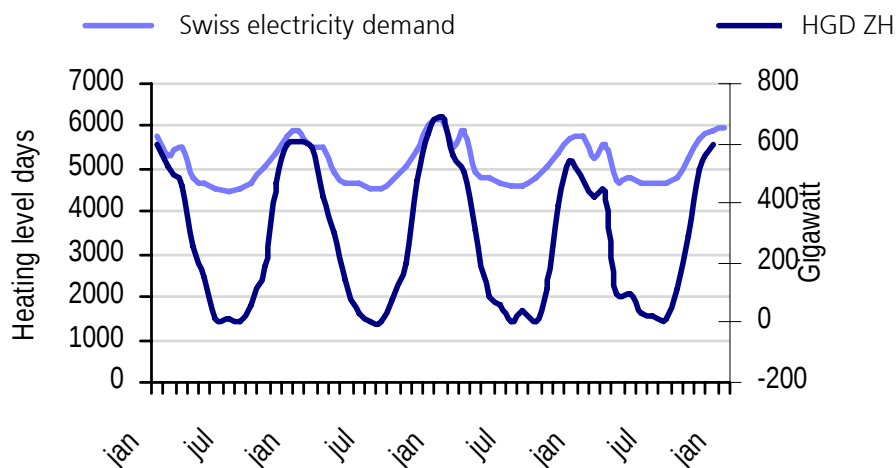
Source: Statistique globale Suisse de l'énergie 2005

Electricity increasingly substitutes other energies



Source: IEA, UBS

Strong correlation between heating days and demand



Source: Meteosuisse, BFE, UBS estimates

- General trend: increasing demand of c0.5-2.0% p.a.
- Share of electricity in energy demand split further increasing (23.4% in 2006) at expense of fossils
- 2006/07: mild winter triggering c5% lower demand; trend reversed 07/08 with c20% more heating days
- Electricity increasingly substitutes fossil energy (transportation, heat pumps)

SECTION 4

Summary & Outlook

I want my money back... (London 2008)



...but what if there might be nothing left...



Scale and routing should trigger increased competitiveness and cost reductions

- Construction costs: standardized design, more efficient generating technologies
- Financing costs: Streamlined licence procedures, new approaches to lower investors risks
- Operating costs: capacity factors have increased
- Waste and decommissioning costs

Source: WNA

UBS rating methodology

KKL Leibstadt (May 06, 2008)

	Investment-grade									
UBS	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-
S&P	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-
Moody's	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3
Fitch	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-

Higher credit quality

Lower credit quality

Source: UBS Investment Research, Fitch, Moody's, S&P

UBS rating:

Through the combination of our qualitative and quantitative assessment we arrive at the UBS rating. We note that a company might have a stronger or weaker profile when compared to the justified rating, which could be driven by near-term outlook or event risk uncertainty.

Quantitative factors: income statements, balance sheets, and cash flow statements

- Financial ratios over time (including multi-year averages) and current period ratios
- Indicators of a company's ability to service its obligations.
- Group and each of its segments analysed separately.
- Comparison with sector peers, highlighting particular company strengths and weaknesses.
- Earnings trends, stability and quality of profitability measures:
 - Solvency ratios
 - Capitalisation
 - Interest coverage
- Debt coverage based on income statements and cash flow statements. funds from operations, cash flow from operations as well as free operating cash flow (incl. capex) and free cash flow (incl. capex and dividend payments) are our main metrics

Financial analysis: Further important criteria

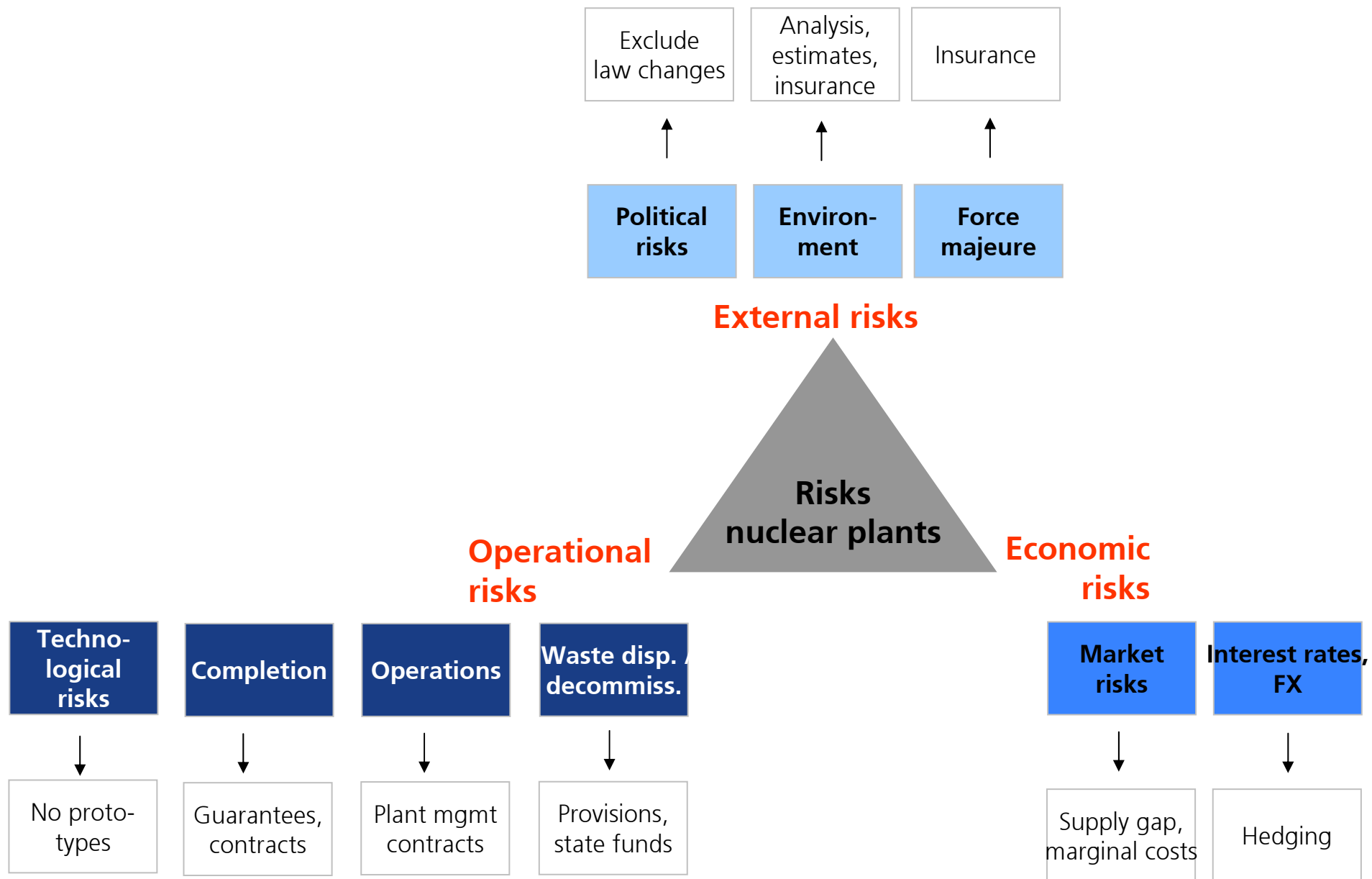
- Material differences in reporting standards (if disclosed and/or applic.)
- Presence of exceptional items
- Excess liquidity and intended use
- Debt structure, maturities and availability of credit limits
- Additional on- and off-balance sheet liabilities not included in debt (eg. operating leases, pension liabilities, other financial commitments and contingencies)
- Particular terms and conditions of debt instruments
- The importance and contribution of each financial ratio can vary depending on industry characteristics. In order to ensure comparability and consistency across the coverage universe, the weighting and classification of ratios can change over time.

Qualitative analysis - past and expected strengths and risks

Key factors:

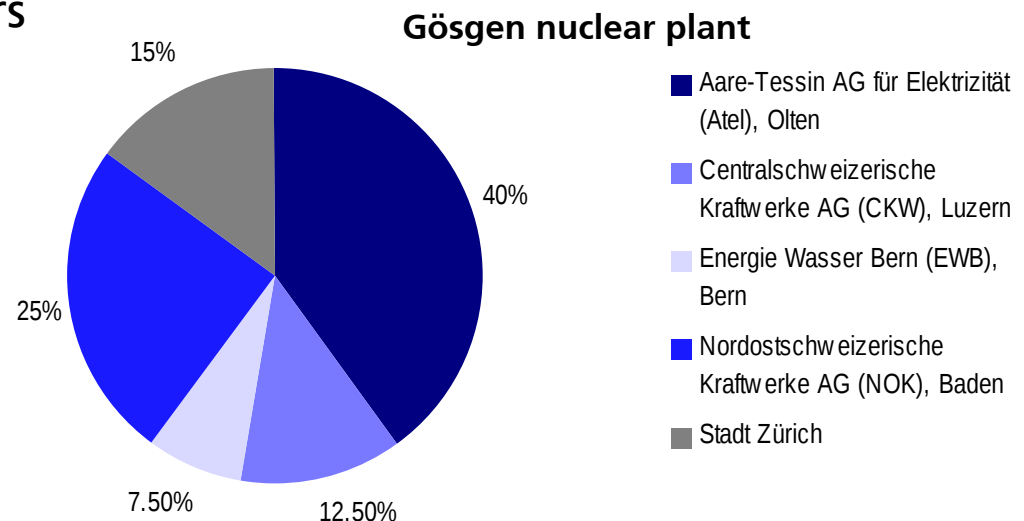
- Management quality, integrity and track record
- Corporate governance
- Company and financial strategy
- Diversification in terms of products, end-markets, clients and geography
- Business risks in the form of seasonality and cyclicalities
- Competitive positioning and barriers to entry
- Bargaining power of suppliers and buyers
- Industry trends, threats of substitute products and services
- Regulatory environment, litigation and environmental risks
- The weighting, and pot. further internal / external criteria depends.
- We consider the current business cycle and as such the resulting UBS rating should exhibit only limited volatility due to economic cycles.

Risks associated to investments into nuclear power



Utilities: Specific considerations

- Swiss partner power plants with special-purpose nature
- Partner power plants (eg, KKL):
owners committed to take all electricity produced in proportion capital participation, covering proportionate share of annual costs (including interest costs, provisions for debt repayment and amortization charges).
- Predefined customers (i.e. shareholders)
- Particular financial characteristics: more leveraged structures
- Heightened dependence on shareholders
- Importance of generation assets:
 - integration in owner's operations
 - financial, managerial and operational support

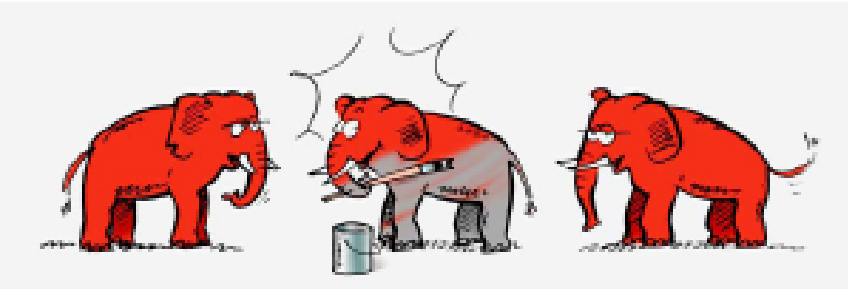
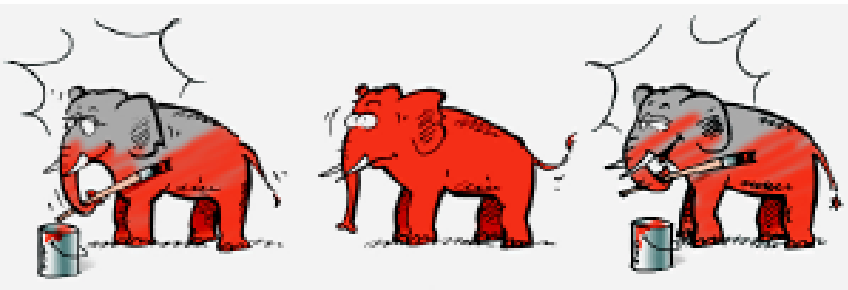
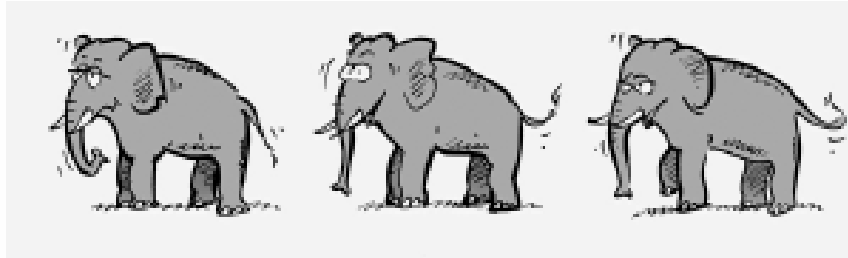


Risk analysis—summary

Potential equity risks	Risks mitigated through contract	Risks requiring government mitigation/action	Risks model dependent
◆ Fuel costs ◆ Decommissioning (cost) ◆ Availability/reliability ◆ Other operating costs ◆ Residual construction/commissioning	◆ Construction/commissioning	◆ Licensing/safety ◆ Planning ◆ Waste (funded over life by operator) ◆ Decommissioning (standards)	◆ Power price risk

- Investors generally willing to take operating risks
 - assume experienced nuclear operator
 - Risk sharing from partner concept
- Clear policy required to address pre-construction and back-end risks
 - investors will require confidence in timing on new nuclear build
 - although financial impact (NPV) of back-end risks limited
- Investors willingness to take power price risk will depend on the financial model for new nuclear

Differentiation is key, always one step ahead –
or other perspective: follow the mass – no prototype, no risks



... in almost any
industry

source: SIG

Thank you

SECTION 6

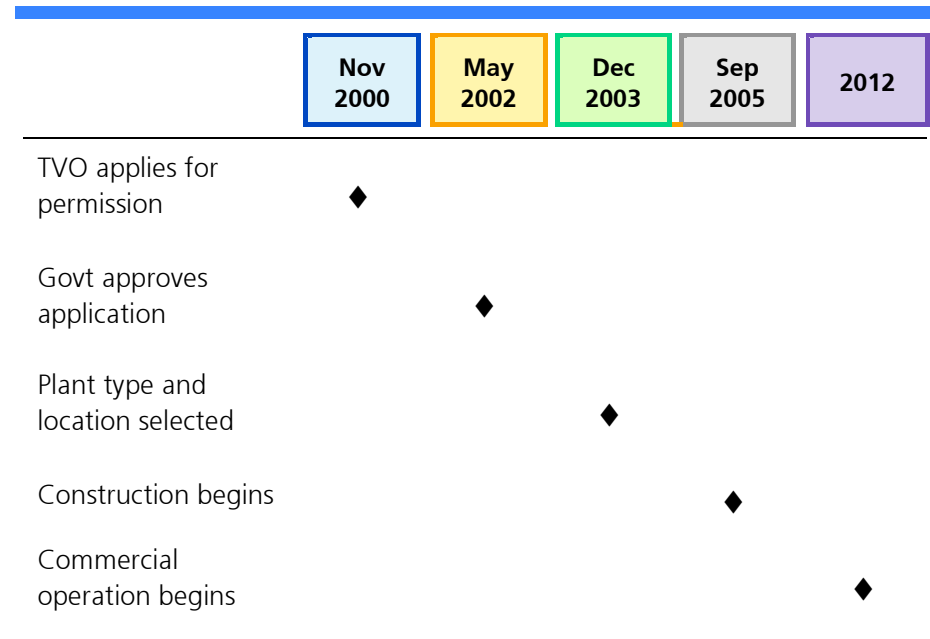
Benchmark cases and internal studies



Finland—Olkiluoto 3 (OL3)

- ◆ Finland currently imports more than 70 percent of its energy supply and electricity consumption in the country is increasing steadily
 - in order to become more self-sufficient, the Finnish parliament gave TVO (Teollisuuden Voima Oy) permission in 2000 to construct a 5th nuclear reactor
- ◆ The electricity company selected French-German consortium Framatome ANP as the preferred bidder for the turnkey construction and delivery of a 1600MW EPR, the first reactor of its generation ever to be built
 - reported to be a fixed price contract with the consortium carrying responsibility for the plant equipment and buildings, licensability, performance and time schedule
- ◆ In deciding upon a location, both existing nuclear plant sites in Finland—Olkiluoto and Loviisa—were considered
 - Olkiluoto was finally selected with the aim of utilising as much of the existing infrastructure as possible
- ◆ The €3.2 billion nuclear power plant represents the largest ongoing investment in Europe and the biggest ever industrial investment in Finland
- ◆ Over 60 Finnish companies will participate in the OL3 project either:
 - directly as shareholders of TVO by buying B series shares or
 - through TVO's majority shareholder Pohjolan Voima Oy
- ◆ Energy company Fortum has acquired a 25 percent stake in the project and is expected to invest €185 million over the next 5 years

Timeline of OL3



Industry snapshot

No. of reactors:	4
Total capacity:	2.7GWe
Percentage of total electricity supplied:	27%
Operator(s):	TVO, Fortum
Technology currently employed:	BWR, PWR (VVER)
Expected cost of EPR:	€3.2bn ¹

Note:

- 1 Cost estimate is all-inclusive of plant delivery, construction work, ancillary services and project management



Finland—Olkiluoto 3 (OL3)

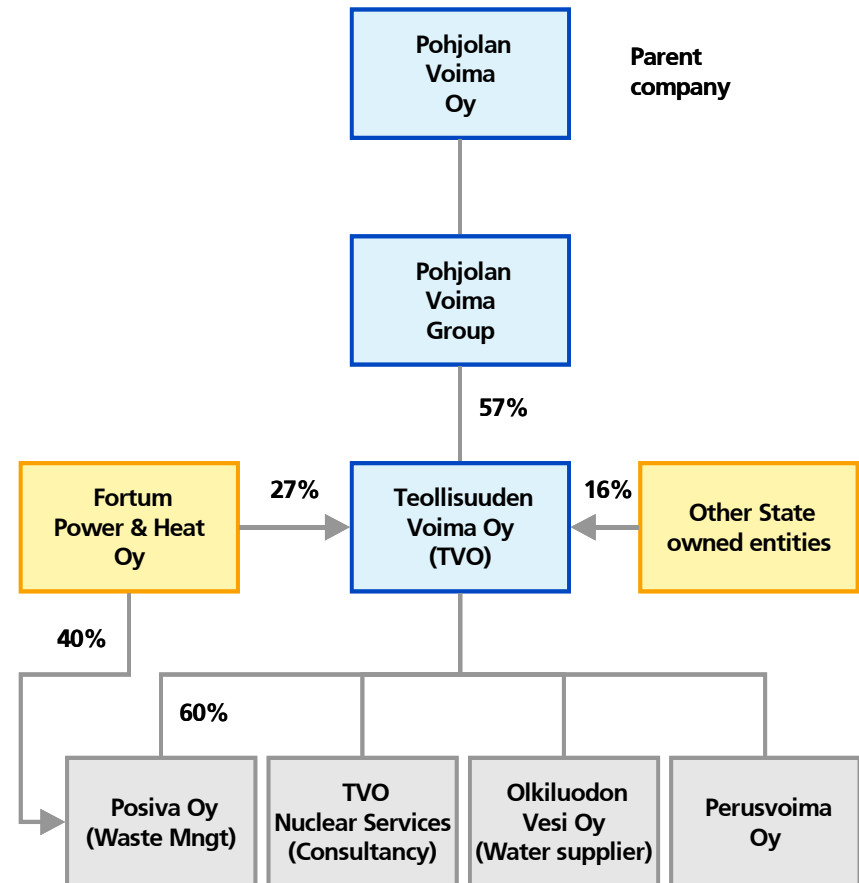
Project financing

- ♦ The OL3 project will be partly financed by TVO's shareholders through a 20 percent equity injection and a 5 percent shareholders' loan
- ♦ The remaining 75 percent will be raised in the debt capital markets. To date, TVO has obtained the following credit facilities to contribute towards the financing
 - €1.95 billion syndicated revolving credit (5/7 year facilities)
 - €587 million export credit (12 year)

TVO overview

- ♦ TVO is a public-private partnership company, which is 43 percent government-owned and 57 percent privately owned (Pohjolan Voima Oy)
 - the private owners are mostly domestic industrial companies with a high demand for base-load power; hence low costs are critical for them
 - the shareholders receive electricity at cost in proportion to their ownership and then sell any unwanted portion into the Nordic market. Therefore, the output is effectively contracted to each owner over the life of the plant

TVO–Group structure



Case study II: France—Flamanville 3

Key facts

- ◆ France is the world's largest net electricity exporter with 59 reactors operated by fully state owned company Electricite de France (EDF)
- ◆ Due to the anticipated increase in electricity demand, in June 2004 the French government announced the construction of a new first-of-a-kind EPR nuclear power plant
- ◆ Flamanville, an existing nuclear site, was selected as the preferred location due to its position by the seaside, availability of space, suitable infrastructure and strong local political support
- ◆ EDF is implementing a similar stakeholder structure to that used in Finland except that any energy users/suppliers interested in purchasing a stake in Flamanville 3 are required to form a consortium in order to facilitate the participation of SMEs
 - utilities in Belgium, Spain and Italy have all expressed interest
- ◆ Italian electricity company Enel will invest in up to 12.5 percent of Flamanville 3 at a cost of approximately €375 million and will also contribute towards the financing of back-end liabilities
 - in return Enel will receive 12.5 percent of the electricity produced
- ◆ EDF intends to build a series of EPRs to replace its nuclear fleet, beginning in 2020
 - there is some discussion that long-term power purchase contracts will be tendered in units of circa 20TWh and will last about 20 years

Timeline of Flamanville 3 project

	2004	2006	2007	2012
Announcement of Flamanville 3 project	◆			
Feasibility study	◆	◆		
License issued and construction begins			◆	
Commercial operation				◆

Industry snapshot

No. of reactors:	59
Total capacity:	63.4GWe
Percentage of total electricity supplied:	Over 80%
Operator(s):	EDF
Technology currently employed:	PWR
Expected cost of new EPR:	€2.8bn (2004 value) (€43 per MWh) ¹

Note:

- 1 The "complete cost" is defined as the net present value of projected charges expressed in constant euros per MWh, including construction costs, interest during construction, decommissioning, O&M, taxes and fuel costs including charges for the back-end of the fuel cycle

Required Disclosures

■ Statement of Risk

Investment risks to the favourable positioning of long Swiss generators include falling electricity wholesale prices (driven by lower fuel and CO2 prices), leading to lower marginal generation costs. Moreover, we see certain indications that companies have overpaid for acquisitions on the distribution level as well as uncertainty linked to the upcoming liberalization of the Swiss electricity market (influence on transmission assets, regulation, and cross-border auctions). Company-specific risks may be linked to the lack of international diversification of generation and sales regions plus a lack of scale compared with competing European majors.

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UBS Investment Research: Global Equity Rating Allocations

UBS 12-Month Rating	Rating Category	Coverage ¹	IB Services ²
Buy	Buy	57%	38%
Neutral	Hold/Neutral	36%	35%
Sell	Sell	8%	29%
UBS Short-Term Rating	Rating Category	Coverage ³	IB Services ⁴
Buy	Buy	less than 1%	31%
Sell	Sell	less than 1%	38%

1:Percentage of companies under coverage globally within the 12-month rating category.

2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.

3:Percentage of companies under coverage globally within the Short-Term rating category.

4:Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

Source: UBS. Rating allocations are as of 30 June 2008.

UBS Investment Research: Global Equity Rating Definitions

UBS 12-Month Rating	Definition
Buy	FSR is > 6% above the MRA.
Neutral	FSR is between -6% and 6% of the MRA.
Sell	FSR is > 6% below the MRA.
UBS Short-Term Rating	Definition
Buy	Buy: Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.
Sell	Sell: Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.

Required disclosures (continued)

KEY DEFINITIONS

Forecast Stock Return (FSR) is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months.

Market Return Assumption (MRA) is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium).

Under Review (UR) Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation.

Short-Term Ratings reflect the expected near-term (up to three months) performance of the stock and do not reflect any change in the fundamental view or investment case.

EXCEPTIONS AND SPECIAL CASES

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Buy: Positive on factors such as structure, management, performance record, discount; Neutral: Neutral on factors such as structure, management, performance record, discount; Sell: Negative on factors such as structure, management, performance record, discount.

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Additional disclosures

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