Utilities Sector Sustainability Research Paper

Generating "Negawatts"
Energy Efficiency's Threats and Opportunities for European Utilities

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Money does not perform. People do.

DEXIA Asset Management

Generating "Negawatts"

Executive Summary

Energy efficiency benefits are widely acknowledged

A "negawatt" is a unit of energy saved. The cleanest, the most reliable and the cheapest energy is the energy you don't use. Energy efficiency is all about delivering sustainable growth that minimises economic and environmental and social costs. Energy efficiency benefits for society in general are widely acknowledged. But what does energy efficiency mean for the utilities sector? Is it only a threat (lower energy demand and potentially lower prices) or are there any business opportunities that utilities will be able to grasp?

Utilities could suffer from Energy Efficiency

The EU's 20% energy savings target underpins Europe's other two, more high-profile, objectives: emissions reductions and renewables expansion. With existing business models, there is no incentive for utilities to make customers reduce their energy demand. On the contrary, utilities are penalised by declining energy volumes – the current recession-driven demand destruction being clear evidence of such a trend. Even if the scale of achieved energy savings remains uncertain, energy efficiency could have a significant negative long-term structural impact on utilities, a point so far largely ignored by investors.

A New Paradigm: Energy Efficiency creates Business Opportunities

Utilities are slowly changing their business towards a model of selling less energy but more energy services. This is an ongoing process that will take time and that is not without difficulties, as utilities face strong disincentives in this process. However utilities can make energy efficiency a profit centre in response to commercial demand and energy efficiency policy requirements. Utilities need to position themselves on the growing energy efficiency market, which will, irrespective of their position, affect their traditional business. It would be in the best interests of utilities to do more than just generate and ship units of energy (at declining growth rates); they could benefit from offering energy services to their residential and industrial/institutional customers.

Energy services providers in the UK residential supply market

In liberalised energy supply residential markets, energy efficiency services provide offsetting and cross-selling opportunities for utilities. Such services are also a means of attracting new customers and securing their loyalty. Increasing the proportion of customers who buy both energy supply and energy services should increase profit and value per customer. Energy services for residential customers generate higher growth rates and higher margins than energy supply. **Centrica** and **Scottish & Southern Energy** are well positioned to benefit from these opportunities in the UK.

Energy services providers for large industrial, tertiary or public customers

Energy services companies sell the use of energy instead of just providing a commodity to institutional customers. The energy services business offers a relatively safe and resilient business profile.
In the absence of a clearly listed energy services pure player, the market is using past transaction multiples to value such activities. The two largest utility-affiliated energy services companies are GDF Suez Energy Services and Dalkia (currently a joint venture between Veolia Environnement and EDF). Those energy services divisions represent, respectively, 16% and 5% of **Veolia Environnement** and **GDF Suez'** total enterprise value. At a time when long-term energy costs are expected to rise and new European energy efficiency policies are reinforcing energy conservation, we believe that an energy services division constitutes a strong advantage in a utilities portfolio of activities.

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1. The Benefits of Energy Efficiency

What is Energy Efficiency?

Energy efficiency is about using fewer energy sources to obtain the same services. By definition, energy efficiency can be measured as the ratio between a service that is delivered and the energy it requires. For the same quality of service (lighting, heating, cooling, etc.) energy efficiency reduces the input energy required by the end-use application. In this research paper, energy efficiency relates to end-use energy efficiency rather than energy efficiency in the whole energy system (production, transportation and distribution). The key focus is on the *demand-side* of energy utilities activities, rather than the traditionally dominant *supply-side* view of the sector.

Energy efficiency is a "triple-win" solution

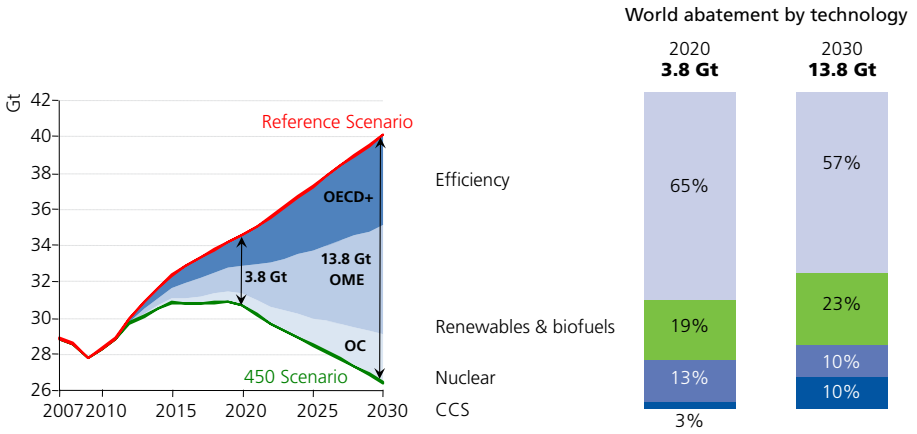
The cleanest, most reliable and cheapest energy is the energy you don't use. Energy efficiency is a "triple-win" solution to the "energy trilemma" of simultaneously (a) tackling climate change (and other environmental challenges), (b) ensuring security of supply and (c) providing affordable access to energy. Improving energy efficiency is increasingly becoming a priority for governments and for energy users (both households and businesses) as it is the most cost-effective way to tackle energy-related environmental, geopolitical, economic and social challenges.

1.1 Cleanest option – Environmental benefits

End-use energy efficiency is the largest and the cheapest climate change mitigation option

Energy efficiency provides a solution to environmental problems at local level (by reducing atmospheric pollutions, water use and wastes) and at global level (mitigating climate change). Beyond the 'decarbonisation' of power generation, improving end-use energy efficiency is both the largest and the cheapest option for fighting climate change.

Figure 1.: World energy-related CO_2 emission abatement



Source: International Energy Agency (January 2010)

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In its latest '450 scenario', the International Energy Agency (IEA) estimates that end-use energy efficiency measures represent 59% of the global energy-related CO_2 emissions abatement potential by 2020 (52% by 2030). End-use energy efficiency has by far the largest potential of CO_2 emissions abatement by 2020 and 2030 followed by renewables (18% by 2020), nuclear (13%), power plant efficiency (6%), CCS (carbon capture and storage) (3%) and biofuels (1%)[1]. Energy efficiency holds not only the largest but also the cheapest emissions reduction potential. Energy end-use efficiency has often negative marginal costs; it is almost always less expensive than developing new low-carbon energy supply alternatives (renewables, nuclear or coal with CCS).

1.2 Most reliable option – Security of supply

Energy efficiency resolves major energy supply/ demand imbalances and provides key energy security benefits

Energy consumption is highly correlated to demographic and economic growth. In a business-as-usual scenario, world electricity demand – mainly driven by emerging and developing countries[2] – would, according to the IEA, grow by 76% between 2007 and 2030. At the same time, however, the depletion of fossil energy sources and the willingness to decrease countries' energy dependency urge society to change the way in which energy is consumed. For both geological (below-the-ground) and geopolitical (above-the-ground) reasons, the investment case for energy efficiency is clear. Better energy efficiency changes consumption behaviour and strengthens the security of energy supply. It reduces the tens of billions of currencies channelled each year for oil and gas imports to unstable regions. In the electricity sector, it alleviates the pressure to build new plants and transmission lines. Saving a kilowatt-hour through energy efficiency improvements is easily one-third (or less) of the cost of any new source of electricity supply[3]. Energy efficiency is increasingly being viewed as the "first fuel" of choice.

1.3 Cheapest option – Economic and social benefits

Energy savings
=
cost savings for households and industries
+
job creations

Despite the current economic crisis and volatility in commodity prices, high energy prices are expected in the long run. In the power sector, Europe's need for new base load capacity over the next 5-10 years and a long-term positive outlook for oil, gas, coal and CO_2 prices (especially to make CCS economic), are putting upward pressure on electricity prices. The UK regulator, Ofgem, estimated that proposed energy investments could lead to a domestic energy bill increase of 14% to 60% by 2020[4].
In this context of higher energy costs, implementing energy efficiency provides economic and social benefits such as (a) improved affordability for households, (b) higher profitability for industries (especially in energy-intensive sectors) and (c) job creation.

- The issue of affordability for domestic consumers is already and will increasingly be, a significant political issue. It is worth noting that cumulated energy savings to consumers eventually pay back the investment costs of the energy efficiency measures.
- European industrial companies' energy costs are rising steadily. Competitive pressures are already leading energy-intensive industries to significantly enhance their energy efficiency. In France, for example, between 1973 and 2007, the energy intensity (energy consumption/GDP) of the industrial sector decreased most (64%) among the economic sectors[5].

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- Energy efficiency is also creating jobs that, most of the time, cannot be outsourced to emerging countries. For example, it is estimated that efficiency measures could create up to 3.5m jobs in the building sector in the EU and US alone. Smart-grid investments are expected to deliver up to 280,000 direct jobs as a result of technology deployment[6].

Energy efficiency is all about delivering sustainable growth that minimises the accompanying economic, environmental and social costs. Energy efficiency benefits for society in general are widely acknowledged. But what does energy efficiency mean for the utilities sector? Is it only a threat (lower energy demand and potentially lower prices) or are there any business opportunities that utilities will be able to grasp?

2. Utilities could suffer from Energy Efficiency

The traditional utilities business model runs counter to society's drive towards energy efficiency

The definition of a 'paradigm shift' is "*when the usual and accepted way of doing or thinking about something is changed*"[7]. The old energy paradigm is mostly focused on the supply side. The traditional business model of utilities and utility cashflow generation are based on the increase in energy supply (at the lowest cost) in response to the unlimited growth in energy sales. This model runs counter to society's drive towards energy efficiency. More and more energy efficiency policies in the EU could drastically transform the energy markets and adversely affect the traditional utilities. If regulatory and market changes are successful in achieving energy efficiency savings, this could be detrimental to utilities' profitability.

2.1 Energy efficiency policies set ambitious energy reduction targets

The role of the EU is primarily to set up a broad energy efficiency framework focused on labels, standards and targets. EU Member states then have to adopt and implement regulatory instruments to drive energy efficiency.

Energy efficiency labels/standards for buildings, appliances etc.

EU energy efficiency policies and standards have been developed, notably for buildings, various appliances and electric motors in industry. The 2005 Eco-design Directive kicked off the process, creating a set of EU-wide minimum performance standards and labelling for many energy-consuming appliances. The average washing machine in use today (5% of EU residential energy use) consumes about 12% more electricity than the most recent machines available. The same goes for fridge/freezers and many other appliances in EU homes[8].

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Figure 2.: Main European legislation on energy efficiency

Year	Directive/Regulation	Scope
1992	Directive on labelling of consumption of electrical appliances	Fridges, freezers, washing machines, etc. must indicate energy efficiency level.
1992	Directive on the efficiency of heaters fed with gas or liquids	Certification introduced, with the «CE» label for those reaching minimum standards.
2000	Climate Change programme	European states start discussing ways to reduce CO2 emissions, and energy savings are stressed as a promising route.
2002	Directive on the energy performance of buildings	Minimum of energy efficiency targets for old and new buildings imposed in all states.
2003	Directive on Emissions Trading Scheme	Emphasis placed on CO2 emissions reduction: incentives provided to improve the efficiency of power generation.
2005	Directive establishing a framework for the setting of eco-design requirements for energy-using products (or framework "eco-design Directive")	Objective: increase the energy efficiency of all products throughout their lifecycle (I.e., products that consume energy themselves - not windows, for instance). In principle, the Directive applies to all energy-using products except vehicles for transport.
2005	Green paper of the European Commission on energy efficiency	Prepared the 2007-13 action plan: 20% energy efficiency improvement target by 2020 proposed.
2006	Action plan on Energy Efficiency over 2007-13	Objective: reduce energy consumption by 20% by 2020.
2006	Directive on end-use efficiency and energy services	Objective: energy savings representing 9% of total final consumption by 2016 (vs the 2000-2005 average). All states required to draw up an Energy Efficiency Action Plan to reach the objective.
2007	European energy policy	The objective of 20% energy savings by 2020 reaffirmed and presented as one axis of energy policy, alongside security of supply, and renewables development: 20% savings must be obtained by 2020 (based on a standard project of energy consumption); 20% of energy must come from renewables; greenhouse gas emissions must be reduced by 20%. This 20/20/20 package was approved by the European Council on 12 December 2008 and by The European Parliament five days later.
2009	Extension of scope of the 2005 Ecodesign directive approved by the European Parliament	Increases the scope in order to cover other energy-using products that help reduce consumption indirectly (windows, construction products, shower heads, etc).

Source: Exane BNP Paribas

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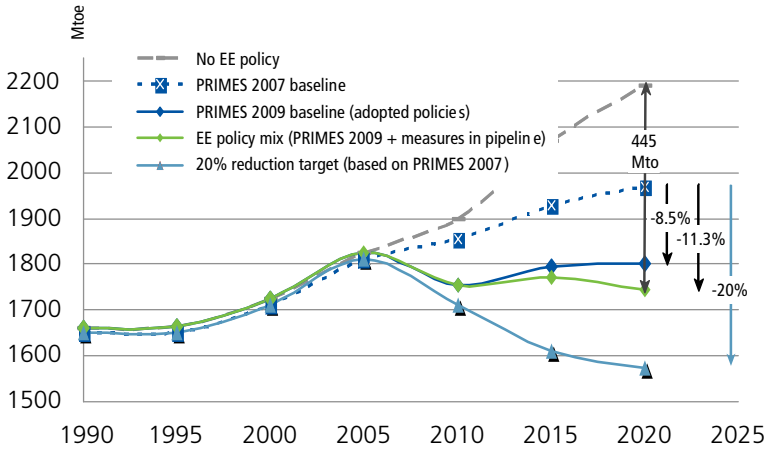
The April 2009 extension of the Eco-design Directive increases the scope of the energy-using products covered and allows a faster adoption of the mandatory minimum efficiency requirements. The November 2009 revised Energy Performance of Buildings Directive (EPBD) compromise – which aims to have all buildings erected after 2020 to have been constructed in accordance with "*high energy-saving standards*" – will have to be powered, to a "*large extent*", by renewable energy.

The EU has adopted two non-binding energy efficiency targets...

One of the (non-binding) objectives of the EU's 2006 End-Use Efficiency and Energy Services Directive is energy savings of 9% of the total final consumption by 2016 (vs the 2000-2005 average). National Energy Efficiency Action Plans have been prepared by the Member States, each presenting the national strategy adopted by each Member State seeking to achieve its energy savings objective. The second target was integrated as one of the three pillars of the European energy and climate policy package presented in March 2007 and finally agreed in December 2008. It won't be easy to meet this target, which requires primary energy consumption to be 20% lower than the baseline projection by 2020 (without any energy efficiency policies being implemented). In November 2008, the EC argued that the current set of measures, if properly implemented by Member States, would only achieve energy efficiency savings of 13%, short of the 20% target[9]. More recent estimates expect savings of only 11%[10].

Figure 3.: EU target: 20% primary energy savings by 2020



Source: European Commission (November 2009)

... but the 20% reduction target by 2020 could become binding

Unlike the EU's mandatory GHG reduction target (20% by 2020 from 1990 levels) and renewable energy target (20% of primary energy consumption by 2020), the third "*20% energy efficiency target*" (probably the least-known and least-mediatised target so far) is only voluntary for now. "*Energy-efficiency measures have long been considered as fashionable items with no real teeth.*"[11] Nonetheless, the EU wants Member States to increase and speed up their efforts.
Energy efficiency is getting increasing attention from governments as it is critical to the achievement of the other two targets. Members of the European Parliament have asked that the 20% target be made a binding commitment. According to a draft of the EU's revised Energy Efficiency Action Plan, the EC is also working to impose a binding target[12].

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2.2 Traditional utilities' business model hit by lower energy demand

Momentum is building for the imposition of binding energy efficiency targets. The global recession has hit energy demand. However, as recovery beckons, utilities are likely to suffer the effects of energy efficiency even longer.

In recession, energy demand destruction is no surprise

The 2009e European electricity consumption trend is between -3% to -10% (compared to 2008), depending on country. As industrial production dropped, there were significant falls in electricity demand in most European countries in 2009: in September, Italian power demand fell 7% year-on-year[13]; German power demand in September was down 6% YoY[14]. In October, demand destruction in gas across Europe was -11%[15]. According to some of the most optimistic estimates, demand destruction in 2009 should reach 3% for electricity and 8-9% for natural gas (in volume terms)[16].
Forecasts vary, as, while Europe should, in theory, recover its 2008 electricity consumption levels in 2011 at the earliest[17], it could, in reality, take longer (up to 2015)[18]. The recovery in gas demand, on the other hand, should not reach its 2008 levels before 2014 (CERA consultancy estimates) or 2015 (IEA estimates)[19].

Lower demand, however, is not only cyclical but has structural energy efficiency effects

Is demand destruction only cyclical or is it a structural trend? Should recession-driven energy demand falls reverse with a broad economic recovery? Power consumption is largely expected to resume its steady upward trend. But binding energy efficiency targets could, going forward, delay and slow energy demand growth. Electricity demand growth should moderate considerably from previous trends.
At its latest Capital Market Day, E.ON estimated that global recession had "stolen" 3-4 years of demand and "*increasing efficiency targets* [would] *dampen demand growth*". In the UK, National Grid is now forecasting an average annual decline in gas demand of around 0.25% over the next 10 years.
This lower demand is an effect of the recession and of efficiency measures being driven by higher consumer fuel prices[20]. Energy efficiency measures could reduce growth in European power consumption by a compound annual growth rate (CAGR) of around 0.6% between now and 2020[21].
According to some other estimates from Cambridge Energy Research Associates, "*if the EU member states pursue both the renewable energy target and the energy efficiency target in a mandatory fashion*, […] *then total natural gas consumption across the EU could drop 16% by 2020 and 35% by 2030 over 2008 levels.* […] *Electricity consumption would likely remain flat. That means overall energy* […] *would sustainably decline*"[22].

Energy utilities adversely affected by lower energy demand and prices

Under the traditional business model of unregulated energy utilities (gas upstream, electricity generation and supply), the achievement of large and sustained energy efficiency savings conflicts with utilities' profitability. Companies have the incentive to increase energy volume sales at the highest price. Electricity generation represents the main source of value for European utilities with 60-65% of their Enterprise Value (EV).

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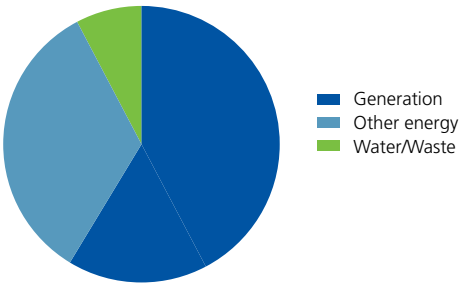
Figure 4.: European utilities sector enterprise value (EV) by asset type



Source: JPMorgan

Most of the sector's market capitalisation comprises utilities that are exposed to wholesale power prices. This being the case, energy efficiency represents a significant threat. With energy efficiency "*we are on the verge of a fundamental shift in perceptions of the valuation of the power generation segment*"[23]. Overcapacity in the electricity markets will increase further with energy savings and depress power generation margins (spreads). The impact of energy efficiency policies could delay power market tightening by two more years, with excess capacity due to remain high until 2013-2015, despite economic recovery in 2010[24]. The electricity supply crunch that was expected by the end of the decade will not happen. Reserve margins will not show any tightening before 2015, thus keeping power prices low.
In France, EDF estimates that energy efficiency targets could be demanding given the directions taken by the government under the Environment Round Table "*Grenelle de l'Environnement*". That could have an "*adverse financial effect on the Group*"[25]. In the UK, Centrica considers there is potential demand risk "*associated with legislation aimed at reducing customer energy consumption that can challenge utilities' ability to help customers meet such reductions whilst remaining profitable*"[26].
Lower energy demand can threaten the profitability of downstream energy supply businesses.
The traditional business model of utilities companies faces significant risks. On the other hand, other sectors should benefit from energy efficiency. According to a draft EU report, if the proposal for a binding energy efficiency target is adopted, and more stringent eco-design standards for buildings are implemented, it would channel billions in EU funds towards property developers while cutting business for traditional energy suppliers by about 11%[27].

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Three potential limits:

In this black-sky scenario for the traditional utilities business model, we need to acknowledge three potential limits to the magnitude and the effects of energy efficiency: (a) lack of effectiveness in policy implementation; (b) energy efficiency gains offset by additional consumption; and (c) demand-side efforts insufficient to offset supply-side replacement needs:

1/ Lack of effectiveness

- First, EU energy-efficiency targets, being extremely ambitious, might not be achieved in full because of the multiple barriers (financial, institutional, behavioural, etc.) present;

2/ Additional consumption sources

- Second, energy efficiency gains in some domains could be offset by new sources of energy demand in others. While individual appliances are more efficient, their multiplication (e.g., the increasing number of domestic electronic appliances) could more than compensate the individual savings. Additional electricity consumption could also be expected if electric cars are rolled out in numbers. Although, in the near term, the contribution of electric vehicles to German power consumption is expected to be small, in the long run, i.e., by 2020, it could be in the 3-7% range[28]. However, most of the related demand (battery recharging) is likely to occur overnight, during off-peak hours. While gas demand will fall in the residential and industrial sectors (with greater energy efficiency), the power generation sector should sustain gas demand expansion as more generation capacities switch over to gas from coal and oil due to the carbon price incentive[29];

3/ Supply-side replacement needs

- Third, even if energy savings are achieved, declines on the supply-side should not be forgotten. Power plants have a limited life span and replacement plant requirements have a significant impact on the equilibrium of energy markets. A significant effort on the demand side might not be sufficient to completely compensate the expected retirement of existing power plants.

The EU's 20% energy savings target underpins Europe's other two, more high profile, energy and climate objectives of emissions reductions and renewables expansion. With existing business models, utilities have no incentive to make customers reduce their energy demand. On the contrary, utilities are penalised by declining energy volumes. The current recession-driven demand destruction is clear evidence of such a trend. Even if the scale of achieved energy savings remains uncertain, energy efficiency could have a significant negative long-term structural impact on utilities – an impact which, so far, has been largely ignored by investors.

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3. A New Paradigm: Energy Efficiency creates Business Opportunities

Utilities can make energy efficiency a profit centre

While energy efficiency is profitable for society in general, it is unprofitable for energy providers. Without an adequate business and policy response to the paradigm shift implied by energy efficiency, utilities are likely to suffer from a sustained decline in energy consumption. However, with adequate market and regulatory incentives, electric and gas utilities can become more than just commodity providers and make energy efficiency a profit centre.

3.1 Regulatory and market incentives required to shape business opportunities

Although commercial demand for energy efficiency is the main driver, enabling policy options need to be developed

There is an evident conflict of interest between traditional utilities seeking to increase megawatt volumes sold and the efforts of governments and customers to achieve energy efficiency.
Both the current market structure and the regulatory framework need to evolve. Commercial demand for energy savings is the main driver of energy efficiency services. However, policy options need to be developed to overcome several barriers.

"Negawatts" are much more complex to deliver than Megawatts, as several barriers need to be overcome

Energy markets face multiple obstacles in their attempt to fill the gap between the technical energy savings potential and its full deployment. Financing is often cited as the most frequent reason[30].
Energy efficiency will only be pursued if it is economical both for customers and energy providers.

- **Information and financial barriers for customers:** energy customers are insufficiently aware of the saving opportunity. Even when the information is known and, despite the overall long-term cost-saving potential, the price of energy is too low in most EU countries (especially with regulated tariffs that do not reflect supply cost) for individuals to justify the initial cost of energy efficiency measures. This is especially true for residential and small commercial energy users, less for larger customers.
- **Financial and institutional barriers for utilities:** the energy companies are traditionally biased towards large-scale generation projects, while energy efficiency is about small-scale systems at user sites. Money flows to where there is least resistance, to Megawatts rather than to Negawatts[31] with higher transaction costs (plethora of small projects to be promoted by a large number of actors). Veolia Environnement argued that large institutional investors are focused on large projects while the "energy revolution" needed requires the aggregation of small projects[32].
  There is a Principal/Agent problem with split incentives. It can be difficult to align costs and benefits. In brief, "Negawatts" are much more complex to deliver and finance than Megawatts[33].

Generating "Negawatts"

Megawatts	«Negawatts»
1-2 stakeholders (equipment supplier and electric utility)	Multiple stakeholders: equipment supplier, electric utility, consumer, market intermediaries like Energy Services Companies (ESCOs)
One decision-maker (generally the utility)	Multiple decision-makers (the utility, consumers, etc.)
Straightforward asset-based deal	Savings-based deal, hence requires pre-assessment/audits, measurement and verification, etc.
Mature market (with tested technologies, quality standards, etc. already in place for several decades)	Evolving market (standards may not exist, e.g., CFLs, LEDs, product may not be available)

Source: World Bank

Appropriate policy and market-based incentives are essential to address current barriers and achieve energy efficiency potential

Appropriate policy and market-based incentives are essential to address current barriers and achieve energy efficiency potential. Energy efficiency rather than the energy volumes supplied[34] have to be rewarded. In Europe, the utilities sector has traditionally been state-owned and run under monopoly regimes. A process of regulatory reform during the 1990s has moved towards more liberalisation. Other than by "re-regulating" the utilities sector (as is the case in some US states, that have begun experimenting with "decoupling" utility revenue from electricity sales), the further liberalisation of the EU energy markets needs to find the right balance between "carrot and stick" in its attempts to design energy efficiency regulations. Stricter requirements and compulsory changes need to be complemented with the development of a "market" for energy efficiency.

Apart from the critical European energy efficiency standards (on appliances, buildings etc.) and the overall EU targets previously mentioned, there is a portfolio of well-spread or still uncommon energy efficiency tools included in national energy efficiency policy packages that have a critical impact on energy utilities:

Utilities with distribution networks and supply activities will benefit from regulations driving investments in smart meters that can help customers use 6 to 15% less energy

- **Regulations that favour smart grids, smart meters with dynamic pricing:** A smart grid is a network that integrates the generation/sourcing, transmission, distribution and consumption of energy using modern information technology. In April 2009, an EU directive was adopted with the aim of equipping 80% of consumers with Smart Metering systems by 2020.
  A number of EU Member States are already moving ahead with mandated smart meter rollouts. Regulatory models give distributors incentives to invest in such new distribution technologies with capital recovery through distribution tariffs. International studies conducted in a number of countries suggest that smart meters can help customers consume 6 to 15% less energy[35].
  Customers respond to dynamic pricing, and this has a significant impact on peak demand.
  The most widespread implementation is in Italy, which has mandated a nationwide programme. Italian distributors that invest in smart-grid projects, for example, receive a rate of return, for the first 12 months of the investment's life, that is 2% higher than the normal regulated rate of return on investments[36]. Other EU Member States are in various stages of developing their policy approach. The UK Government Low Carbon Transition Plan has targeted over £3.2bn of investment in domestic energy efficiency, the installation of smart meters in every home by 2020 and a smart-grid policy road map due out in 2010[37]. – *Utilities with regulated distribution networks and liberalised supply activities will benefit from regulations driving investments in smart grid and smart meters*;

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Regulations drive the positive long-term profile of providing micro-generation or co-generation solutions

- **Regulations that promote Micro-generation and Co-generation:** In the future, more and more power will probably be generated by local sources (solar, wind, biomass). Power is usually generated at a central location and transported to end-users. Conventional centralised methods result in only 25%-30% of the original fuel energy reaching the point of use. Micro-Combined Heat and Power (m-CHP) systems, that use natural gas, achieve an 80% thermal efficiency because the m-CHP system captures and uses the heat produced, and eliminates distribution and transmission losses[38]. Utilities providing such products/services would benefit not only from policy frameworks that encourage decentralised energy production (with feed-in-tariffs for example) but also from the imposition of mandatory targets for the production of electricity from renewables or co-generation. The UK Government announced plans where non-renewable residential micro-CHP technologies could be eligible for feed-in-tariffs[39]. There is a European CHP directive on the promotion of high-efficiency cogeneration. However, the directive does not set targets. There remain substantial differences in CHP levels across the EU. Countries with high market penetration of CHP include Denmark and the Netherlands[40]. – *Energy utilities providing micro-generation solutions to their end-customers or that are involved in the management of CHP operations also benefit from such regulations*;

By offering energy performance contracting to large customers, utilities could profit from energy savings

- **Regulations that promote the energy services model:** The 2006 Energy Services Directive is supposed to create the necessary conditions for the development and promotion of a market for energy services and the delivery of energy efficiency to end-users. By offering (through their energy services division) energy performance contracting to large industrial customers or municipalities, utilities could turn a profit through energy savings. In France, the initiative sparked by the "*Grenelle de l'Environnement*" draws on such energy performance contracts. Based on diagnostic analyses and engineering recommendations, this agreement defines actions that can be taken to improve energy efficiency, with guaranteed results over time. The measurement of energy savings has to be codified and standardised. A dynamic market for energy services has not yet fully developed, but further regulatory incentives should be created for utilities to invest in energy services. – *Energy utilities with significant energy services division should benefit from such regulatory and market incentives*.

White certificates:
an innovative and cost-effective market-based policy instrument

White certificate schemes are a new policy tool through which energy suppliers (or grid operators) are expected to foster investments in energy efficiency in a cost-effective way, and which obliges energy suppliers in competition (or regulated distributors) to promote energy consumption reductions with investments in various areas such as insulation, energy efficient heating systems and electrical appliances. First implemented in the UK in 2002 as a simple obligation on energy suppliers without trade provisions, the scheme was supplemented by an organised market when implemented in Italy in 2005 and by bilateral exchanges when implemented in France in 2006[41]. Such a scheme has also been introduced in Denmark and Flanders (Belgium).

An overall target of energy savings over a given period has been basically defined. This definition is the most important decision variable for policy makers. Quantitative obligations are individually defined for each energy supplier (or network distributor) to promote energy-saving actions in relation to its sales and market share.

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The schemes target energy savings representing, on average, about 1% of the different countries' annual energy demand[42]. To fulfil their obligations, suppliers can organise and subsidise energy efficiency actions, subcontract the realisation of such measures and/or buy certificates.

In France, the first phase of the white certificate scheme (mid-2006 to mid-2009) is now over. The 54TWh energy consumption reduction target has been achieved and even exceeded (realised savings were 65TWh). EDF was the most affected, with 55% of the first-phase target imposed. GDF Suez came second, with 25% of the target.
The average price of the white certificates in the first phase was €3/MWh (against a penalty for non-compliance of €20/MWh). GDF Suez has been providing financial support via one of their subsidiaries (a 55%-owned bank)[43]. Both EDF and GDF Suez expressed their relative satisfaction with their efforts in the first phase, notably the development of a network of local participants to implement energy efficiency measures, and to collect the resulting white certificates[44]. For the second phase, the target could be increased by 2 – to 18 times – compared to the first-phase target (5 times, according to some sources), industrial participants are requesting only a doubling or tripling of the target.
The benefits and costs of such schemes have to be assessed. Tradable white certificates are, in theory, one means of achieving energy efficiency targets in a cost-effective way. Although white certificate schemes are in conflict with the core business of utilities, they are considered a useful tool, representing both a constraint and an opportunity for energy suppliers. Such schemes bring together two distinct energy efficiency activities: financing and implementation. To meet their energy efficiency obligations, suppliers have to subscribe to partnerships. The main drawbacks are the transaction costs and the administrative complexity of the schemes. Turning constraints into business opportunities is one of the strategic goals of the supply divisions of energy companies. Energy efficiency obligations provide the opportunity to develop new business models, in which information and advice is central to differentiating competitors. The programme developed by Centrica in response to the UK energy efficiency scheme is considered by the company an *"important marketing and customer relationship tool"*[45].

At European level, there are plans to propose a directive obliging each Member State to set up a white certificate scheme. However, the schemes would remain national instead of EU-wide[46]. Discussions, already under way, are still at a very early stage.

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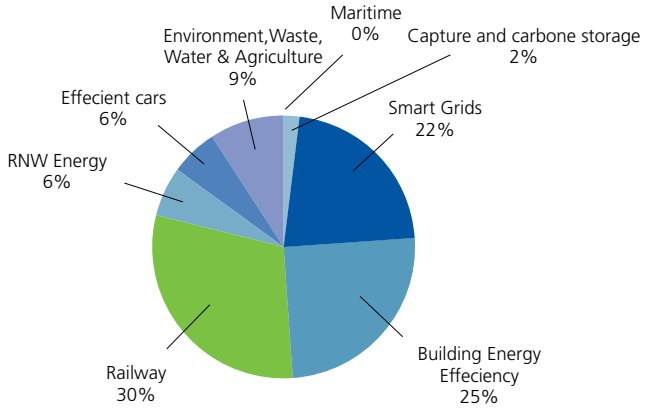
Subsidies, taxes and stimulus plans support energy efficiency

At national level, the budgetary tools that support energy efficiency include subsidies (e.g., grants and zero/low-interest loans) for investments in energy efficiency, tax credits for the purchase of energy-efficient equipment; and taxes on energy use in order to create incentives to reduce wasteful energy consumption. Within all global green stimulus plans, building energy efficiency and smart grids account for almost half of total investments (47%)[47]. In Europe, stimulus plans allocated €29bn to energy efficiency.

Figure 5.: Sector breakdown of the global green stimulus plans



Source: CA Cheuvreux

Momentum is building for the imposition of more challenging targets on utilities

Even though, in the US, energy efficiency credits should be used both in the future federal cap and trade regime and in the renewables portfolio standard, the EU is only looking into potentially pouring a high proportion of revenues from the future auctioning of carbon allowances from 2013 into energy efficiency funds. One final budgetary aspect, of critical importance to utilities, concerns the negotiations with governments in which nuclear lifetime extensions are partly exchanged against investments in energy efficiency. In Germany, the government and utilities are likely to direct some of the additional cash flows obtained from extending the lifespan of nuclear power plants into energy efficiency measures[48]. Similar schemes could also be implemented in France, where political debate about the future of regulated tariffs and the use of the nuclear rent is ongoing.

Momentum is building for the imposition of more challenging energy efficiency targets on utilities. Due to their close relationship with the end- consumers, utilities are considered best suited to undertake, fund or accompany energy efficiency actions. Policymakers are increasingly focusing on utilities as a potential vehicle for energy efficiency investments. Many of the potential tools that utilities can use to promote energy efficiency are not yet being used to their full potential. According to the IEA, "*evidence suggests that creating incentives to encourage energy efficiency action by utilities is extremely cost-effective*"[49]. 2010 should be a crucial year for energy efficiency regulations in Europe.

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3.2 The opportunity to become energy services providers

The challenge facing utilities is that of how to prosper as a supplier of energy when the focus of government policy and customers is to significantly reduce energy demand. Utilities need to realign their companies' capabilities and performance models with the rapidly growing energy efficiency market.

Utilities need to prioritise their investments away from declining markets and, instead, focus their efforts on growth markets

Strategic choices are emerging from the energy efficiency revolution. European utilities need to diversify away from declining markets (electricity and gas sales in Western Europe) and, instead, extend their portfolio of activities to new areas in order to generate sustainable growth: (a) by pursuing their traditional business model elsewhere (with international diversification in emerging markets), (b) by investing in generation from renewable sources (representing the majority of the 2009-13e European capital expenditures growth in Europe, 69% in value and 52% in MW terms[50]), and (c) by adding energy efficiency services to their traditional energy supply business for both the mass market of small consumers and the "business" market (industrial and tertiary sector, municipalities, etc.).

The emergence of a rapidly growing energy efficiency market is driven by high energy prices and environmental regulations

Here we focus only on the third energy efficiency growth option. High energy prices and environmental regulations are driving the emergence of a rapidly growing energy efficiency market. As energy prices are likely to be higher in the long term, there are incentives for customers to look to conserve energy. European environmental and energy policies are driving changes in energy consumption patterns. Some innovative regulatory frameworks are driving the energy services business model (e.g. white certificate schemes).

If utilities do not position themselves on the energy efficiency market, competitors and non-utility market participants will!

There is a market for energy efficiency. Some energy utilities understand that it is in their best interests to tap into this market by offering energy efficiency services. If utilities do not position themselves on this market, competitors and non-utility market participants will! Ernst & Young considers that "*utilities have not been first to the party, and must focus carefully on differentiating themselves clearly in a crowded marketplace*" promoting energy efficiency[51]. In this new environment, utilities are competing not just with their peers, but with many different kinds of business. For example, the first-movers in selling energy-efficient technologies have not been utilities but rather capital goods, electrical equipment and engineering companies such as General Electric, ABB and Schneider Electric. Beneficiaries of the energy efficiency market are also the building material suppliers and property developers receiving incentives to renovate old buildings or develop new building with higher energy efficiency standards. Finally, companies such as Google are already providing households with a free energy management software tool called PowerMeter, in combination with a power-usage measuring device, thus bypassing utilities' smart meters[52].

It is in energy utilities' best interests to do more than just generate and ship units of energy

Utilities need to adapt to their new environment, just as telecom companies did in the 1990s following the emergence of mobile phones and the internet, and the decline of the fixed-line telephone industry. Although utilities have become leaders in delivering commoditised energy products to a mass market, customers, especially large ones, don't want kilowatt-hours: they want services. In the future, utilities will probably charge customers not for units of power but for the hours of heating, cooling and light provided. It is in energy utilities' best interests to do more than just generate and ship units of energy: they could benefit from offering energy services to their residential and industrial/institutional customers:

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They can benefit from offering energy services to their residential...

- **Residential segment:** in a competitive energy supply market, utilities companies will focus on: structuring an energy efficiency services offer to better attract and retain retail customers, to increase their margins and to partially compensate for lower energy volume sales. Such innovative commercial offers will include: energy efficiency advices, diagnostics, financial services, assistance for renovation, smart metering with dynamic pricing, and the supply of energy efficient appliances and heating systems[53];

... and industrial/institutional customers

- **Public and commercial segment:** for industrial and tertiary businesses, as well as for municipalities and other public institutions (such as hospitals and schools), energy management is being outsourced to energy experts such as Energy Services Companies (ESCOs) primarily as a means of reducing their energy costs and their environmental footprint. We expect more and more energy utilities to make a strategic move into this industry, that offers a business with rather low risk, relatively high growth and a pretty attractive return on investments.

Utilities are changing their business towards a model of selling less energy but more energy services. This is an ongoing process that will take time and that is not without difficulties, as utilities face strong disincentives in this process. However, in response to commercial demand and energy efficiency policy requirements, utilities can make energy efficiency a profit centre. Regulations in favour of smart meters, micro- and co-generation solutions (notably from renewable energy sources), energy performance contracting and white certificate schemes could offer new business opportunities to utilities, which need to position themselves on the growing energy efficiency market, (even though this is bound to affect their traditional business). It is in utilities' best interest to do more than just generate and ship units of energy (at declining growth rates): they could benefit from offering energy services to their residential and industrial/institutional customers.

Questions for assessing utility companies' ability to adapt their traditional business model to the new energy efficiency environment

There are a number of questions that long-term investors could ask to utilities companies to assess their ability to adapt their traditional business model to this new energy efficiency environment:

- What are the effects of end-use energy efficiency on your long-term assumptions for the electricity and natural gas markets in Europe (in terms of volume growth and prices)?
- What are the potential negative impacts of energy efficiency on the profitability of the various parts of your energy value chain (from gas upstream and electricity generation through to transportation and distribution activities, and encompassing energy supply activities)?
- Is energy efficiency only a threat for your traditional business model or can you transform it into a new profit centre? How can you (further) complement your portfolio of activities by providing energy services, including energy efficiency services, to your residential and industrial/institutional customers?
- How much of your total revenues, EBITDA and net income are currently derived from energy services? What are your expectations for such figures in the next three, five and ten years (in terms of the percentage of your overall activity)?

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4. Case Study 1: Energy services providers in the UK residential market

While, in many European countries, energy supply is in its infancy, the UK supply market is probably the most mature, as regards energy supply and related services (including energy efficiency services).

Energy efficiency services provide revenue-offsetting and cross-selling opportunities

As liberalisation continues to enhance competition, utilities must complement their traditional generation and energy supply businesses with energy efficiency services. Companies are starting to offer "energy services" packages that include home energy audits, insulation and the installation of condensing boilers, heat pumps, solar panels and smart meters. Energy efficiency services are an opportunity for cross-selling. Scottish and Southern Energy (SSE) sees energy efficiency regulations providing "*opportunities for servicing the wider needs of* [their] *customers through* [their] *broad range of products. For example, if it becomes mandatory for every household in the UK to have a smart meter installed, there will be an opportunity for SSE to provide other services to customers at the same time*"[54]. Centrica, for its part, sees that, as a result of energy efficiency efforts,[55] "*recent corporate strategy work highlighted that low carbon energy services, and in particular low-carbon and renewable micro-generation, has the potential to create a material profit pool that can offset the reductions associated with reduced consumption*". However, such offsetting revenues might not be sufficient to fully compensate foregone sales.

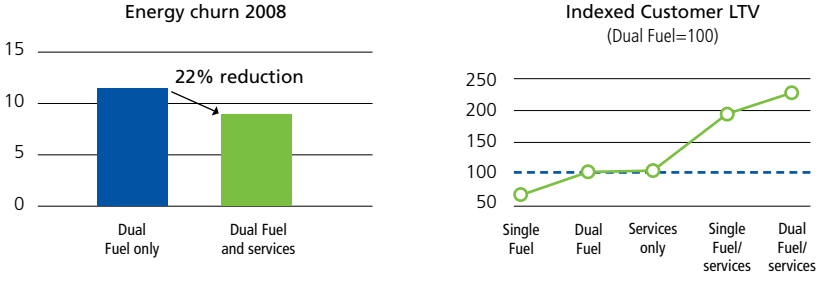
Energy utilities can provide financing

Retail customers need innovative solutions to help them address the high capital outlay that inhibits much of their demand for energy efficiency. In the UK, it is expected that an outlay of £6,500/household could improve most homes markedly. Utilities could undertake efficiency improvements, with customers repaying over 20-25 years commencing when efficiency savings start to be realised[56].

Energy efficiency services as a means of attracting new customers and securing their loyalty

In liberalised markets such as the UK, customers eagerly switch energy suppliers in order to benefit from lower energy prices and enhanced service offerings. We see energy efficiency services as a means of attracting new customers and securing their loyalty. SSE considers that "*customers want more information on how to use less energy and on saving energy, not only for climate change reasons, but also for cost reasons, we must adapt to help them, or lose them to other suppliers*"[57].
Utilities can acquire new customers by adding value, via energy services, to the supply of otherwise homogenous commodities such as electricity or gas. Centrica estimates its customer churn rate is 22% lower among customer groups who have dual fuel accounts and energy services, as customer loyalty, in those cases, is higher.

Figure 6.: Churn and Lifetime value of product offerings



Source: Centrica

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Increasing the proportion of customers who buy both supply and services should increase profit and value per customer

Customers who stay for longer generally also bring more value (Lifetime value (LTV) – measured as the present value of the future cash flows attributed to the customer relationship)[58].
As the number of product offerings to each end-user increases, the cost to serve per customer reduces due to cost efficiencies. Centrica believes that it could deliver cost cutting of £100m by 2010[59].
Centrica is currently combining its energy and services businesses. Since June 2009, 16% of the households that Centrica serves have been buying both an energy and a service product[60]. If successful, increasing the proportion of customers who take multiple products (dual fuel and energy services) should: increase customer retention, lower Cost to Serve and, in so doing, increase profit and value per customer[61].

Energy services for retail customers generate higher growth rates and higher margins than energy supply

We looked at various estimates from sell-side analysts[62] on the Services business of Centrica and SSE (even if such services are not always purely energy-efficiency related). Analysts tend to give higher growth forecasts to their services business (11% annual growth rate in average) compared to their supply business (low single-digit growth rates at best). Centrica's home services business has delivered an operating profit CAGR growth of 15% over the last five years. One of the brokers assumes a 14% CAGR growth in services sales for SSE during 2009-14e while assuming a nominal 1%-a-year growth in electricity sold in the supply business due to weaker demand. Analysts also tend to attribute a higher long-term operating margin to energy services (14-16%) than to energy supply (3-5% on average for its European peers). In terms of valuation, the services business enjoys, on average, 9x EV/EBITDA 2009e in analysts' Sum-of -Parts valuation, while the pan-European utility sector average for total core enterprise value is 7.7x EV/EBITDA 2009e based on various analyst estimates[63]. The multiples used to value such activities are, we believe, likely to increase, given the growth prospects (that are still underestimated by analysts).

In liberalised energy supply residential markets, energy efficiency services provide revenue-offsetting and cross-selling opportunities for utilities. Such services are also a means of attracting new customers and securing their loyalty. Increasing the proportion of customers who buy both energy supply and energy services should increase profit and value per customer. Energy services for residential customers generate higher growth rates and higher margins than energy supply. Centrica and Scottish & Southern Energy are well positioned to benefit from these opportunities in the UK.

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5. Case Study 2: Energy services providers for large customers

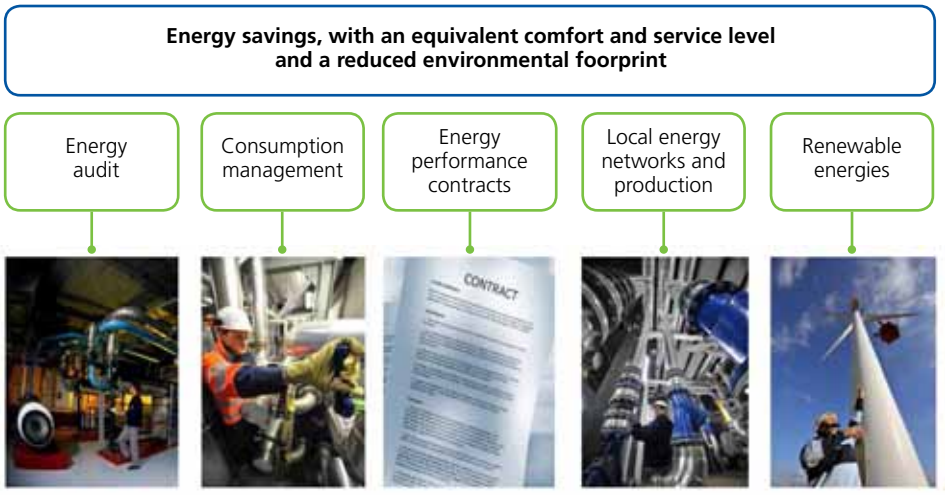
In this second case study, we will: (a) briefly describe the energy services offered to large clients (industry, tertiary, municipalities), (b) assess the financial value drivers of such activities and how they are currently perceived by the equity markets, and (c) provide an overview of the main European utilities with a significant exposure to the energy services market, targeting large energy users.

5.1 Description of the energy services offered to large clients

Energy services companies sell the use of energy rather than just provide a commodity to large customers

Energy services companies serve an increasing number of large companies and municipalities. Energy-intensive industrial firms have initiated deals with specialist energy services companies. More and more local authorities are also keen to outsource energy management services to an external partner. Energy services companies manage and sell the *use* of energy rather than just provide an energy commodity from a centralised energy production and transportation system. Energy services offer both technical and financial services to implement energy efficiency projects. But energy efficiency is often only one subgroup of the services available within the whole energy services package (although it remains difficult to assess the extent thereof).

Figure 7.: GDF Suez' strategy based on Energy and Environmental Efficiency



Source: GDF Suez

Energy services encompass activities such as energy analysis and audit, consumption management, and the design, operation and maintenance of energy installations (e.g., heating/cooling networks) and decentralised power generation (e.g., CHP capacity using renewables such as biomass).

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Energy performance contracting (EPC) is at the heart of energy services business models

According to the definition provided in an EU directive, energy service companies "*deliver energy services and/or other energy efficiency improvement measures in a user's facility or premises, and accept some degree of financial risk in so doing. The payment for the services delivered is based (either wholly or in part) on the achievement of energy efficiency improvements and on the meeting of the other agreed-upon performance criteria*"[64]. Energy performance contracting (EPC) is at the heart of such business models. These contracts reward the services provider not only for supplying energy, but for implementing energy-saving schemes. There are different types of EPC: guaranteed savings contracts (that guarantee the amount of energy saved); shared savings contracts (split energy cost savings); chauffage contracts (outsourced contracts for heating, cooling, or lighting); and build-own-operate-transfer (BOOT) contracts. Of these, about two-thirds are guaranteed or shared savings contracts[65]. EPCs are agreements that last many years, (between 5 and 15 years, some, even longer).

5.2 Financial value drivers and equity market perception

The demand for energy efficiency services is driven by economic and environmental factors

The demand for energy efficiency services is driven by economic and environmental factors:

- **Economic drivers:** despite up and downs in energy prices, the long-term trend is for energy use to be more and more expensive. This has significantly increased interest in energy efficiency from big energy users. Energy services providers are positioned as managers of flows for large customers in order to optimise their consumption and thus reduce their operating costs. Such outsourcing increases the productivity of their business customers and alleviates the energy cost burden on public budgets;
- **Environmental drivers:** customers need to reduce both energy costs and energy-related emissions. International, national and local regulations which target the carbon footprint of large energy users are a window of opportunity for energy efficiency services. Stricter environmental policies provide a favourable market environment. France will introduce an energy and carbon tax from 2010. Veolia Environnement believes that the implementation of such a tax will create significant opportunities for their "energy services" division[66]. The "Grenelle" measures in France are also planning large heating networks (biomass in particular).

The challenge involved in estimating market size

Estimating the energy services market size is no mean task. Different estimates see revenues as ranging from €5bn to €200bn per annum, depending on the activities taken into account.

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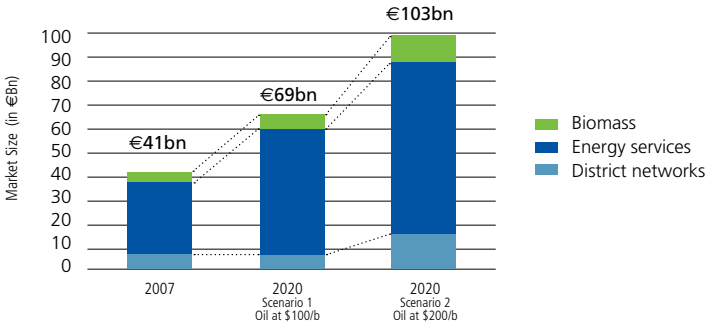
Figure 8.: European energy services market based on two scenarios (€bn in constant euros)



Source: Veolia Environnement (October 2008)

In October 2008, Veolia Environnement estimated the European energy services market (that also includes district networks and biomass) at around €41bn in 2007, a figure which could reach between €69bn and €103bn by 2020, depending on the oil price.

Revenues and EBITDA growth from energy services are among the best in the utilities sector, outpacing overall growth

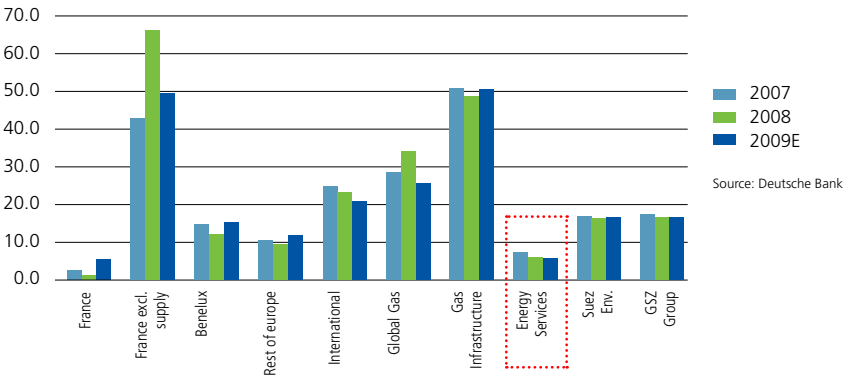
Dalkia (the energy services joint venture between Veolia Environnement and EDF) has enjoyed strong growth, with both a revenue and an operating profit CAGR of 12% between 2005 and 2008 (5% revenue growth in France, 19% outside France)[67]. There is strong growth potential for this market over the coming decade, with revenues and EBITDA CAGR from energy services among the best in the utilities sector. The GDF Suez Energy Services division targeted 4-5% revenues and 5-7% operating income CAGR 2008-2011, while Dalkia targeted a revenue CAGR of 5-7% over the 2007-2011 period. In line with both companies' expectations, consensus[68] expects Dalkia and GDF Energy Services to continue to grow at a sustained pace (5-8% EBITDA CAGR on average) over the next few years.

Operating margins are higher than those for supply but much lower than those for the upstream or generation businesses

Operating margins for the energy services market (in the 7-12% EBITDA margin range) are higher than those for the energy supply business (3-5% being the European average), while lower than in the upstream or generation businesses (25%-50%), as shown for GDF Suez in Figure 9. Veolia, which has historically enjoyed EBITDA margins of between 10 and 14%, targeted a 2011e EBITDA margin of 12% in October 2008.

With respect to returns, energy services have relatively lower capital intensity than the generation

Figure 9.: GDF Suez – EBITDA margins by division (all in % terms)



Source: Deutsche Bank

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Energy services have relatively lower capital intensity and enjoy double-digit ROCE

or upstream businesses. Energy services are a mix of low capital-intensity energy management contracts and higher capital intensity heating/cooling networks. Some energy services proponents argue that a 25%-50% return on investment is common in the industry[69]. Based on figures provided by Veolia's energy services' division, their 2007-08 average pre-tax Return on Capital Employed (ROCE) was 11%. In October 2008, Veolia targeted a pre-tax 2011e ROCE of between 13% and 14%. Those returns compare quite favourably with those earned in the utilities sector in general.

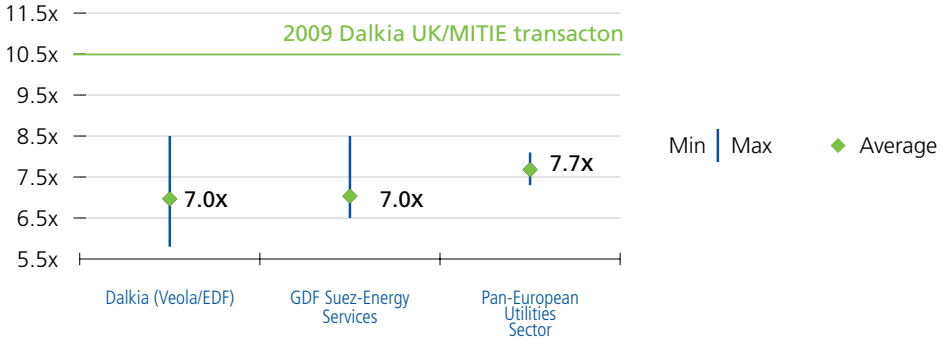
The energy services business offers a relatively safe and resilient business profile

In terms of risk, the energy services business offers a rather safe business profile (compared to more volatile generation/supply activities) with predictable and recurring cashflows[70]. "Pure" energy services contracts are theoretically not exposed to volumes of energy consumption but positively related to energy prices (rising energy prices generally encourage the search for energy efficiency). In the current recession, the industrial segment is suffering because the lower energy prices have led some customers to postpone certain projects. Even if municipal contracts (e.g., district heating/cooling activities) have a positive correlation with volumes of energy consumption and energy price levels, the use of tariffs that reflect input energy costs results in energy prices being passed on to the client. At its third quarter 2009 results, Veolia estimated that only 32% of its energy services division's revenues were exposed to the economic cycle and even that should be relatively insulated via medium-term contracts[71]. The efficiency provided at customers' sites becomes even more critical during an economic slowdown.

In the absence of a clearly listed energy services pure player, the market is using past transaction multiples to value such activities

One of the most critical aspects when looking at energy services is to value such business.
In the absence of a clearly listed energy services pure player, the market is looking at the transaction multiples shown in recent deals. The main indicators used are P/E and EV/EBITDA multiples. The graph below presents the range of multiples used by analysts for valuing the energy services division of Veolia (Dalkia) and GDF Suez (or the implied multiples shown in Sum Of the Parts (SOTP) valuations when using other methods, e.g., DCF).

Figure 10.: EV/EBITDA 2009e multiples



Source: Dexia AM estimates (as at mid-November 2009) [72]

At least, three remarks can be made:

The average multiples used to value the energy services divisions are slightly lower than for the pan-European utilities sector, with a wider range, but higher multiples have been used in more recent transactions

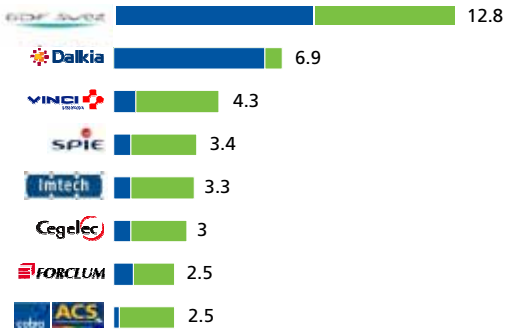
- **Slightly lower multiples:** the average multiples used to value the energy services divisions are slightly lower than for the pan-European utilities sector (7.0x vs. 7.7x EV/EBITDA 2009e). Higher growth prospects and lower risks are offset by lower margins;
- **A wider range of multiples:** the range of multiples used to value those energy services businesses (5.8x-8.5x EV/EBITDA 2009e) is much wider than for the pan-European utilities sector (7.3x-8.1x EV/EBITDA 2009e). This shows the higher uncertainty in valuing this business in the absence of clearly listed pure players and the use of diverse past transactions;
- **Higher and higher multiples:** The public purchase offer launched by Suez Lyonnaise for Elyo in 1996 had an underlying EV/EBITDA multiple of 4.5x[73]. In 2000, the transaction between EDF and Veolia achieved an 8.5x EV/EBITDA multiple. A much more recent transaction in the energy services industry is support services group MITIE's acquisition of Dalkia's UK facilities management arm. The value of the deal for Dalkia's FM business in the UK reached a transaction multiple of 10.5x the 2009e EBITDA[74], a 50% premium compared to the average multiple used to value Veolia and GDF Suez' energy services divisions. As for the retail business segment, we believe that the multiples used to value the energy services activities are likely to increase in the future, given the strongly positive growth prospects, still underestimated by the equity market.

5.3 European utilities with significant exposure

The two largest utility-affiliated energy services companies are GDF Suez Energy Services and Dalkia

The two largest utility-affiliated energy services companies are GDF Suez Energy Services and Dalkia (the joint venture between Veolia Environnement and EDF). Apart from those two companies, there are numerous smaller non-utility energy services competitors. There are also divisions in more diversified construction companies offering electrical, energy infrastructure or facilities management services.

Figure 11.: European players in energy services (2007 revenues in €bn)



Source: GDF Suez
N.B.: Excluding diversified UK groups

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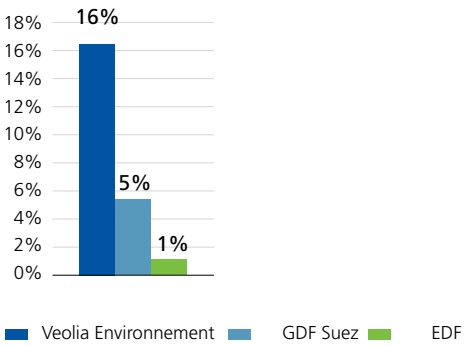
For the utilities players, those energy services divisions represent 16% and 5% of Veolia and GDF Suez's total enterprise value in a range of analysts' estimates[75]. For EDF, the stake in Dalkia represents 1% of its total enterprise valuation.

Figure 12.: Value of "energy services" as % of total Sum Of The Part valuations



Source: Dexia AM estimates (as at mid-November 2009)[76]

If multiples similar to those shown in the recent UK Dalkia transaction were used, this would lead to an 8% and 2.5% upgrade respectively in Veolia and GDF Suez total enterprise valuations

If multiples similar to those shown in the recent UK Dalkia 2009 transaction were used to fully value the energy services divisions of Veolia and GDF Suez (10.5x EV/EBITDA 2009e vs. 7.0x currently used), this would lead to an 8% and 2.5% upgrade respectively in the total enterprise values of Veolia and GDF Suez (and 0.5% for EDF). There is currently some press speculation about Veolia taking 100% of Dalkia (including Dalkia International) in exchange for new shares reserved for EDF that would increase its current 4% stake in Veolia to c.15% (depending on the estimates). The actual valuation agreed in this potential 2010e transaction should be an opportunity to give more clarity to the valuation of the energy services business.

An energy services division constitutes a strong advantage in a utilities portfolio of activities

At a time when long-term energy costs are expected to rise and new European energy efficiency policies are reinforcing energy conservation, we believe that an energy services division constitutes a strong advantage in a utilities portfolio of activities. It is in the best interests of the utilities sector, as energy experts, not to leave this energy efficiency market to other providers, be they independent energy efficiency service providers or divisions from larger construction or commercial services groups.

However, in the foreseeable future, the core business of energy utilities will probably remain the generation and sale of energy

However, we should recognise that, in the foreseeable future, the generation and sale of energy will probably continue to be the core business of utilities. Given the profitability of such activities, a full change in the utilities business model seems unlikely. It should also be recognised that the alternative source of revenues provided by energy services is unlikely to completely offset the loss of revenues implied by lower energy consumption in the traditional utilities business (those activities even reinforcing the energy efficiency trend and further aggravating the loss of volumes supplied).

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Energy services companies sell the *use* of energy rather than just provide a commodity to large customers. Growth from energy services is among the best in the utilities sector. Operating margins are higher than for supply, while much lower than in the upstream or generation divisions. Energy services have a relatively lower capital intensity and enjoy a double-digit pre-tax Return on Capital Employed (ROCE). The energy services business offers a relatively safe and resilient business profile. In the absence of a clearly listed energy services pure player, the market is using past transaction multiples to value such activities. The two largest utility-affiliated energy services companies are GDF Suez Energy Services and Dalkia (currently a joint venture between Veolia Environnement and EDF). These energy services divisions represent 16% and 5% respectively of Veolia Environnement and GDF Suez's total enterprise value. At a time when long-term energy costs are expected to rise and new European energy efficiency policies are reinforcing energy conservation, we believe that an energy services division constitutes a strong advantage in a utilities portfolio of activities.

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Important information concerning the sustainability analysis

Dexia AM's Sustainability Analysis is based upon different sources of information developed by Dexia AM's SRI team, among others: sector studies and company analyses by Dexia AM's sustainability analysts, "Dexia AM's Sustainability Analysis Research Methodology 2006", "Methodology Guidelines November 2005" by Franca Morroni, "Dexia AM SRI Business Case 2004" and Dexia AM leading SRI principles and multiple research conducted since 1996 as well as data from selected SRI data providers.

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