The path to high performance

Addressing the conflicts between European energy policy targets and utility industry goals

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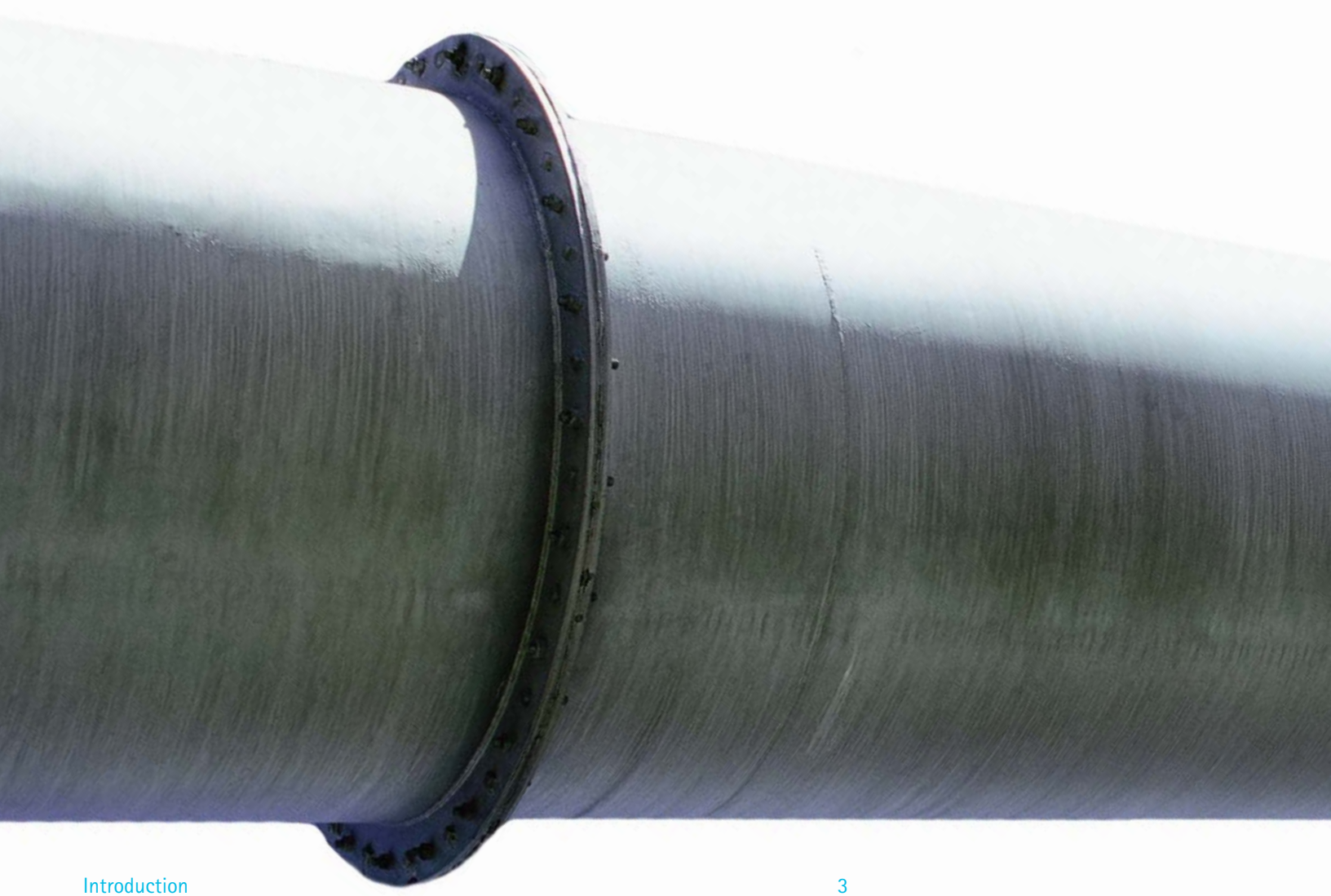
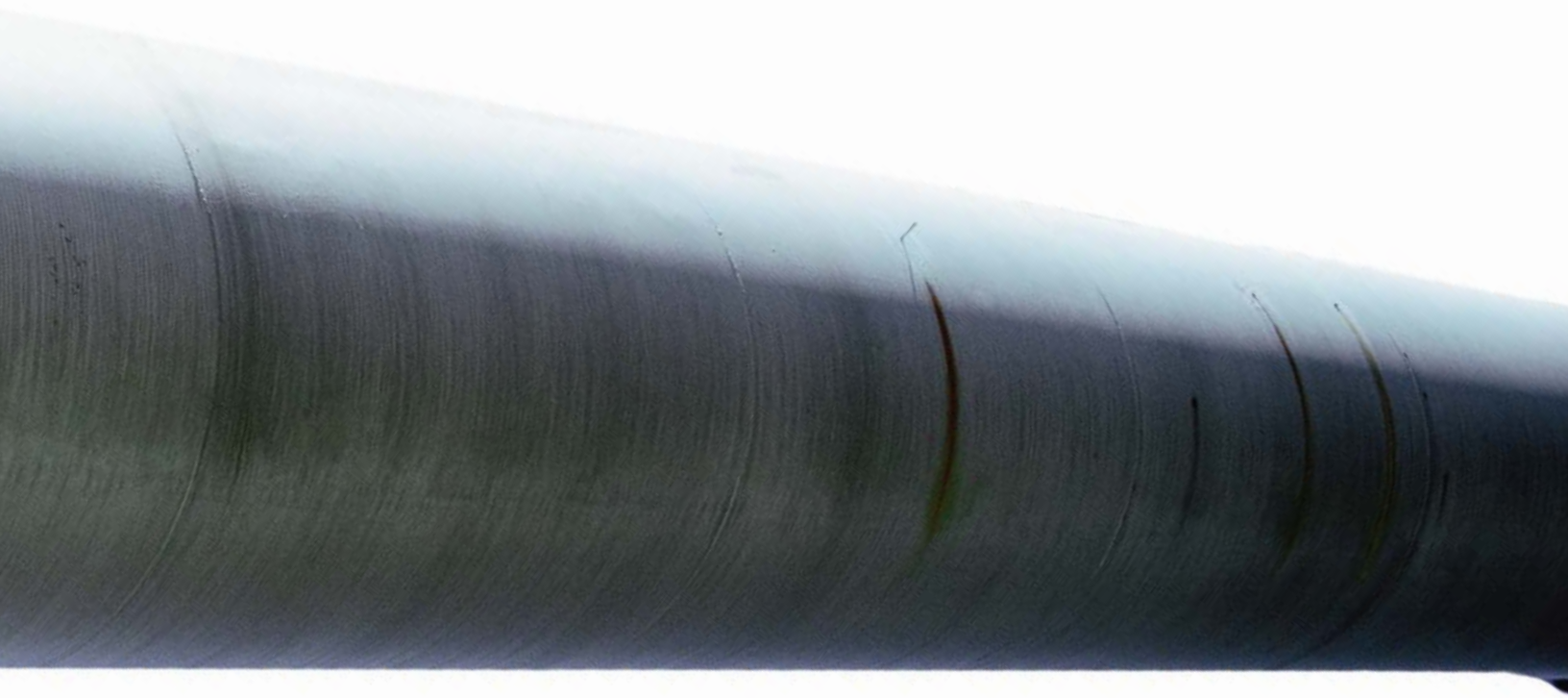


Introduction



The European utilities industry faces a host of challenges like never before. In January 2007, the European Commission adopted new proposals for an ambitious energy policy for Europe, clearly signaling a changing market for the European utilities industry. The policy has given rise to three ambitious targets for 2020: a goal of 20 percent of energy use from renewable sources, a 20 percent reduction in greenhouse gases and a 20 percent improvement in efficiency of energy use. Further steps were taken in January 2008 when the European Commission put forth an integrated proposal for Climate Action. This proposal includes a directive that sets an overall binding target for the European Union of 20 percent renewable energy by 2020 and a 10 percent minimum target for the market share of biofuels by 2020 to be observed by all member states.[1] EU policymakers will maintain a strong commitment to reaching 2020 environmental targets. Strong political pressure exists to ensure the market can deliver against the 20:20:20 targets, and every year, social awareness of the need for action on climate change continues to grow.

Accenture believes these pressures create major challenges for the European utilities industry as it confronts conflicting goals that have reached a tipping point—a situation that potentially holds massive implications for the industry. Together with the dual EU policy goals of maintaining security of supply and improving market integration, the coming industry challenges will separate the "leaders and winners" from the "followers and also-rans." Leveraging our industry experience and research-based knowledge to help utility companies become high-performance businesses, Accenture has developed a point of view on the key policy enablers that will eventually help the market to maximize the probability to achieve the 2020 environmental goals, realize an optimal economic outcome and ultimately achieve high performance. We have also identified potential utility strategies that we believe will help position players for the future.

[1] Source: European Commission/Energy, http://ec.europa.eu/energy/energy_policy/index_en.htm

Major forces shaping the European energy market

Before focusing on the future, it is helpful to understand today's environment as a starting point by looking at the forces shaping the energy market.

The European energy market has become a highly politicized market, and this trend is set to intensify rather than diminish. Competition policy to reduce consumer costs, increase the security of supply as a response to imported gas dependence and blackouts, and finally, the emissions policy as a response to climate change are the three classic pillars that drive the EU energy agenda.

With the implementation of the Emissions Trading Scheme (ETS), carbon emissions are now being priced into the market with the expectation that carbon prices will rise in the future. Together with high, volatile energy prices (such as crude oil exceeding $130 per barrel—an increase of over $100 in the last eight years), pressure is increasing to reduce the price of energy to consumers and, at the same time, to shift to a greener, more secure, longer-term energy supply.

The market response

The impact of historical policy direction on industry behaviour is clear: Incumbent utilities have sought to develop Pan-European operations in order to compete against the local strengths posed by regional utilities and municipalities together with the goal of achieving economies of scale and increased revenues.

In the last decade, the market structure has changed (see Figure 1). On the one hand, liberalisation increased competition in the industry, but on the other, this led to consolidation and a mergers and acquisition (M&A) boom. This changing landscape led to the entry of new players to the market and spawned new developments, including start-up supply projects, new energy merchants, upstream capital development, private equity buyouts, infrastructure funds, hedge funds trading energy commodities and more. These new market entrants and developments have emerged on both the supply and demand side of the market, further increasing competitive pressures and driving innovation.

The industry consolidation trend has also resulted in an increase in the share of companies with a Pan-European operating model and a decrease in the number of municipalities. For example, from 1997 to 2004, the number of municipal power suppliers in Germany decreased from 900 to 700.

Figure 1. Industry response to policy evolution over the last two decades

Policy focus

Central planning

- Long-term system reliability
- Energy demand growth planning—predict and provide

Competition

- Market deregulation
- Privatisation/IPOs

Security of supply

- Reinforcing and replacing assets to prevent blackouts
- Securing fuel supplies
- Market transparency

Emissions

- Increasing renewables and (selective) nuclear capacity
- Encouraging low-carbon solutions

Industry development in response to policy

1990 → 2000 → 2003

Vertically integrated

- **Monopolistic**
- Top-down planning and management
- Business unit silos
- National focus

Cost focus

- **Sector specialisation**
- Build capabilities to manage assets competitively
- Optimise asset base and commercial availability

Consolidation

- **Focus on performance**
- Grow market share
- Increased trading and risk management capability

Pan-European model

- **Focus on performance and growth**
- Integrating utility operations
- Increasingly sophisticated portfolio management and cross-border trading

Utilities have responded to market and policy change to reduce risks and reap rewards.

Source: Accenture research

Shaping future strategies

The policy and industry dynamics occurring in Europe today make it challenging for utilities to shape future strategies that can position them for positive outcomes that lead to high performance.

Given the historical developments that have created the current political energy landscape, Accenture believes policymakers face three challenges in terms of developing the future European energy market (see Figure 2).

- How to increase market integration and competitive access, thereby ensuring market efficiency
- How to maintain the current security of supply balance
- How to ensure that industry can deliver the ambitious environmental targets

Against this background, we view utilities operating in regulated markets as having three strategic imperatives:

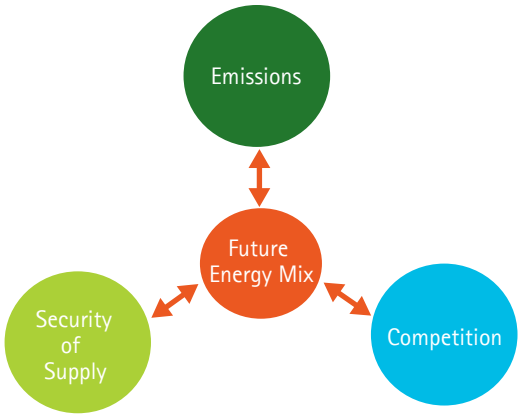
- Improve performance
- Sustain growth
- Maintain the social bargain with stakeholders

Additionally, Accenture believes that the 2020 targets trigger conflicts between the policies themselves as well as with the strategic imperatives of the industry. As we examined these conflicts in more detail, four emerged: three are conflicts between policies, and the fourth is a conflict between policy and industry (see Figure 3). More specifically:

- The first conflict is between policy-makers' desire to meet targets but limit the cost burden on consumers.
- The second conflict is between desire for security of supply and overcoming the intermittency of renewable energy technologies such as wind and solar power.
- The third conflict is among the opposing priorities of different levels of policy formulation: EU, national and local.
- The fourth conflict is between the EU drive for demand reduction and efficiency and existing utility business models based on megawatt (MW) sales volumes.

These four conflicts hinder the ability of policymakers and industry to meet the 2020 targets and deliver mutually beneficial outcomes. Yet, as we examined these conflicts further, which are detailed on the following pages, we were able to outline actions both policymakers and utilities can take to create optimal outcomes to meet the 20:20:20 targets.

Figure 2. Policies have been developed to overcome the three main challenges in the energy market.



The recent "Energy Policy for Europe" has given rise to three ambitious targets for 2020:

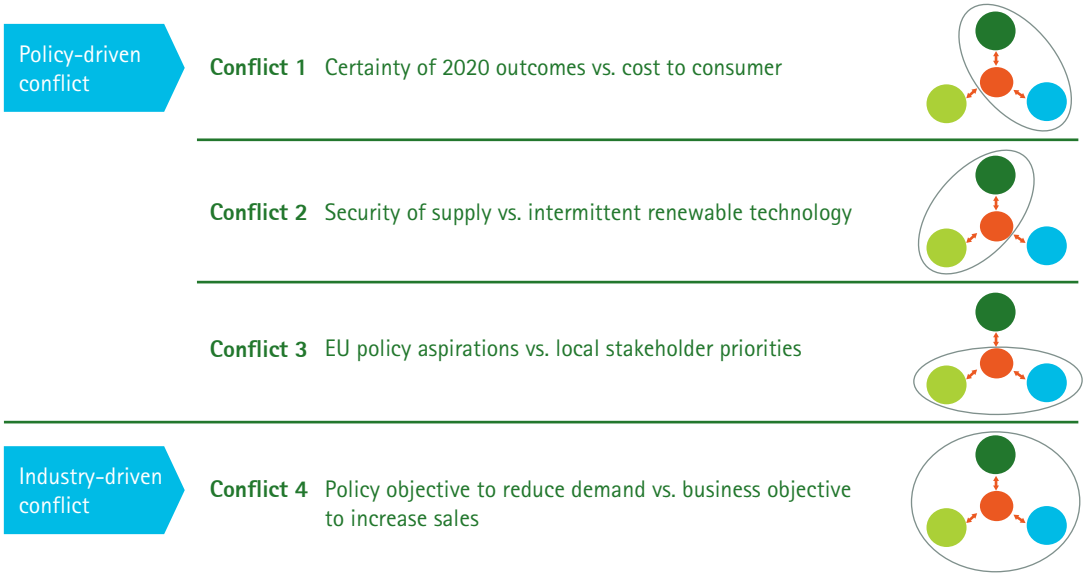
- 20% reduction in greenhouse gases
- 20% of energy use from renewables
- 20% improvement in efficiency of energy use

Operating in regulated markets, utilities have three strategic imperatives:

- Improve performance
- Sustain growth
- Maintain the social bargain with stakeholders

Source: Accenture research

Figure 3. Conflicts between EU policies and industry goals



These conflicts represent delivery risks for EU 2020 targets.

Source: Accenture research

Conflict 1: Certainty of 2020 outcomes versus cost to consumer

Today, renewable technologies are more expensive than traditional thermal generation, as shown in Figure 4. An unconstrained, highly competitive free market would, therefore, not roll out these technologies.

Government interventions in the form of subsidies are currently required to support renewables. Thus, it is likely that there will be a cost penalty to consumers for ensuring increased renewable generation. An example is the €11,000 per roof cost of rolling out photovoltaic generation in Germany. Essentially, conflict 1 is a conflict between the competition agenda and the emissions agenda, characterized by quick and certain centrally mandated rollout of renewables or uncertain market-derived delivery of sustainable solutions. Cost and time are key in this conflict.

As part of the 2020 environmental agenda, policymakers are seeking definite outcomes—that is, that targets can be met in a relatively short time. But relying on competitive market mechanisms to drive innovation and sustainable solutions introduces uncertainties. Uncertainties arise because solutions must be tested and need time to evolve and adapt to the changing marketplace.

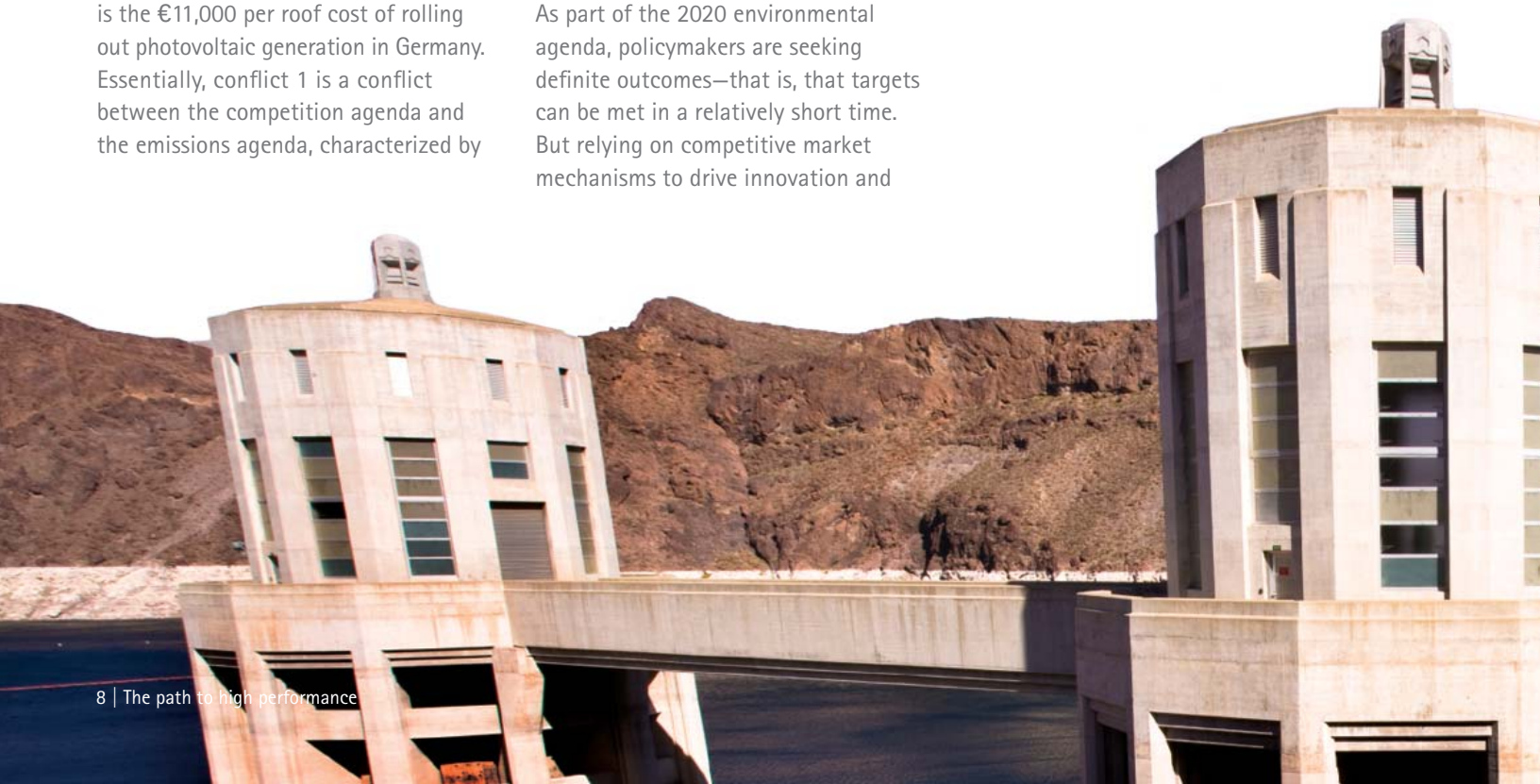
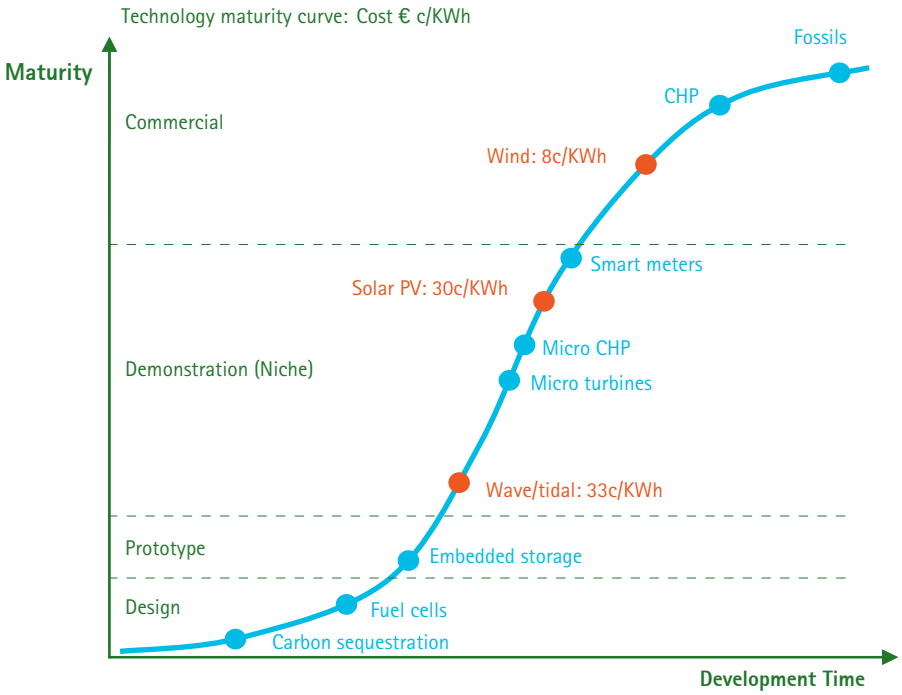


Figure 4. Conflict 1: Certainty of 2020 outcomes versus costs



Subsidy mechanisms will help developing technologies become cost competitive.[2]

It is not clear which, if any, renewable technologies will reach this point. Therefore, policies that promote output from particular renewable technologies will create an inevitable cost penalty that can be high.

Example

Subsidy for 55,000 photovoltaic (PV) roofs in Germany cost €600 million or €11,000 per household.

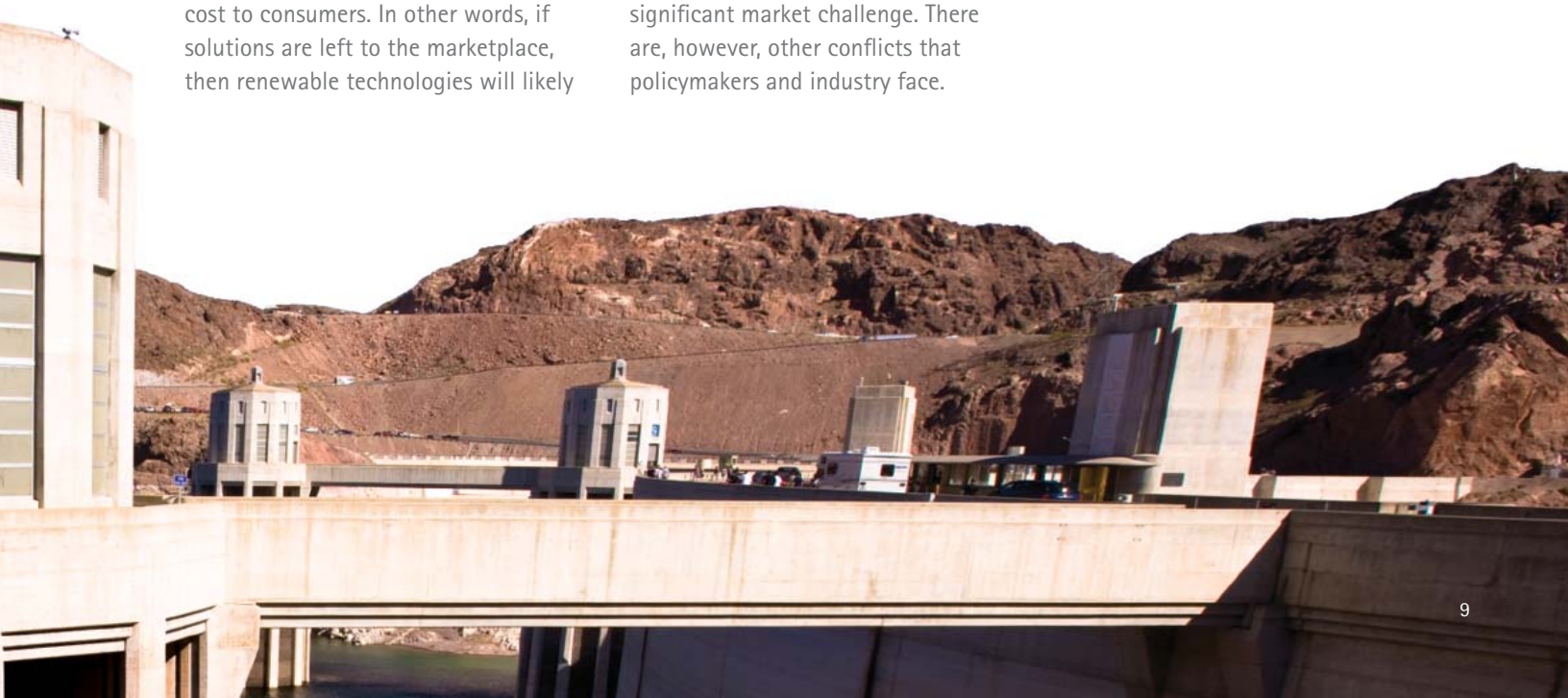
[2] Costs of renewable technologies have actually increased recently due to constraints in the supply chain.

Left to the market, renewable technologies will be slow to mature; ultimately, only those that are cost competitive will prevail.

Source: Accenture research

Technological development and rapid infrastructure rollout by central decree would deliver greater certainty of meeting targets by 2020, but these measures also increase the risks of poor short-term technology choices. Poor technology choices and failure to harness innovative potential of the market implies a higher long-term cost to consumers. In other words, if solutions are left to the marketplace, then renewable technologies will likely be slow to mature. Ultimately, only those tried-and-tested solutions that are cost competitive will prevail.

Accenture has identified the conflict between directed action and evolutionary market change and between speed of implementation and cost to consumers because we believe it represents a significant market challenge. There are, however, other conflicts that policymakers and industry face.



Conflict 2: Security of supply versus intermittent renewable technology

The second conflict we have identified, illustrated in Figure 5, relates to the need to maintain a secure, stable network whilst rapidly deploying intermittent renewable energy supply and delivering new, potentially unproven solutions.

We believe that new, unproven and/or intermittent green technologies imply a much higher investment risk and capacity requirement as well as higher development and implementation costs than currently available nuclear or fossil technologies. In addition, for less mature technologies, there are likely to be much longer rollout time scales.

As suggested earlier, the fact that wind energy is intermittent means that the network requires substantially more capacity than conventional generation technology. Compare typical utilisation rates of more than 80 percent for coal/gas generation with 27 percent utilisation for onshore wind.

The difficulty of forecasting renewable energy output for wind, wave and solar generation implies that some base-load backup capacity will always be required. We estimate that for every 1 MW of renewable capacity, on average, approximately 0.65 MW of conventional capacity will be required as backup to ensure security of supply at times of peak demand. In addition, substantial transmission and distribution infra-structure will be required to connect the distributed supply sources with demand centres.

Already the market is seeing signs of investment uncertainty, and it is critical that decisions are made to ensure the future stability of European energy markets. Therefore, we see a significant conflict between the rapid uptake of renewable solutions and sustaining a secure network from now until 2020 and beyond.

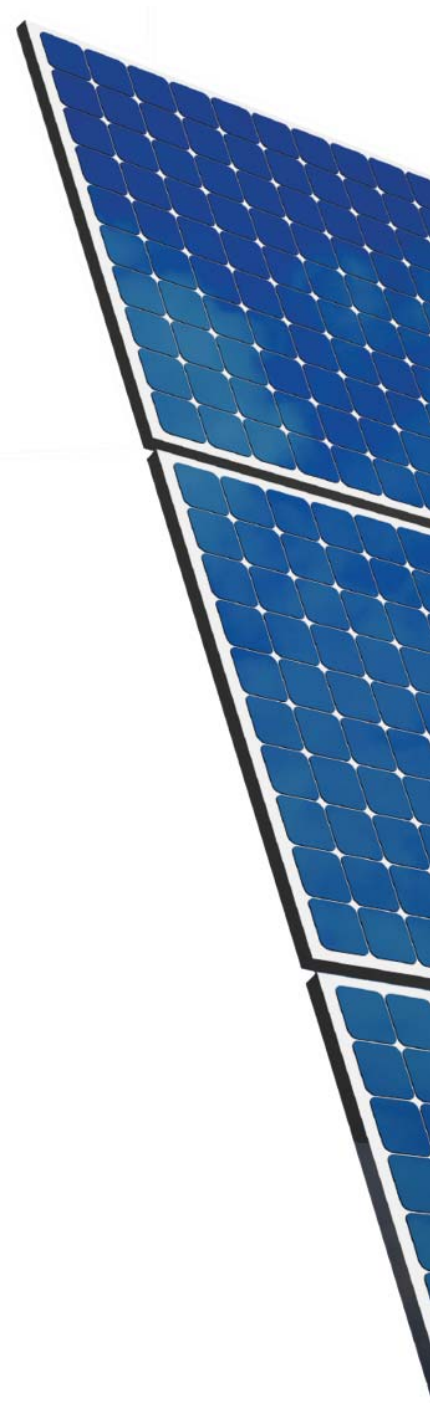
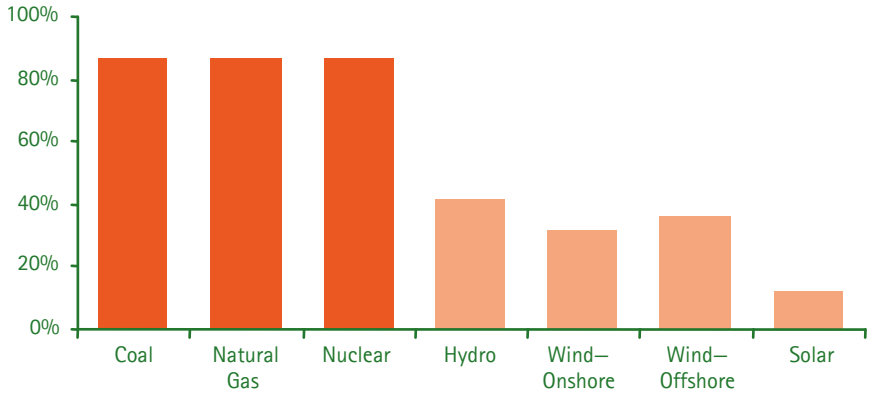


Figure 5. Conflict 2: Security of supply versus the intermittent renewable technologies

Utilisation factor for different technologies



The output from most renewable technologies cannot be controlled. (Typically 1 MW of renewable capacity is required to replace 0.65 MW of conventional capacity.)

Also, a number of renewable technologies are immature and will have additional performance risks.

A high renewables market share will require additional investment to balance the system:

- Backup fossil generation
- Demand management
- Network interconnections

The market may not be able to appropriately forecast the required investment to maintain current standards of security of supply.

Sources: International Energy Agency, Royal Academy of Engineering

Conflict 3: EU policy aspirations versus local stakeholder priorities

There are many well-known examples of conflicting stakeholder demands. EU agreement and subsequent national ratification of the ETS Phase III are unlikely to be completed before 2010 due to the significant degree of consultation and negotiation.

In terms of cross-border interconnection, the Commission's technology report estimated that more than 60 percent of projects declared of European interest face significant delays. Accenture believes many of these delays are the result of conflicting EU, national and local priorities.

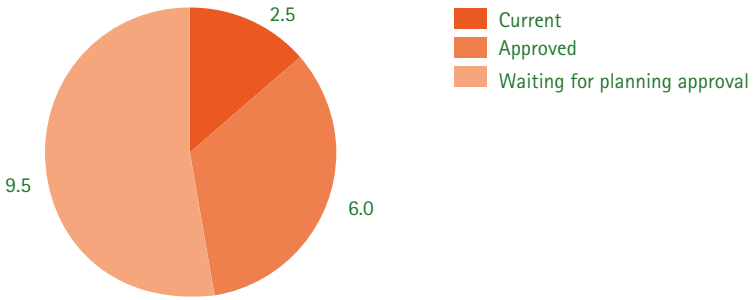
Local resistance to wind, wave, coal, nuclear and waste management investments is well recognised, often called the "not in my backyard" or "not in my garden" syndrome. The 1 gigawatt (GW) London Array initiative, one of the largest UK wind energy projects, required almost three years from concept to approval partly as a result of planning delays and local environmental concerns. In fact, as we can see in Figure 6, around 9.5 GW of UK wind capacity is waiting for planning approval. As John Hutton, the UK Business, Enterprise and Regulatory Reform Secretary of State, suggested in his 2007 Energy Challenge statement, "In a worst-case scenario, there can be seven to 10 years between a company taking an internal decision to invest and delivery of energy to the grid."

Another prominent area of resistance is around nuclear energy. Nuclear energy has been a contentious decarbonisation solution for many years and has faced significant local resistance. In a time of increasing security of supply concerns, the nuclear debate has resurfaced—in Germany, Italy, the United Kingdom, Poland, Sweden and many other member states. The resolution of national and local priorities with respect to the use of nuclear energy will strongly influence the ability of member states to deliver against their decarbonisation commitments.

Only 6 percent of EU energy is currently sourced from renewables. The required rapid rollout to meet the 20 percent target is blocked by planning delays and local objections. Local and national politics and existing industry investment plans can favour development of high-emissions technologies, whereas member states are divided on their approach to nuclear power.

Figure 6. Conflict 3: EU policy aspirations versus local stakeholder priorities

UK wind energy 2007 (GW)



Local political and public priorities within member states can conflict with broader EU-level aspirations.

Source: British Wind Energy Association

Conflict 4: Policy objective to reduce demand versus business objective to increase sales

The fourth conflict, as depicted in Figure 7, can be described as industry and shareholder inertia versus policy momentum.

Through the 20 percent efficiency objective, EU and national policies imply a reduction in energy use and demand. However, current utility business models are based on volumes of energy sold. In other words, given stable margins, higher sales volumes translate to higher revenues. With existing business models, utilities have minimal incentive to innovate new customer propositions to reduce demand.

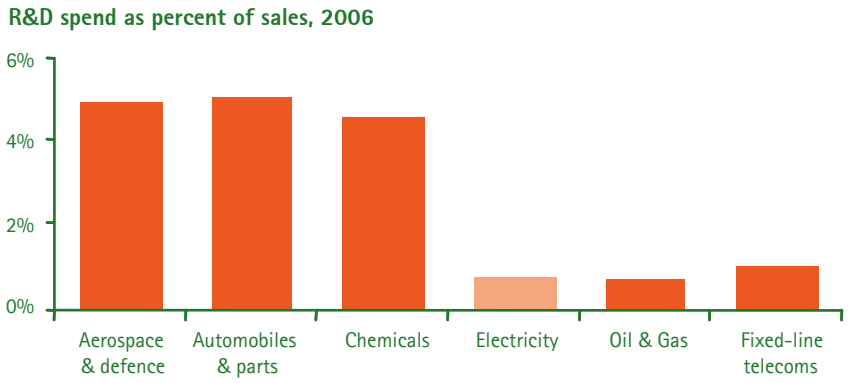
Furthermore, investment in research and development has been low relative to sales (less than 0.5 percent) for the electricity sector. This was also true for the telecommunications sector until the introduction of disruptive technologies and an expanded service offering triggered a wave of innovation.

New market entrants redefined the market. In the case of utilities, the risk of cannibalising existing sources of revenue is a key concern, and one that will need to be addressed to deliver efficiency savings.

Historically, utility shareholders have been accustomed to receiving consistent, predictable returns and steady dividends. Relative to other asset classes, utilities have traditionally been considered a low-risk investment. The industry is geared toward experienced management delivering consistent performance and a secure social service using proven solutions. So the obvious question that arises is: Can short- to medium-term profit objectives align with longer-term "green" growth strategies? Are utilities and their investors prepared to change over the next decade?

In sum, conflicts exist between commercial and social bargains, and between shareholders and society. Governments want social/industrial outcomes and use carrots and sticks to make them happen. Shareholders simply want constantly improving returns. Corporate social responsibility is about managing these conflicts to produce the optimal outcome. In part, delivering market change will require increased innovation and new supply- and demand-side solutions.

Figure 7. Conflict 4: Policy objective to reduce demand versus business objective to increase sales



Utility revenue model is based on volumes of electricity sold.

- No incentive to innovate with customer propositions
- Low R&D spend with minimal demand-side efficiency focus

Stable cash flows are prioritised over business model innovation and redefined customer relationships.

Lack of customer pull requires clear policy actions that are not yet evident.

Utilities are seen as defensive stocks. Performance is linked to stable returns that discourage major strategic shifts.

Source: Accenture research

Managing the conflicts

If the four conflicts Accenture has identified summarise the market today, and we can see the world changing, what can we say about the future? What are the potential market outcomes? And how can utilities move toward achieving high performance?

We believe that achieving high performance is possible and that an optimal outcome can be achieved, one that favours the realisation of 2020 targets at an acceptable cost. In other words, a point between a fully competitive single market and a technology boom exists whereby targets are delivered at the lowest acceptable cost. However, there are barriers to achieving this optimal outcome, so let us be specific about what the barriers are and subsequently, what actions can be taken.

Accenture believes that achieving high performance is possible and that an optimal outcome can be achieved, one that favours the realisation of 2020 targets at an acceptable cost.

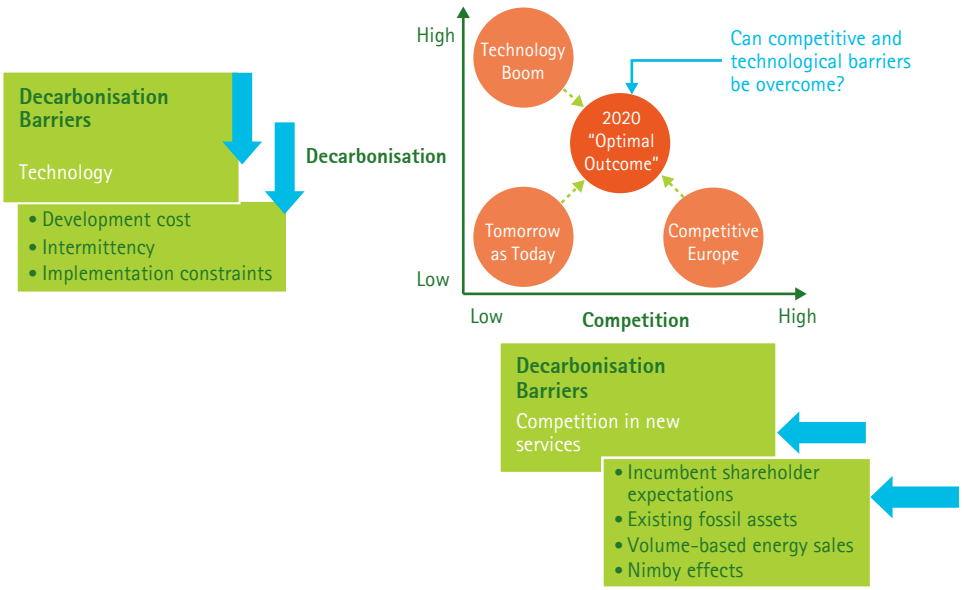
The two barriers of major concern are technology and elements of competition, as illustrated in Figure 8. There are technology barriers to decarbonisation, such as the high development costs of low-carbon technologies, the intermittency of renewable technologies, and implementation constraints such as in the supply chain and skills shortages. There are also competition barriers, such as shareholder expectations of low-risk returns, the danger of stranding an existing fossil asset base, utility revenue models based on volume of sales and local resistance to new projects.

What can the market do to overcome these constraints? How can the industry and member states expedite the technological development of clean-energy solutions to deliver the 2020 renewables, emissions and efficiency objectives? We believe examples in the marketplace of leading practice in terms of policy enablers and potential utility strategies already exist and provide responses. Let's explore some of these leading practices as they relate to each of the four conflicts.

Managing conflict 1: Managing for a certainty of 2020 outcome and cost to customers

Several European governments have been proactive in the promotion of incentives and price signals to facilitate the development and deployment of renewable technologies. Germany, for example, has encouraged its industry to become a leading producer of wind- and solar-power technologies. In so doing, it has reduced the cost of these technologies and invigorated its manufacturing base, bringing new jobs to its economy.

Figure 8. The optimal outcome requires technological innovation and elements of competition.



It is essential to identify a new scenario that meets targets at the lowest acceptable cost: the 2020 "optimal outcome" scenario.

Source: Accenture research

Similarly, German and Spanish feed-in tariffs have encouraged deployment of renewable technologies by providing investment certainty and encouraging economies of scale. As an additional price signal, an ETS Phase III should stimulate investment in emerging renewable technologies and likely trigger further development cost reductions. (German feed-in tariffs have managed capital costs by incentivising investment rather than reducing costs, but they have delivered a renewables share of approximately 24 percent.)

Accenture believes that utilities should capitalise on available incentives and take proactive strategic positions on high-potential technologies by investing in innovation to deliver exclusive access to future solutions.

In another example, in managing the capital cost of new technology deployment, the Netherlands has mandated both a solution and a specification for smart metering. (Specifically, it has mandated dual fuel smart meters to meet the Energy Services Directive, with universal rollout by 2013.)

Utilities can also manage deployment costs through innovation in supply chain management, risk sharing and partnerships. For instance, current renewable energy generation equipment costs are particularly high due to resource and component costs. By partnering with or even acquiring suppliers, utilities may be able to manage capital costs and their supply chain uncertainties.

Capital risk can also be mitigated by exploring innovative financing and asset ownership mechanisms such as Public Private Partnerships in the United Kingdom or inviting commercial customers to own equity in generation assets, as in Finland.

In summary, policy frameworks and business strategies exist today that can deliver low-carbon solutions. The delivery of solutions is a question of coordinated effort to ensure certainty and meet timelines.

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Managing conflict 2: Managing security of supply and intermittent renewable technologies

As discussed previously, the transformation to a low-carbon generation mix has significant implications for security of supply. However, the key issue of intermittency is already being addressed by policymakers across Europe. For example, the Spanish government has set requirements for utilities with a high proportion of wind power to improve 24-hour forecasts to allow for more effective supply planning. In addition, Denmark has regulated priority dispatch for renewable generation as a means of ensuring supply. Together with improved central planning, asset management and system balancing, there are no strong reasons why intermittency cannot be managed.

Examples of utilities addressing the challenges of intermittency and disparate location include Danish utilities exporting wind-powered generation to Germany and increased transmission and distribution (T&D) investment allowing power from Germany's windy northern region to be delivered to its high-demand southern region. One of the most promising utility strategies for managing intermittency is to prioritise investment in stable renewables such as biomass, waste, tidal and geothermal energy so that reliable generation can be guaranteed with low emissions.

Finally, the stranding of fossil-based generation assets poses a significant threat to many utilities. Under future constricted operating regimes, dynamic portfolio management of fossil-plant output will be critical to maximising value from existing fossil assets. Prioritising investment in technologies such as carbon capture and storage (CCS) to decarbonise fossil assets will be fundamental to long-term success for those utilities unable to take advantage of renewable energy-generation or plant-efficiency savings.

Managing conflict 3: Managing EU policy aspirations and local stakeholder priorities

It is clear that national- and community-level priorities often conflict with EU renewables and emissions policy. Local community opposition to low-carbon generation solutions such as nuclear plants, waste-to-energy plants and wind farms delays deployment of low-carbon solutions in many countries across the EU. In the United Kingdom, the government has fast-tracked new nuclear site selection and planning approval by locating new plants on existing sites.

This approach takes advantage of the existing support of local stakeholders who recognise the economic benefits such facilities bring to the local community, including long-term, high-skilled jobs.

Utilities should build on EU and national support by actively engaging local stakeholders on the benefits of locally provided green energy, highlighting the societal benefits of low-carbon generation. For example, the UK government claims that the nuclear industry will create 100,000 jobs nationally and generate £20 billion for the economy. It is important that policymakers and utilities communicate a consistent message to local communities.

Furthermore, national and local governments should work with utilities to deploy technologies that optimise the use of local resources. Sweden's combined heat and power requirements are partially met through policies promoting biomass-fueled plants whilst the coal-rich United Kingdom and Germany have started promoting CCS technology as a long-term solution. (For example, Sweden provides a tax incentive for biomass heating systems in which home owners may get tax reductions of 30 percent of the costs of the installation of a heating system. The UK government, with 40 percent of Europe's potential wind resources and high wave/tidal potential, has started a £50m Research Development Fund for offshore-generated electricity. This will support several 5–10 MW demonstration farms prior to full-scale local deployment.)

In tandem with consistent, prioritised policymaker action, utilities should focus their renewable energy investments on long-term strategies that take advantage of local natural resources. A simple example is wind investments by Spanish and Danish utilities that have helped to reinforce their local/regional reputation as green energy providers.

In tandem with consistent, prioritised policymaker action, utilities should focus their renewable energy investments on long-term strategies that take advantage of local natural resources.

Coordinated action is important. Through National Allocation Plans, the EU gives national governments a great deal of freedom in how they approach renewable energy and emissions targets. All levels of government should work with utilities to ensure that the use of local renewable resources can be maximised over the next decade.

Managing conflict 4: Managing the policy objective to reduce demand whilst meeting business need to increase sales

In terms of the fourth conflict, Accenture believes a contradiction exists between EU aspirations for increased energy efficiency and the current market structure that supports higher utility revenues derived from increasing megawatt volumes sold. This is an area where national policymakers in Europe have yet to make significant progress.

Policy options certainly exist for addressing the conflict between 20:20:20 targets and utility business models, such as the supplier obligation in Poland that will require utilities to source 7.5 percent of electricity from renewable generation by 2010 or the California example of decoupling utility revenues from volumes of energy sold.

Leading utilities have a great opportunity to redefine existing markets, create new businesses and ultimately achieve high performance. Rather than offer customers energy volumes at ever-increasing prices, utilities could be selling energy management services and associated products. By investing in new products or offering innovative services, utilities can lock in customers and avoid investment in additional generating plants. For example, Swedish utilities are leasing energy-efficient appliances to customers with the cost of power included, thus creating a fresh revenue stream and reducing demand on load. Poland has seen new market entrants that are capturing customers by offering energy services that improve the efficiency of buildings and reduce costs to consumers.

Leading utilities have a great opportunity to redefine existing markets, create new businesses and ultimately achieve high performance.

Accenture believes that utilities eventually will become less product-centric and more customer-centric. Customers will become more segmented, but margins can be managed. Services can be tailored for environmentally conscious, cost-conscious, functionality-oriented customers. Lifestyle-driven tariffs should proliferate to allow better customer choice. For example, demand management tariffs may be linked with equipment and appliances fitted with an indicator for peak or off-peak energy use.

Accenture believes that utilities eventually will become less product-centric and more customer-centric.

In addition, we believe utilities should be exploring the opportunities presented by cooperation with other industries. Development of the infrastructure for electric transportation or a service for leasing hybrid-electric car batteries holds great potential. Automobile manufacturers are already investing heavily in this space, and utilities risk being left behind. Can utility shareholders, long accustomed to stable returns, be persuaded to embrace the innovation required?

Policymakers need to create the conditions in which market uncertainty is reduced, encouraging investments in immature technologies. German and Spanish feed-in tariffs provide the prospect of secure revenues required to manage the capital risk.

Utilities in turn need to open a dialogue with shareholders about the risks and opportunities of investing in new technologies and pursuing innovative business strategies. It may be that the risk management implications of the new policy climate in which utilities are being asked to operate result in a new breed of investor being attracted to utilities. Recent high valuation of renewables suggests that this process is already under way.

The redefinition of the service provided by utilities and the attendant management of risk and return require significant leadership and stakeholder support. It is essential that utilities can balance their revenue and profitability imperatives whilst shifting toward decarbonised sales and business operation.

Toward high performance

Accenture has demonstrated that policy and industry solutions currently exist in the market for the management of the four conflicts we identified in this article.

We believe that to successfully manage the conflicts to produce an optimal outcome and progress toward high performance, a combination of strong policy action, technological innovation and competition is required.

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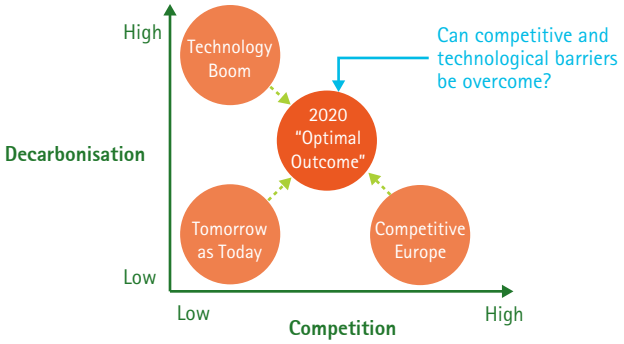
Consider our analysis of a technology boom scenario (see Figure 9), where we identify a quadrupling of average consumer costs. As part of our lowest-acceptable cost scenario, we calculated for the United Kingdom that delivering targets and optimally managing conflicts can double consumer electricity bills by 2020, an additional €600 per annum. Compare this increase to the doubling of domestic gas heating prices in the last five years (UK consumers are paying an additional €470 per year) and also the record oil price rise in the transportation sector. With sustained oil and gas price rises, the power sector can lead the way by securing long-term renewable supplies, thereby decarbonising the economy whilst helping to offset primary energy price increases to the consumer.

Figure 9. The optimal outcome will be met through technological innovation, regulatory certainty and elements of competition.



Management of decarbonisation barriers can deliver an outcome in which targets are met at an acceptable cost.

UK example: Additional €600–800 per year, doubling the "tomorrow as today" UK-projected electricity bill.[3]

The 2020 "optimal outcome" is a new scenario where targets are substantially met at the lowest acceptable cost—assuming conflicts are properly managed!

[3] Source: Accenture research

Top five actions for policymakers and regulators

Based on the scenarios presented in this article, we list five top actions for policymakers and regulators and five top actions for utilities that we believe are the keys to the delivery of an optimal outcome under which 20:20:20 targets are met and where utilities can prosper on a path to high performance.

We begin with actions for policymakers and regulators:

Action 1: Avoid the "wait and see" approach.

We believe that policymakers should finalise outstanding policy uncertainty and establish investment security so that utilities do not favour a wait-and-see approach. As noted earlier, uncertainty is one of the greatest barriers to achieving the 2020 targets. Utilities must urgently increase the pace of their green energy investments, and there are means to managing investment risks as seen by feed-in tariff mechanisms and carbon-abatement contracts that provide certainty to markets. Without clear, guaranteed long-term price signals, the investment required to deliver renewable generation and reduced CO_2 emissions will not materialise in time for 2020. Confirmation of ETS Phase III is critical here.

Action 2: Strengthen national plans to meet national targets.

The European Commission and national policymakers need to build on the climate change momentum and ensure that EU, national and local implementation plans are realistic and actionable. Regulators should monitor progress against targets. Contingency plans for noncompliance should be developed to provide national and local implementation guidance and suitable penalties should be rigorously enforced for noncompliance of target milestones.

Action 3: Accelerate cross-border infrastructure planning and interconnection.

Infrastructure planning needs to be coordinated at an EU level. Centrally managed planning and investment for network interconnection and system balancing is necessary to facilitate the reciprocity and market access required for cross-border trade.

Action 4: Design regulatory frameworks to deliver infrastructure ahead of need.

Policymakers and regulators should develop a strategic vision of European networks and the technologies that will efficiently connect new renewable sources to existing demand centres by 2020 and eventually to an electrified

heating and transportation market by 2050. For 2020, it is critical that the main physical locations are identified, and that network designs and pre-build approvals are expedited such that the network can be built in advance of asset needs, whether it is offshore or onshore wind, wave, tidal, biomass or waste-to-energy generation.

Action 5: Enable a stable system for renewables, nuclear and carbon capture and storage.

In conjunction with the measures in Action 4, the market will need a stable system that ensures renewables portfolios can be effectively balanced and integrated with nuclear and future CCS solutions. Security of supply is a fundamental consideration here.

System balancing mechanisms, load shifting, improved renewable generation forecasting and energy storage will be critical to managing the intermittency risk and providing a stable, sustainable system.

By following these five actions, policy-makers can remove future uncertainty and provide the market infrastructure that will be necessary to support utilities as they take their strategic decisions and attempt to meet their environmental commitments.

Top five actions for utilities

Accenture believes that market players should take actions suited to their core strengths to deliver a sustainable market position in the lead up to 2020.

The top five actions for utilities are:

Action 1: Incumbent utilities—Market leaders should prepare for further market change.

With more than €100 billion in clean technology investments made last year, substantial technological development will occur in the coming decade. New market entrants have already appeared on both the supply and demand side of the market. Utility competitors will be moving quickly to catch up. It is, therefore, important for utilities to claim the best sites, people, resources and partners to maintain a competitive advantage. Moreover, the ability to optimise disparate natural resources to balance supply and demand across regions will serve as a key differentiator. Similarly, the ability to test and then deploy innovative products and services in multiple geographies represents a huge opportunity for utilities to expand into new markets, such as electric transportation.

Action 2: Incumbent utilities—Market laggards have a last call for action.

To be in the lead, utilities will need to assess the impact of market change, develop realistic strategies that will best position their firms for 2020 and build the necessary capabilities and skills. As a utility, set internal targets for cost-effective implementation and monitor your progress. Manage ongoing operational risks and carbon exposure through an asset efficiency and carbon credit (ETS/CDM/JI) strategy.

Action 3: Oil and gas firms should diversify.

Oil and gas firms that are present in the power sector have a strong chance to strengthen their portfolios and make further sector investments as part of a diversification strategy. These firms can use high oil prices to secure capital for renewable projects and hedge future downside risk in European oil demand by aggressively pursuing opportunities in offshore wind and CCS, whilst forward integrating into power generation and retail supply. We believe there is huge upside potential in gas-fired generation, and that, long-term, economies will need to electrify to meet 2050 environmental goals.

Action 4: Municipalities should deliver community-based green solutions.

Municipalities should strengthen delivery of green solutions that are optimised for communities. They should take advantage of close customer relationships to attract capital and implementation partners. Investment in biomass, waste-to-energy and wind generation all offer potential. Implementation partners can bring improved access to capital, skills, programme management and delivery experience of new technologies on the demand and supply side to help tailor solutions to local community needs. With the importance of winning over local communities and maximising the use of local natural resources, we believe that local knowledge and local partnerships will offer a significant competitive advantage.

Action 5: New entrants should move into demand-side solutions.

Finally, new entrants should offer integrated demand-side solutions such as provision of heating, cooling and lighting through energy infrastructure management and intelligent buildings as a means of differentiation and brand identification. These firms will need to prepare an entry strategy and lobby policymakers to ensure commodity risks and industry structures do not act as a barrier. In parallel, new entrants can start testing products and engaging with customers to ensure their products/services will meet 2020 market needs.

The next 10 years: View of the industry

Accenture sampled the views of more than 250 members of the electricity and gas utility industry in order to gather industry opinion on a number of aspects of the conflicts detailed in the previous sections.

The results showed that the majority feel the EU 20:20:20 targets make sense, but most utility respondents feel they are not likely to be reached by 2020 (see Figure 10). When asked whether a hierarchy between EU energy targets is desirable, the majority of respondents agreed that the reduction of CO_2 is the main target, and that others support it (see Figure 11).

On the topic of whether the EU will reach the 20:20:20 targets, the prevailing opinion is that these goals will more likely be met between 2025 and 2030 (see Figure 12). The greatest barrier cited is the lack of customer demand for green solutions (see Figure 13). No single reason predominated on the question of whether achieving the EU 20:20:20 targets conflicts with security of supply (see Figure 14) or whether the targets conflict with competition/liberalisation (see Figure 15).

As the utilities across Europe explore the possibilities and actions to take over the next decade, Accenture believes that by following the actions this report outlines, market players can deliver CO_2 emissions reductions whilst reaping significant benefits such as new products in new markets. As always, being a first mover holds the greatest risks, but also the greatest rewards. And the potential rewards are great. There is a visible path toward successful delivery of the 2020 targets against an acceptable stakeholder outcome, and ultimately high performance. However, the journey will not be easy, and it will require the proactive engagement of policymakers and industry players.

Figure 10. The EU 20:20:20 targets as a whole

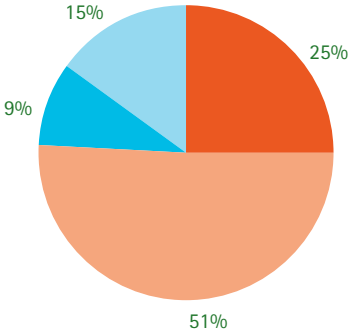


Figure 11. Is hierarchy between EU energy targets desirable?

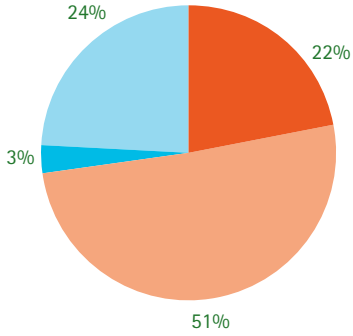


Figure 12. When will the EU reach the 20 percent renewable energy target?

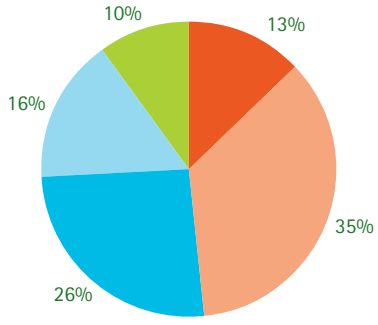


Figure 13. The greatest barrier to meeting the target

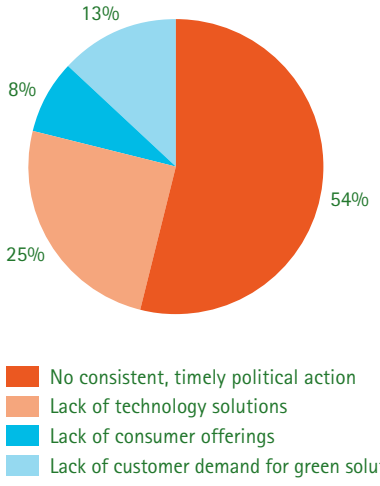


Figure 14. Achieving the EU 20:20:20 targets conflicts with security of supply

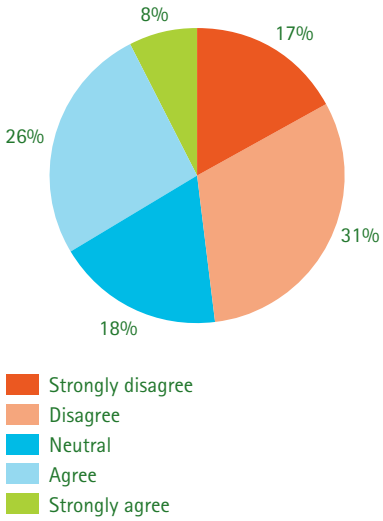
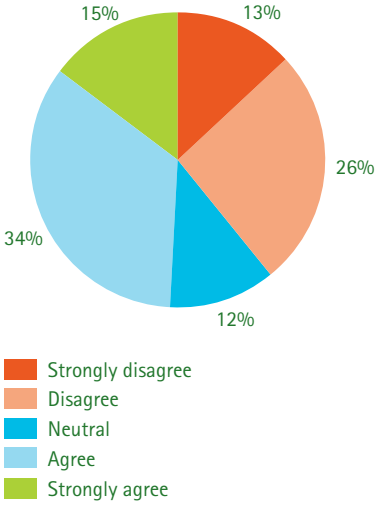


Figure 15. Achieving the EU 20:20:20 targets conflicts with competition/liberalisation



Source: Accenture research (audience polling Eurelectric Conference 2008)

Scenarios and modeling

To assess the potential for achieving the European Union 2020 renewable energy targets, Accenture developed and analysed four scenarios for tomorrow's utilities market.

We then created a model to analyse and assess the likelihood of meeting the targets under the four scenarios. Of the four, only the "optimal mix" scenario held the greatest potential for meeting the EU targets. While the technology boom scenario could also meet the targets, the cost would be unacceptable to consumers. Our summarisations are below:

Scenario 1: Today as tomorrow

Marked by minimal change and even a move back to national champions and protectionism, energy security reigns, and there is little support for either liberalisation or a carbon agenda. This scenario is further characterised by no long-term carbon price, uncertainty that stifles investment in renewable energy technologies, high gas price due to lack of investment and instability, and consequently the construction of efficient coal plants to compensate for high gas.

Scenario 2: Competitive Europe

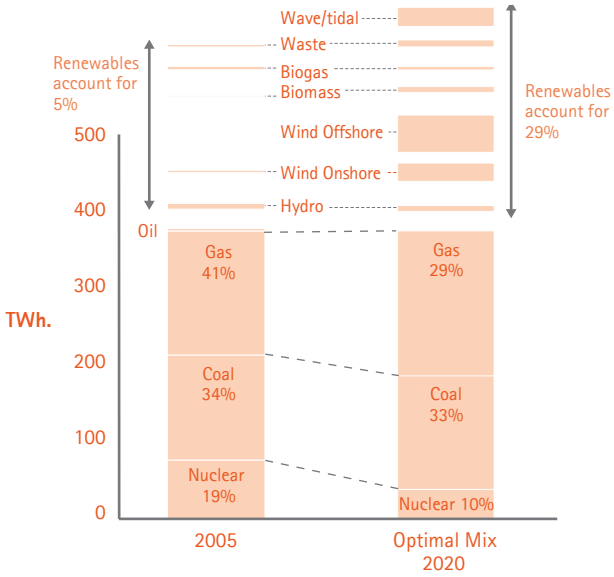
Characterised by a move toward Europewide harmonisation and the creation of a single European market by 2020, the liberalisation agenda is pursued by policymakers and regulators. The lowest-cost solution dominates, not the lowest-carbon agenda; the carbon agenda falters. Gas sees significant growth, coal continues to hold market share and renewable energy generation struggles to compete on cost.

Scenario 3: Technology boom

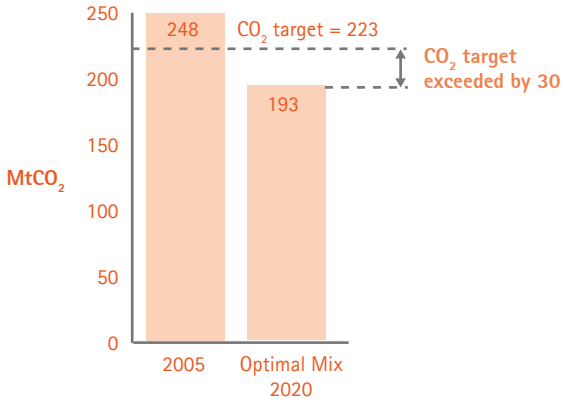
This scenario is an era of rising carbon prices and low-carbon technologies (renewable, nuclear and biofuels) as the EU pushes a low-carbon agenda. Centrally directed policies, however, limit the cost-lowering effects of competition in this scenario. This scenario depicts a world of distributed generation and energy services. Consumers embrace energy-efficient products and services, and there is a high share of renewable energy generation. Coal experiences a sharp decrease as it becomes too expensive and is offered at a high cost to the consumer.

Figure 16. Under an optimal mix, targets are met at a much reduced cost.[4]

Renewable target of 20% exceeded by 9%.



CO_2 target exceeded by 13%; cost to consumer of €10,000-12,000 per household over 15 year period.



[4] Results are UK-specific
Source: Accenture research

Scenario 4: Optimal mix

The EU pushes a low-carbon agenda, with carbon priced at around €20/tonne. In this scenario there is a balance between the centrally directed low-carbon policies and market forces, which keeps prices relatively low. This scenario is characterised by consumers increasing their consumption of energy-efficient products and services, an increased share of renewable energy generation, a significant decrease in coal as it becomes too expensive, and reduced cost of energy to the consumer with some competition. This scenario represents the most promising scenario for meeting the 2020 targets at an acceptable cost (see Figure 16).

About Accenture

Accenture is a global management consulting, technology services and outsourcing company. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. With more than 180,000 people in 49 countries, the company generated net revenues of US$19.70 billion for the fiscal year ended August 31, 2007. Its home page is www.accenture.com.