High performance. Delivered.

Proposals for an Energy Policy in Italy

Ways Forward

Proposals for an Energy Policy in Italy

Ways Forward

by Andrea Gilardoni and Luca Cesari

Scientific Coordination
Alessandro Marangoni
Roberta Bigliani

Research Team
Carlo Gadaleta Caldarola

Matteo Neri
Mauro Ripamonti
Stefano Clerici

Our thanks to everyone who contributed time and effort to this project.
In particular, to:

Prof. Piergiorgio Berra for his insightful critical reviews and invaluable suggestions;

Prof. Massimo Beccarello, Ing. Domenico Dispenza, Dott. Cristian Fabbri, Ing. Roberto Garbati, Dott. Giovanni Locanto, Ing. Fabrizio Longa, Dott. Andrea Mangoni, Ing. Massimo Orlandi, Dott. Umberto Quadrino, Dott. Massimo Romano, Prof. Gianni Silvestrini
for interviews kindly released to the research team.

The views and opinions put forward in this White Paper are those of the authors, solely.

Con il sostegno di

Banca Intesa

Banca Intesa Infrastrutture e Sviluppo

Index

Proposals for an Energy Policy in Italy

1. Why a Paper on Italian Energy Policy?

Energy is crucial for the economic, social and environmental development of the planet. Italy needs to change its "emergency" mindset and set out in a new direction that leads to structural solutions based on a wide social consensus.

Energy has always been a priority consideration. Today, it has become a topic that is crucial to social, economic and environmental development of the entire planet. A symptom of the growing relevance of the energy question is the shark spike in energy prices, also driven by the emerging giant Asian economies of China and India. Energy has also been the spark that set the flame to many recent international political crises.

From an environmental standpoint, the world's increasingly voracious appetite for energy has served to worsen the greenhouse effect and put a strain on efforts to protect the ecosystem.
All of this happened at a time of transition for the energy market in Europe. As a result of market deregulation and the emergence of energy trading, the idea of centralized energy planning has been abandoned in favor of more market driven mechanisms.
The changeover will require a certain period of time to complete. There are learning curves to be traveled, corrections to be identified and fine tuning to be implemented before the system can be considered fully in place.
The fragmentation of the various responsibilities and the emergence of new players with governance roles have in a certain sense undermined the very notion that an overall system actually exists.
This is probably a transition cost that has to be paid until the new model - with its own checks and balances - is truly anchored.
The changeover process has also impacted the legal framework, triggering adjustments and sometimes change courses and major rewrites. Shifts in the legal framework gave rise to what was quickly labeled "The Rules Market", in which different players jockey through legitimate channels to influence new legislation. This development, in turn, underlined the need for a duly empowered independent market regulating Authority.

However, the prevailing philosophy is that this independent arbiter must be positioned one notch below the overall administrative-political system which is responsible both for managing the sensitive democratic balances among nations that energy invariably entails, and for defining short and long term strategies to ensure sufficient energy supplies.
This is the context which has reignited debate on energy also in Italy. Much of the debate has been conducted from the standpoint of analysis and criticism, rather than on tabling proactive ideas for systemwide actions. Those proposals which have been discussed have largely been extremely short term in nature and often shaped to promote interests that are specific, though legitimate. Discussion was often sparked by particular events (for instance, power outages and black-outs, the repeated "Nimby" [Not In My Back Yard] syndrome the drought that caused a drop in hydro-electric production and the more recent gas supply difficulties), which were foreseeable.
We are going to join Italian debate to share our idea and proposals which are the product of in-depth research into the energy question today and the result of a series of interviews with industry-qualified experts.

Our proposals take into account the complexities that are specific

to energy, though recognizing the sector's multiple inter-dependencies. We have adopted a neutral, objective standpoint and our stated goal is to make a useful contribution to ongoing efforts to define an efficient energy policy.
We are convinced that Italy must address the energy question by moving away from the emergency-type mindset that has been a hallmark of Italy's approach to date. Our position is that the country needs to build consensus and start out in a new direction that gives balanced weight to the full set of objectives which an energy policy is required to address.

2. Industry Trends and Objectives

The end game is an energy system that is economic, sustainable and safe, that takes account of the world's dwindling supplies of fossil fuels and that enables country competitiveness.

Statistics forecast that primary energy consumption in Italy will grow by 11% between now and 2015, with demand for electricity expanding by 25-30%.
The corresponding outlook for gas consumption is more uncertain, as this depends on how much is used to generate electricity. Demand for gas is expected to grow by between 18% and 28% between now and 2015.

Based on the assumption that planned measures are ultimately implemented, carbon dioxide (CO_2) emissions are expected to remain stable between now and 2015. However, this will not be sufficient to meet the targets set for Italy in the Kyoto protocol.
Prices for fossil fuels are widely expected to increase in a structured manner and the distance between production sites and consumption sites will gradually widen.

Competition in the Italian market - which to date has been slow to take off – will develop only to a limited extent and the fragmentation that characterizes gas retail and distribution today will be only partially redressed.
In relation to investments, important projects for electricity production plant renewal are already under way and are set for completion within the next five years. This should lead to noticeable improvements in average system efficiency.
Investments in gas and electricity transportation and gas storage infrastructures have not come on stream as quickly as planned. These shortcomings are expected to be rectified, though neither quickly nor deeply enough to position Italy - as many had hoped - as Europe's gas hub.
Given this background, the objectives of the country's energy policy can be summarized in the following mission statement:

"To Build an energy system that is economic, sustainable and safe, that takes account of the world's dwindling supplies of fossil sources, enables country competitiveness. Finally, assures that the prices charged to end users reflect gained system efficiencies".

3. Basic Assumptions and Criteria

The paradigm must move away from reliance on energy stocks which by their very nature are not limitless, to utilization of natural flows that are inexhaustible.

Energy policy must address a multiplicity of needs:

Security of Supplies.
It is the capacity to guarantee that demand can be satisfied within a system where predefined security is a given. In the short term, this means maintaining a quality service. In the mid to long term, it means assuring constant capacity to meet the country's energy needs.

Environment Sustainability.
The policy must guarantee today's energy needs without creating economic and environmental fallout for future generations and without compromising their ability to meet their energy needs.
For production, this entails accelerating the gradual shift from today's paradigm, with its reliance on exploitation of energy stocks which are not limitless, toward a new logic based on utilization of natural flows that, by contrast, are limitless.

Social Acceptance.
Energy policy must take account of the cultural values and the wishes of the peoples who live in proximity to the energy infrastructure. The production and transportation of energy have visible impacts on the environment As such, they are often at the center of residents' discontent, whether stated or not. Though the so-called "Nimby" syndrome is frequently overlooked, it is, on reflection, perhaps the very factor which more than any other has held back the development of energy infrastructures.

Supply Affordability.
Prices charged for supplying gas and electricity to end consumers must be affordable. Energy policy must acknowledge the strong impact that energy prices have on the nation's production system and must accordingly endeavor to offer prices which are more or less aligned with those charged to competitors in other countries. Energy policy must take into consideration the effect that energy prices have on the country's balance of trade. This is an especially important factor in the case of a country like Italy which has no domestic sources of fossil fuels to rely on. Policy must be framed in a manner that assures that energy shippers have access to procurement that is not only affordable but also safe and reliable. Policy-makers need to bear in mind the reality that expenditure on energy constitutes a significant recurrent expense for householders and one that can neither be eliminated nor replaced. Although less so today than in the past, energy policies must also facilitate the development of competition as a vehicle for promoting greater efficiency.

Industry and Employment Promotion.
The gas and electricity industries directly and indirectly have a strong impact on other industries and on employment – (just think of engineering, plant construction and energy services). When drafting energy policies, due weight must be given to possible increases in the cost of energy – for instance, in the case of renewable energy sources – can reflect positively on the nations' economy. One such positive effect would be the retention of cash within the country as opposed to exporting it to pay for non-domestic energy supplies.
In Denmark, for example, where energy policy strongly rewards the utilization of renewable sources of energy, the wind-based energy industry now posts sales of some 3 billion euro each year, employs some 30,000 people and is now

Deregulation brings to the fore externalities that exist on both the demand and supply sides.

the country's second most important export industry.
The above five needs are closely interrelated. In some cases, choices have to be made, without ignoring possible trade-offs. For example, since investing in supply safety by increasing reserves entails a certain cost for the country, the expenditure must be proportionate to the effective measurable gravity of the risk being reduced.
Furthermore, the weight of each of these five needs can vary in time and as a consequence of domestic and international events. Today, for instance, the need for secure supplies would appear to be the major priority. However, it is not difficult to foresee that with time, environmental considerations will escalate in importance.
The proposals we developed and described in Chapter 4, are based on a number of assumptions that are explained below.

Systematic recognition and quantification of positive and negative impact of "externalities" both on demand and supply.

In relation to energy, an important part of the investment and consumption options available has significant side-effects on each of the five needs we mentioned above. And these side-effects are not always quantified in the final accounts. In economics, they are called "externalities".
Let's take the case of safe supplies. From the Supply standpoint, building import or storage infrastructures certainly increases the safety factor for the country's supplies, in addition of any direct or indirect economic returns for shareholders. From the Demand standpoint, the option of utilizing electricity at night time and thereby spreading demand over a wider window reduces peak demand and increases the system's reserve margins. However, very often, externalities such as these, which are objectively difficult to quantify, are not adequately reflected in the overall economics.
Less relevance was given to externalities in the past because the mission of the state monopolies of the time also included the benefits of the system. That logic no longer applies today.
Deregulation forces us to openly acknowledge that externalities are an inherent part of the system and that they impact both supply and demand.

Introduction of cost-benefit sharing mechanism at local level, within the context of an overall national scheme.

Though energy issues are global issues, solving them cannot but at local level. For example, the major obstacle to building a regasification plant in Italy is local level opposition. Under the principle of cost-benefit sharing, Regional and Local Authorities would have greater involvement and responsibility for reaching energy policy objectives. This, in effect, amounts to another instance in which externalities must be recognized, though limited to a local level context. The philosophy of cost-benefit sharing can also be used, for example, in relation to renewable sources of energy, energy efficiency, greenhouse gas emissions, regasification plants, electric power generation plants and the exploration and production of fossil fuels.
In other words, the idea is to apply a mechanism that is similar to the Burden Sharing model that applies at European level for the purpose of compliance with the Kyoto protocol: costs incurred by compliant Regional Authorities would be compensated by non-compliant Regional Authorities through a system of rewards and penalties.
This process would be coordinated at national level charged with defining macro-level objectives to be shared across local geographies bearing in mind all local

Decentralization of the energy agenda could be useful but only on condition that overall national interests are not compromised.

peculiarities. Decentralization of the energy agenda could be seen as both useful and desirable, but only on condition that overall national interests are not compromised, especially from strategy and safety standpoints.

Greater leverage of taxation as a tool in energy and environmental policy.

The European Union's 2005 White Paper on Energy Efficiency states that "at the moment, Community tax policy still remains too often a simple tool at the service of budgets, without much coherence with the aims of other policies, and full of exceptions demanded by Member States for all manners of consideration".
Italy's fiscal policy is often structured for a strictly financial standpoint and does not serve to provide guidance for the market. The tendency today is to rely more and more on instruments such as White, Green and Black Certificates, though these mechanisms too have significant limitations. For instance, they are - by their very nature - hard to reconcile with externalities. Green Certificates, for example, are calculated based on the renewable energy generated, irrespective of the fact that the power generating plant may have externalities to address in relation to environmental impact or acoustic pollution.
On the other hand, taxation could well become an easy-to-implement tool that can be used selectively and highly effectively. The underlying assumption is that a more targeted use of the ability of the tax system to drive alternative options would not leave the state coffers with less tax revenue.
Taxation can also be seen as a tool for applying penalties, for instance, on plant and assets that have an overly negative impact on the environment, thereby also taking into account any externalities.

Acknowledge the power of moral suasion versus public and private companies.

"Moral suasion" is a soft solution which, like the tax tool - if not more so - is easily implemented, very effective and extremely low-cost. Governments and Authorities alike systematically leverage moral suasion in order to steer operators' decisions in the desired direction. In fact, the state shareholding in private energy companies serves to influence business missions by providing for the wider national interest. Private investors' perceptions of state shareholdings in market listed companies are that they serve less as a threat to returns on private investment in the narrow sense than as a guarantee.
Greater leverage of moral suasion could prove to be an effective tool also in the case of private companies. Furthermore, it would be easier to achieve than ex-post regulation, always a complex and costly solution both to define and to apply.
Norms containing incentives - like the power of moral suasion - should be seen as tools which serve to limit companies' strategic freedom to act. While Germany is world leader in wind power generation in terms of installed capacity, not all players have invested heavily in this source. E.On, one of the two German giants, today has the greatest wind power generation capacity worldwide. By contrast, its competitor, Rwe, has made only marginal investment. This shows how, within the level playing field of a system of incentives pushing toward renewable sources, companies' strategic choices can differ considerably. We believe that this is the type of scenario in which the power of moral suasion can be brought to bear on Italian players, both large and small, in connection with renewable sources, energy efficiency and diversification of supply.

4. Priority Actions

We will now turn our attention to possible areas for targeted action, distinguished by energy supply and demand. Here we will move from the general to the specific, to concretize the policies we have developed. Many of the points which follow may need further detailed analyses and we have omitted details in places for the sake of brevity.

Actions that impact Demand.

1.
Drive efficiency in end use.
Encourage more efficient and consumption of electricity and gas.

Actions that impact Supply.

2.
Develop renewable energy.
Solar, photovoltaic, wind, biomass and other latest generation sources.
Hydroelectricity is not included as it there is little scope for expansion in this area in Italy.

3.
Recover industry and technology leadership.
Focus on innovation in the gas and electricity industry across the entire chain of production.

4.
Achieve greater efficiencies and security in supply and transmission.
Expand import capacity in order to guarantee security of supplies and generate a limited overcapacity.

5.
Marker structure: secure efficiency and competition.
Facilitate the emergence of a market that is efficient in both structure and operations.
Identify measures which enable competition to transfer the benefits of efficiency to end user prices.

Actions that impact Supply and Demand.

6.
Fine tune National and European governance.
Identify actions to enhance coordination among the numerous institutions and entities charged with governing the new liberalized market scenario at national and international level.

The above six lines of action will be examined in the following pages.
Service quality in relation to distribution, while important, is not considered in this document since not critical today, also thanks to the positive effects of AEEG actions.

4.1 Drive Efficiency in End Use

The EU could save at least 20% of the energy it consumes today; Italy could save 10%–15%.

Energy efficiency has always been crucial. Levels of efficiency improved considerably in the wake of the energy crisis of 1973, before dropping back when oil prices plummeted. Today, therefore, there is ample margin to recover efficiencies, at least in theory. The recent introduction of energy efficiency certificates was the result of a policy decision to drive more efficient consumption. This initiative is supported by a new services industry whose mission is to promote energy efficiency. The policy seems to be on the right way, for now. However, further actions should be addressed to deliver more impressive results.
It is not easy to quantify exactly how much energy Italy could potentially save. The European Commission is on record as stating that the EU "could save at least 20% of the energy it consumes today." In the specific case of Italy, this would imply a saving of some 38Mtep of primary energy.
A saving of this magnitude would take Italy back to the consumption levels of 1990 and would be a saving that is much higher than the total savings of 2.9 Mtep for 2009 as targeted under the White Certificate system. In view of Italy's lower energy intensity compared to other European countries, it is probably safer to estimate the potential savings in the range of 10-15% of current consumption over a 10-year period.
Savings of this level could be reached by adopting the following measures:

Support the development of White Certificates.

As this new market mechanism has only recently been implemented, it is too early to judge the outcomes. Control mechanisms could be more finely tuned to guarantee successful startup. Historically, the problem has been the low inclination to save energy on the part of those for whom savings targets had been set. In some cases, there were even conflicts of interest. These were partially offset by the benefits contained in the new norms. Today, the scenario is changing: there are approximately 500 businesses that are prepared to commit to energy savings. In future, this could lead to the introduction, and achievement, of even more stringent savings targets.

Consolidate the emerging domestic energy services market.

The world energy services market [ESCO] is dominated by a small number of major foreign players. The White Certificate system could well lay the groundwork for the creation of a domestic ESCO industry. In the interest of the nation, public sector shareholders therefore ought to act to encourage Italy's major utilities to invest in energy services and contribute to the startup of a market which could subsequently expand abroad.

Create incentives to use energy-saving products.

Energy-saving products - often economical themselves - have externalities that are positive for the entire system. We recommend that taxation be used to penalize energy-intensive products, and facilitate greater awareness of the energy efficiency levels of a wide range of products - especially white goods - by spreading the use of energy labeling. New measures for the disposal of old white goods could be studied and introduced.
New standards regulating standby mode could be introduced at European level to curb one of the greatest sources of electricity wastage. Research conducted in the UK found that UK consumers pay in the region of 1.1 billion euro every year as a result of electrical devices left in standby mode.

Adopt a cost-benefit sharing system that recognizes the efforts of Regional and Local Authorities.

Simplify and restructure residential tariff.

Transparency at billing level is a powerful tool with which to educate consumers about the real costs of their energy consumption and prompt them to make self-imposed savings. This concept will in fact be reinforced by the introduction of a new social tariff with maximum consumption limits. Bi-hourly tariff is in force for energy today, depending on whether consumption is daytime or night time. However, information limitations and the only marginal difference between the two rates do very little to make this approach truly effective. This tariff could be redefined on a multi-hour basis aligned with the demand curve, and the tax lever could be used to accentuate the difference between the different hours. This would have the effect of leveling out the daytime electricity demand curve; this, in turn, would bring benefits to the overall system from environmental and supply security standpoints which could be quantified in economic terms and passed on to the end consumer. The installation of intelligent meters now under way across the country will facilitate solutions of this type.

Promote an intensive campaign to inform and educate on energy saving.

The diffusion of energy conservation habits has been significantly hampered by lack of information.

These limitations could be partly side-stepped by intensifying current information campaigns that aim to educate the public to be more aware of energy efficiency. It will also be important to launch campaigns targeting construction sector and engineering and plant construction industry.

Introduce incentives to build energy efficient housing.

Once ratified, EU Directive 2002/91 will introduce energy audits and energy certification for buildings, including standards for air conditioning. This regulation represents a step in the right direction and hopefully it will be applied in a serious manner in Italy. A major drawback of the new regulation is that it applies only to newly constructed buildings and, partially, to buildings currently being remodeled. In Italy, new buildings account for 0.6% of all buildings, and 66% predate 1976. This normative gap can be redressed by replicating the fiscal measures implemented for general construction work, i.e., by offering tax breaks for projects that improve a building's energy efficiency rating, as certified by the company that executed the work. Public support for the construction industry through tax breaks has had a payback also in another sense: it has boosted tax revenues.

Define cost-benefit sharing objectives for energy efficiency at regional level.

Given that regions across Italy have greatly differing patterns of energy consumption, specific energy saving targets could be centrally defined for each region. The targets could be supported by a cost-benefit sharing system to economically reward Regional and Local Authorities.

Improve energy efficiency in buildings owned by the Public Administration and set specific conditions in contracts for tender.

There is wide margin for improvement in the area of energy efficiency in the real estate portfolio of Italy's Public administration apparatus. Improvements could be achieved by setting specific energy saving objectives to eliminate existing wastage, and by encouraging public buyers to stipulate energy conservation conditions when offering contracts for tender.

4.2 Develop Renewable Sources of Energy

Developing renewable sources of energy is grounded on two cornerstones: targeted options and effective actions.

The development of sources of renewable energy is today considered an indispensable step on the road to environmental quality and reliable national energy supplies. Politicians can draw on the experiences of their colleagues elsewhere in Europe to design norms which are at the same time based on targeted options and effective measures. Pursuing targeted options means, firstly, ignoring energy options which are not really renewable in the strictest sense. If worth supporting at all, such sources of energy could be sustained through other initiatives. Secondly, it means identifying certain sources as priority sources by weighing their respective economic and social appeal in a nationwide context.
Effective actions require that technology reach a critical mass of resources which would foster the emergence of an industry in Italy with competences in plant, installations and logistics, based on research and innovation. This would also help move forward along the learning curve and build economies of scale for renewable sources of energy.

A number of recently enacted norms are coherent with this perspective, and it is encouraging to note the reorganization of GRTN, as a body specifically mandated to promote renewable sources of energy.
Italy already derives a considerable share of its electricity supplies from renewable sources, with hydro-electricity accounting for most of it. It is not feasible to make much greater use of this particular source.
Italy lags behind other countries in relation to the newer forms of renewable sources of energy, especially wind power and photovoltaic. If development of these sources continues at the current slow pace, and if there were even a modest increase in Green Certificate quotas, the most reliable forecasts show that Italy will still fail to meet the targets set for the country in the 1999 White Paper and those which the EU set for Italy. By 2010, the variance between actual and target levels should be approximately 6.5 Mtep, with a shortfall of some 1.1 Mtep in the most optimistic scenario with Green Certificates at 4% (see figure 1).

We believe that initiatives to develop renewable sources should be launched with a view to reaching the targets defined for 2010, though starting from those defined in 1999. This should be sustained throughout the subsequent decade through measures that encourage constant compliance with this philosophy.

In our opinion, the core fundamentals are as follows:

Restrict the Green Certificate system to renewable sources of energy.

It is something of a discrepancy that technologies which are not strictly renewable are included among plants that can benefit from the Green Certificate system. We are of this opinion not so much because these plants do not merit public support, as the fact that it opens a door for lobbyists to seek analogous public support for other sources that are not strictly renewable. This, in effect, is what happens today in the case of the "assimililated sources" which have absorbed 80% of CIP 6 funding, to the detriment of sources that are truly renewable. Cogeneration and, in part, thermo-valorization of waste are also to be excluded from the

The type and extent of support provided must be differentiated for the various renewable sources of energy.

renewable category. However, these sources merit financial support of some description since they produce benefits for the system and for environmental reasons. These sources - and others not listed here – should be supported through ad-hoc measures and in the interim, should be allowed to benefit from the Green Certificate system. Obviously, any new incentives introduced should at least be equivalent to the benefits that can currently be derived form the Green Certificate system.

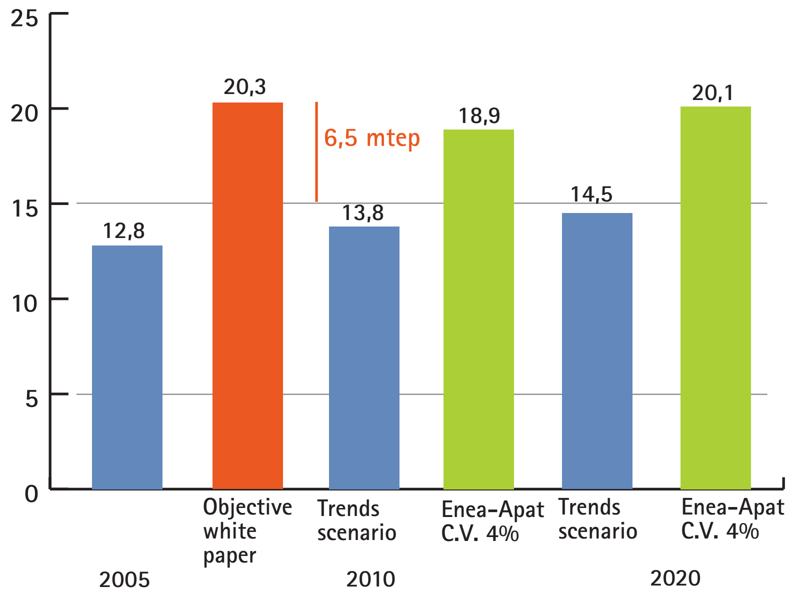
Sustain off-shore wind power in a differentiated manner.

Among the new generation renewable source of energy, wind power is the one which today uses the most competitive technology. In fact, wind power accounts for some 80% of all renewable capacity currently being developed in Italy today. This source of energy is marred by both is visual and acoustic impacts, and these drawbacks will become more and more controversial as plants are built across the country (in areas which, by the way, will be increasingly less optimal). This can be partly remedied by following the German example whereby off-shore wind plants are encouraged with certain incentives which are different from those used to foster on-shore plants. The former are more expensive, and they will not be developed widely enough without greater public support. Recognizing a preference for the off-shore version is yet another example of externalities that influences the type of incentive to be selected and correctly balancing this consideration with others such as its adaptation to Italy's densely populated and scenic landscape, and the country's lengthy coastline. To provide an idea of what could be achieved, one third of the at least 4,000-5,000 MWe in new wind power coming on stream before 2020 could be sourced off-shore.

Sustain solar and photovoltaic.

Photovoltaic, in absolute terms, is not a renewable source of energy of any great significance. In Germany, world leader in this area, total photovoltaic

Figure 1 – Renewable energy: Scenarios and Objectives (values in Mtep)



Fonte: Our elaboration of ENEA data for 2003

Implement a widely-scoped, firm policy to develop all new renewable sources.

production contributes less then 1% to overall energy needs. Without resorting to overly optimistic scenarios, it is feasible that the photovoltaic source, together with solar energy, could be particularly suited to, and sustainable in, Italy.
A development in this sense would require a program of direct incentives, similar to the program successfully started up in 2005, to support the installation of power generation plants in the homes of domestic end users.
Significant progress in relation to the latter could be made by simplifying authorization procedures so that, for example, simply communicating the fact that work has commenced to install photovoltaic or solar panels would suffice for planning purposes. Again drawing on the German experience, the cost of connecting the domestic plant to the grid would be borne by the public purse, as would the cost of downloading and valorizing the electric power generated. Power would be charged at rates which would ensure that the investment is amortized in a timeframe of between 1 and 10 years, in line with market trends.

Support for photovoltaic is commendable for three reasons: it is a quite recent technology and there is still room for a nationwide plant industry to emerge and grow; Italy is favorably positioned with regard to hours of available sunlight; and - unlike other forms of renewable sources - because solar energy directly involves the end users, it sensitizes them to energy supply issues.

Define a broader trajectory for long term quotas.

The wording of Law no.62 dated May 18, 2005 which ratifies EU Directive 2003/55 for Italy is "equivocal and arouses suspicion that there may be a rethink in future regarding the decision to maintain the current Green Certificate system for certain types of plant." Apart from any rethink on the Green Certificate system at EU level, the fact that mandatory quotas have been defined for only a limited window (3 years) creates uncertainty for the longer term picture and undermines any willingness to commit serious investments. This uncertainty can only be redressed by introducing more public incentives than would otherwise have been necessary if the political-administrative system had sent out clearer signals of a longer term commitment.
Our stance is that a wider and more determined policy should be implemented to facilitate the development of all the newer renewable sources of energy. Raising the mandatory quotas (not less than 4-5%) is not only a necessary prerequisite to achieving the objectives set our above, but could also help to indicate the right direction to pursue.

Deploy more funding to scientific and technological research.

We will address this topic in greater detail in section 4.3. Here we will limit ourselves to observing that research to increase yields and reduce costs of renewable sources is fundamental to promoting wider utilization of these alternative solutions (especially photovoltaic).

Introduce a cost-benefit sharing system at Regional level.

It may be useful to introduce a system of cost-benefit sharing also at regional level, along the lines of the energy efficiency model discussed earlier. This solution would help avoid vetoes on projects for renewable energy, such as happened in Apulia and Sardinia in the case of wind power.

4.3 Recover Technology and Industry Positions

"The Stone Age did not end because mankind ran out of stone, and the Oil Age will not end because we ran out of oil."

"The Stone Age did not end because mankind ran out of stone, and the Oil Age will not end because the oil wells dried up, but because of technology, the real enemy of OPEC." This famous quote from Zaki Yamani, Saudi Arabian Minister for Petroleum, neatly conveys the importance of promoting research in energy.
Technological innovation in energy is indispensable in the short term to achieve at least four objectives: cut the costs of renewable energy, cut greenhouse emissions, increase the savings obtainable from current energy technologies and make nuclear plants safer.
In the mid term, the new frontier of energy technology could be hydrogen, the new power generation technologies, and also more efficiency of today's technologies.
In the longer term, research is the only way to guarantee substitutes for today's diminishing supplies of fossil fuels.
Some observers claim that Italy might be well advised to pursue only certain defined types of frontier technologies, with the aim of positioning the country as a world leader. Others hold the view that Italy must work hard to close the gap with technologies already successfully working in other countries.
While it is not our purpose in this White Paper to identify the sectors in which Italy should focus its investments, we are convinced that the country must dedicate more resources to technology development. Funding for research and development in energy (and other areas) has significantly declined in Italy over the past twenty years to such an extent that the country's energy research industry is close to extinction.
As part of the liberalized framework, CESI lost its monopoly on system research in January 2006. A new national policy on energy development has been implemented in its place. Funding for system innovation, which is largely comparable to basic research, has been provided by dedicating a share of electricity revenues equal to between 0.2 and 0.3% (Item A5), amounting to some 60 million euro each year. This source of funding was abolished in June 2005.

The new policy is based on a three-year plan which was at approval stage at the time this White Paper went to press. Details of the content of the plan have not been disclosed. Our preference would be that project financing be made available through contract tender competitions in a market driven context. We would also hope to see system research accompanied by parallel innovation in industry through a close working relationship with power generators. We believe applied research should be fostered and encouraged to aim for objectives that are aligned with the country's broader energy policy.
Lastly, we would like to see co-financing promoted as a means to increase total investment in research and innovation.

It is also important to increase funding for the other cornerstones of the nation's energy research policy, especially the Universities and ENEA. One objective that could be achieved in the short term would be to double the government R&D spend on energy technologies from the current budget of 300 million euro to 600 million euro – at constant values, the budget back in 1990.

Increase financing for research and sustain innovation in science and technology.

In conclusion, therefore:

Dedicate a larger percentage of billable rates to support investments in the research, development and industrialization of innovative products and processes.
By widening the mandate to conduct system research to include technological innovation and progress, the percentage of billable revenue should rise to not less than 0.5%. If this were to impact prices charged for energy, it seems to us that the question of providing extra funding for research - especially in the energy sector - is crucial for the nation's development. The corollary effects on employment and industrial output, even in the short term, must not be underestimated. In a context of multiple expenses and where there is a drive toward commercially viable solutions, public sector support must be conditional on a willingness to share industry costs at least on a 50:50 basis, as happens at elsewhere in Europe.

Provide more investments in energy research by sustaining the nation's universities.
Academic research is often conducted in a fragmented manner. As it is typically spread over a wide range of topics, it therefore never reaches a meaningful critical mass and lacks significant levels of coordination. One solution could be to promote the creation of a network of universities focused on energy-related issues, culminating perhaps in a Center of Excellence.

Participation in research projects at European and Worldwide levels.
The European Union should be encouraged to take an active part in the more ambitious or longer term energy research projects. After all, the energy issues to be addressed are pretty much uniform across the entire continent and the synergies could be significant. Italy, too, should take part in international nuclear research programs where research is also conducted into latest-generation technologies. Italy should especially team up with the United States to develop fourth generation nuclear solutions.

Sustain joint-ventures in technology, also through M&A.
Part of Italy's wealth of know-how can be reinforced through merger and acquisition or joint-venture activities conducted by Italian businesses abroad. Such was the case with ENEL, for example, which in 2005 acquired the nuclear plants formerly owned by Slovenske Elektrarne, and signed a deal with EdF to develop third generation nuclear energy. Operations of this type are beneficial to the country as a whole, and deserve support on the diplomatic front. But the same is also true in the case of smaller operations, such the former municipalities now listed on stock markets. These will probably set out to widen their knowledge capital once the present consolidation phase has been completed.

Maintain support for ENEA, and increase funding to focus on renewable energy and efficiency.
Over the past decade, ENEA's spend on R&D in the energy field has dropped significantly. This is a tendency which ought to be reversed, though without creating wastage of public resources. It might be useful, for instance, to have ENEA focus solely on certain issues, such as energy efficiency and renewable energy, in order to better concentrate available funding and avoid overlaps with other centers conducting research in Italy.
The ENEA spend on energy should be increased by up to 100 million

The country needs to develop a hydrogen program involving the nation's main operators and define economic measures and incentives to sustain in-the-field research.

euro, an increase of approximately 33% compared to present levels of funding.
In response to possible allegations that this level of spending is excessive, one only needs to bear in mind that Italy has one of the lowest percentages of GDP dedicated to R&D among western nations.
One could also bear in mind that the increased funding proposed above would not even be sufficient to reposition ENEA funding at its 1990 levels.
Increased funding should be conditional upon the adoption of mechanisms to steer and control spending in order to guarantee optimal use of all resources made available.

Develop a National Hydrogen Program.

A policy to develop and sustain energy derived from hydrogen - though not a primary source of energy - is worthy of special attention. Countries such as the US, Germany and Japan and certain regions in Scandinavia and the UK launched programs to conduct research and disseminate technologies based on hydrogen, considering them strategic for the future energy needs. In Italy, a number of initiatives in this area have been started up spontaneously in both the public and private spheres. Examples include the experiences in Piedmont and Lombardy. But what is missing is a national center to coordinate these efforts, and steer them with a clear sense of direction. ENEL or ENI, who could have acted as drivers or coordinators, preferred instead to act as followers, unlike many of their foreign counterparts who, by contrast, adopted more aggressive positions and made significant investments to develop hydrogen-based technology.
There is therefore an urgent need to launch the hydrogen option anew. This should be brought about in a context of a coherent framework which integrates different energy sources and energy carriers and transcends skepticism and outdated views.
Two lines of action are fundamental: on the one hand, a deployment strategy must be identified in collaboration with the country's main operators to give a strong signal that the country is seriously interested in pursuing solutions in this area; on the other hand, economic measures and incentives must be developed to sustain research and in-the-field experiments. A national hydrogen program would enable Italy to valorize a number of distinct industry competences: the chemical, mechanical, ceramic and textile industries could capitalize the development of hydrogen-based technologies to enhance their international credentials and become innovative laboratories for sustainable economic growth.

4.4 Greater Efficiency and Security of Supply and Transportation

Radically overhaul the gas system model to transform Italy into an international hub.

Efficiency and security of supply and transportation can be considered differently in the cases of gas and electricity. Following the blackout of 2003, security in the electricity industry has much improved, though problems of congestion and insufficient interconnections to the international grid still remain.
For gas, the major concern is not so much efficiency as security. Security in terms of supply and storage has become more important than ever since electricity generating plants are consuming more gas. This in turn, leaves Italy more dependent on imports from gas-supplying countries, such as Algeria, Russia and, more recently, Libya. In future, when the enormous program to reconvert traditional production plants to a combined cycle has been completed, over 50% of Italy's electricity production capacity will be dependent on gas.
The system today is fraught with tensions. In 2004, supplies in strategic storage had to be tapped into and supplies to certain customers were subject to the interruptions allowed under supply contracts. The shortfall in deliveries of gas from Russia in January 2006 caused by problems between Gazprom and Ukrainian government and harsher than usual temperatures across northern Europe, served as a wake-up call for the general public to take note of the growing vulnerability of our gas system.
In the light of the above scenario, there is an obvious need to formulate a policy which reduces Italy's exposure to interruptions in gas supplies. Indeed, this issue has become something of a priority. Failure to address it squarely would be irresponsible.
At the same time, we must bear in mind that every enlargement of the nation's storage capacity represents a cost. That cost escalates rapidly, and entails running certain risks. The level of security of the system today is inadequate: the system is overly dependent on imports and storage which just about cover the nation's needs. In the event of an act of terrorism or a drawn out interruption in imports, supplies in storage would be depleted within a matter of weeks.
We agree with the view expressed by numerous observers and by AEEG that the country's gas system model needs a radical rethink. The present model is based on the premise that Italy is a major importer, which in fact it is. But an ambitious objective would be to transform Italy into an international hub where gas supplies would transit en route to other markets across the continent. This objective can be achieved by building a series of plants to reconvert liquid natural gas and by larger or new storage fields.
There are also objective considerations which support such a solution. Italy is the world's fourth largest importer of gas. Italy can capitalize its strategic geographic position and leverage the fact that with North Sea gas supplies are set to run dry within the next ten years, the current north-south gas supply flows will probably be reversed to flow in a south-north direction.
The fallout from such a development would be significant. Both the gas and electricity supply systems, for instance, would become more secure as a result of increased supplies and more diversified sourcing. The slight excess on the supply side that this would bring about would likely stimulate greater market competition compared with the negligible levels we see today.

Limited imports, the Nimby effect, bureaucracy and demand side uncertainties have all blocked the creation of the hub model

This scenario could even result in gas prices gradually discoupling from the price of oil across Europe in the longer term.
If these are the reasons to turn around Italy's gas supply model, what are the obstacles that are holding back progress? Historically, there are three.

1.
ENI import cutoffs.

Since ENI - Italy's largest nationwide operator, and the sole operator of the country's transportation, importation and storage infrastructures - cannot increase its gas imports, it has no business reason to invest in LNG. Within a framework of new legal norms, however, ENI might develop an interest in increasing its importation capacity. It is therefore in the national interest that Snam Rete Gas acquires greater autonomy, while remaining within the public domain. This point is discussed elsewhere in our White Paper.

2.
Opposition from local entities and bureaucratic obstacles.

Other obstacles are the Nimby question and the issue of opposition from local populations and their elected representatives. Careful application of the cost-benefit sharing model could be one way to ease the way toward allowing the construction of necessary infrastructures. In an optimistic - though not unrealistic - perspective, we could even have a situation where geographies would compete to have infrastructure built in their territories.

3.
Uncertainties on the demand side.

In the absence of a centralized planning capability, especially in relation to the construction of gas-powered electricity generation plants, future demand will remain unpredictable. If this factor does not block the next LNG plant scheduled to go live in Italy (in Rovigo), it may well scuttle plans for other sites.
Time waits for no man: while Italy drags its feet, other European countries have already moved in the direction we have outlined, sometimes with variations, toward the construction of a hub. There are projects to build two trans-Europe pipelines from Turkey to Central Europe via the Balkan countries. Both of them bypass Italy. Spain and France have started projects to reinforce their links with gas producing countries in North Africa by building LNG plants though they are not yet functioning at full capacity. The paradox, therefore, is that while support for the idea of making Italy a hub continues to grow, the likelihood that it will ever happen is falling fast since other countries have not idly stood by and watched. The irony is that Italy is now importing gas from a Gaz de France terminal in Montoir, France.
The time variable is therefore crucial.
Summarizing, a number of criteria must be met before a hub can be built. These include:

- Supply must be greater than demand. While an obvious prerequisite for a hub, this factor is the most difficult to attain in the context of Italy's gas market, dominated as it is by one major player.
- Sufficient nationwide transportation capacity, such that exports are feasible at competitive prices.
- Sufficient storage capacity, which is right sized for new quantity needs and enables modular service.
- A gas stock market, which facilitates spot trading.
- Strong government backing for the project and for promoting gas sales abroad.

Unless all of the above preconditions are satisfied, it is

The prerequisites for building a hub are: higher supply than demand, transport and storage capacity, a gas stock market and government support.

difficult to see how the strategic objective of making Italy a gas hub can be achieved.
Many of our proposals for supply and competition therefore focus on assuring that these preconditions are adequately addressed.
Given the above, our proposals for both gas and electricity are as follows:

Accelerate the process of unbundling Snam Rete Gas from ENI, maintaining its public sector profile.

Under current regulations, ENI is set to scale back its 50.06% stake in Snam Rete Gas to under 20%. Snam Rete Gas controls Stogit, owner of almost all of Italy's gas storage facilities, and the company which operates Italy's sole LNG plant. The corporate unbundling regulation can be improved in three respects. Firstly, retaining a 20% stake would give ENI an ability to strongly influence Snam Rete Gas decisions. Secondly, this arrangement would have the undesirable effect of leading to the privatization of Italy's gas transportation network. Thirdly, because it was not just control over Italy's gas network that allowed ENI to build a dominant position; it was their control over international gas pipelines that bring gas to Italy.
To overcome these issues, we suggest that a public entity (such as Cassa Depositi e Prestiti) acquire a majority stake in Snam Rete Gas, thereby ensuring that the nation's gas network remains under public ownership. We would also propose that ENI be barred from holding more than a 5% stake in the company. We believe that Italy's national importation capacity should be increased while Snam Rete Gas is reorganizing.
Our proposals outlined above are not particularly innovative. In fact, they amount to replicating for the gas industry what has already been achieved for the electricity network. The present configuration of the electricity network only emerged after the previous model, with its separation of ownership from management, ended in crisis when network investments collapsed and the system experienced blackouts in 2003.
If Snam Rete Gas operated as a public entity, it would be positioned to steer investments in transportation over a longer period of time. This would guarantee greater system security, reliability and competition, and transform Italy into a gas hub for Europe.
The proposal of a merger between Snam Rete Gas and Terna seems to be not particularly strategic. Though there are no reasons for objecting to the deal, synergies between the two are modest at best. The merger between Lattice and National Grid in the UK does not appear to have generated any significant impact.

Sustain the construction of LNG plants deployed to exports and reserve (European hub).

We are tabling this proposal to avoid a scenario where LNG plants are built for the sole purpose of satisfying today's growing domestic demand. They must also provide reserve margin and enough surplus supplies for export. Our proposal is framed on the premise that, in the present system, no operator would run the risk of investing in importation capability in excess of demand in the absence of any guarantee to cover risk. Moreover, plants that guarantee supplies from different sources should receive preferential treatment, to encourage greater diversification of sourcing.

Strengthen the Virtual Point of Exchange and grow it to a gas stock market.

An Italian gas stock market should be introduced to enable spot trading and allow operators to rapidly rebalance without

Build LNG plants to meet increased domestic demand; make supplies more reliable and develop exports

penalties. This could perhaps best be achieved by building on the Snam Rete Gas's existing VPE (Virtual Point of Exchange) structure. A stock exchange-type model, such as the one now in use in the UK, is gaining ground across Europe in close alignment with existing physical hubs (NBP, Zeebrugge, Eurohub, Baumgarten). If Snam Rete Gas were a standalone, public sector company, there would be no need for an additional entity to act as manager of the future Italian gas stock exchange. However, before a gas stock exchange can be realized, a wholesale liquid market would need to be increased and an even marginal level of overcapacity be achieved. Absent these conditions, developing a gas stock market would be a useless, if not harmful, exercise.

Reinforce strategic and modular storage.

The present stagnation of investments in storage facilities is a worrying phenomenon. The obvious fallout is that there are fewer guarantees for system supplies and because modular capacity is lacking, efforts to build a competitive liquid market are seriously hindered.
But these shortfalls on the supply side are hard to justify given that, compared to the rest of Europe, Italy has an abundant supply of suitable sites for storage purposes as well as large number of production fields that are nearing the end of their days and that could potentially be converted for storage purposes.
To offset these shortfalls, AEEG has offered incentives to build new sites and expand sites that are not yet working at full capacity. Operators were permitted to set a fixed price for a four-year period. The incentives did not apply in the case of Stogit-owned fields. Although this stratagem triggered an increase in applications for interconnections, the benefits were largely offset by complicated bureaucracy, court cases and lengthy realization times. It is therefore unlikely that any new fields will come on stream in the near future.
The solution required here is largely of a legislative nature: resolute action needs to be taken to correct and simplify the bureaucratic process which was responsible for derailing field expansion plans.

Strengthen "energy diplomacy" with export-market countries.

Governments, now as in the past, have a decisive role to play in energy procurement. The connection is easy to see: considerations of a diplomatic nature are fundamental since energy resources in many countries are managed by state-owned enterprises. As a nation through which supplies transit to countries in Central and Eastern Europe, Italy certainly is a more reliable partner compared to the countries on gas pipeline routes from the Middle East or Russia.

Build new production and transportation infrastructures under a cost-benefit sharing system.

We briefly touched on this point earlier. Across Italy, there are regions that are well equipped with energy infrastructures. Others are more reliant on imports. This is hardly the optimal situation. Bearing in mind the high costs of transporting energy and the inevitable losses en route, this situation represents a considerable cost for the country. For those regions with excess capacity, there are also costs in social and environmental terms and few trade-offs. This is why we are not in favor of plans to build new LNG plants in parts of the country, such as Sicily, which are already congested, instead of in areas closer to high consumption and

Decisive role of government in energy procurement: diplomacy is key element.

storage sites. A transparently defined cost-benefit sharing system would enable planners to bypass the Nimby syndrome at local level by recognizing the externalities to be borne by local populations within the overall context of the national system.

Gradually increase electricity interconnections across zones and across borders.

Priority should be given to actions needed on the nation's electricity transmission grid in order to reduce the gap between energy charges applied in different zones. Why this is a priority becomes clearer when one considers that much of the new capacity generation scheduled to come on stream in the coming years will be installed in Italy's northern regions which already have excess capacity.
The task of strengthening Terna's network is now easier than before, thanks to the company's new ownership profile. Network Investments have paybacks not only in terms of more reliable supplies but also in terms of lower energy charges. Greater pressure on networks would in many cases be more than offset by lesser utilization of inefficient generation plants.
The long term objective for imports would be to channel an increasing share of electricity supplies into a stock exchange-type market which would directly foster competition.
Italy today is overly dependent on imported energy to meet the nation's needs. It is therefore vital to increase the country's importation capacity. It is equally vital to achieve this objective in a manner that avoids market turmoil and allows for a parallel reinforcement of domestic production capacity.
The aim of importing more electricity is not to increase

Better cross-country and cross-border connections mean more reliable supplies and lower energy charges.

reliance on foreign suppliers, but to foster greater market competition within Italy. If the national network were better connected in the short term, the extra cost of generating electricity domestically could potentially drive de-specialization in production and a greater reliance on diversified sources. Since Italy is already the world's largest net importer of electricity, it would not be prudent to roll-out improvements to national connections too rapidly. Moreover, it is expected that energy costs in the future will tend to align with Italy's costs. Italy has recently exported quantities of energy at lower prices.
Though these were particular, short term cases, they nonetheless prove that the efficiency of the system has improved. If this phenomenon were extended, there would be positive fallout not only for the nation's interconnections but also for imports of natural gas.

Reshape the electricity transmission system to facilitate renewable energy.

If we are to encourage households to adopt photovoltaic to meet their domestic needs, the country will need to have a distribution network in place that is capable of uploading excess energy produced in homes and redistributing it across the network in bi-directional flows. The technologies behind existing urban networks would need to be overhauled in order to make this possible. Obviously, small producers could not be expected to bear the costs of such a major transformation. Here, the former municipality utilities would have a key role to play, and an opportunity to demonstrate that they are sensitive to the needs of the system and the wider community.

4.5 Structure of the Market: promote efficiency and competition

What is the most preferable structural model for Italy's gas and electricity industries?

Apart from arguable statistics, deregulation has not brought about a significant reduction in prices or the development of fully fledged competition. The merits of competition have in fact often been exaggerated and expectations deriving from competition have consequently been out of proportion. There is no doubt that the previous monopoly situation had introduced - and perpetuated - inefficiencies, negligible progress and only paid very modest attention to customers. On such a static system, deregulation therefore had the effect of an electric shock.

In Italy, the end price of energy products is determined not so much by the forces of competition as by the price of oil on world markets, taxation policies (and related policies such as concession taxes and system charges) and by transportation and distribution, i.e. those phases that are still regulated because they constitute natural monopolies. These factors actually account for some 60% of final energy prices, and can at times account for up to 80%. It therefore follows that even a perfectly working competition scenario would only have an impact on a small percentage of the final price.

Despite this, the effects of competition are easily visible, and will be even more so in the future.

The strongest levers in the quest to contain final energy prices are the terms and conditions in international energy procurement contracts and the efficiencies achieved by overcoming the current fragmentary nature of the gas distribution market.

Increased efficiency of existing electricity generation capability will also be fundamental from an environmental standpoint and for reasons of energy security. One could embark on a project to design the ideal structure for the industry but it would be closely connected to the structure that in reality exists. This is not an exercise in the abstract: rather, it is the result of looking at how other European countries followed different models. So what's the best model for Italy? At one end of the spectrum, we have France, with its perennial (and often justified) logic that leaves little room for international players; at the opposite extreme, we have the singular case of the UK, where privatization has been strong but which also has a remarkable capacity for controls by the Authority and the government. The models adopted in all other countries fall somewhere between these two. Italy too must build a model that takes account of the pros and cons of its previous experiences. In this context, one would hope to see:

- ENI and ENEL - Major Italian companies – strengthening their positions abroad as part of a strategic framework, while also focusing on the needs of Italy. We are therefore contrary to the idea of fully privatizing ENI and ENEL, an idea strongly supported by many, because we believe it would have no real benefit either for Italy's development or for competition. Given the continued existence of the National Champion model (France), of the creation of one (Spain, with Gas Natural's aggressive OPA for Endesa), we believe it would be counter-productive for Italy if ENI and ENEL were further downsized (with the exception of Snam Rete Gas, for the reasons we explored earlier);
- Local mid-to-large utilities continuing to concentrate,

Italy's energy giants – ENI and ENEL – must strengthen their presence abroad.
Local utilities must continue to consolidate.
International operators must invest in Italy as fair market players.

especially in the distribution area, with the aim of building efficiencies. Italy probably needs to end up with 4 or 5 large aggregations to ensure economies of scale while meeting local needs. For example, if sellers batched together or formed large consortia to buy gas, the end price for gas paid by Italian industry, and indirectly for the entire country, might fall. If local networks grouped together they might achieve greater efficiency, quality and reliability for the system;

- International players consolidating their positions in Italy, while avoiding the creation of dominant positions. The presence of international players is an opportunity to enrich the domestic system from different standpoints: technology, finance, supply, etc. However, given the strategic nature of energy, that presence must never give rise to over-dependence and loss of autonomy.
  This is precisely what is happening all over the world.

Once national strategic interests have been afforded sufficient protection, we believe privatization needs to be addressed using a pragmatic approach that is free of prejudices as to the superiority of one model as opposed to another. The issue must be decided case by case, though in the case of monopolies, the public model would seem preferable to the private. Public and private ownership can in theory be indifferent, provided they are both required to follow the same rules. Any residual legacy privileges from the monopoly era must therefore be eliminated.
In the light of these considerations, the focus should be on creating an excess in supply, always a prerequisite of any competitive market. Today, margins between supply and demand in the gas and electricity industries are so slim that the country needs virtually the full production of all production sites, including those that are less efficient and that in fact add to the marginal cost of production. One could even ask a the following rhetorical questions: What sense is there in building a competitive model in a context where demand corresponds to supply, where all the possible options are in fact required and where demand has no real alternatives?

The UK experience shows that energy prices were reduced by operators, not after deregulation, but once they had created an excess on the supply side. Only an excess in supply would make it practicable to open a Gas stock market and enable consolidation in electricity.
Efficiency in the electricity market can also be measured by looking at the output from production facilities. The consequences of efficiency at production plants are analogous to those of savings made by end consumers or those brought about by increased production of renewable sources. The aim should be to raise levels of efficiency from their current 38% to around 55-60% over the next ten years.
This could also be achieved by making greater use of cogeneration and vapor heating which allow optimal use of primary energy by recuperating heat.

Measures that would enable achievement of these objectives are:

Accelerate the adoption of competitive bids for awarding contracts for local distribution of gas and electricity, apply the network code at distribution

Concentration models can be different, but the aim would be to merge gas local distribution networks into 4 or 5 national companies.

level and increase AEEG controls over the minimum safety and service quality standards.

Though these are three distinct proposals, they can be grouped together because they each address the same objective, i.e. drive the concentration of small local gas monopolies into larger groups. While the smaller companies have been key players in the past – they were responsible for the widespread adoption of methane gas – they are now relatively inefficient and their inefficiencies are weighing on the overall system. The winning solution today is the model adopted by the major former municipality-controlled utilities which now operate as stock market listed companies with multi-regional market scope.

Accelerating the concentration process is better achieved not so much though incentives as by the elimination of circumstances which in effect discourage concentration. One example is the persistent habit of extending in-house contracting and the network code in the case of local distribution. Furthermore, small companies have difficulties in rigorously complying with all AEEG security and service quality regulations. AEEG's constant supervisory activity has already produced the indirect effect of pushing smaller operators toward concentration and greater efficiency.

Promote the creation of network companies, including at local level.

A gas concentration model at local level could be based on clear distinctions among all roles along the value chain and on the financial side. One can imagine companies that would simply own networks; other companies would manage network development and extraordinary maintenance, while other companies would be responsible for distribution and sales. Network owners, for instance, could be exclusively public sector entities that would accordingly provide the necessary guarantees. Financing could come from institutional entities such as pension funds, bank foundations, etc., interested in stable, low risk returns, though admittedly, also the returns would be low.
It goes without saying that business models based on these principles would necessarily presuppose the creation of companies of a certain dimension which would be at least regional, if not inter-regional, in scope.

Support the internationalization of Italian utilities, also at commercial level.

We have already seen that not only has government intervention in the energy field always existed, but that it has had a determining effect on the structure of the energy sector in various countries. Gaz de France, for example - based on direct input from its government-controller - has managed to make France a European gas hub despite the fact that France does not have the necessary geographic prerequisites.
Without detracting from the general principles of deregulation, direct intervention by the Italian government in the management of energy procurement policy is fundamental. Government intervention is important not only for reasons of security, but also from a price standpoint, when one considers that the country's trade deficit is largely due to the cost of energy imports.
The government ought to reinforce its commitment on two fronts: firstly, in support of international expansion by Italian energy companies (for instance, the opportunities in Eastern Europe and Russia), and secondly, in developing relationships with gas importers and exporters with a

Keep coal as a benchmark source of energy, but within a more diversified sourcing framework.

view to transforming Italy into gas hub for the Mediterranean region. Following the example of the UK and France, Italy's embassies abroad and the country's banking network could be leveraged to assist at least with the first of these two objectives.

Bring about a moderate surplus supply of gas and electricity by respectively setting up a gas hub and by enhancing interconnections.

We have mentioned these aspects in the previous paragraph. Here we will limit ourselves to underlining the fact that this is a necessary step in a process to develop a truly competitive market scenario in Italy. While increasing importation capacity, the electricity stock exchange could be further enhanced by introducing fixed term financial instruments, and the gas stock exchange could be upgraded from its current status of little more than an electronic message board.

Accelerate the conversion of coal-fired plants to clean-coal plants and achieve a better balanced mix.

Many observers have put on record their desire to see the replacement of the country's old, coal-fired plants with combined cycle plants because the latter produce lower carbon emissions. The economic appeal of coal-fired plants is debatable. The greatest uncertainties hanging over their future are due to emission trading certificates and the trend in international gas prices which, in 2005 alone, nearly doubled. Coal is an appealing option from a security point of view in that it contributes to the diversification of energy sources and energy source countries, and because reserves of coal are not expected to run dry for another few centuries. Nevertheless, the question must be asked whether this is sufficient rationale for tipping the scale in favor of coal. The laws setting maximum importation quotas for ENI have given a huge advantage to natural gas in Italy: ENI has made massive use of gas in electricity generation and the public has embraced it favorably since there are no visible or environmental side effects. However, replacing coal with natural gas would be wrong, just as in the past the overwhelming dependence on oil was wrong. Let's not forget that gas accounts for some 40% of Italy's current gross production and considering the new plants under construction, this is set to increase to 60%. Therefore, it is preferable to maintain Italy's coal-fired production capacity, but to accelerate its conversion to clean-coal, provided that the new technologies do not consider any coal-based source as an obstacle to compliance with the Kyoto protocol. Public opinion will need to be sensitized on this aspect, since the public is in general more aware of security issues today than in the past.

Sustain improved efficiency of traditional electricity generation plants by rigorously applying the Kyoto protocol parameters.

Apart from straightforward economic reasons, increasing the efficiency of electricity production plants is an indispensable step to reducing reliance on fossil fuels and therefore improving the quality of the environment and security of the nation.

Though the market is to an extent pushing in this direction, efforts to increase efficiency at traditional power production plants are hindered by economics. A number of operators have adopted combined cycle technology that is less efficient compared to the latest versions released, since the latter are more expensive. Such reasoning does not take account of the environmental externalities, security and the country's balance

Increase the efficiency of electricity generation plants by sustaining cogeneration and vapor heating, especially in the North.

of payments. Increasing power plant efficiency can be accelerated by rigorously applying the parameters of the Kyoto protocol and, in particular, by tightening the link between electricity production allocation rights and energy actually produced.

Sustain cogeneration and vapor heating though ad-hoc subsidies.
Cogeneration and vapor heating are the two types of plant that guarantee the highest energy yields available today. Since these technologies are not economically appealing, their use could be encouraged through appropriate subsidies. The European Commission has estimated that cogeneration and vapor heating - and their industrial applications – can save between 3 – 4% of primary energy compared to separate production. It would therefore be desirable that such technologies be more widely adopted especially in Northern Italy where the climatic conditions are more favorable to vapor heating. As we have mentioned elsewhere, it would be preferable to avoid using Green Certificates. The preferable solution would be to introduce an appropriately designed system of ad-hoc subsidies, while guaranteeing existing exit rights.

4.6 Balancing National and European systems of governance

If greater coordination at European level could be a mid-to-long term objective, the national system of governance needs to be better balanced today.

European Union Directives have introduced deep changes in the system of energy policy governance which had previously been based on the concept of National Champions. Despite the common rules, each country has interpreted and tailored EU regulations in their own ways. Though the gaps have somewhat narrowed, there are still substantial differences in reality and in law. The coexistence of models that are direct opposites (we have already cited the cases of France and the UK) means that each nation can (and must) develop its own reference model. Companies, meanwhile, have continued their expansionist march across the continent, and this should create the circumstances for introducing a Europe-wide Energy Authority. If this were to happen, a trans-national or EU logic could bring about numerous advantages, such as:

- Building an integrated storage and transportation system;
- Progressive alignment of energy prices across Europe;
- Reinforcement of a common R&D and nuclear policy;
- Greater coordination of fossil fuel procurement;
- Planning of energy infrastructures at European level.

Governments have been reluctant to delegate energy to a non-national body, despite recent episodes which show that certain vulnerabilities are shared across Europe. If greater coordination at European level is a mid-to-long term objective, Italy needs to reposition its system of national governance in the short term. The system in Italy is based on two cornerstones: AEEG and MAP. The Ministry for the Environment now also has a growing role. The role of the Ministry of the Economy cannot be overlooked, not only because it is a shareholder in ENI and ENEL, but also because of the huge flows of finance that converge on the state coffers from the energy industry through taxation and dividends. There are other players whose roles are also growing in importance: the Regions, local authorities, AU, GME and GRTN. The Regions are pushing for greater autonomy, and are relying on Title 5 of the Constitution to advance their case. However, they sometimes seem to neglect the other side of the coin, where they would find their obligation and responsibility to pursue certain objectives. The system is further populated by the large number of small operators who have come into existence since deregulation. In addition, there are the semi-institutional operators, such as Snam Rete Gas, Terna and Stogit.

The scenario is characterized by frequent use of judicial hearings (such as the administrative TAR process) which only serve to block or to delay the implementation of AEEG or MAP policies. On another level, there are the European institutions which, for an import-dependent country like Italy, are particularly relevant. Many of the problems in the energy sector derive from the need to coordinate all the above players, as became evident during the black-outs.

Since 1999, Italy has had a considerable number of new laws, ministerial decisions, interim orders and two constitutional reforms that related to energy. In 2005, AEEG promulgated nearly 150 decisions. None of this intensive legislative production has done much for clarity in the industry.

Clarify players' responsibilities and reinforce the independence of AEEG

The polemics that followed the black-outs of 2003 and the recent block on rates decided by MAP demonstrate that there are still no net borders between the powers exercised by the numerous players mandated to provide energy governance. The fact that so many cases are submitted to TAR is proof of the extent of the uncertainties that persist.

In the near term, it will be necessary to continue to build a clearer, wider-scoped regulatory framework that assures greater stability. This would reduce uncertainties and send a clear signal to both public and private operators.

The measures proposed for rebalancing this scenario are:

Continue the process to accurately define players' responsibilities and reinforce the independence of AEEG

Some observers have pointed out that one of the outcomes for the continued uncertainties is that AEEG has often been forced to carry out activities that are outside the scope of its mission. Instances include cases where AEEG was asked to resolve issues that are more in the domain of economic policy and, sometimes, foreign policy, such as the case of the Take or Pay contracts. On the other hand, in other circumstances, AEEG powers were not strong enough, for example in the case of the penalties in the wake of the 2003 black-outs, or in the case of the incentives to build storage fields and new importation capacity.
AEEG's powers to impose fines for operators' behaviors have recently been strengthened and this is a positive step forward. There is still room for improvement for powers to fine in the area of tariffs. Greater AEEG powers to impose fines for tariff-related matters would reduce the chronic delay in defining distribution tariffs and would reduce the risk of discontinuities in certain tariff elements, such as system charges, where the government has a role to play.

In the relatively short term, both public and private network operators should be given all responsibilities for developing and correct functioning of the internal transportation system. For security reasons, one could also consider the hypothesis of merging independent high tension electricity networks under Terna ownership and management, while bringing high pressure gas under Snam Rete Gas ownership and management.

Another hypothesis would be to consider taking responsibility for starting up energy savings policies from AEEG and transferring it to GRTN, on account of the affinity with renewable sources policies. Government powers in the area of strategic security - especially regarding long term procurement - should be reinforced. Regions and Local Entities should play a lesser role in matters of security. By contrast, they should play a greater role in energy policy development, in matters of energy production infrastructure and in relation to energy saving, within a cost-benefit sharing framework that states clear objectives to be reached at national level.

Introduce a single step judicial process at State Council level to determine appeals against decision by AEEG or other public bodies in the area of energy.

We have seen how questions relating to energy sometimes require rapid responses, in order to keep the system from losing competitiveness and possibly other, more serious risks. The regulatory framework has had the effect of delaying a number of key projects. There is also the fact

Introduce a single-step appeal system and streamline the authorization process.

that local administrations do not always have the means or the know-how to determine complex questions that may have ramifications at national level. There is therefore a real need to develop solutions that shorten the time required to obtain clear decisions. One hypothetical solution would be to introduce a single step judicial process at State Council level to review appeals against decision taken by AEEG or other public authorities in the energy area.

Simplify the process for authorizing infrastructure planning and development.

While this is not the place to analyze the planning process in detail, we will limit ourselves to putting forward a few principles for reforming the authorization process.

Firstly, it would be advisable to avoid spreading jurisdiction among too many administrative levels, and to remove the possibility for the negative judgment of just one person or one single level to block an entire project that may have strategic relevance. Secondly, it would be better to avoid the possibility that national energy matters be determined at some decentralized level. For example, the construction of a LNG plant of national strategic importance should not be blocked by the veto of some local administration. Thirdly, bureaucratic procedures and official response times should be reduced and the 'silence means consent' approach should be used more widely, at least in relation to renewable energy and energy efficiency. In many cases, the time needed to obtain authorizations was longer than the times needed to actually build the plants for which authorization was requested. This obviously represents an additional cost burden for the builders, and creates uncertainties which are naturally reflected in the price of energy. Lastly, there should be clear rules that take greater account of social and environmental externalities impacting the local territory, and specific mechanisms should make provision for compensation and funding to reduce those impacts (e.g., by placing high tension electricity cables under ground).

5. Conclusions

If the national energy policy moves in the right direction, not only will structural issues be resolved but sustainable development opportunities could be opened up. A Ministry of Energy could be set up and mandated to coordinate and promote the transition process.

The energy context worldwide and forecast growth in demand are critical. Among all OECD countries, Italy is in a particularly difficult position owing to its heavy dependence on imported energy.
Public opinion in Italy and across the world is aware that the current energy model is not sustainable in the long term, neither from economic nor environmental standpoints. And this is the first step on the road to changing the country's national energy policies. This shift will require a change in mindset regarding how energy is consumed and significant new economic investments from society at large.

Italy's total energy spend in 2005 amounted to 36.5 billion euro (up 7 billion euro on 2004) shows that unless something is done to reverse current trends, this picture is destined to worsen from a cost point of view.

Having said that, it is fundamental that in the short term works begins on transforming Italy into a gas hub for Europe in order to achieve two objectives: firstly, to develop internal competition and secondly, to assure greater security also for the electricity industry.

In the mid-term, Italy's priority objective will be to reduce reliance on fossil fuels, through greater energy efficiency and energy saving and by developing renewable sources.
Longer term, research will have a central role to play, though the foundations must be put place today.

If the nation's energy policy moves in the right direction, the dynamics of the international energy markets could constitute an opportunity for development for Italy, a country which today is force to anticipate the critical issues with which in ten years' time all major industrialized countries will be forced to contend.

In conclusion, given the complexity and the sensitivity of the energy question, it would be a welcome development if Italy instituted a Ministry of Energy, mandated to promote and coordinate the transition to new energy models already under way at international level and to implement structural solutions to issues that make Italy particularly vulnerable from different standpoints.

About the Authors

Andrea Gilardoni
Professor in Economics and Corporate Management and Director of MEGES Master in Public Utilities at Bocconi University, Milan. President of various companies operating in the Utilities industry.
Author of numerous publications on Energy matters and Director of "Management delle Utilities", a specialist magazine for Utilities.

Luca Cesari
Managing Director at Accenture, with responsibility for Utilities in South, Central & Eastern Europe and Latin America. Has managed projects in strategy consulting, business transformation and information technology for major Utilties and Energy players in Italy and abroad.

This White Paper, titled "Ways Forward", is part of a wider study conducted by Accenture and AGICI under the title "Proposals for An Energy Policy". "Ways Forward" is an excerpt that states the study's proposals for action. An in-depth analysis of the Energy industry in Italy is contained in the wider study (available only in Italian).

For information please contact:

Roberta Bigliani
EMEA&LA Utilities Marketing Manager,
roberta.bigliani@accenture.com

Lucia Morcelli
Management Secretary
Agici Finanza d'Impresa
lucia.morcelli@agici.it

This publication is a translation from the original Italian.

About Accenture

Accenture is a global management consulting, technology services and outsourcing company. Committed to delivering innovation, Accenture collaborates with its clients to help them become high-performance businesses and governments. With deep industry and business process expertise, broad global resources and a proven track record, Accenture can mobilize the right people, skills and technologies to help clients improve their performance. With more than 129,000 people in 48 countries, the company generated net revenues of US$15.55 billion for the fiscal year ended Aug. 31, 2005.

Our Utilities Industry group, with 7500 industry professionals around the world, collaborates with over 300 utilities in 43 countries and serve 83% of the Global Fortune 500 utilities. Also, as an industry participant, Accenture serves 15 million utilities end-customers in North America and Europe, processing 50 million bills, reading over 30 millions meters and handling over 10 million customer inquiries annually.
www.accenture.com.
www.accenture.com/utilities5

AGICI Finanza d'Impresa

AGICI Finanza d'Impresa is an independent company that provides Strategy and Financial Advisory services.
AGICI has built up exceptional competence and experience especially in the area of Environmental and Public Utilities Services.
AGICI's Global Utility Research Unit (GURU) Project, which analyzes markets trends in Utilities in Italy and across Europe, provides Public Administrations, private operators and investors with valuable support in their decision-making processes.
AGICI is founder of the Observatory on M&A in Italian and European Utilities.
http://www.agici.it/english/index.htm
http://www.agici.it/english/GURU-project.htm