TCPA POLICY STATEMENT

# Planning for Sustainable Energy

## 1. TCPA Vision for a Sustainable Energy System

The TCPA vision is for clean, safe, low carbon energy generated more closely to the communities and households it serves. A decentralised energy system will ensure less waste, greater efficiency, more direct local benefits from energy installations, and stronger incentives to employ generation methods benign in their impacts on people and the environment. A sustainable future of this kind, that integrates people's needs with those of the environment, has consistently been the TCPA's mission.

The energy solutions of the future, in the form of micro-generation and decentralised energy supply, separate from centralised grids, are already at the heart of energy systems in other parts of Europe and Japan, and need to be prioritised by policy-makers in the UK. The current 100 year old energy system is wasteful, out of date, and in need of replacement. Importantly, we have a once in a lifetime opportunity to transform the system and to meet people's needs more efficiently in environmentally, socially, and economically sustainable ways.

Smaller-scale, cleaner networks of heat and power are ideally suited to the energy needs of modern businesses and to the creation of sustainable communities. Creation of these networks should go hand-in-hand with demand management through greater efficiency in energy use across all sectors. Sustainable energy strategies should be reflected in Government policies, such as the Sustainable Communities Plan and for transport, and through the planning system and building regulations.

Renewable energy makes use of proven and widely used technologies and should be the cornerstone for investment in energy generation. The renewable energy portfolio can include a range of sources appropriate to context, including a balance of micro-, community-, and large-scale generation and distribution. Efficient use of fossil fuels, including clean coal and gas with carbon capture and storage (CCS), will also play an important role especially in the early years of a transition to a low-carbon economy.

The TCPA therefore calls for major investment in the creation of a decentralised network of renewable energy and low-carbon technologies. This will need to be supplemented by a national grid, in turn served by large-scale generation, which should ultimately also be produced from renewable installations.

In the short term the TCPA is also concerned about the forecast deficit in base-load energy supply. While reassessments of energy needs should be made regularly, the process of shifting to a more efficient decentralised system supplying more efficient buildings and communities is likely to result in significantly lower overall energy demand. However, any supply deficit must be addressed if we are to ensure that the poorest and most badly housed in society do not have to deal with the consequences in terms of soaring fuel bills.

The Government is seriously considering further developing the nuclear option as part of a lower-carbon mix. To justify an extension of present nuclear generation provision, Government would need

to address the following critical issues:

- The effect of a new nuclear programme on investment in energy efficiency, renewable generation methods, and on the possibility of establishing a more decentralised electricity generation system.
- The impact of the new nuclear installations on local environments and communities.
- An implementation process that does not sacrifice the proper, community-involving, planning of nuclear development proposals for the sake of speed.
- The long-term storage of waste materials from the power stations.
- The time likely to be taken to get new nuclear stations on stream compared to the time likely to be taken for energy efficiency measure, decentralised, and renewable technologies to meet demand.

The TCPA is a sustainable development charity whose field of expertise lies mainly in the planning, housing, and development fields, rather than engineering or in the science of energy production. The provision of a successful energy infrastructure is largely dependent upon an effective planning system. Decisions about energy production have profound social, environmental and economic consequences, and the Association therefore has a responsibility to set out its conditions for acceptable methods of generation and supply.

## 2. Why Sustainable Energy?

### 2.1 Climate Change

There is a wide-ranging scientific consensus that our climate is changing and that these changes will intensify with potentially catastrophic implications for global ecosystems. The science is increasingly well understood and the actual climate changes well documented. Action on an unprecedented scale is required now to deal with the challenge.

Geological records show that our climate has changed greatly over time, but current concerns relate to quickening, human-induced change brought about principally by burning fossil fuels.[1] It is increasingly accepted that stabilisation of atmospheric $CO_2$ concentrations will need to be at around 400 parts per million (ppm) rather than the 550ppm agreed by EU member states in 1997. This will necessitate significant UK emission reductions of somewhere in the region of 3-6 per cent annually. An enormous challenge requiring action across all sectors.

Short- and longer-term changes to building standards and the energy supply system are needed to move the UK from a high demand, carbon intensive energy system to a low demand, cleaner one. The steps necessary for achieving this are set out in this statement. Reference is also made to transport and to wider development needs. These are discussed in more detail in other TCPA policy statements.

### 2.2 The Energy Gap

Climate change is not the only reason why the switch is necessary. Western economies are reliant on oil and gas for most of their energy. However, as with all fossil fuels, supplies are finite and many suggest that in the case of oil global output is close to reaching its peak. There is almost no agreement as to when this will happen: a report by the French Government[2] on the global oil industry for instance suggests a possible peak as early as 2013. At this point there will be less oil produced year-on-year, the oil will be harder to extract, and it will often be more environmentally damaging. Furthermore, beyond the peak, drop in supply is unlikely to be smooth, rather a rush to grab the remaining easier oil will result in an extended peak, followed by a rapid decline. If we accept that there is no reliable data on when a peak will happen, and that it is preferable to avoid the inevitable economic and social consequences of this for nations and for global political stability, then steps to ease the transition to a non-oil economy should be prioritised.

In a short period the energy debate in this country has moved from energy over capacity (currently 23 per cent above demand), to concern that we will face power shortages. This has happened for a number of reasons: most nuclear capacity will be phased out by 2020 (although the life of some plants may be extended), leaving up to an 8 per cent energy gap and a 19 per cent electricity gap; many existing coal fired power stations will also close by 2020, due to more stringent EU environmental regulations (coal currently supplies 17 per cent of total energy demand); and North

Sea oil and gas supplies have peaked leaving fears that supplies from abroad may be less reliable.

However, the nature of investment means that there will always be a 'gap' 10-15 years in the future. The real issue is where that investment will go. Long-term options will depend on government policy, but in the short-term additional capacity is likely to come from gas. Principal suppliers will be Norway and, via the European shared gas pipeline, Russia, although increasing quantities of liquefied natural gas are now coming from north Africa. In the immediate-term supplies may be tight due to new supply infrastructure not being complete and the substantial investment required to supply power stations with gas. Although this is likely to be a short-lived problem, the fact that gas is finite will necessitate development of alternatives.

In order to ensure that energy demand is satisfied sustainably, the TCPA recommends:

- A long-term sustainable energy vision with stakeholder buy-in, supported by an appropriate policy framework.
- Reducing energy demand in all sectors as the corner stone of energy policy.
- Balanced consideration of all generation and supply options.

## 2.3 Sustainable Energy

The TCPA believes that the basis of a sustainable energy system can achieved within the timescales demanded by climate change. However, the task of shifting the energy system away from one powered mainly by fossil fuels should not be under-estimated. While all sectors will need to play a role, the energy sector has a vital contribution to make.

Current UK demand for energy is around 400,000GWh every year[3], with renewable energy supplying less than 4 per cent of this. While meeting the short-term renewable energy and carbon reduction targets will be demanding enough, achieving 60 per cent cuts in carbon emissions by 2050 will require a huge contribution from energy efficiency and alternative sources.

The key will be to develop a system that allow the benefits to be reaped while minimising any adverse impacts on other policy areas: including social exclusion; security of supply; sustainable development; and the economy at large. The TCPA believes a system that has decentralised generation and supply at its heart has the best chance of achieving this.

The current centralised system of energy generation and distribution has developed over the past 100 years. Establishing a reliable and effective replacement will be complex. The energy system which will be in place in 2050 will have small-scale, community-based generation at its heart. It will be more diverse, both in terms of technologies and scales; more suited to the needs of communities and businesses; and less passive, i.e. the distinction between producer and consumer will become blurred and users more aware of what is involved in producing the energy they use.

The technologies necessary to achieve this are available now and have been demonstrated to work effectively in the UK, Japan, and other European countries such as the Netherlands. Combinations of measures have brought environmental benefits, raised generating efficiencies to over 90 per cent – utilising energy that is normally thrown away through cooling towers – while proving to be economically viable.

# 3. Creating a Sustainable Energy System

Reaching a firm conclusion about the right approach and energy mix will necessitate a full and open debate that considers all options objectively. The TCPA has concluded that the following energy hierarchy should form the basis of a new long-term energy system:

- Measures taken to maximise efficiency in energy generation and supply, and to reduce the use of energy in all sectors, including buildings, transport, and industrial.
- Energy produced from renewable sources at small- and large-scales.
- A hierarchy of least environmentally and socially damaging sources, including fossil fuels with CCS, subject to satisfying environmental, social and economic criteria.
- Nuclear, subject to satisfying environmental, social and economic criteria.

Detailed discussion of each of these is set out below.

## 3.1 Energy Efficiency

While UK energy intensity (the energy required to achieve a unit of economic output) has increased 40 per cent since the 1970s, carbon emissions have continued to grow, despite a recent gradual decline. The objective of a sustainable energy system therefore must be to increase the amount of sustainable energy supplying a lower overall demand.

The contribution of each economic sector to emissions is important and will change over time. In 2004 energy supply accounted for around 35 per cent of GHG emissions and is predicted by Government[4] to decline as a proportion; transport accounts for 24 per cent and is likely to increase; industry's 22 per cent is predicted to continue to decline; the residential sector accounts for 24 per cent and is also likely to increase; while the 4 per cent emitted by the service sector is expected to decrease.

It will be important to prioritise action. Based on the above figures and the potential for success, the key areas on which to focus efficiency attention are energy supply, the built environment, and transport. Further prioritisation can be based on where inefficiencies lie in the current energy generation, supply and use system: for electricity around 61 per cent of primary energy inputs are lost in generation and as waste heat though cooling towers; a further 3.5 per cent is lost in transmission and distribution across national and local grids; and a further 13 per cent is due to inefficient end use. This means that only around 23 per cent of generated electricity is ever actually used.

The TCPA's transport policy statement[5] set out how this sector can contribute to reducing emissions by: optimising local, sustainable accessibility for everyone; encouraging less polluting modes; increasing the propensity to choose non-car modes; and maximising the transport and land use planning system's contribution to the provision of sustainable communities.

### 3.1.1 Efficient Supply

The energy system is dominated by large-scale supply, leaving little scope for small-scale generation and limiting the overall diversity of supply. Electricity is produced mainly by fossil fuels in large centralised power plants and distributed via national and local grids. Heat is supplied by a mix of grid gas, oil and electricity.

As a result more attention needs to be paid to the role of local networks, powered by low-and zero-carbon micro-generation, which make use of heat and power and avoids losses through long-distance transmission. Local authorities in Woking and Southampton have well established networks that have provided cost effective energy while significantly reducing demand. The Energy Saving Trust (EST) estimate that 30-40 per cent of the UK's energy needs could be met by micro-generation by 2050[6].

Although far more efficient in terms of minimising distribution losses micro-generation is unlikely to be able to provide all the energy needed as part of a diverse and secure energy system. The remainder will need to come from large-scale centralised supply feeding into a national grid. Initially, this will come from a combination of renewable energy, such as wind power and biomass, and more efficient fossil fuelled power stations, incorporating CCS.

### 3.1.2 Efficiency in the Built Environment

The standard form, location and density to which our homes and communities are built plays a crucial role in determining energy demand. While energy performance of new buildings is steadily improving, due mainly to successive revisions of the building regulations and use of sustainability standards, it remains a long way from the zero-carbon goal required by the climate change and supply security imperatives. Reducing energy demand through passive efficiency measures, such as better insulation, location, orientation, and low energy lighting, is usually the most cost effective strategy. Consideration also needs to be given to energy demand associated with the use of buildings, i.e. travelling from homes to places of work, leisure, and so on.

A recent year-long study by the Sustainable Development Commission[7] draws on work by a range of sources and shows the practical potential for energy efficiency to be around 20 million tonnes carbon per year by 2020 (or 27 standard 1,000MW gas powered power stations), with further cuts by 2050.

The 2006 revision of Part L of the building regulations intends to improve energy efficiency in new buildings by 40 per cent over 2002 levels along with an energy labelling scheme for homes and other buildings. Unfortunately, lack of resources for enforcement means that many buildings do not even reach the 2002 standards.

There are a number of reasons why the necessary cuts are not happening:

- Energy performance standards in new buildings are too low. Around 4 million new homes will be needed by 2020. Stringent sustainability standards should be set in order that their energy demand is as low as possible.
- Energy performance standards in existing buildings, which make up 99 per cent of buildings, are not being adequately addressed. Necessary action will include: fiscal incentives for the uptake of energy efficiency; and demolition where appropriate.
- Government has failed to persuade the public and stakeholders of the need for energy efficiency. Efforts to raise awareness must be coupled with initiatives that ensure energy efficiency technologies are easily and cheaply available to all.
- A failure to address the growth in demand for private transport and aviation.
- Insufficient action on the energy consumption of appliances. The EST estimates that the equivalent output of a 1,500MW power station is wasted by leaving appliances on standby.
- Steps have not been taken to address the lack of understanding of what is involved in the production of energy and the environmental and social consequences of this.

The TCPA recommends:

- A revised energy efficiency strategy with tougher targets across all sectors to reduce demand. Targets should have cross-departmental support.
- Government departmental and agency funding priorities to have energy efficiency at their heart.
- Additional resources for developing an energy efficient supply system, including ensuring the necessary skills are in place.
- Preparation of a local heat and power network strategy, with a focus on delivery.
- Guidance and assistance for local authorities and other stakeholders in setting up local heat and power networks.

## 3.2 The Energy Generation Mix

The Government is rightly pursuing security of supply as one if its core energy policy objectives. A system that relies on its energy from more than one source inherently has more stability and security of supply, regardless of the intermitancy of individual technologies within that system.

### 3.2.1 Renewable Energy

The group of technologies coming under the banner of 'renewable' is broad and their application and potential application equally so. Some are ideal for individual buildings, others perform better feeding into a network; some are large-scale and can provide uninterrupted power base-loads for a grid system, others are smaller, intermittent and need to be used as part of a technology mix. Some provide heat and power, others just one or the other. These differences need to be considered in developing energy policy and strategies at national, regional, local, and site levels.

Principal applications will be in generating electricity and powering heating and cooling systems in buildings, but renewable energy also has a role to play in the transport sector. In the short-term renewables are likely to simply provide alternative fuels for combustion, but increasingly they may be called upon to produce hydrogen for use in fuel cells.

For renewable energy to live up to its potential it must, together with demand management, be the cornerstone of energy policy. Without this commitment, renewable energy will continue to be a fringe technology, contributing marginally to a traditional energy system. The Government's energy policy should be challenging and visionary, but also practical. It will need to take full account of the available technologies and ensure that the mechanisms put in place to implement them are equipped for the job.

The Sustainable Development Commission[8] estimates a practical UK renewable energy resource of around 87 per cent of current electricity production. Introducing price constraints of 5p/kWh would reduce this to around 67 per cent. Whether or not these figures are ambitious or underestimates will depend upon technological developments and policy. For example, these figures assume little role

## Definitions

### Micro-Generation

Micro-generation is often, but not exclusively, renewable since it is the generation of energy by individuals and communities to meet their own needs. Although the UK lags behind many European countries, growing use of planning policy to require on-site renewable energy generation is having a positive effect on the use of micro-scale technologies. Typically technologies include: micro-wind, solar photovoltaics, solar thermal, CHP, biomass, ground source heat and cooling pumps, micro-hydro, and fuel cells.

### Biomass

Biomass is the only form of high grade renewable heat. It takes the form of by-products, such as straw, energy crops, and processed fuels, such as wood pellets which are generally imported. These fuels are used in straightforward combustion, and can include combined heat and power (CHP), or the more sophisticated but efficient anaerobic digestion, gasification and pyrolysis. Energy crops include short rotation coppice, willow, and perennial grass.

for solar photovoltaics due to their continued high cost. However, technological improvements, policy changes in the planning system, and the emerging Code for Sustainable Homes may begin to change this (see section 4.1).

The generally higher cost of renewables compared with more traditional generation is often seen as the principal barrier to their becoming the dominant energy source. While important, changes are occurring in the UK and globally that will demand regular reassessments of relative costs. The cost of fossil fuels has increased significantly, and while in some cases this may represent a price 'spike', the rises are generally held to represent an overall upward trend. Some renewables, on the other hand, are already cost effective (solar thermal, for example) or close to (such as onshore wind). Growing maturity in the renewables industries will continue to bring prices down, leading to low and in most cases inherently long-term stable unit costs.

The list of technologies below is not exhaustive.

**Wind, Tidal and Wave**

Wind is an electricity generating technology, suited to large- and small-scales. The relative maturity of the technology and the industry, and the wind conditions enjoyed in this country, means that it is the technology that will make the greatest contribution to short-term renewable energy targets. Much of this is likely to come from large-scale onshore facilities. The realisable resource, based on exploitation of around 15 per cent of the total potential onshore capacity, and 30 per cent of offshore, would be of the order of 40-50GW.

Over 1.1GW of on-shore capacity is operational in the UK, with 3GW certain to be installed by 2010. Realistically, the 2010 figure could be as high as 6GW (or 5 per cent of electricity demand), providing around 2GW of actual power (accounting for times when turbines are not turning). The off-shore industry is far more fledgling. A recent report[9] shows that without additional financial and policy support only 2GW will have been installed by 2015, rather than the potential 8MW (or 6 per cent of demand) identified by the industry.

Looking further forward to the 2020 target of around 20 per cent from renewables, assuming adequate research and development for emerging industries is in place, tidal and wave energy technologies will be sufficiently mature for commercial use.

**Biomass and Energy-from-Waste**

The Royal Commission on Environmental Pollution (RCEP)[10] estimates that one third of the total UK straw production (of 24 million tonnes in 2002) could be used to generate energy; in principle providing more than 3 per cent of the UK's electricity. However, experience suggests that this may be unlikely due to factors such as the seasonal nature of the straw supply.

The Department for Environment, Farming and Rural Affairs (DEFRA) estimates the total available

biomass resource at one million hectares from a total agricultural area of around 17 million hectares, of which around 640,000 hectares is currently set-aside land. Current cultivation is less than 2,000 hectares. A recent report from the Biomass Task Force concluded that biomass could potentially provide up to 7 per cent of the UK's heat demand by 2015. The main challenge will be to find ways to exploit the fuel resource and establish reliable and affordable fuel supplies. Short rotation coppice (SRC) has a cycle of 15-20 years meaning that investors would require long term certainty: current grants provide a lump sum rather than ongoing support.

Around 90 million tonnes of waste is produced in the UK each year, of which 62 per cent is biodegradable[11]. Energy-from-waste has suffered from a poor image in the UK. However, new technologies, such as anaerobic digestion, clean incineration, and pyrolysis, mean that energy-from-waste should be considered as part of the generation mix. Consideration will need to be given to any conflicts with recycling objectives, but it is likely that energy-from-waste could make a significant contribution to energy demand.

**Solar**

While discounted by some as an uneconomic luxury, the use of solar for producing electricity is proving to be an increasingly important part of the energy mix. As a minimum, individual buildings and communities should be planned so that they can easily accommodate retro-fitted solar panels in the future. Solar hot water, however, is already a commercially viable technology and where suitable should be a standard addition to buildings.

**Barrages and Tidal**

The technology already exists commercially to supply significant amounts of energy from large-scale barrages. The Severn Estuary, for instance, has a tidal range of around 13 meters. The limitations on development of hydropower are principally, water, geographical resources, potential environmental problems, and who pays for the cost of undertaking such major infrastructure projects. There is a need to re-open the debate on barrages and a thorough assessment made of the pros and cons and practicalities of pursuing such a programme. Due to the length of time needed to complete planning and construction stages, this debate needs to happen as a matter of urgency.

Though in its infancy, the Carbon Trust[12] suggest the tidal and wave power industry could supply between 15 and 20 per cent of UK electricity needs. Several gigawatts could be installed in the UK by 2020 if investment in R&D and trials is stepped up, combined with a clear long-term policy framework.

**Geothermal**

Geothermal energy has existing potential to generate significant quantities of heat and power in a number of parts of the country. Local authorities such as Southampton have taken a lead in developing community heating networks using the heat from the ground.

**Transport**

Despite improvements in vehicle efficiency, and some attempts to address demand, the numbers of vehicles on the road and overall GHG emissions from the sector have grown from 40MtC in 1990 to 45MtC in 2004. Emissions from aviation grew from 20.2MtC to 37.5MtC between 1990 and 2002.

In the long-term many believe that hydrogen will become the fuel of choice. But while successful prototype vehicles have been developed the infrastructure needed to provide a viable alternative to traditional fuels is some way off. In the meantime, petrol-electric hybrid vehicles are becoming more common, as is the prevalence of biofuels. In response to this the Government has introduced the Renewable Transport Fuel Obligation, whereby 5 per cent of UK fuel sales will be from renewable sources by 2010. There is, however, concern that biofuels are not carbon neutral due to the need to produce the fuel and transport them from source to pump.

In conclusion, renewable energy together with demand management has the potential for meeting substantial amounts of UK energy needs, but this will only happen if it forms the central plank of energy policy. Therefore, the TCPA calls for:

- A long-term and ambitious, outcome driven, programme to promote renewable energy, focussing on existing, but giving consideration to new, delivery mechanisms.
- Evaluation of chosen delivery mechanisms to ensure they are equipped to deliver.
- Secure, long-term policy and funding regimes for all technologies to provide certainty to industry and investors.

### 3.2.2 Fossil Fuels and Low-Carbon Technologies

Oil continues to be the fuel of choice across the world for its usefulness in generating power, warming buildings, and importantly as a direct fuel for transportation. Supplies, however, are finite: UK production has already peaked and without sustained investment will decline sharply to almost zero by 2020[13]. Gas is often seen as an intermediate fuel to aid the global switch from oil to renewable energy. Currently gas contributes around 40 per cent of the UK's energy supply, as a conduit for energy generation and direct supply to homes and industry. Its share has grown along with declining prices over the past two decades. Recent potentially short-lived high prices, however, have forced a switch back to other sources, principally coal. This has contributed to an increase in carbon emissions.

Reserves of gas are higher than for oil, but the global infrastructure necessary to transport and use the fuel are more complex. However, the rising cost of oil and gas is likely to make developing this infrastructure more economically viable – oil has gone from an historic average of $20 per barrel to well over $60, in part caused by international and internal conflicts and a shortage of refining capacity. In the past, high oil prices have resulted in a shift in attention towards energy efficiency, but this has generally proved short-lived once energy prices return to their historic averages. With rising demand particularly in India and China and few new large oil fields being found many fear $50 - $60 per barrel may be the new average. It is questionable whether or not economies reliant on oil can sustain such prices without serious investment in energy efficiency and alternatives.

Coal's share of the fuel market has declined substantially due to the relative cheapness of gas over the past two decades. Coal now produces a third of the UK's electricity. Due to climate change, this share is likely to decline further to around 16 per cent by 2020[14] – coal is the most carbon intensive fossil fuel.

Despite rising prices, particularly for oil, fossil fuels will continue to play an important role in the energy infrastructure of most countries. Coal for instance remains cheap and plentiful. The environmental and social consequences of this could be severe and so consideration needs to be given to underground CCS (principally in empty oil and gas fields, or saline aquifers). The Government estimates that CCS could reduce carbon emissions by up to 85 per cent and has made some R&D money available. A recent Government Science and Technology Committee[15] study found significant scope for CCS to reduce emissions. It also found most of the technology to be proven and costs to be comparable with other low-carbon approaches with substantial potential for cost reduction through innovation.

A further option for making fossil fuels more efficient is to use combined heat and power (CHP). Conventional electricity generation is very inefficient as only a small part of the input energy is converted to electricity (typically 25-35 per cent), with the remainder lost via cooling towers as waste heat. By using the waste heat for use in homes, offices, and other buildings, power generation becomes vastly more efficient. CHP can take place at power station-, community-, and micro-scale, making power and heat generation nearer 85 per cent efficient. A further advantage of CHP is that it can be powered by renewable sources such as biomass.

### 3.2.3 Nuclear

The UK currently has 23 reactors providing 19 per cent[16] of the country's electricity. This level of production will decline to around 7 per cent by 2020 when all but three reactors will have reached retirement. In terms of total energy however, nuclear currently provides 7.8 per cent. Building new plant to replace decommissioned reactors will be a long process.

The TCPA established its policy of opposition to the development of nuclear energy capacity on environmental, economic, safety and social grounds, through its involvement in the Windscale and Sizewell B inquiries in the 1970s and 1980s. It remains committed to a future without power generation by nuclear fission, but recognises that as the country's present nuclear reactors are decommissioned a serious shortfall in supply could arise during the period approximately 10 to 35 years hence.

Because of the growing danger of climate change, which was not an issue when the Association last considered nuclear power generation, it is increasingly important that this potential 'energy gap' should be bridged by generation methods which produce low- or zero-carbon. The Association believes that every effort must be made to bridge the gap by:

- Reducing demand;
- Significantly improving the efficiency of energy used; and
- Using renewable sources of energy.

However, concern has been expressed by some that this will not prove possible in the timescales demanded by climate change and the need to bridge the energy gap. The Government therefore appears to be seriously considering further developing the nuclear option as part of the necessary low-carbon mix. To justify an extension of present nuclear generation provision, Government would need to address the following critical issues:

- The effect of a new nuclear programme on investment in energy efficiency, renewable generation methods, and on the possibility of establishing a more decentralised electricity generation system.
- The impact of the new nuclear installations on local environments and communities.
- An implementation process that does not sacrifice the proper, community-involving, planning of nuclear development proposals for the sake of speed.
- The long-term storage of waste materials from power stations. Since no long-term strategy for dealing with existing high-level waste has been developed, this should be agreed urgently.
- The time likely to be taken to get new nuclear stations on stream compared to the time likely to be taken for energy efficiency measure, decentralised, and renewable technologies to meet demand.

Further considerations which at the present time appear relevant but are not necessarily crucial to the decision include:

- The quantity of GHGs released during the construction, fuelling and decommissioning of a nuclear power station compared to the amount which would have been released from fossil fuels used to generate the same amount of electricity over the life of a nuclear reactor.
- The costs, particularly but not exclusively per tonne of carbon saved, of nuclear compared to other technologies, bearing in mind that the cheapest technology is not necessarily the most appropriate.
- The employment opportunities available in a nuclear programme compared to those arising from renewable technologies.

The Association is not yet in a position to draw firm conclusions about the need for a further, final, round of nuclear power stations and urges that the widest, most open and well-informed, public debate about this specific question should be held before any decision, for or against, is taken. In the meantime energy policy as defined following the current review should keep the nuclear option open while promoting all energy efficiency measures, decentralised low- and zero-carbon approaches, and renewable sources with the utmost vigour.

## 4. Delivering a Sustainable Energy System

Delivery of a sustainable energy system will require a joining up of mechanisms, including: building standards; building regulations; the planning system; planning for major infrastructure developments; transport planning and delivery; and funding.

The private sector's role is critical. To ensure that the private sector fulfils its potential, the Government, together with stakeholders, should establish what is expected of them. There is also a need for greater emphasis on articulating the economic benefits of developing sustainable energy, particularly to individuals, communities, and the public and private sectors.

### 4.1 The Planning System

The planning system is a crucial delivery mechanism for sustainable energy. It influences demand for energy and delivery of supply networks. Current planning policy is enshrined within Planning Policy Statements, particularly PPS22 (Renewable Energy) which sets out a positive framework for planning and decision-making. There is, however, a strong case for broadening out PPS22 to encompass sustainable energy as a whole.

Concern has been expressed that the Government will bypass the planning system in order to speed up the decision-making process for major energy infrastructure. This follows the drawn-out Public Inquiry for Heathrow Terminal 5. In the 2001 planning Green Paper[17] Government initially proposed that MPs should take decisions on major infrastructure in Parliament, leaving only the detail to the

Public Inquiry process. It was confirmed that MPs votes on such matters would be subject to party whips, a fact that conflicted with the quasi judicial nature of planning. This proposal was rightly dropped and instead new, and as yet untested at a major inquiry, procedures were introduced. These include the idea of parallel and simultaneous inquiry sessions on different aspects of a development.

The TCPA also believes that a national development framework would assist the process of decisions being taken, as they should be, following Public Inquiries chaired by an independent Inspector. All major developments should be subject to this process, in this context the impact of the development (in terms of its operation and any waste production) on communities must be properly tested.

Strategic planning at the national level will be used to inform regional and ultimately local decision-making on the most appropriate strategies for particular areas. These decisions will consider the full range of options at all spatial scales, including consideration of how developments should fit into local heat and power networks.

Regional Spatial Strategies (RSS) should contain clear strategies for expanding sustainable energy. These strategies should set out the most suitable locations for wind farms, and other technologies requiring major strategic infrastructure, by identifying wind resource areas (WRA), for example. RSS should explicitly not exclude locations outside of the WRAs, however the thoroughness of the studies should provide greater certainty for developers. Stakeholder involvement in the development of these strategies will be crucial to winning support for new developments.

The TCPA has strongly advocated using the planning system to promote local sustainable energy. A growing number of local authorities have developed prescriptive planning policies requiring on-site renewable energy generation to deliver a proportion of likely energy demand. These are to be welcome since they inherently encourage developers to build to high energy efficiency standards while having the potential to create huge markets for micro-generation technologies. The Government should amend PPS22 to require all local authorities to include similar policies in their Local Development Documents. There is considerable support from both local authorities and the private sector for creating such a level playing field.

Some parts of the country are more suited to siting sometimes controversial renewable energy technologies, such as wind and biomass. Processing such applications and effectively involving communities will generally require greater resources from the local planning authority. More resources should to go to councils receiving large numbers of such applications to enable them to deal with them swiftly and effectively, thereby contributing to meeting Government targets.

The planning system should be used to deliver higher sustainability standards in new developments. An increasing number of developers are adopting standards such as ‘EcoHomes/BREEAM’. The Government’s emerging Code for Sustainable Homes should provide a recognised national standard. To be effective though the Code needs to apply to all buildings, not just homes, minimum standards should be set high, it should apply to retro-fit of existing buildings, and it should be mandatory through the planning system and building regulations (section 4.2). The highest Code standard should incorporate on-site sustainable energy. Developments meeting this standard should benefit from speedier processing through the planning system. Similarly, certain micro-generation technologies should be incorporated into Permitted Development Rights.

The Government’s sustainable communities agenda needs to be used more effectively to bring together environmental, social and economic considerations to ensure energy use in buildings and transport is minimised. It should also be used to bring together integrated and effective delivery mechanisms.

### 4.2 The Building Regulations

The planning system and building regulations are important parallel systems. Both have distinct roles to play but should work closely together. Used effectively they provide an important delivery mechanism for sustainable energy.

It is crucial that resources are available to enable building control officers to enforce sustainability standards and other regulatory requirements. This is also an issue for planning and there is a case to be made for combining the two systems, or at least for ensuring better integration between the two: something that is increasingly difficult as more and more building control departments are outsourced to consultants. Of course there is also a vital role for developers and their teams in

meeting standards. The importance of doing so in relation to combating climate change needs to be better made, and this in turn should be articulated by developers to clients and consumers.

The 2004 Sustainable and Secure Buildings Act allows building regulations for the first time to directly address sustainable development. While the legislation is in place, no action has to date been taken to implement the provisions of the Act. This should happen as a matter of urgency.

## 4.3 Fiscal Measures

Householders and businesses should be encouraged to install energy efficiency and micro-generation technologies using a incentives, with carbon neutrality being the aim. Examples could include, lower rates of Stamp Duty or council tax/business rate rebates on highly efficient homes and buildings, and those that include micro-renewables. Central government, together with public and private sector partners, should extend the current trial to all local authority areas in the UK. Support should also be given to regional and local bodies to develop their own locally specific schemes.

## 4.4 Energy Services

There is very little government funding available for sustainable energy, and what is available has an uncertain future. Therefore, using other mechanisms is crucial. Energy services offer huge potential for delivering sustainable energy at the local level. These are packages of advice, energy efficiency and supply, and access to grants and finance, ideally provided by one company. Benefits include increased capital investment in energy services by levering in private finance, increased revenue, reduced bills and management costs, and improved comfort and health for residents.

In order to lever in private finance, some local authorities have entered into legal public/private joint venture energy service companies (ESCo). Enabled by the Local Government Act 2000, local authorities such as Woking and Kirklees have successfully used ESCos to deliver energy services for individual buildings as well as across whole local authority areas. The customer pays a guaranteed amount for the energy services, leaving the ESCo to focus on delivering those services as efficiently as possible to maximise environmental benefit and/or profit. They can be a powerful mechanism for meeting the requirements of planning and other requirements. However, setting up an ESCo can be complicated and advice and guidance needs to be offered to assist local authorities.

## 4.5 Education and Training

Extensive education and training programmes should be established so that all actors in the energy planning and delivery process are aware of what is involved in being proactive in delivering sustainable energy. This should include:

- Simple, concise and targeted information made available to planners, developers, councillors, communities, and other stakeholders.
- Clarity as to what technologies require planning permission and which are permitted development.
- Best practice and leadership examples, fiscal incentives, and other measures should be developed and disseminated to planners, developers, and other stakeholders.
- Linked to education and awareness, the Government needs to take a firm and positive stance on sustainable energy.
- Information on how to run a home in an energy efficient way, including where more information can be obtained, eligibility for grants, and energy efficient and renewable energy products bought, should be included in home sellers packs. Similar information should also be provided for all other buildings.

## Notes

1 See also the TCPA's *Climate Change* Policy Statement, 2003
2 Economics, Industry & Finance Ministry (2005) 'The Oil Industry 2004', France.
3 DTI Energy Statistics (2005)
4 DTI (2005)
5 TCPA (2005) 'Planning for Accessible and Sustainable Transport'.
6 EST (2005) 'Potential of Micro-generation: study and analysis', for the DTI.
7 SDC (2006) 'The role of nuclear power in a low carbon economy – Paper 2: Reducing $CO_2$ emissions - nuclear and the alternatives. An evidence-based report by the Sustainable Development Commission', SDC, London.
8 SDC (2006)
9 BWEA (2006) 'Onshore Wind: powering ahead', and BWEA (2006) 'Offshore Wind: at a crossroads', BVG Associates for BWEA and Renewables East, London.
10 RCEP (2004) 'Biomass as a Renewable Energy Source', London
11 TCPA (2006) 'Sustainable Energy by Design: a guide for sustainable communities', London
12 Carbon Trust (2006) 'Future Marine Energy. Results of the Marine Energy Challenge' London
13 DTI (2006)
14 DTI (2006)
15 House of Commons Science and Technology Committee (2006) 'Meeting UK Energy and Climate Needs: the role of carbon capture and storage', 1st report of session 2005-06, The Stationary Office, London.
16 DTI (2005) Energy Trends – internet statistics.
17 DETR (2001) 'Planning: delivering a fundamental change', DETR, London.

The Town and Country Planning Association (TCPA) is an independent charity working to improve the art and science of town and country planning. The TCPA puts social justice and the environment at the heart of policy debate and inspires government, industry and campaigners to take a fresh perspective on major issues, including planning policy, housing, regeneration, and climate change. Our objectives are to:

- Secure a decent, well designed home for everyone, in a human-scale environment combining the best features of town and country.
- Empower people and communities to influence decisions that affect them.
- Improve the planning system in accordance with the principles of sustainable development.

TCPA

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