

## Scenarios for the Future of Energy in Europe to 2035

### Background

SAMI and Article 13 jointly organize a series of scenario explorations of strategic topics. The first topic was the future of energy. This was developed in two stages: first, in a Gen Y Forum, in which Gen Y participants and experts developed a common view of the major uncertainties and hence the scenario axes. The second stage was an event with the Strategic Planning Society (SPS) Special Interest Group on Futures and Strategy, which used briefing on future trends and the Three Horizons<sup>1</sup> methodology to develop the storylines.

### Briefing on futures trends

Chris Yapp presented the road to 2035. Each great innovation surge from the industrial revolution back in the 18th century to the present ICT revolution, are observed to evolve in three stages.

The installation period (the initial enthusiastic bubble led by financial capital) is followed by a recession (turning point) due to the difficulty of social absorption of the new paradigms. This in turn is followed by a deployment period (the golden age led by production capital) that is enabled by new regulations and policies for widening markets and insuring social stability.

Are we currently observing the premises of a sustainable knowledge-society golden age? What is clear is that some key supporting technologies are there such as cloud computing, internet of things, gamification, 3D printing, new smart cities, sensor nets, new materials like graphene with its conductivity and energy storage properties and synthetic biology protocells.

But most of these technological advances are creating challenges on the energy front as they are driving up the demand for energy, requiring more adjustments towards a low carbon world, creating new vulnerabilities (e.g., the growth of wireless is resulting in a growing vulnerability to solar flares) and necessitating the build-up of critical national infrastructure that can cope with the new requirements. Further thoughts on energy futures include: centralised versus decentralized generation and consumption, local solutions versus global, market versus state control, energy saving and management, fuel poverty and systemic risk.

The slide set is at [www.samiconsulting.co.uk/](http://www.samiconsulting.co.uk/)

The Russian-Ukrainian current crisis was afforded special attention as a key event that may have an impact on future energy supply in Europe. To quote the European Wind Energy

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<sup>1</sup> Bill Sharpe,

Association: "...The situation in Crimea is a wake-up call, Europeans rely on the most unstable and volatile parts of the world for energy security..."

### Scenario dimensions

The two most unpredictable forces Gen Y saw as affecting the future of energy were:

1. Will energy be affordable and the supply secure or not?
2. Will public opinion allow new build infrastructure – eg for renewable energy generation?

From possible answers to these we created 4 scenarios:

## Scenarios for energy in Europe 2035

Affordable and secure energy	Yes	Net energy importer	All is well
	No	Two tier energy	Investment failure
		No	Yes
		Public opinion allows new build infrastructure	

### The scenarios

In **Two tier energy**, European governments fail to generate sufficient public support for new build / renewables, and so fail to create appropriate policy environments for the new build required to ensure a diverse energy mix. With an uncertain environment for energy investors exists, there is a lack of new generation investment.

The rich will manage to get their energy from private contracts, yet the poor are hit the hardest due to the increasing and unpredictable rates for energy. Meanwhile the competitiveness of industry, lacking cheap energy, will be damaged. This in turn results in global corporations relocating elsewhere, further exacerbating the intense structural and socio-economic damage.

In **Net energy importer**, wide-spread lack of public support, including a significant NIMBY-ism, continues to prove a barrier to any progress on new build or a significant move towards



renewable energy. This places ever-greater reliance on the (now dwindling) national energy resources (e.g. North Sea) and on imports to supplement the existing energy infrastructure.

Recognising the perilous position and increasing reliance on overseas supplies, greater profits can be accrued by international energy firms and their respective countries of operation. Governments would be required to expend an increasing percentage of national income on buying overseas energy, whilst using subsidies to keep it notionally affordable. Yet it is unlikely subsidies would stretch as far and wide as required, resulting in the vulnerable, poverty stricken and elderly all being disproportionately affected by fluctuating prices. Any market for renewables would remain stifled.

**Investment failure** sees the unusual situation in which public support is positive towards new build and renewables, yet energy does not become more secure or affordable. This situation could arise due to government instability, which fails to generate the support required for significant investment, or wider political short-termism.

Given the support of government, industry would be favoured by this scenario. Yet, for the general population, despite their acceptance for the need of new build / renewables as necessary, this is not reflected in action towards creating secure and affordable energy.

**All is well** is the most optimistic of our scenarios with affordable, secure energy with positive public opinion. Public opinion may have been swayed by a talismanic figure such as a Beckham or modern day Churchill lending their support to 'green' or a huge disaster such a large numbers of winter deaths when power supplies fail could act as a negative catalyst. 7

In this most optimistic scenario, everyone 'wins'. The general public gets cheaper and more secure energy; governments have local, secure and cost-effective energy. Additionally, energy companies can move forward with long-term planning. The only real losers are those individuals wedded to carbon intensive fuels.

## Implications

A key factor in determining outcomes in 2035 is what Generation Y think and do, as this is the generation which will increasingly be charged with dealing with the challenges (both from a professional perspective and as consumers). As the first digitally native generation, these individuals bring new values, behaviours and perspectives. Research has shown that whilst the % of Generation Y who report that they "buy as many green/eco-friendly products as they can" is up to 36% in 2012, only 51% said they made an effort to cut down on electricity use to save energy, compared to 68% of 'baby-boomers' in the 1970s. Similarly, massive increases in the use of smart and mobile technology places new demands on when and where energy is required, demands that simply would not be considered 20 years ago.

**Policy makers need to consider three areas in order to navigate these scenarios:**

1. To build public support – there needs to be a clear communication of risk in order to build shared understanding, particularly amongst Generation Y, of the dangers of not investing in new infrastructure.
2. Good, robust and unwavering governance is required from national and European leaders to take the difficult short-term decisions, which will bring long-term benefits.
3. A clear understanding of how energy is currently being used, and how this will change as new generations move through the workforce and society is required to ensure energy scenarios are fit for the future.

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