INTRODUCTION

The Institution of Engineering and Technology (The IET) welcomes this opportunity to provide a written response to this BEIS Select Committee informal consultation on the proposed Industrial Energy Transformation Fund (IETF).

We are an independent charitable institution working to engineer a better world by advancing the engineering community for the benefit of society. Two thirds of our membership of 169,000 engineers and technicians live and work in the UK.

Answers to consultation questions have been provided by the members of the IET’s Design and Production Sector including engineers working for manufacturing businesses, and subject specialists from industry and academia serving on the IET’s Manufacturing Policy Panel.

RECOMMENDATIONS

1. The IET welcomes the setting up of the IETF with its twin objectives of energy efficiency and decarbonisation and calls on the Government to declare a national state of industrial emergency to help bring these issues to the attention of business and industry.

2. We encourage the Government and industry to invest, not just in capital equipment, but in skills. Better energy use must come before different energy use. Driving forward a skills-based programme of change is much more difficult but it’s cheaper, quicker and just as likely to deliver results at scale. Of course, investment in capital equipment and skills is needed.

3. As a leading independent charitable engineering institution, the IET is well-placed to work with BEIS to convene a panel of industry practitioners (to include UK-based multi-national firms which are world-class in their approach to energy improvement) to help frame the urgent message to business and industry about the need for behaviour change.

1. What wider benefits could the IETF deliver, such as local growth and low-carbon leadership opportunities?

1.1 A well-designed IETF could deliver multiple benefits: local growth, regional productivity, local jobs, increased tax revenues for HM Treasury, CO2 reduction, increased profits, increased business rates for local authorities, increased resilience to energy price and availability changes, reduced cost of grid and energy supply, and difficult-to replicate skills benefits that offer medium-term productivity advantage and, potentially, long-term product marketing advantage.

1.2 Engaging in a process which is framed, first and foremost, to enable firms to increase sales, is key. Energy is only one of several critical resources consumed by a manufacturing business. Such resources cost money and thereby eat into revenues
Reducing a firm’s energy consumption will save money, releasing those financial resources to be directed and invested elsewhere in the business.

1.3 Increasing sales, in this way, by making the organisations leaner, fitter, more agile, more appealing to customers and more successful in attracting orders may also encourage firms to take steps to deliver other non-labour resource efficiencies. Reducing water, raw materials and other non-labour costs could generate significant savings. Implementing energy efficiency and decarbonisation measures across the business won’t cost the earth. Indeed, it can be done relatively quickly and cheaply.

2. Are these barriers the ones that prevent you from investing in industrial energy efficiency and decarbonisation projects or are there other barriers? If so, what are they?

2.1 The reasons why businesses don’t invest are many and varied: lack of awareness; perception that it’s expensive requiring six-figure investment; perpetual focus on fulfilling customer orders above all other aspects; competing projects for company investment perceived as being more attractive, important or rewarding; general absence of performance management measurements; shortage of staff, skills and expertise; low expectation of return on investment and impact on the bottom line; lack of leadership and other such shortcomings.

2.2 Size of business, technology readiness and payback periods are further barriers. Large organisations are more likely to employ a dedicated person or team to monitor their energy needs and consumption whereas SMEs are less likely to do so, making it much more difficult for SMEs to deliver progress. Multi-national brands may operate global policies and procedures to determine their investments. For example, several multi-national car brands assembling vehicles in the UK operate a one-year-only payback policy. This can often prevent even the most basic schemes commanding the necessary resources, even though there may be broader financial, environmental and social benefits.

2.3 What most businesses want is certainty, carbon pricing, a stable regulatory environment and longevity of government schemes and support. Lack of external finance is not generally a barrier but the impact of pricing risks, policy change risks and general business uncertainty should not be underestimated. Businesses buying their energy in advance want stable, consistent prices and security of supply.

2.4 There can be unintended consequences of complex policy and commercial interactions. For instance, businesses considering capital investment in their premises may be deterred from doing so as this would, in many instances, trigger an increase in the property’s rateable value and, with it, higher business rate bills from their local authority.

3. How would you raise funding for a decarbonisation project? Would you consider third party financing? If not, why not?

3.1 The approach will vary from firm to firm depending on their size, structure and sector. Generally, energy efficiency projects are likely to be funded internally through CAPEX due to relatively low internal cost of capital. Renewable supply projects may
well access third party financing, where appropriate. Such financing is relatively easy to secure.

3.2 Most companies still use 50% of their peak energy when production has stopped. That **50% is the prize.** The best manufacturing companies understand that the biggest gain is to reduce energy when production has stopped first, then reduce energy during production.

3.3 Companies such as Toyota and Airbus **focus on reducing energy** rather than switching sources. They focus on better operation of existing capital and only invest once they have the best process and can’t improve on it further.

4. What evidence is needed in your organisation to make investment decisions, or to spend resources on exploring energy efficiency and industrial decarbonisation projects?

4.1 Typically, **companies look for economic, environmental and technical evidence.** What are the capital costs of the project together with estimates as to the running costs and impact on revenue budgets? Overall, what will be the financial return? What level of carbon reduction and positive environmental impact will be secured? What is the level of technology readiness, risk, scalability and replicability?

4.2 Many firms just want to be left alone to get on with the job of fulfilling customer orders. **Investments can be triggered by third party interests,** where perhaps Company A comes to a commercial agreement with Company B to invest in its property estate to generate revenues from its property demise albeit paying for the privilege e.g. British Gas investing in a large-scale industrial solar array at Toyota’s Deeside engine production centre. The downside of this approach is that not all the benefits flow back to Company B.

5. What were the payback periods of some of your recent investments? Are there any additional/alternative quantitative factors that heavily influence your investment decisions? Which of these could be an effective test of additionality for the IETF, and why?

5.1 Payback periods vary from firm to firm depending on the type and complexity of investment, the funding source and the company’s protocols and procedures. As mentioned, **payback can be as short as 8-12 months** e.g. in the automotive sector, especially where investment decisions are controlled by overseas headquarters.

5.2 Typically, payback on internal investment may be less than four years. In respect of third party projects, off-take arrangements are likely to be longer term up to (say) 15 years. Return on invested capital might be in the order of 12 years. **The return period will be determined by individual circumstances** and businesses will have their own criteria to assess what’s reasonable.

5.3 **Additional factors** include supply resilience, price certainty and other environmental impacts such as habitat management and restoration.
6. Do you have views on what design features might best support achieving an appropriate balance of both IETF objectives?

6.1 Decarbonisation and energy efficiency are two quite different approaches and Government has a role to play in encouraging both. When moving towards net zero carbon, energy efficiency may not be the solution in isolation. Incremental change is needed. Decarbonisation is likely to deliver greater change but may be more expensive.

7. How can we best target the IETF to maximise value for money?

7.1 The establishment of the IETF is a bold and welcome move. Government has an important role to play in setting the agenda: inspiring businesses to engage and establish energy efficiency and decarbonisation plans; encouraging firms to work together with their neighbours, local communities and supply chains, where appropriate; providing financial support and helping to stimulate crowdfunding.

7.2 Switching to renewable energy sources won’t necessarily save energy. Government has an important role to play in making us feel guilty about the amount of energy we consume, not smugness about the source! Behaviour change on a massive scale isn’t easy yet government at all levels yields considerable power and influence. Taking a leading role through activities such as procurement, standards and public awareness campaigns can begin to help shape public opinion and appetite for change.

7.3 Carbon capture storage is an expensive but nonetheless vital route for large-scale, energy-dependent businesses e.g. steelworks, data centres. Considerable work is being done to address their future needs and options.

7.4 Tools may also provide efficient and lower risk returns. This approach would fit with the carbon hierarchy. Priorities could be given to those projects which best enable works, and which can be subsequently replicated, if successful.

8. How do you think we should focus the IETF’s decarbonisation element? What is your evidence for this view?

8.1 Identification and application of suitable metrics is key. Such metrics need to be scientifically informed.

8.2 Long-term scenario planning and road mapping is also vital.

9. Are there any additional complementary policies that the Government could consider maximising the impact of the IETF funding?

9.1 Carbon pricing, increased regulation and alignment could play an important part in helping to maximising impact.

9.2 There is a logical sequence of events which needs highlighting to industry and Government is well-placed to provide leadership, in this regard. Industry advanced in the 1980s and 90s through the adoption of lean manufacturing techniques. In the same way that lean came before factory automation, better energy use must come before different energy use.
9.3 At £315m over five years and splitting resource equally, the IETF could provide as much as £31m per annum for energy efficiency initiatives and £31m per annum for decarbonisation. Such national investment will attract match-funding from participating businesses and, potentially, from other sources such as crowd-funding, third party investors, depending on the average scale of awards made by the Fund. If the demand for funding exceeds the supply of funds available, will there be provision for the IETF to be topped up to expedite qualifying projects?

9.4 One of the most cost-effective ways to maximise the IETF would be to invest, not just in capital equipment but in skills. Buying more energy efficient equipment works but costs more. Driving forward a skills-based programme of change is much more difficult but it’s cheaper, quicker and just as likely to deliver results at scale. Of course, we must do both – invest in capital AND skills.

9.5 What’s needed is a national state of industrial emergency to bring energy efficiency and decarbonisation to the fore. Both IETF objectives should not be done in isolation and Government is already backing several schemes and initiatives to support UK manufacturing which can complement industrial energy efficiency and decarbonisation. One such example is the Made Smarter North West pilot which is enabling manufacturing firms in the region to introduce or augment their adoption of industrial digital technologies to improve products, processes and profits. Tackling the IETF at the same time would increase the impact of both digitalisation and decarbonisation. The IET is active in this space and partners with other stakeholders which also champion the sector including Make UK, High Value Manufacturing Catapult, Energy Systems Catapult, ICAEW, CBI, Royal Academy of Engineering and the network of manufacturing experts and those close to practice working within UK academic institutions.

10. What stages of development are most in need of IETF funding, to enable projects to reach deployment?

10.1 Moving from pilot to commercial industrialisation of alternative low carbon supply for thermal demand.

10.2 Ideally, there needs to be a specific process (perhaps templated?) which companies can be encouraged to follow several simple initial steps to achieve significant reductions and improvements, largely through their own actions and interventions. Access to IETF funding would be subject to evidence that the Company had successfully completed those set initial steps.

11. Can you provide evidence for the type of support (such as regulation, grants, loans, equity) that could enable industrial decarbonisation projects to go ahead?

11.1 Not currently.

12. Do you have any additional suggestions of how you could engage with us as we design the scheme?
12.1 The UK hosts several multi-national businesses which are world-class in their energy improvement approaches, having a strong track record of success in this area e.g. Toyota. Identifying and convening a panel of practitioners from these businesses would provide invaluable input towards achieving an appropriate balance of energy efficiency versus decarbonisation objectives and provide invaluable insights and inputs around other IETF aspects.

12.2 As a leading independent charitable engineering institution with a large UK membership in the energy and manufacturing sectors, the IET is well-placed to convene such a panel, providing a neutral space for impartial cross-sector discussions.

12.3 Our experience is that companies will often become aware of change schemes and take their first steps towards that change after talking to their peers, employees and suppliers. In this way, case studies can be a very powerful and effective tool to inspire confidence and convey simple messages. Before companies invest, they need to change behaviour. We find video fuelled by social media platforms is a quick and effective to widely promote key messages to business.

12.4 Peer-to-peer learning is also vital and something which the IET has been developing through its Design and Production Sector, as part of the implementation of its ‘Sustainable Manufacturing – the next steps’ strategy. This has engaged companies from the food and drink sector in a peer-to-peer pilot based around identifying resource efficiencies.

For further information


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