So what if there were a larger and more sustained energy efficiency effort across the economy, what would be the impact?

Policy Briefing 03

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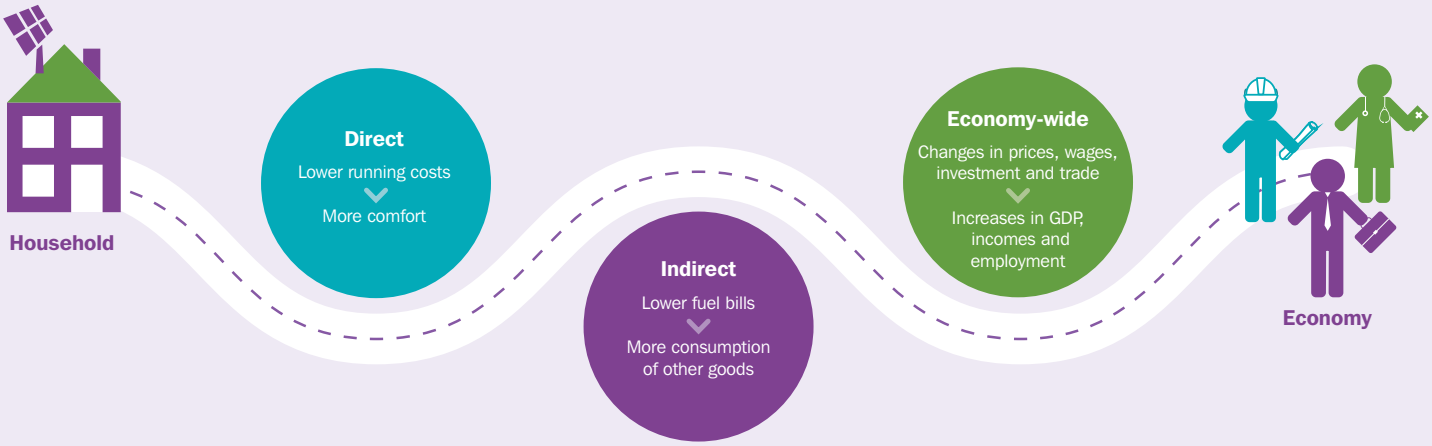

Household energy efficiency – multiple benefits

Improving household income and boosting the economy

The short term positive economic impacts of energy efficiency projects are visible on the construction site. The physical upgrading of buildings creates work and jobs. There are also knock-on impacts on the supply chain through increased demand for building and insulation materials which benefit the economy. These effects are short term and tied to the upgrade project itself.

Less often considered is the subsequent and ongoing impact of the building's improved efficiency. Increasing energy efficiency means that it becomes cheaper to heat our homes (and workplaces). When people have more money to spend as a result of lower energy bills, they can – and will – spend it on a range of different things. This increases the demand for goods and services and boosts the economy. So further rounds of economic benefits start with lower fuel bills, which imply an increase in disposable household (and business) income and spending. Hence policy actions to improve energy efficiency act as an economic stimulus package

Fuel poverty

The direct disposable income boost of energy efficiency measures is particularly important for low income households who usually spend a higher proportion of their income on energy. In fact, these households may spend part of their savings by allowing themselves to heat their homes to a normal level rather than needing to save on energy bills. EPSRC funded research at the Centre for Energy Policy (CEP) and the Fraser of Allander Institute at the University of Strathclyde has looked into the 'multiple benefits' of energy efficiency policy at the national economy level. This specific work on household energy efficiency traces the long- term impact of improving the energy efficiency of a range of household income groups in the UK by simulating how households might spend the money they save in lower energy bills on other things and how producers of different goods and services may respond. Policy briefing 04 will focus on this issue in more detail. Please contact us for more details (see over).

Energy efficiency has 'multiple benefits'

There is growing interest among policy makers internationally in the multiple benefits of energy efficiency. The benefits of improved energy efficiency are not limited to energy/emissions savings, security and affordability, which are usually the targets of energy efficiency policy. Impacts of energy efficiency measures also include potential economic and social benefits ranging from GDP growth, employment and public budgets to reduced (energy and absolute) poverty and improved population health. The original work carried out by the IEA researchers (see over), and now being developed by Centre for Energy Policy (CEP) and the Fraser of Allander Institute at the University of Strathclyde argues that these wider economic and social benefits should be taken into account when evaluating an energy efficiency policy. These benefits ultimately derive from the fact that energy efficiency increases disposable household income and thus benefits the wider economy as a whole. What economic modelling can demonstrate and explore further is the economy-wide picture of economic growth and increasing employment which flows from the initial energy efficiency actions.

Centre on Innovation and Energy Demand

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The challenge for energy policy and CO_2 reduction – rebound effects

Direct

Cost-effective efficiency improvements make energy services cheaper, thereby encouraging increased consumption of those services.

Indirect

Cost savings from energy efficiency improvements may be spent on other goods and services whose provision involves energy use and emissions at different stages of their international supply chains. For example, savings on heating bills may be used to purchase laptops made in Asia and shipped to the UK.

Economy-wide

Shifts in consumption patterns may trigger multiple changes in prices, investments and incomes in both domestic and international markets. Energy efficiency improvements by firms may lower output prices, boost productivity and competiveness, encourage economic expansion and thereby increase energy consumption.

Transformational

In some cases, efficiency improvements may help open up markets for new technologies and systems, triggering entirely new energy-using applications, products and industries.

The energy policy challenge

Perhaps surprisingly, it turns out that the real challenge of these positive economic impacts is to those policy makers who are working hard to develop sustainable energy savings. As disposable household income is spent, additional energy is consumed as the economy seeks to meet increased demand for goods and services. Over time this can erode the initial absolute energy savings of the original initiative. Thus, a key challenge in the near term is to better understand this type of economic rebound effect and its impact on net energy savings. Improving our understanding of how people use this income released by lower energy bills will allow energy policy makers to better forecast net energy efficiency outcomes and to better accommodate economic growth, while retaining energy savings and carbon reductions.

Institutions

The project 'Energy saving innovations and economy wide rebound effects' is funded by the EPSRC under the 'Working with the End Use Energy Demand Centres call' (EPSRC grant ref:EP/M00760X/1).

The project led by Professor Karen Turner, Director of the new Centre for Energy Policy (CEP) at the University of Strathclyde International Public Policy Institute. The project involves researchers from the Centre of Energy Policy and Fraser of Allender Institute at the University of Strathclyde.

The project commenced in March 2015 and will complete in February 2017.

Project website: **www.cied.ac.uk/research/impacts/energysavinginnovations**

More information

'Increasing energy efficiency, improving household incomes and boosting the economy' Karen Turner, Fiona Riddoch and Gioele Figus **www.strath.ac.uk/research/internationalpublicpolicyinstitute/ourblog/september2016**

'How Improving Household Efficiency Could Boost the Scottish Economy' Karen Turner, Fiona Riddoch and Gioele Figus **www.strath.ac.uk/research/internationalpublicpolicyinstitute/ourpolicypapers/**

'Increasing energy efficiency in Scottish Households' Gioele Figus, Karen Turner et al **www.strath.ac.uk/research/internationalpublicpolicyinstitute/ourpolicypapers/energyarchive/**

'Household Energy Efficiency Could Help Boost the Economy' **http://ec.europa.eu/environment/integration/research/newsalert/pdf/household_energy_efficiency_could_help_boost_economy_49si7_en.pdf**

'Capturing the Mutliple Benefits of Energy Efficiency' **www.iea.org/topics/energyefficiency/energyefficiencyiea/multiplebenefitsofenergyefficiency/**

How to engage with us

Engaging with stakeholders is a core element of this work and we would be interested to hear from anyone who would like to find out more about the project – including individuals or organisations that would like to take part in stakeholder workshops.

For more information please contact

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