

Residential energy efficiency and potential contribution to economic growth

All-Energy exhibition & conference
10/5/2023

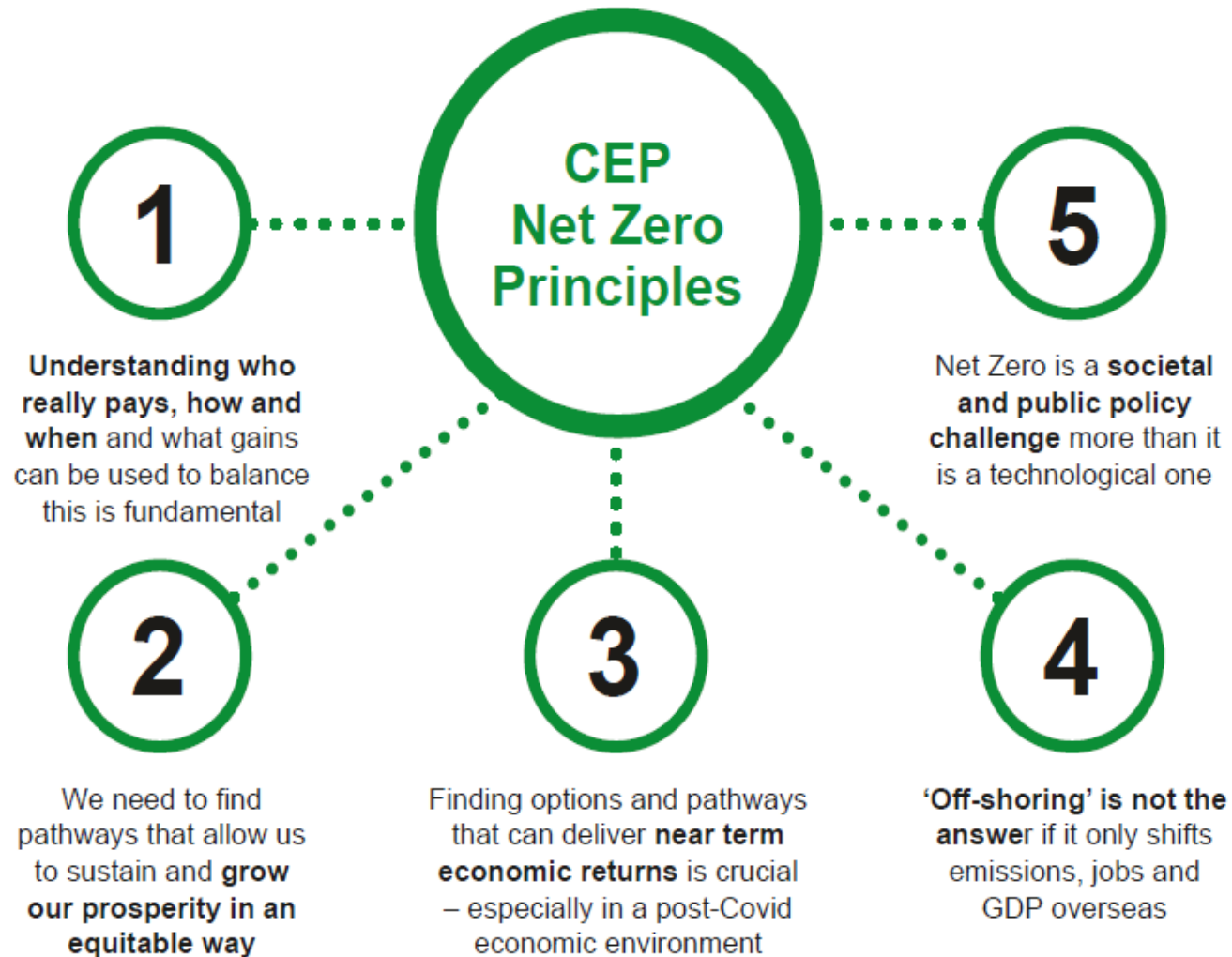
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Our general approach: CEP's Net Zero Principles Framework



Viewpoint

The need for a Net Zero Principles Framework to support public policy at local, regional and national levels

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Abstract

Many nations have committed to midcentury net zero carbon emissions targets in line with the 2015 Paris Agreement. These require systemic transition in how people live and do business in different local areas and regions within nations. Indeed, in recognition of the climate challenge, many regional and city authorities have set their own net zero targets. What is missing is a grounded principles framework to support what will inevitably be a range of broader public policy actions, which must in turn consider pathways that are not only technically, but economically, socially and politically feasible. Here, we attempt to stimulate discussion on this issue. We do so by making an initial proposition around a set of generic questions that should challenge any decarbonisation action, using the example of carbon capture and storage to illustrate the importance and complexity of ensuring feasibility of actions in a political economy arena. We argue that this gives rise to five fundamental 'Net Zero Principles' around understanding of who really pays and gains, identifying pathways that deliver growing and equitable prosperity, some of which can deliver near-term economic returns, while avoiding outcomes that simply involve 'off-shoring' of emissions, jobs and gross domestic product.

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The 15-year retrofitting programme

- 15-year £68.5billion programme to achieve 2035 EPC C goal
 - Almost equal distribution of retrofitting across different household quintiles
 - 20% to HG1 households, 22% to HG5 households
 - Least activity in HG3 households (18%)
- Early, steady and late action scenarios with funds allocated appropriately throughout the programme
 - Steady action spreads activity equally across all the years
 - Under early and late action 50% of the activity concentrated in the first and last 3 years respectively
- 4 different ways to cover the retrofitting cost
 - Covered immediately by households retrofitting their property (Regulation)
 - Cost covered by the government via Grants (not modelled raising the funds)
 - Cost deferred into future by using interest-free Loans (5-year or 25-year repayments)
 - £4,100 cost per household, each retrofitted property becomes 17.2% more energy efficient
- Total cost and distribution among households of 15-year programme from BEIS internal analyses
 - Efficiency gains data from National Energy Efficiency Database (NEED)



The impact of who pays and when

Key findings:

- The efficiency gains allow households to **free up real disposable income** to spend on other things
 - But the expansion triggered is affected during an extended transition phase by the need to recover the costs
- The **funding mechanism does not influence the long-run results** as these depend on efficiency gains achieved
- Requiring households to cover a significant part or the entire cost of retrofitting straight from the outset of the programme can lead to temporary negative GDP impacts
- Deferring the costs further into the future (25-year Loans) **helps mitigate some of the early negative impacts** but could lead to greater GDP losses once the retrofitting activity has ended
- Passing the cost to the government is the option that **minimises the negative GDP impacts** both in terms of magnitude and duration
 - However, it could lead to a budget deficit of up to £5billion
- There are three drivers behind the GDP impacts we observe
 - Increased retrofitting activity increases the demand for workers and pushes the labour cost up across the economy
 - The repayment requirements place restrictions on household income and consumption
 - UK sectors anticipate the end of the retrofitting activity and adjust the allocation of their resources accordingly

Figure 1: Evolution of GDP over time due to 15-year programme of residential energy efficiency improvements of UK households (bargained real wage)



How household real spending power is affected

Figure 2: Evolution of HG1 consumption over time due to 15-year programme of residential energy efficiency improvements of UK households (bargained real wage)



Key findings:

- The only driver of the economy-wide impacts that can be directly affected by the funding mechanism is **the household real disposable income**
- The distribution of the retrofitting activity means there are **similar restrictions to the households' income** across all quintiles
 - Grants the only option that does not introduce any restrictions
 - HG1 **proportionately more affected** by income restrictions
- Regulation and 5-year Loans impose comparable **restrictions to household income from the early stages** of the programme
 - Limited efficiency gains to help mitigate the income restrictions
 - Loans **extend impacts beyond the end** of the programme
- Deferring the cost further into the future reduces the size of annual restrictions and significantly mitigates any income losses
- These are important insights as the funding mechanism can play a **significant role on whether social issues like fuel and absolute poverty may be aggravated** by certain net zero actions
 - Might be different funding mechanisms be applied to different income groups?



Distributing the activity across the programme

Key findings:

- How the retrofitting activity is distributed across the duration of the programme has clear impact on the anticipated impacts
- Impacts not limited to GDP but also **spill across other areas of policy** interest like employment
 - Labour requirements or retrofitting and over time meeting increased household **demand introduce price pressures to economy** – the efficiency driven part of the expansion is to mitigating the impacts of these
- Large labour requirements particularly in ‘Construction’ sector a potential challenge depending on **whether there is the necessary skilled labour force in place** if acting early
 - Acting late actually increases the labour requirements but there is more time to establish the necessary work force

Figure 3: Evolution of GDP and employment over time due to residential energy efficiency improvements in UK households (bargained real wage)

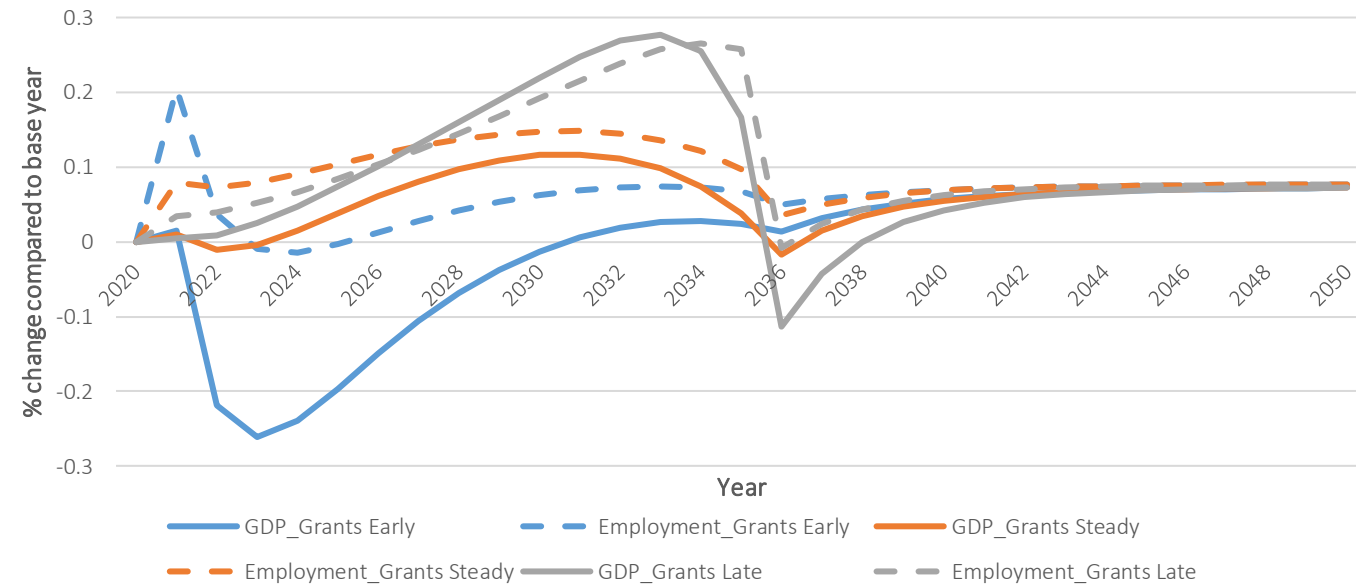
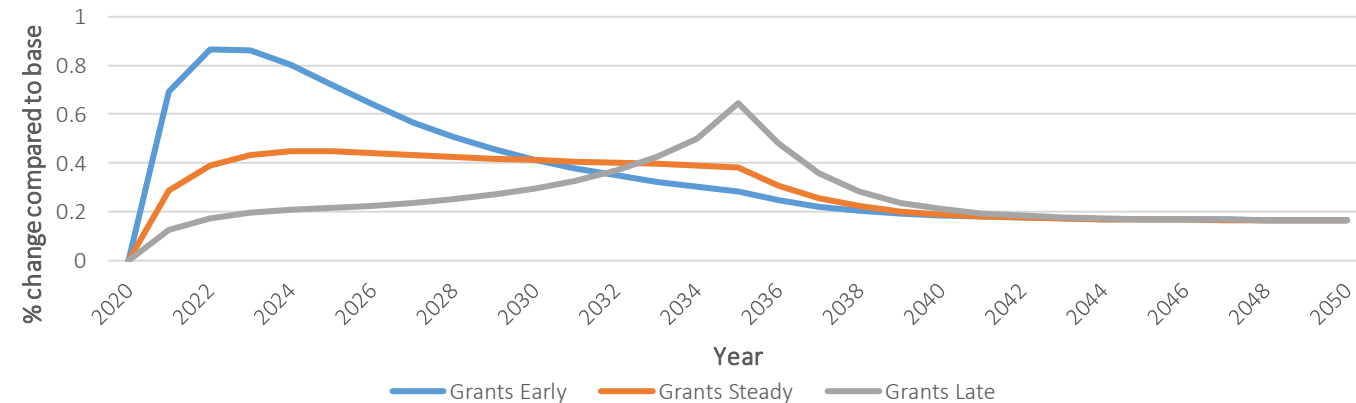


Figure 4: Evolution of CPI over time due to residential energy efficiency improvements in UK households (bargained real wage)





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Thank you!

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