



Understanding the Web of Constraints on Resource Efficiency in Europe – Lessons for Policy

SUMMARY OF KEY POINTS

- In practice there are usually compound causes for why resources are not used more efficiently – not just single ‘barriers’.
- We propose a metaphor of a ‘web of constraints’.
- Policy instruments that do not address systemic interactions tend to be ineffective.
- The design of policy (mixes) needs to be based on understanding the ‘web of constraints’.

The POLFREE (POLicy options For a Resource-Efficient Economy) project explored drivers and barriers for a resource-efficient economy in Europe. The project investigated why resources have been used inefficiently, developed new concepts and paradigms for resources efficiency, and examined through modeling different policy scenarios for resource efficiency. This Policy Brief belongs to a series of five, listed below. These, and all other project outputs, may be found at www.polfree.eu

POLICY BRIEF SERIES

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Conclusion 1

Independent explanations for resource inefficiencies do not offer much mileage

The concept of resource efficiency (RE) and the circular economy has attracted the attention of policy makers and businesses in recent years. However, changing current patterns of resource use is a complex task, and relatively little progress has thus far been achieved. Single factor explanations for resource inefficiencies (such as low commodity prices) do not offer much mileage in describing why this is the case. In practice, there are compound causes for why resources are not used more efficiently. The notion of individual barriers to resource efficiency is very often too simplistic or even misleading. For instance, it may suggest a lack of appropriate incentives for a (socially) desired behaviour, such as using public transportation. However, often such behaviour is not desired but altogether opposed to the preferences of the individual. The term 'barrier' is best used to refer to factors that stand in the way of what people would like to do. When people do not have a desire for driving less, the lack of desire could be considered a barrier to resource efficiency – but this is not how the individual concerned conceptualises it. People's preferences have deeper roots that are often difficult to uncover, and we find that the concept of individual 'barriers' is not very useful for when there is no desire for resource-efficient behaviour.

Conclusion 2

The concept of a 'web of constraints' helps to understand resource (in)efficiency better

Resource efficiency is shown to depend on many factors in simultaneous operation and dynamic interaction. Demand and supply are part of causal loops involving positive stimuli and impediments, creating a 'web of constraints' (and a 'web of drivers'). The web of constraints concept draws attention to the systemic blocking mechanisms having to do with people's preferences and life circumstances, weakly developed infrastructures, limited supply offerings (which depend on business models and policy stimuli at the national and EU-level).

The Figure on the following page shows an example of the causal loops leading to resource-efficient and inefficient heating in residential properties – an area of intensive resource use. The web of constraints operating on residential heating is complex and includes the interaction of the value of building insulation to an owner, the cost of energy, regulations and economic incentives/disincentives, among others.

Conclusion 3

Policy instruments and mixes must address the 'web of constraints' to be effective in driving resource efficiency

An important implication of Conclusion 1 & 2 is that policy instruments that do not address systemic interactions in resource use tend to be ineffective. They push down one spot of the waterbed (i.e. the primary effect), but the water will simply flow to push up the surrounding parts (i.e. the collateral effect). As such, the average height of the bed (i.e. the net result) will hardly change. Therefore, there is a need for policy (or very often policy mixes) that is (are) mindful to the web of constraints on resource efficiency.

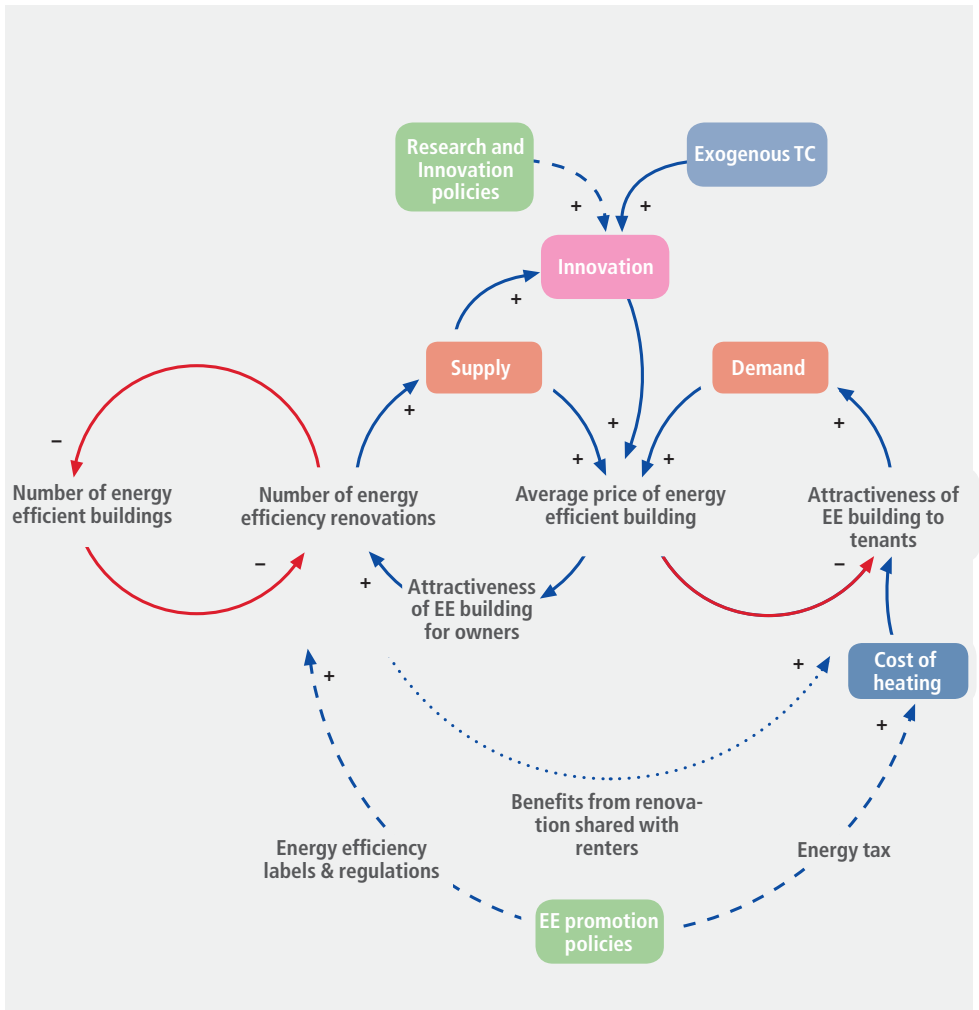


Figure 1: Cause-effect chains for resource-efficient heating at home

Policy mixes must also be internally coherent and consistent, with policy makers aware of the effects of policy interaction. Various examples of existing policy instrument mixes produce conflicting incentives, both within the EU policy framework and within a national policy context, and sometimes also between these different levels of governance and policy-making. For instance, an important element of EU policy is the promotion of the free movement of people and goods and investments in Trans-European transport infrastructure (TEN-T). However, the transport sector is also an important source of environmental impacts such as air pollution, land use and fragmentation and material use. While the link between transport and air pollution has been the primary focus of sustainable transport policies at the EU level, less attention have been given to the material and land use implications of transport policy.

Another example of an inconsistency in EU policy over time is waste policy. After years of Member States investing heavily in incineration infrastructure, the EU shifted its focus to the promotion of recycling. This produced a double investment in waste management infrastructure, producing stranded assets. Increasing recycling targets may mean that recycling facilities may compete with incinerators for a number of waste streams, since the recyclable fractions of municipal solid waste are (often) those with a higher calorific value – such as paper, cardboard or plastics. A number of studies have illustrated that waste-to-energy plants contain a high proportion of recyclable materials.

Accordingly, the multi-layer policy context is not an unequivocal push to increasing resource efficiency (Domenech et al., 2014). Our review of business barriers finds that most businesses do not see economic advantages of improving resource efficiency in their current product range (Diaz Lopez et al., 2014). Some entrepreneurs establish new businesses with resource efficiency as a key attribute, but few are successful. Many firms have adopted some form of corporate social responsibility (CSR), but often as an element of corporate culture that should indirectly stimulate business performance (more sales) as a key (if not primary) objective. The inertia of the resource efficiency concept amongst business, apart from the ambiguous role of the policy context, has everything to do with the role of the consumer. Our review of individual barriers to resource efficiency (see Policy Brief N.2) illustrates that, although about half of respondents to a survey indicated a desire to reduce their consumption of resources, most associate resource-efficient alternatives with products or services that are of lower quality, and with few cost savings (Kammerlander et al. 2014).

The multitude of constraints call for policy mixes that turn vicious circles into virtuous circles of positive feedback – the generation of a ‘web of drivers’. To do so, the design of a far-reaching policy strategy on resource efficiency needs to be aimed at systemic changes operating at different levels, including business models, social consumption patterns, and regulation. Systemic changes do not occur overnight, but take time, and partly depend on external influences that cannot always be managed.

Conclusion 4

Stakeholders need to be engaged in the design and monitoring of policy instruments

Economic instruments (such as the EU Emission Trading Scheme (EU ETS) for CO₂, or resource taxing) are central in improving resource efficiency across the economy, but in and of themselves are not sufficient. Strategic reactions by stakeholders and other uncertainties, interconnected in a web of split incentives, lubricious consumer preferences, information asymmetries etc., tend to prevent the full theoretical potential of such an instrument from being achieved. A possible way forward is to engage with business and behavioural experts, in an effort to anticipate collateral effects. By engaging businesses, consumer and other relevant stakeholders, policy and policy mixes becomes a multi-actor initiative that address both primary and collateral, systemic effects.

In such a multi-actor initiative, policy not only provides incentives and sets limits but also provides orientation, stimulates mutual learning, fosters socio-technical alignment, ensures that a wide variety of options are explored and deals with conflicting claims by technology actors. Although there is a threat of powerful, incumbent stakeholders dominating the dialogue and lobbying for reduced ambition, this should be the concern of the Chair and may be anticipated by connecting the invitation to the dialogue with accepting a certain policy ambition.

Further Reading

Domenech, T., Bleischwitz, R., Ekins, P., O’Keeffe, M., Drummond, P., 2014, *Lessons from the EU policy experiences*, Polfree Deliverable 1.2

Diaz Lopez, F.J., Becker, J., Berkers, F., Eris, B., Koers, W., Vliet, H. van, Bastein, T., Polfree, 2014, *New business models that support resource efficiency*, Polfree Deliverable 2.4

Kammerlander, M., Backhaus, J., Wieser, H., Kemp, R., Dijk, M., 2014, *Individual behavioural barriers to resource-efficiency*, Polfree Deliverable 1.6



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