

### SOLAR SUBSIDIES

## More may not always be more

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The rate of adoption of energy-efficient and renewable technologies is not always seen to grow linearly with the level of subsidies, challenging policy-maker expectations. To try to model and explain this nonlinear response, Shen Liu and colleagues in the US and China propose a socio-technical analytical framework for calculating optimal subsidies that takes into account the potential negative effect of rising subsidies on consumer desire to appear pro-environment.

Prosocial behaviour or environmental status signalling is often seen as a factor in households' choice to adopt renewable or solar energy technologies. This manifests, for instance, as a household's willingness to pay for a reputation for being pro-environment. Motivational crowding theory posits that external motivation such as subsidies can negatively affect this perceived utility, thereby decreasing technology adoption rates. Shen Liu and colleagues take into account the marginal external benefits, such as perceived reduction in emissions and creation of green jobs, in addition to the cost or reliability benefits typically considered in consumer choice models. The researchers then define a utility function that includes not just the external benefits, but social effects such as prosocial behaviour and motivational crowding. Using the example of the US, the study shows that if fossil fuel is not an inferior good (with consumption falling as incomes rise), then higher solar subsidies may not always lead to higher solar adoption rates and lower fossil fuel consumption. The work emphasizes the need for considering complex patterns of social behaviour in energy policy design.

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