Should public policy support disruptive consumer innovations for climate change?

Charlie Wilson
APPAM International Conference
Barcelona, July 2019

S I L C I
Social Influence and disruptive Low Carbon Innovations
silci.org
Limiting warming to 1.5°C requires **45%** reduction in CO₂ emissions by 2030 (IPCC 2018)

**very rapid** emission reductions needed to meet public policy goals

**typically framed as a supply-side** problem

Source: Global Carbon Project (2018) *Global Carbon Budget 2018*
consumption practice

potentially *disruptive* consumer innovations

driving (ICE) cars with low occupancy

car-share
<table>
<thead>
<tr>
<th>consumption practice</th>
<th>potentially <em>disruptive</em> consumer innovations</th>
</tr>
</thead>
<tbody>
<tr>
<td>driving (ICE) cars with low occupancy</td>
<td>‘taxi-bus’</td>
</tr>
</tbody>
</table>

*driving (ICE) cars with low occupancy* refers to the practice of driving internal combustion engine (ICE) cars that are not fully occupied. This practice is considered potentially *disruptive* in consumer innovations due to its inefficiency and environmental impact.
<table>
<thead>
<tr>
<th>consumption practice</th>
<th>incumbent firms, service providers</th>
<th>markets, regulations</th>
<th>infrastructures, norms</th>
</tr>
</thead>
<tbody>
<tr>
<td>driving (ICE) cars with low occupancy</td>
<td>automakers, garages, dealers</td>
<td>revenue-raising taxation</td>
<td>parking, transit usage, ownership</td>
</tr>
</tbody>
</table>
driving (ICE) cars with low occupancy

potentially *disruptive* consumer innovations

- ‘taxi-bus’
- ride-share
- car-share
- e-bikes
- MaaS

consumption practice
driving (ICE) cars with low occupancy

doing big (meaty) supermarket food shops

car-share

e-bikes

MaaS

ride-share

P2P food sharing

‘taxi-bus’

11th hour apps

P2P food sharing

diet gamification

consumption practice

potentially disruptive consumer innovations

online food hubs

recipe boxes

11th hour apps

P2P food sharing

diet gamification

consumption practice

potentially disruptive consumer innovations
consumption practice

- driving (ICE) cars with low occupancy
- doing big (meaty) supermarket food shops
- manually controlling devices whenever needed

potentially *disruptive* consumer innovations

- ‘taxi-bus’
- ride-share
- car-share
- e-bikes
- MaaS
- online food hubs
- recipe boxes
- 11th hour apps
- P2P food sharing
- diet gamification
- internet of things
- smart appliances
- smart homes
- heat pumps
- P2P goods
consumption practice

- driving (ICE) cars with low occupancy
- doing big (meaty) supermarket food shops
- manually controlling devices whenever needed
- using grid-supplied energy whenever needed

potentially disruptive consumer innovations

- ‘taxi-bus’
- ride-share
- car-share
- e-bikes
- MaaS
- online food hubs
- recipe boxes
- 11th hour apps
- P2P food sharing
- diet gamification
- internet of things
- smart appliances
- smart homes
- heat pumps
- P2P goods
- PV + storage
- P2P electricity
- vehicle-to-grid
- demand response
- time-of-use pricing

Driving (ICE) cars with low occupancy and doing big (meaty) supermarket food shops are examples of current consumption practices. These practices can be potentially disruptive when integrated with innovative technologies such as online food hubs, P2P food sharing, and diet gamification. Using grid-supplied energy whenever needed and manually controlling devices whenever needed can be complemented with technologies like internet of things, smart appliances, and P2P goods. These innovations can lead to more efficient and sustainable consumption practices.
Should **public policy** support disruptive consumer innovations for climate change?

**yes:** $\text{CO}_2$ emission reduction is a public good (cf. grants for energy efficiency, carbon pricing ...)
Should public policy support disruptive consumer innovations for climate change?

**yes:** CO₂ emission reduction is a public good (cf. grants for energy efficiency, carbon pricing ...)

**yes:** disrupting consumption practices may help other policy objectives (e.g., healthy eating)

**yes:** overlap with strategic research & innovation objectives (e.g., industrial strategy)
Should **public policy** support disruptive consumer innovations for climate change?

**yes:** CO₂ emission reduction is a public good  
(cf. grants for energy efficiency, carbon pricing ...)

**yes:** disrupting consumption practices may help other policy objectives (e.g., healthy eating)

**yes:** overlap with strategic research & innovation objectives (e.g., industrial strategy)

**but ..** rapid, disruptive change has negative impacts
De-risking disruption (1): trial innovations in market niches to enable policy learning

(area-based) demonstration programmes for testing -

- new business models
- new infrastructures
- new policy instruments
- new user roles

[Map of England with data legend showing different color areas.

Image of electric vehicle charging.

Diagram of Brooklyn Microgrid]
De-risking disruption (1): trial innovations in market niches to enable policy learning

(area-based) demonstration programmes for testing -

- new business models
- new infrastructures
- new policy instruments
- new user roles
- new regulatory frameworks
De-risking disruption (2): engage constructively with ‘losers’ to reduce transitional inequities

political economics is arguably the principal brake on CO₂ emission reductions
De-risking disruption (2): engage constructively with ‘losers’ to reduce transitional inequities

political economics is arguably the principal brake on CO₂ emission reductions

retraining, community investment, industrial policy, compensation
cf. swords into ploughshares
De-risking disruption (3): support diversity to avoid premature lock-in to new incumbency

scale economies & network effects in digital platforms can lead to rapid market dominance ... Uberisation
De-risking disruption (3): support diversity to avoid premature lock-in to new incumbency

scale economies & network effects in digital platforms can lead to rapid market dominance ... Uberisation

public policy should play an influential role in the ‘selection environment’ for early-stage innovations

e.g., market access in exchange for robust evidence of CO₂ reductions
Should public policy support disruptive consumer innovations for climate change?

**yes**: CO₂ emission reduction is a public good

**but** .. rapid, disruptive change has negative impacts which can be mitigated:
- trials for policy learning
- engagement with ‘losers’
- support for diversity

**but** .. urgency sets up tensions with continuity & (near-term) equity
Should public policy support disruptive consumer innovations for climate change?

Charlie Wilson
APPAM International Conference
Barcelona, July 2019

SILCI
Social Influence and disruptive Low Carbon Innovations
silci.org

International Institute for Applied Systems Analysis
Tyndall Centre for Climate Change Research
European Research Council
consumption practice

- driving (ICE) cars with low occupancy
- doing big (meaty) supermarket food shops
- manually controlling devices whenever needed
- using grid-supplied energy whenever needed

incumbent firms, service providers

- automakers, garages, dealers
- large retailers & suppliers
- renovation SMEs, non-ICT manufacturers
- centralised utilities

markets, regulations

- revenue-raising taxation
- competition, health & safety compliance
- data & privacy
- grid access

infrastructure, norms

- parking, transit usage, ownership
- urban form, high streets, land use
- wireless & 4G networks, boundaries of home
- transmission networks, passive consumption

competition, health & safety compliance