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A framework that identifies non-price influences on energy efficiency, and policies to overcome them

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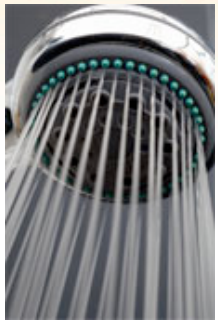
Project rationale

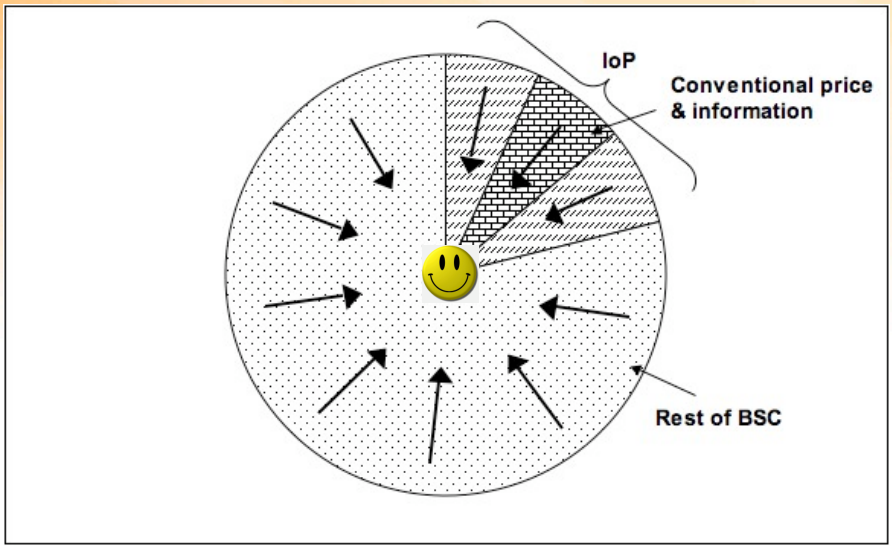
- **Conventional approach** to driving uptake of **EE & DG**
  - emphasises **price signals** and **information**
  - uses **policy add-ons** where this doesn't work because of 'other influences'
  - also assumes energy supply system **simply responds to demand**



- This project was about developing a structured process to
  1. Characterise a subset of those influences
  2. Identify policies that would take them into account
- Move away from technology and price-focused approaches
- Instead focus on **end-users**, and the **decisions** they make
- Look at the various **influences** on those decisions (in addition to prices and information)

Influences on end-users' 'energy decisions'

- Infrastructures of Provision



Infrastructures of Provision

Draws on a broader definition of technology (www.iiasa.ac.at)

- ***hardware*** involved in delivery of energy services (from electricity generation through to end-use equipment and housing stock)
- ***software*** (the knowledge to appropriately design, manufacture and use the hardware)
- ***orgware*** (the associated commercial and governance systems and institutional frameworks required to deploy and integrate the hardware eg. National Electricity Market, Electricity Retailer Licences, Australian Standards, Building Codes etc)

Helps to reinforce the importance of these aspects of technology

Residential hot water service case study

Examples of IoP influences

1. Energy supply industry:

Those more derived from the energy supply industry

- eg. near universal supply of cheap electricity
- eg. the nature of the electricity tariffs (off peak -> storage water heaters)
- eg. high standing/fixed charges reduce incentive to reduce electricity use
- eg. sale of ACs by electricity retailers….

2. Associated physical infrastructure:

Those related to the infrastructure more closely associated with the end-user

- eg. whether the householder owns the premises
- eg. State & local government building regulations and requirements
- eg. solar access, both at the time of installation and in the future

3. End-user technology:

Those that are more directly related to the technologies themselves

- eg. higher capital cost of solar water heaters
- eg. relative availability of SWHs vs conventional
- eg. availability of (suitably trained!) personnel to install and maintain them

System that supplies hot water energy service is not simply meeting demand of end-users, but is also shaping that demand

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Broader Social Context influences

- Energy use and interest in EE options:
  - Supply-side mentality: buy bigger water heater, not use low-flow showerheads
  - Fixed budget to build house, little left over for ‘discretionary items’
  - Emergency situation usually means replacement with what had before
  - Prefer to be wise cynic not naïve green ideologue
  - Evening water use reduces effectiveness of SWHs with off peak boost

- Response to programs aiming to drive EE
  - Cultural differences, language barriers, workshops unfamiliar
  - Disadvantaged communities difficult to reach
  - Energy use (and GHG emissions) are government & energy industry’s problem
  - People tend to discount benefits more than is ‘sensible’
  - People are sometimes simply not rational

In summary

1. Because of IoP and BSC influences, policy used to drive EE & DG should not rely on selected information and price signals to evoke rational responses
2. The IoP/BSC framework provides a structured process to identify the various influences on end-user decisions (price and non-price)
3. Therefore allows identification of policies most appropriate to address particular influences in particular circumstances
4. Command and control, capital grants, low interest loans, and White Certificate schemes, ESCOs, State & local government requirements can be standardised and streamlined, training and certification processes
5. Helps show **what** is needed **where**, **when** and **why**
6. A number of **coherent policies** within an **integrated energy policy framework** are likely to be required to drive effective and efficient deployment of EE & DG.

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Thank you… and *questions*

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www.ceem.unsw.edu.au

Overcoming IoP influences

1. Energy supply industry-related:
   - eg. near universal supply of **cheap electricity**
   - eg. the nature of the **electricity tariffs** (cheap off peak -> storage heaters)
   - eg. high **standing charges** reduce incentive to reduce electricity use.

Suggested policies:

- **Command and control** measures help enforce more efficient appliances
- **Capital grants, low interest loans, and White Certificate schemes** (or Energy Sales Targets) help overcome upfront costs relative to savings
- **White Certificate schemes** (or ESTs) can drive uptake of EE independent of energy tariffs
- **ESCOs** help overcome upfront costs relative to savings, and could bundle standing charges into energy use tariffs

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Overcoming IoP influences (cont.)

2. Associated physical infrastructure:
   - eg. whether the householder **owns the premises**
   - eg. State & local government building **regulations and requirements**
   - eg. **solar access**, both at the time of installation and in the future.

Suggested policies:

- **Command and control** measures could force owner to implement EE (eg, BASIX)
- **Capital grants, low interest loans, White Certificate schemes** (or ESTs) and **ESCOs** help overcome split incentive
- State & local government requirements can be **standardised and streamlined** to enable EE, and can even be used to drive it - similarly for solar access

Overcoming IoP influences (cont.)

3. End-user technology:
   - eg. higher **capital cost** of solar water heaters
   - eg. **relative availability** of systems
   - eg. **availability of personnel** to install and maintain them

Suggested policies:

- **Command and control** measures, **capital grants**, **low interest loans**, **White Certificate schemes** (or ESTs) and **ESCOs** can all be used to overcome the upfront cost
- **White Certificate schemes** (or ESTs) and **ESCOs** can be used to 'make' EE hardware more available and reduce their costs
- **Training and certification processes** are required to make EE skills more mainstream

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BSC influences

How to deal with BSC influences?????

- May be that the best way to do this is simply to **take the decision-making out of the hands of end-users**, especially in the residential sector….
- Command & control, White Certificate schemes (or ESTs) and ESCOs can help do this

The importance of getting it right …..