International Energy Agency

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Monitoring and evaluating policies and goals

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What is Monitoring and Evaluation

Monitoring provides headline data on policy performance...

What happens as a result of the policy?

Evaluation provides an *understanding* of what is happening / happened in practice and why and what can be done about it

Covers impact, economic and process elements

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Why monitor and evaluate

- **Understand what happens as a result of the policy**
- **Government accountable for use of money**
- **Ability to change policy during its implementation**
- **Learn for other policies**
- **Understand the market more**
  - what energy suppliers, etc do,
  - how do energy consumers react
- **Produces data for use in wider understanding of energy**

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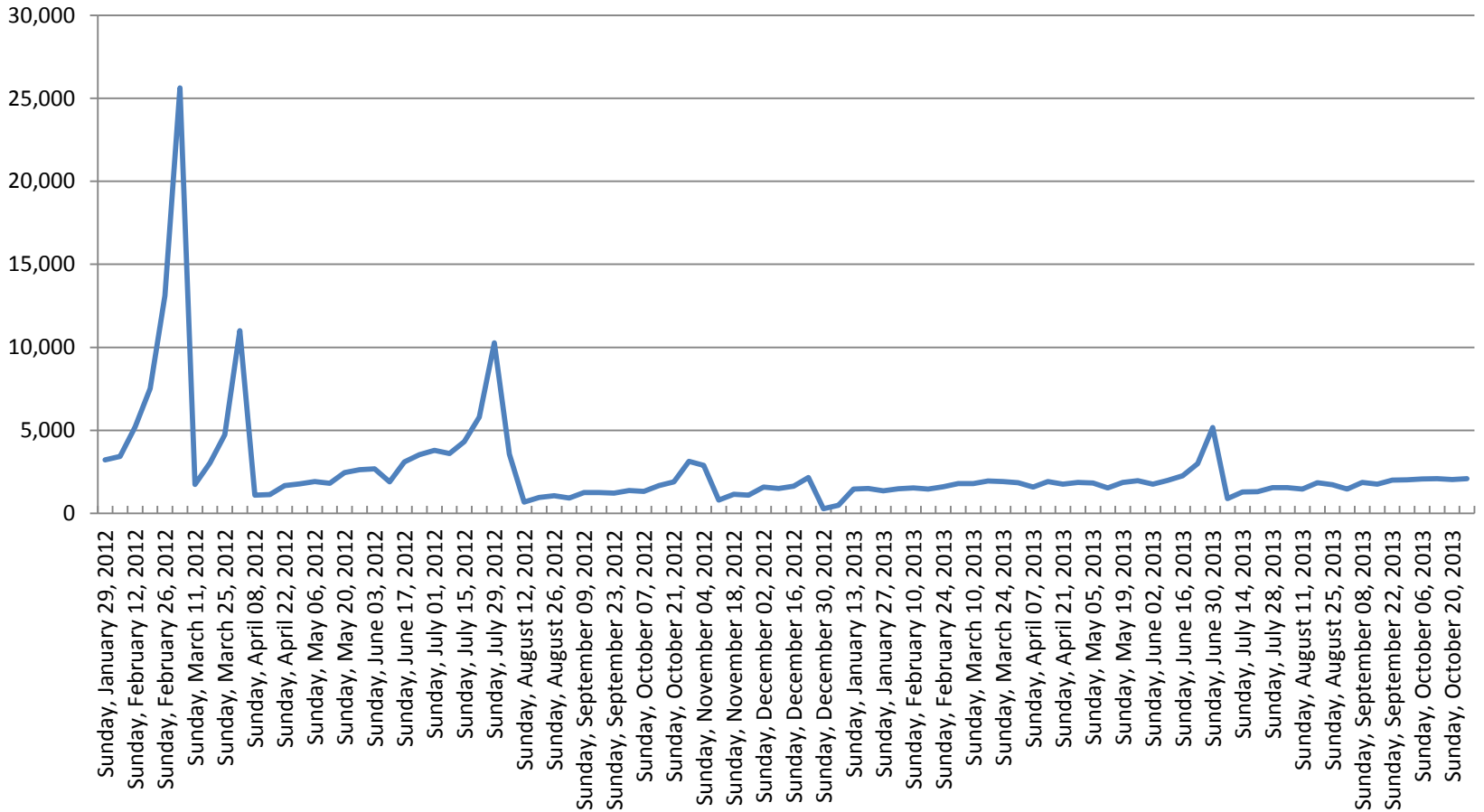
Example - UK Feed in Tariff scheme

Number of Domestic PV installations per week, tariff band 0-4 kW



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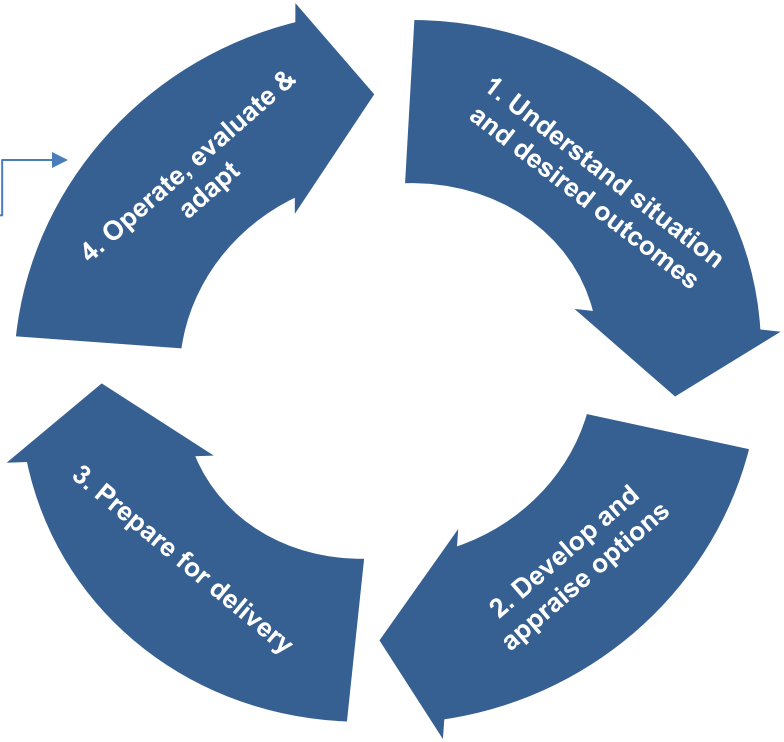
The Policy Delivery Cycle – needs data

- Monitoring performance indicators and expected benefits



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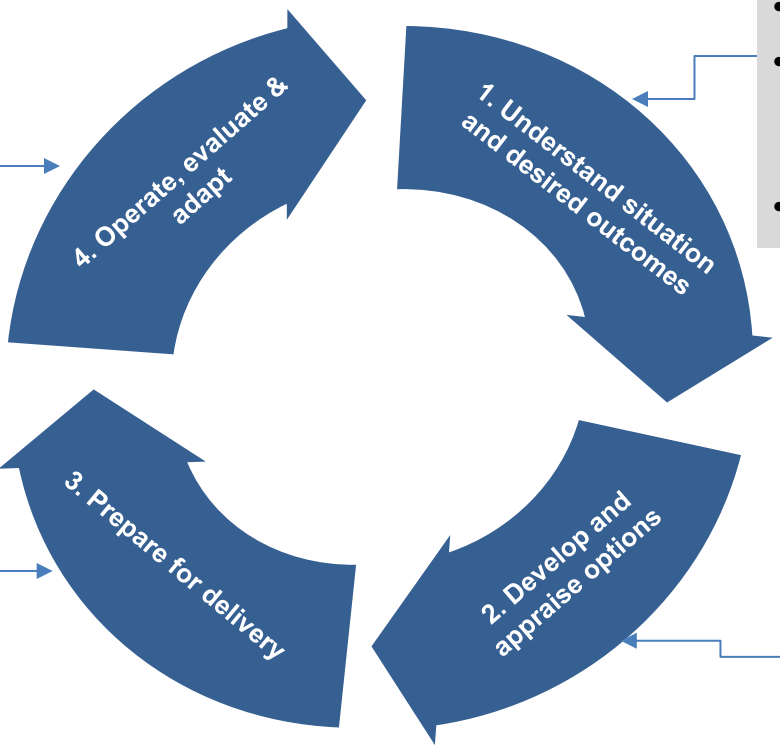
The Policy Delivery Cycle – needs data/analysis at all stages

- Do we really understand what the problem or issue is?
- Are you sure there is a gap?
- What policy or evidence is already out there & what are others doing?
- What outcome would indicate success



- Understand, quantify & analyse impacts, costs, risks & benefits of policy options, including on GHGs
- Address evidence gaps & identify research & analysis required

- Undertake pilots & collect good practice
- Benchmark against other schemes
- Agree and put in place delivery arrangements with delivery partners and regulators
- Put in place policy monitoring, evaluation & reporting mechanisms

- Monitoring performance indicators and expected benefits
- Evaluation and reporting,

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When to monitor and evaluate

1. Before launch

- Should the policy work?
- How will it work?
- Will it be worth it?

2. During delivery

- Is it working? For whom?
- Why / how?
- Unforeseen events

3. After delivery

- Did it work?
- How & why did it work?
- Was it worth it?
- Who gained
- Were objectives met?

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Before the launch -Planning

- Policy and analysts (statisticians, economists, social researchers) have to work together from start
- Review the evidence, is their a policy gap or insufficient evidence, other evidence for similar programmes, most likely in other countries
- Map the policy and understand how it is intended to work – set out the benefits - is required saving achievable
- Design and prioritise impact and economic evaluation projects within budget envelope
- Resourcing: has to be part of the budget for the policy – will be cost effective (~1% of policy costs)
- How will it be implemented
  - Who needs to do what and how likely – what evidence
  - Can policy administrators implement it

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Benefits mapping

Policy benefits:

- Clarity about the outputs and outcomes (direct and indirect)
- Establishes areas of risk and the uncertainties

Helps identify:

- what to measure (outcomes, outputs),
- what assumptions need to be tested
- where priorities lie (e.g. risk, uncertainty)
- Timing

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Before launch – data

- What data needed for monitoring and how can it be collected
- How produce baseline (what change is measured against)
- Planning "data collection" has to start before launch
- Pilot the policy and / or undertake pre-launch research

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Piloting and Pre-launch research

Explore potential delivery issues and risks

- **Motivation of delivery chain – are they likely to act as expected or desired?**
- **Capacity – are they able to deliver the work at the pace and quantity required to achieve the outcomes?**

How will consumers respond?

- **Awareness, acceptability, and demand for policy e.g. domestic measures?**
- **Consumer perceptions and reaction**
- **Unintended consequences**

Test data flows

Ministers, tend to dislike Pilots – like announcements!

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Focus of monitoring and evaluation during delivery

- Produce reliable evidence - what is working, in what context for whom, and how? What is not?
- Understand if the anticipated benefits and outcomes are happening
- Understand and improve efficiency of processes
- Produce evidence-based recommendations to increase chance of policy success
- Has to use very timely data – records from delivery

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Was it worth it?

- What has been achieved and at what cost?
- How efficient was implementation & delivery?
- How do costs and benefits compare with other policies targeting the same outcomes?
- Distributional impacts - who bears the costs and who gains?

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Power Utility's Energy Efficiency Programme

: EGAT's Experiences and Lessons Learned

Mrs. Napaporn Phumaraphand

Director, Demand- Side Management & Planning Division

Electricity Generating Authority of Thailand

EGAT

Power for Thai Happiness

A1 Energy Efficient Appliance

Incandescent Phase-Out Scheme (2007-2010)

- To foster the permanent use of good quality CFLs in place of GLS incandescent lamps by 2010 using Energy Conservation Fund & EGAT budget

Strategies

Supply Side

- ✓ No mandatory enforcement
- ✓ Continue voluntary endosement label NO. 5 program

Demand Side

- ✓ Give away **800,000** CFLs to stimulate public recognition
- ✓ Public campaigns & Market advertising
- ✓ Selling low-priced CFLs with 1 year warranty throughout the country in cooperation with suppliers participating in the program

Targets in 2010:

- Average market price of CFLs < **60** Baht (50% reduction from 120 Baht)
- **60 – 70%** customer satisfaction in price & quality of CFLs

❖ Supported by Energy Conservation (ENCON) Fund, a Public Fund)

A 1 Energy Efficient Appliance

Incandescent Phase-Out Scheme (2007-2010)

- **Results to Date**
  - ✓ Average market price of CFLs lower by 20%
    (Before: 120 Baht in 2006, After: 77 Baht in 2011)
  - ✓ Number of CFLs labeled no. 5 increased from average 3 millions in 2006 to 9 millions in 2007 to 13 millions in 2008 and 10 millions on average in 2009-2012.
  - ✓ Energy savings of **2,502 GWh** with peak demand reduction of **386 MW** and CO_2 reduction of **1.3 million ton**
    (since labeling scheme in 2008 to April 2013)

- **Note:**
  - Market barrier of high initial cost of
  - CFLs has been gradually reduced.
  - Customer information and awareness has been widely raised.

Campaign: Together in conservation

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Impact of policy

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The impact evaluation problem

Measuring activities and outputs is straightforward, if not simple. Outcomes / impacts are more difficult…

Why more difficult?

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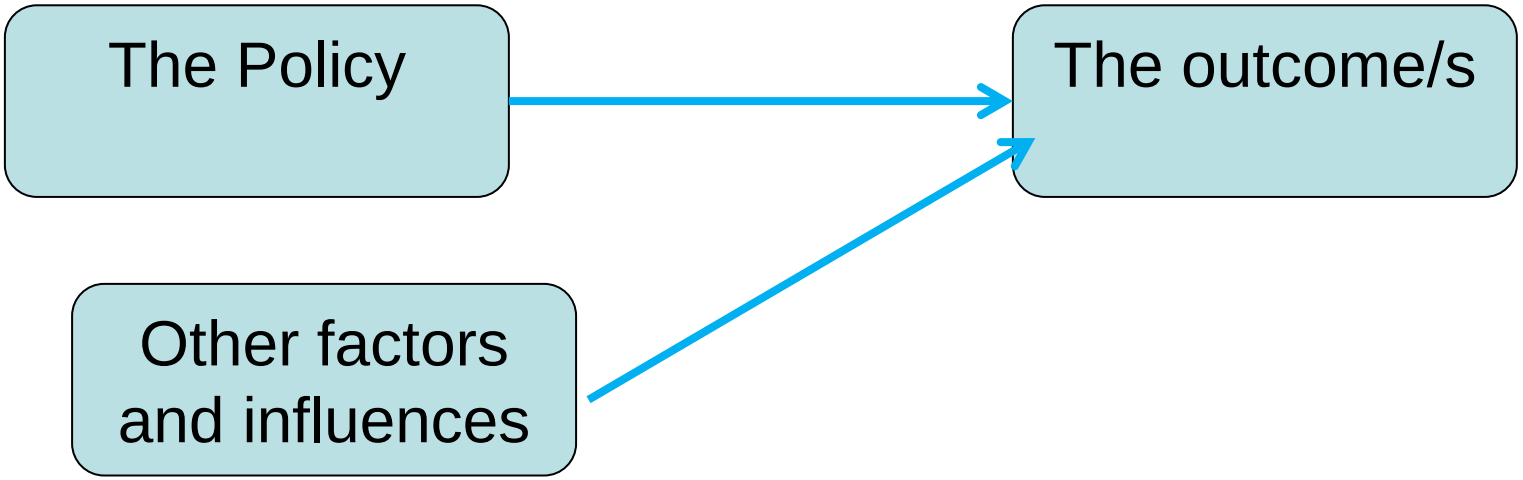
Did it work?: Evaluating policy impacts

Measuring activities and outputs is straightforward, if not simple. Outcomes / impacts are more difficult..



Other factors include:

- Global, national, local trends / events
- Other policies
- Something you haven't even thought of…!

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The counterfactual (what would have happened)

- ***"what would have happened if you hadn't implemented the policy"***

- **Impact evaluations provide an estimate of the impact by directly measuring what has/is modelled to happen in control or comparison groups**
  - measure outcomes amongst those that do (treatment) and do not receive the intervention (control or comparison groups).
  - assumes the only systematic difference between groups is the exposure to the intervention
  - Harder if the counterfactual is modelled

- **It is always an estimate though – you cannot directly 'measure' the counterfactual**

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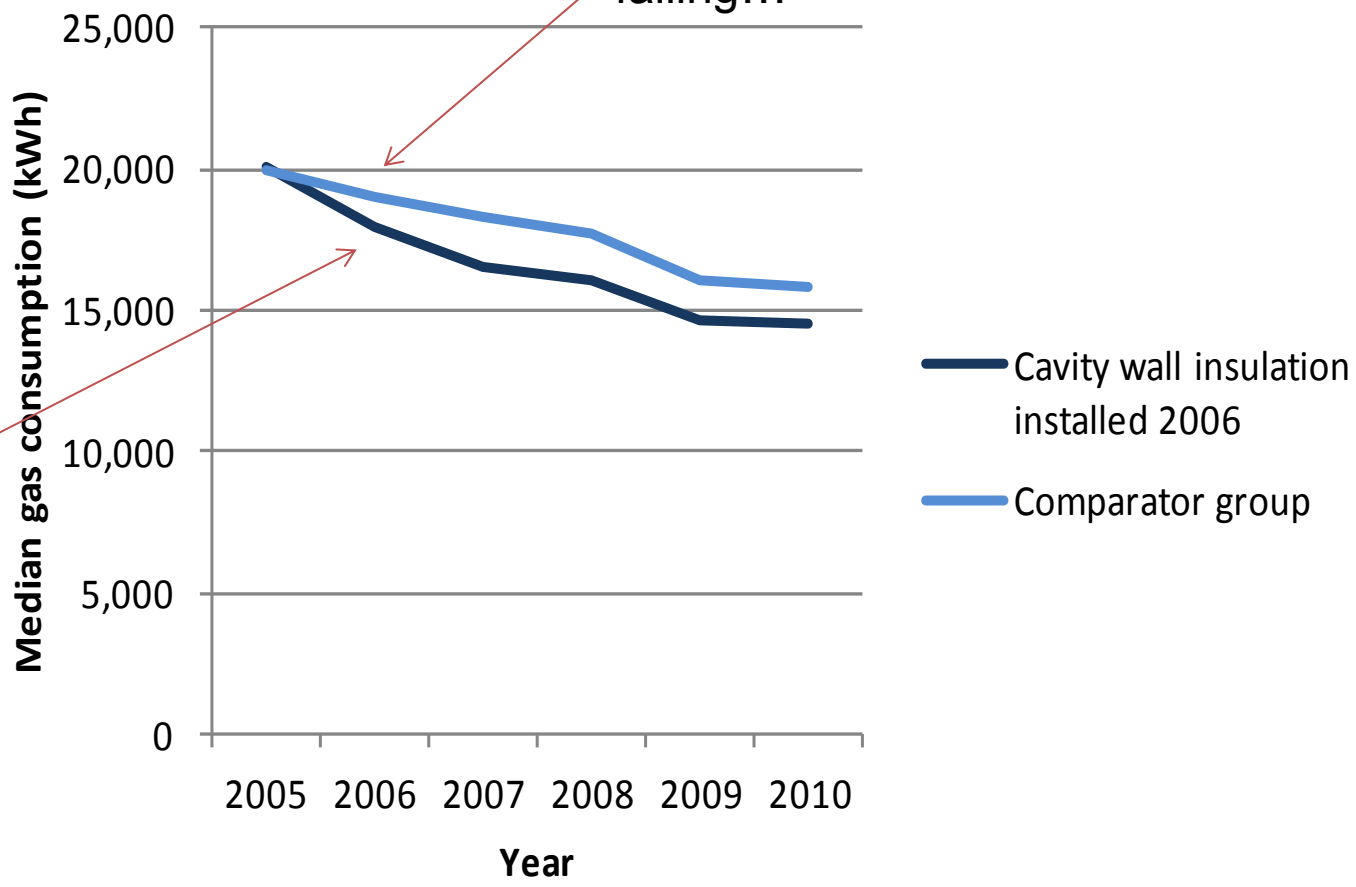
The counterfactual

Gas consumption already falling…

But fell faster initially, and remains lower in the cavity wall insulation group



Source: DECC, NEED summary of analysis, November 2012

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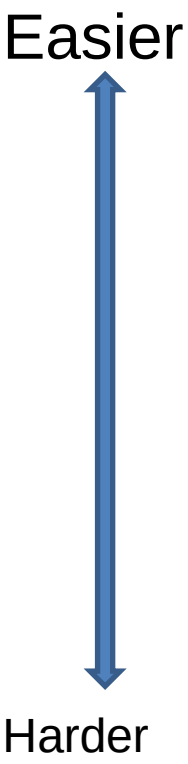
Policy types and challenges

- **Direct implementation of one type of technology**

- **Public information campaigns**

Multiple policies make analysis of impact harder still



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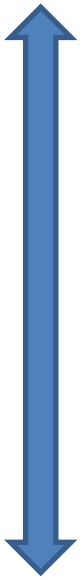
Designs for estimating the counterfactual

Stronger designs



Weaker designs

Randomised controlled trial

Matched comparison group designs

Parallel trends

Non matched groups

Modelled counterfactual

See Annex for other cases

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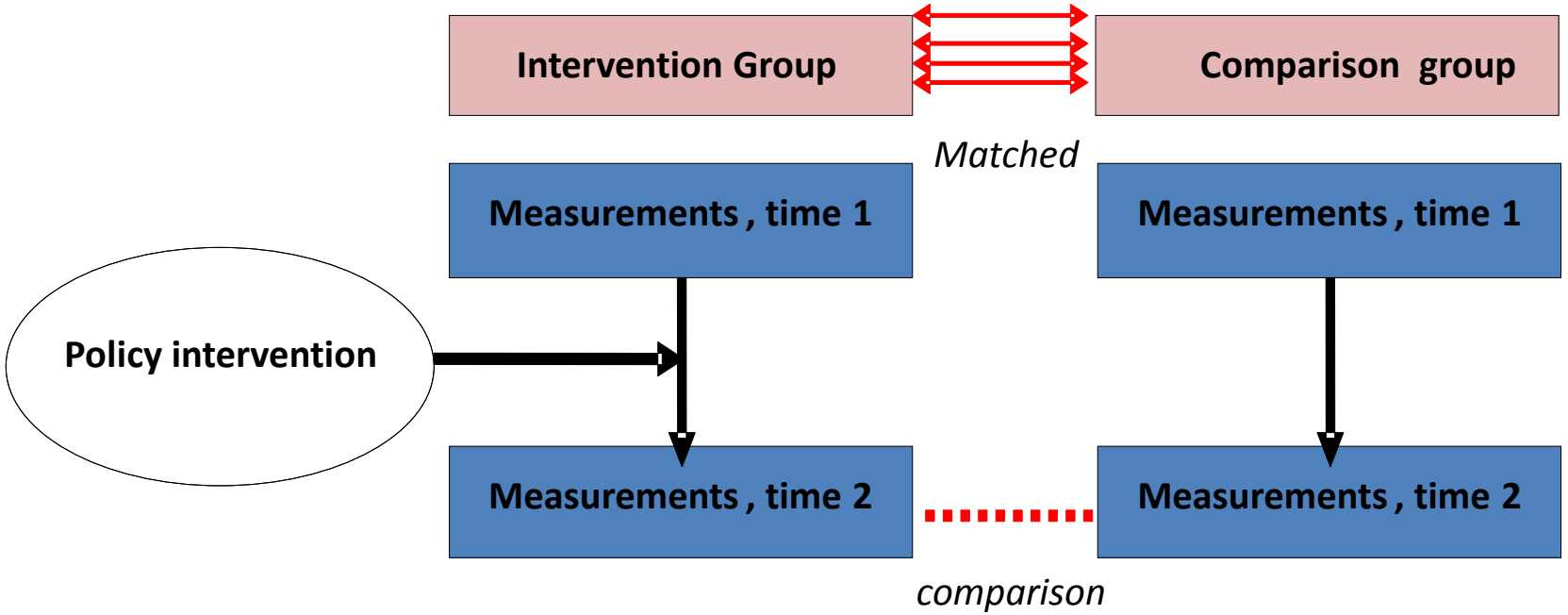
Matched groups

Groups carefully matched and outcomes of interest are compared between the intervention group and matched comparison group



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Data

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Design data collection

- **Data needs to be established from the start, pre-policy**
- **Monitoring data - need to be negotiated, sometimes legislated**
  - Consider commercial sensitivity, consent, data validation, transfer and storage and disposal
  - Baselines need to be collected from participants and non-participant groups

Design process

- **Prioritise (questions or projects)**
- **Ensure data can deliver in time to meet decision points**

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Options for data (focus on a household policy)

- Business surveys
- Household surveys
- Admin data
- In-situ measurement
- Modelling

- Positive and negative points through views of data to understand a household policy

- Modelling not covered – as often needed for counterfactual

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Administrative data/Management information data

- Low survey burden
- Greater number of records allows more detailed breakdowns
- Avoids duplication by making use of existing data
- Can be designed for precise use

- Dependency on third parties
- Definitions and information may not match statistical needs
- Often requires substantial effort and time to set up and may be legal barriers to use
- Has to happen in advance and needs statisticians involved in policy implementation process

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What is Management Information data?

- **Data that are held or need to be held to administer a government policy**
- **Data may be held by the government department or by a public or private company that is running the policy**
- **Can be good way to monitoring the delivery of policy**
- **But need to work closely with policy maker/administrators to get data needed – very hard to change afterwards**
- **For example:**
  - Payments made to encourage take up of renewables in homes
  - Discounts offered to encourage upgrades of boilers
  - Obligations on energy suppliers to improve energy efficiency of homes

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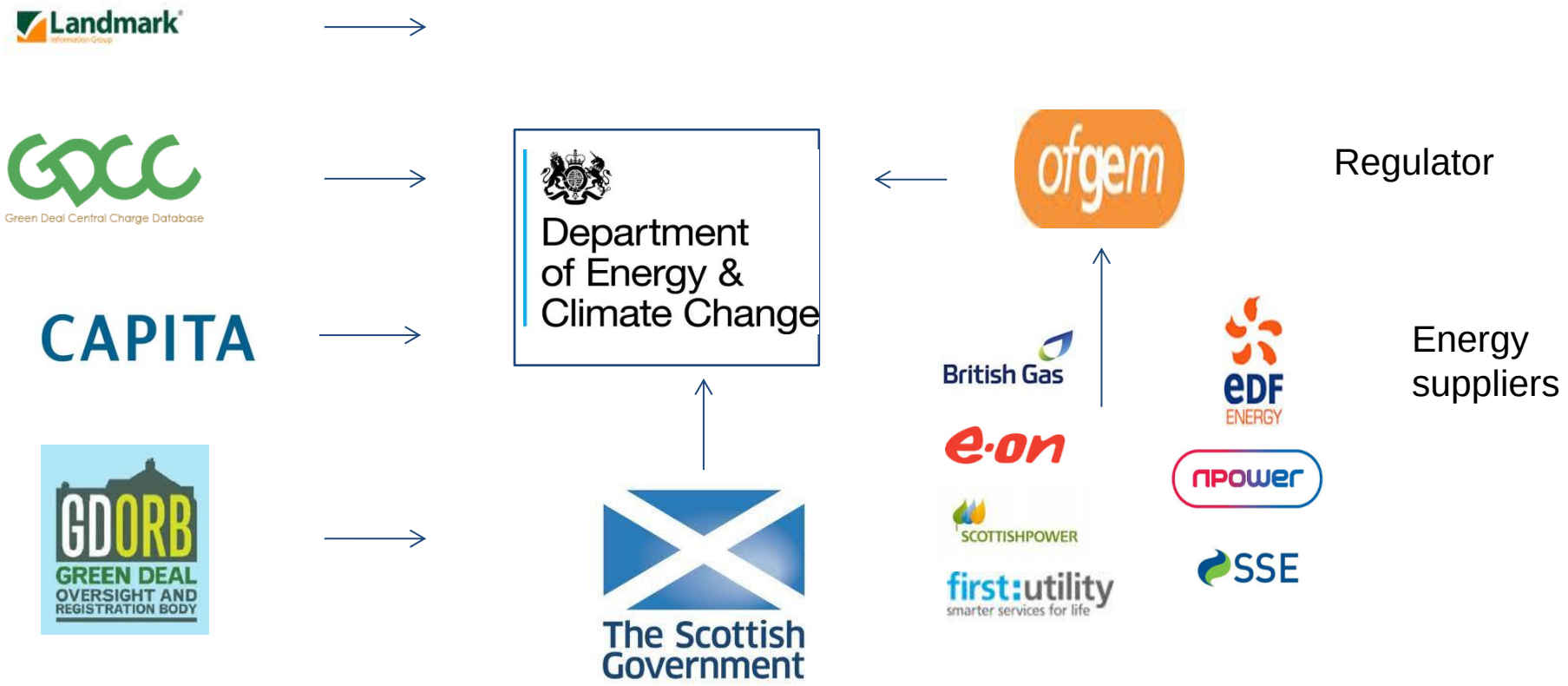
Example – UK data on home insulation policy

Privately funded element

Government supported element (through charge on all energy bills)



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Surveys in monitoring

- **Important role is understanding detail of new policy –**
  - Change in attitude, how policy delivered, long term change etc
  - Less timely for monitoring short term impact
- **Need good understanding and data for target population and counterfactual group**
- **Proper design,**
- **May require some form of in-situ/direct measurement**

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Summary

- Monitoring and evaluation is an essential part of policy delivery
- It needs planning and cooperation between policy makers and analysts (stats, econ, researchers)
- Needs proper resourcing and cooperation
- Need to establish baselines, counterfactuals and flows of data
- Can raise profile of statisticians and funding
- Can provide valuable data for wider energy statistics
- It can and should inform future policy

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Questions

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Annex

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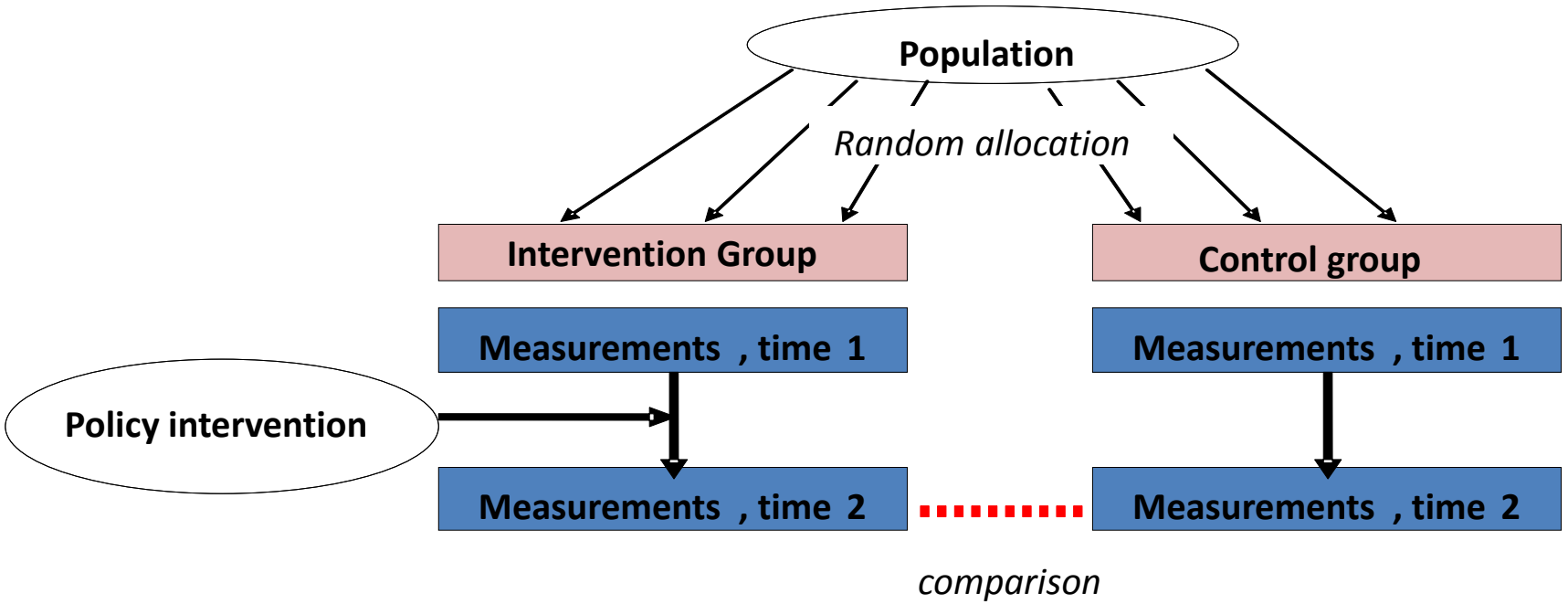
Randomised Controlled Trial

Individuals or groups randomly assigned to intervention or non-intervention (control) group and the outcomes of interest are compared



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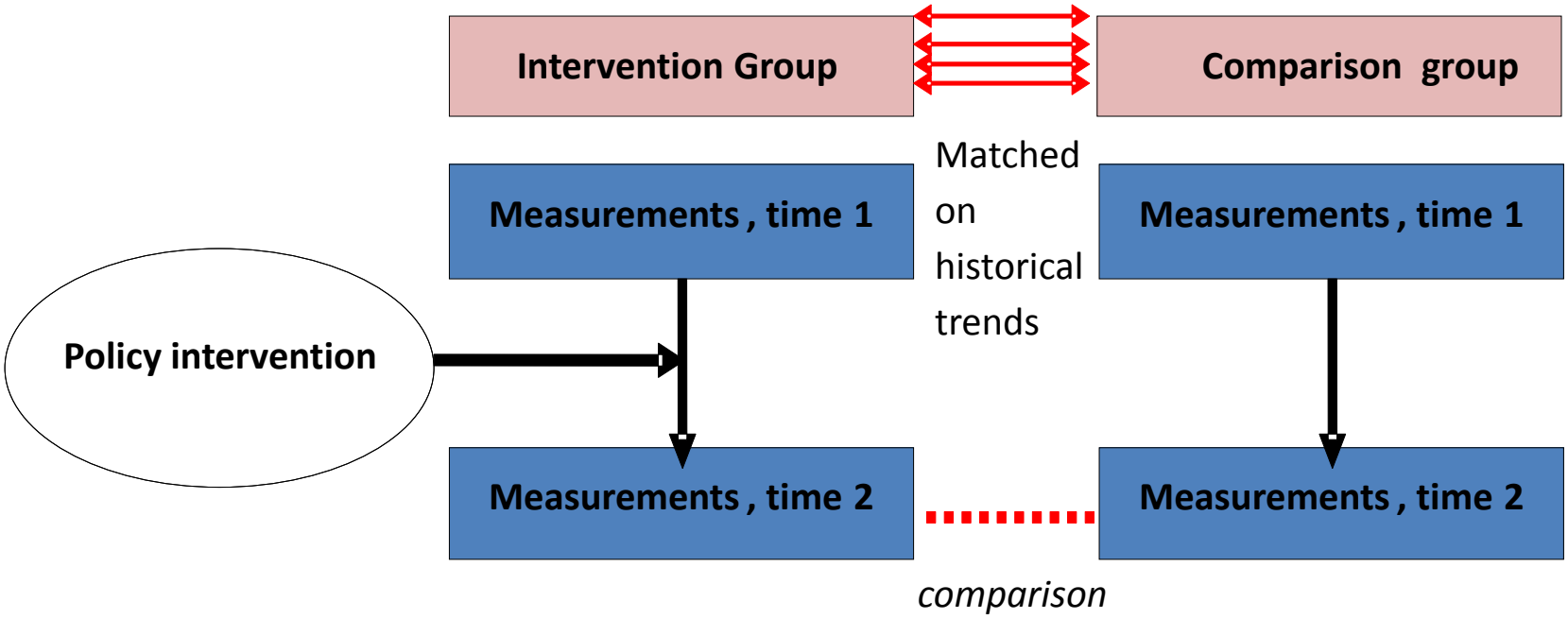
Parallel trends

No direct matching - instead compare difference between groups where strong evidence that trends (on outcomes of interest) for both groups have historically moved in parallel over time



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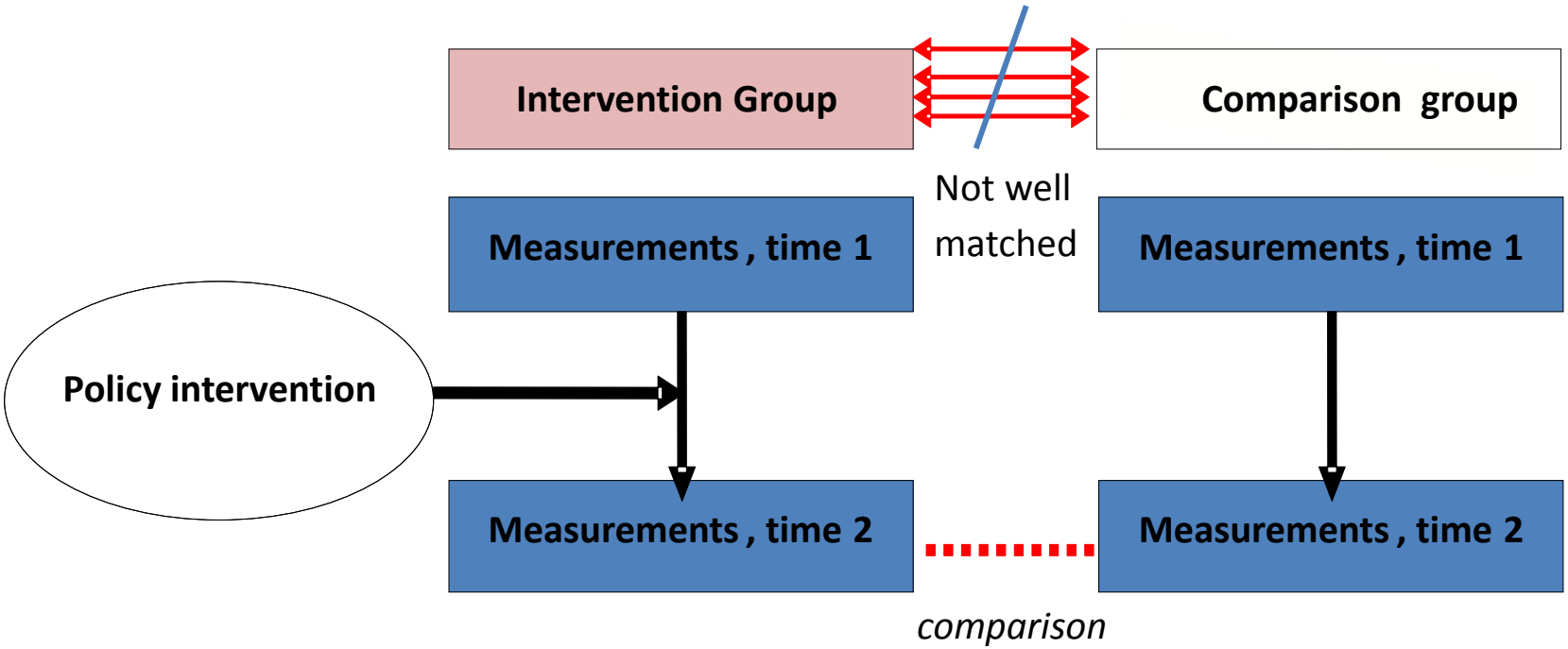
Poorly matched groups

Sometimes groups are matched at aggregate level. Or comparisons made between groups that have not been well matched



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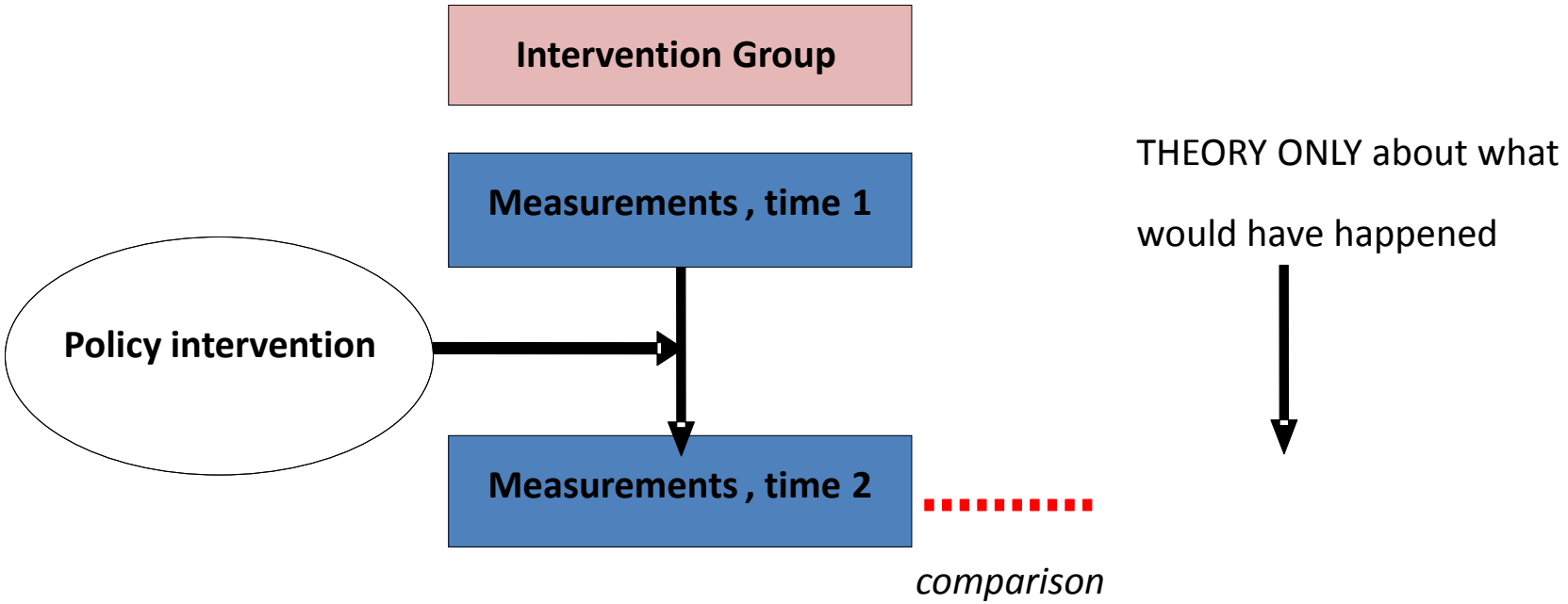
Modelled counterfactual

Based on analytical estimates – can't be sure these are accurate as many assumptions made.



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Households Surveys

- Comprehensive information on all fuels used in private households
- Best achievable data quality if they are well prepared and combined with a comprehensive data validation process
- Can be used directly and as input for model calculations

- Resource intensive
- Expensive
- Time consuming
- High respondent burden
- Need sample frame

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Business surveys

- Timeliness for data and results.
- Fewer respondents to consider in comparison to household surveys.
- Energy companies will hold some information on households energy use.
- Easy to acquire frequent headline consumption data.

- Lack of detail.
- Inconsistency in variables held by area-based energy suppliers.
- Difficult to directly obtain the household variables required for the evaluation

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In situ/direct measurements

- Detailed information on individual appliances, information on patterns of use of the equipment.
- High quality of the results.

- Invasive for households: difficulties in finding households willing to participate.
- High burden in terms of time and human resources.
- Expensive, so often small samples, and less representative
- Constraints in monitoring equipment: limitation in the number of metering devices and monitoring incidences.

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