

# Who should pay for clean energy? Distributive justice perspectives

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## Overview

- The distributional incidence of clean energy policy needs to be both studied and normatively evaluated
- The literature on distributive justice for principles that could govern the distribution of the costs of clean energy
- We translate these into three observable policy design criteria
- We test three clean energy roll-out policy programs against this framework and find that the UK's Feed-in Tariff is the least fair and Australia's Photovoltaic Rebate Program is the most fair

## Increasing spending on clean energy calls for a fair distribution of its costs

### ASSUMPTIONS

1. Climate change mitigation is necessary
2. Clean energy roll-out is one of several necessary mitigation strategies
3. Clean energy infrastructure is costly, and **its costs need to be distributed among members of this generation**



### CONTEXT

1. State-led **spending** on clean energy infrastructure is high and rising
  - UK: £12 bn p.a. (ONS), £100 bn to 2020 (DECC)
2. Socioeconomic **inequality** in several of the countries that lead the deployment of clean energy is historically high and rising



### RESEARCH QUESTION

*'What insights can be drawn from the literatures on climate justice and distributive justice to guide policy design for a fair distribution of the cost of clean energy?'*



The imperative to install clean energy is (partly) about justice, but so is the need to fairly distribute its costs

#### OUR FOCUS: INTRAGENERATIONAL CLIMATE JUSTICE

- ✘ 1. Intergenerational climate justice: 'How much should this generation pay in mitigation costs to avoid climate change and harm to future generations?'
- ✓ 2. Intragenerational climate justice: 'How should the collective mitigation burden of this generation be distributed among us?'

*'A policy that averted dangerous climate change would nonetheless be unfair if the duties to mitigate and adapt were unfairly distributed. It is not enough to devise efficient policy proposals for they might be thoroughly **unjust in their distribution of the costs.**'*

Simon Caney (2009)



## How determine who should pay? Our approach

### WHO SHOULD PAY?

- High-emitting industries?
- Low-emitting schoolteachers?
- The rich?
- The poor?
- Electricity consumers?
- Utilities?
- National governments?
- Developed countries?
- Developing countries?

### OUR APPROACH

- Question: 'What are the **relevant** and **observable** facts about agents that make them liable to pay for mitigation?'
- Mine the literatures on distributive and climate justice for principles that theorise around these morally relevant facts.
- Translate abstract normative theory into measurable policy design criteria for clean energy deployment programs
- Test framework by it using to assess the fairness of actual clean energy deployment programs

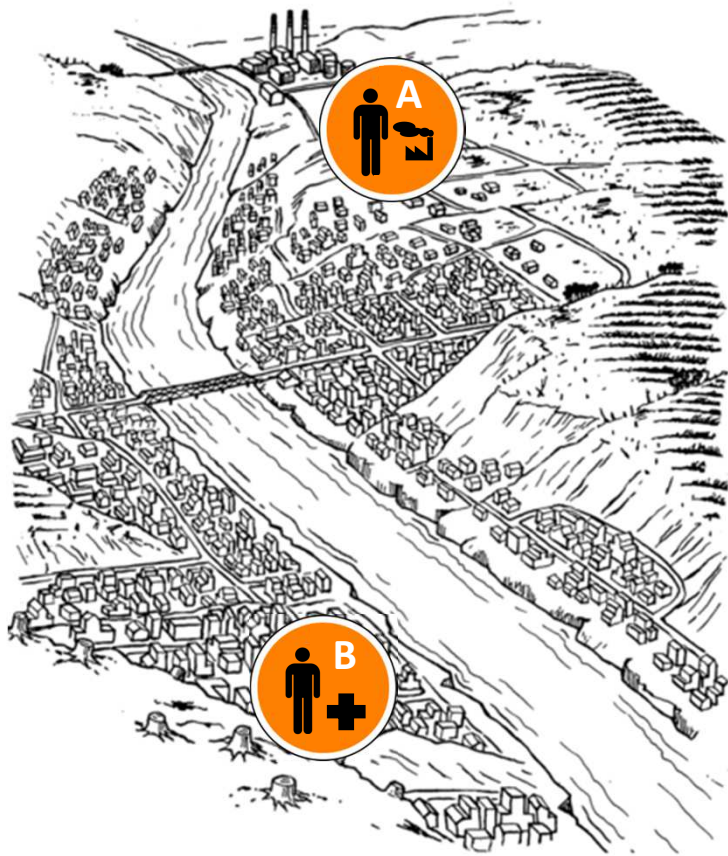
We are **not** doing the philosophical work

- ✓ Applying the work of justice theorists to a concrete policy problem
- ✗ Formulating our own principles of distributive justice

Normative philosophy offers some guidance, and policy-makers need to translate this into specific policy lessons

Distributive principle	How should the cost of mitigation be distributed?	Relevant fact about agent
<b>1. Polluter-Pays (PPP)</b>	<i>'Those responsible for emitting pollutants should also be responsible for remedying the damage that pollution causes.'</i>	Pollution
<b>2. Ability-to-Pay (ATPP)</b>	<i>'Those who have the means and capabilities of mitigating pollution should do so, regardless of whether they themselves have caused it.'</i>	Wealth
<b>3. Beneficiary-Pays (BPP)</b>	<i>'Those who have received an undue gain as a result of pollution should use that gain to mitigate the damage that pollution causes.'</i>	(Source of) wealth
<b>4. Grandfathering (GFP)</b>	<i>'Those who have historically emitted the most should be allowed to continue doing so, putting the burden of mitigation on historical low-emitters.'</i>	(History of) pollution

Polluter-Pays Principle (PPP): Those who cause harm to others are also responsible for correcting the harm or paying compensation



### SCENARIO 1

*Person A emits pollutants in a river, upstream from where Person B lives. Person B is harmed by this pollution.*

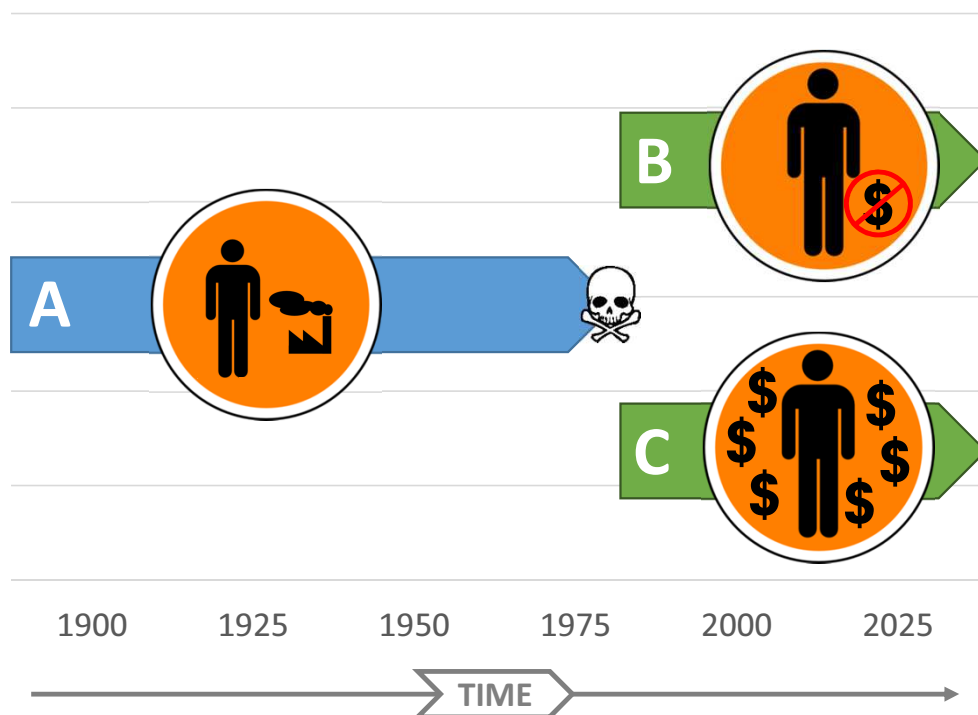
#### PPP SAYS:

**Person A** should pay whatever is necessary to mitigate the pollution caused (or pay enough compensation to person B for the harm suffered). In cases of **multiple polluters**, distribute the mitigation burden proportionally to the pollution of each.

- Analogy: A person who recklessly hits another with a car should pay compensation and/or hospital bills
- Cases where the PPP breaks down:
  1. Disappearing emitters
  2. Excusable ignorance
  3. Basic needs

Ability-to-Pay Principle (ATPP): Those who can afford to pay for mitigation should do so, especially when the polluters themselves cannot be made to pay

The problem of disappearing emitters



### SCENARIO 2

*Person A emits harmful pollutants, but dies before paying for any mitigation. Person B is alive but poor. Person C is alive and rich. Someone needs to pay.*

#### ATPP SAYS:

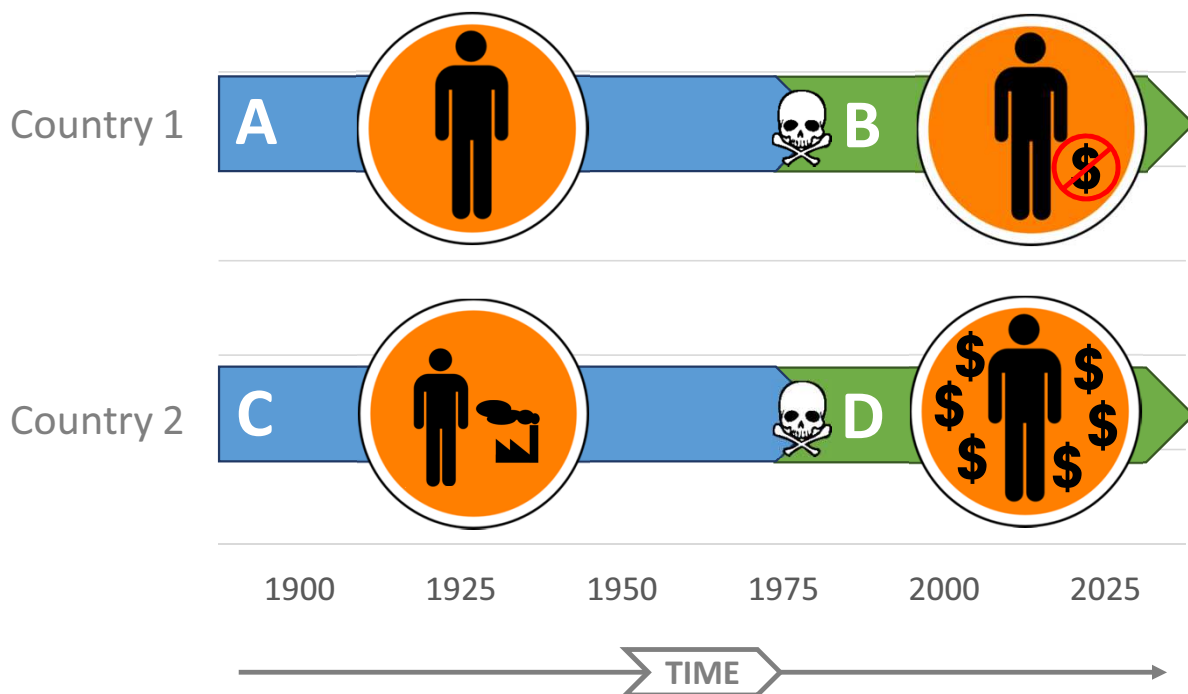
**Person C** should pay more of the mitigation cost, regardless of his own level of pollution

- Analogy: The wealthy should pay more income tax than the poor
- ATPP can also be defended as part of a wider **egalitarian** ideal



Beneficiary-Pays Principle (BPP): Historical pollution created the wealth of the current rich, which should therefore be used to solve the problems caused by that pollution

Wealth creation through polluting activities



### SCENARIO 3

100 years ago, the citizens of Country 1 polluted nothing, while the citizens of Country 2 polluted a lot. As a result, the current members of Country 2 are rich, while the citizens of Country 1 are poor.

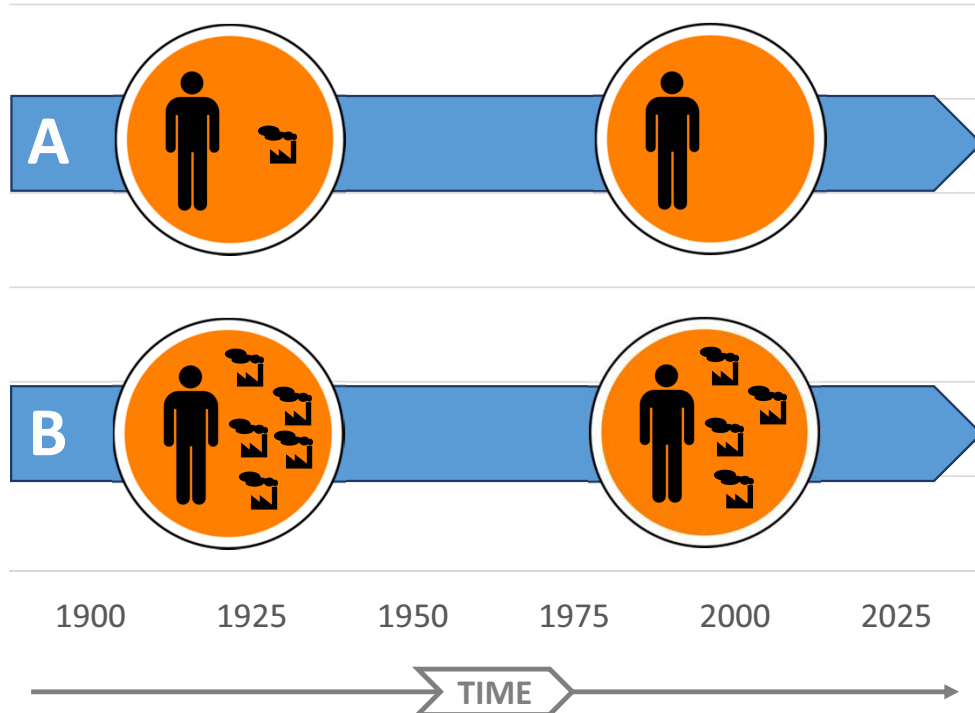
#### BPP SAYS:

The citizens of Country 2 (**Person D**) should use this (undeserved) wealth for mitigation

- Analogy: A person who stumbles upon some stolen goods ought to return the goods to their rightful owner.
- *Corrective justice*, not simply wealth redistribution or progressive taxation

Grandfathering Principle (GFP): Those who have historically emitted the most should be allowed to continue doing so, in order to protect their way of life

Grandfathering of the right to emit



#### SCENARIO 4

*Historically, Person A has emitted very little, and Person B has emitted a lot. Overall future emissions need to be reduced.*

#### GFP SAYS:

Future emissions should reflect past emissions.

**Person A** incurs largest burden, since he should stay below even his previously low levels of pollution.

- Analogy: The government can't tell cigarette manufacturers to shut down overnight but it can prevent new market entry or prohibit new drugs
- 'No moral and political philosopher defends grandfathering' (Caney 2009)
  - Yet, GFP is commonly invoked in climate negotiations (EU ETS, Kyoto Protocol)

## Who should bear the cost of mitigation? Summary of four distributive principles

	High emitters	Low emitters	Wealthy agents	Poor agents
<b>1. Polluter-Pays (PPP)</b>	More*	Less*	-	-
<b>2. Ability-to-Pay (ATPP)</b>	-	-	More	Less
<b>3. Beneficiary-Pays (BPP)</b>	-	-	More**	Less**
<b>4. Grandfathering (GFP)</b>	Less	More	-	-

\* Except where emissions are a consequence of excusable ignorance and/or the fulfilment of basic needs

\*\* Provided that wealth differences are traceable to past pollution

- PPP, ATPP and BPP are broadly compatible
  - Example: PPP could be invoked whenever polluters are alive, culpable, and sufficiently wealthy. Some combination of ATPP and BPP could be used to distribute any remaining mitigation burden.
  
- Grandfathering is in direct conflict with PPP

## How could a clean energy roll-out program reflect these principles?

<u>PRINCIPLE</u>	<u>HOW FINANCE POLICY?</u>	<u>DESIRABLE AND/OR FEASIBLE?</u>
1. Polluter-Pays Principle	Raise funds through taxes on pollution	Yes, but often tax on CO <sub>2</sub> proxy (e.g., fuel)
2. Ability-to-Pay Principle	Raise funds through progressive general taxation	Yes
3. Beneficiary-Pays Principle	Raise funds through taxes on income from polluting activities	Desirable, but intractable to establish exact link between pollution and wealth
4. Grandfathering Principle	Give tax exemptions to high-polluting firms or households	No – in conflict with most people's understanding of justice

### 3 policy design criteria: Clean energy deployment programs should...

- 1 ... apportion costs across agents in a **variable manner**, proportionally to their ability to pay rather than as a lump-sum payment or consumption levy on essential goods or services
- 2 ...make a clear and deliberate connection between the financial burden placed on agents, and their **pollution levels**
- 3 ...allow for **exemptions for the socioeconomically disadvantaged** from paying for the program, or failing that, ensure that they share substantially in the benefits of the program

Criterion 1: ATPP

Criterion 2: PPP

Criterion 3: ATPP & PPP

# What would the ideal financing mechanism look like?

One version of an ideal clean-energy financing mechanism could rely on two separate sources of funds:

- 1 **TAXES ON GHG EMISSIONS**
  - Ideally only over and above a certain threshold of emissions
  - Ideally not on life-essential goods such as heating
- 2 **PROGRESSIVE GENERAL TAXATION**
  - Ideally with an untaxed low-income band



## Caveats:

- Need to establish exact proportion between wealth and cost burden (progressivity)
- Policy programs have both costs and benefits.
  - Inequalities on the benefit (uptake) side would need to be either eliminated or counterbalanced on the cost (financing) side.

## Australia's Photovoltaic Rebate Program (PVRP)



Australia's PVRP	
Duration	2000-2010
Installations	109,634 (128 MW)
Cost	AUD 110 million/year
Who decides how costs are distributed?	National government
Are costs apportioned in a variable manner?	Yes – funded by general taxation
Is the distribution of costs linked to pollution levels?	No
Do exemptions or benefits for the poor exist?	Yes – means test, and indirectly through general taxation

- Provided cash rebates to participating installations, peaking at AUD 8/Watt of installed capacity in 2008
- Funded by the 'Measures for a Better Environment' budget package, raised through taxes and administered by Australian Greenhouse Office (AGO)
- Partly to deal with oversubscription, a means test was introduced in 2008 (only households with annual income <AUD 100,000 were eligible)

## UK's Feed-in Tariff (FiT) for small-scale solar PV

UK's FiT for small-scale PV	
Duration	2010-
Installations	379,531 (1,792 MW)
Cost	GBP 500 million/year
Who decides how costs are distributed?	Utility companies
Are costs apportioned in a variable manner?	No
Is the distribution of costs linked to pollution levels?	Partly – imperfectly proportional to electricity consumption
Do exemptions or benefits for the poor exist?	No



- EU Directive 2001/77/ED (15% of energy from clean sources by 2020)
- Utility companies pay installation owner for electricity produced (currently around 0.15GBP/kWh) plus a premium for export to grid
- Utilities are allowed to pass this cost on to electricity customers through higher bills
- 'Environmental charges' 11% of typical UK electricity bill in 2013
- 97% domestic, 91% solar PV
- Return on a GBP 10,000 installation = 5-8%



## California's Solar Energy Initiative (CSI)

California's CSI	
Duration	2007-2017
Installations	109,634 (1,621 MW)
Cost	USD 217 million/year
Who decides how costs are distributed?	California State Legislature & utility companies
Are costs apportioned in a variable manner?	No
Is the distribution of costs linked to pollution levels?	Partly – imperfectly proportional to electricity consumption
Do exemptions or benefits for the poor exist?	Partly – benefits only



- Two components
  - Feed-in tariff: USD 0.04-0.43/kWh produced for >30kW installations
  - Rebate: USD 0.37-2.57 per installed Watt
- California State Legislature specifically authorised funds to be raised from electricity customers
- 93% residential or small commercial installations
- 10% of budget set aside to support participation by low- and very low-income households
- Households with less than 50% or 80% of area mean qualifies for fully or highly subsidised PV systems, respectively

## Fairness evaluation of clean energy roll-out programs (summary)

Program	Criterion A: Costs are apportioned across agents in a variable manner	Criterion B: High polluters pay more	Criterion C: Excusably ignorant and/or poor agents are exempt from paying	Score
1. Australia PV Rebate Program	Yes	No	Yes	2/3
2. UK Feed-in Tariff for small-scale PV	No	Partly	No	0.5/3
2. California Solar Energy Initiative	No	Partly	Partly	1/3

- On a stylized score out of 3, Australia's PV Rebate Program scores 2 and can therefore be considered most fair.
  - Ironically, this program was criticised as 'unfair' by an Australian think tank (The Australian Institute 2010) due to the disproportionately high uptake among households of high socio-economic status and was discontinued in 2010
- The UK's FiT, which is the costliest of the three programs, is also the least just in its distribution of costs.

## Conclusion

- Policy-makers should look to the literature on distributive justice in order to understand new distributive dilemmas
- We identified 2-3 plausible principles of justice that could instruct the design of clean energy financing mechanisms
- We also translated these into three observable policy design criteria
- In our stylized framework, UK's Feed-in Tariff scheme came out as the least fair

## Uncertainties and directions for future research

- Clean energy is only one mitigation strategy – how are the costs of all other mitigation efforts distributed?
- Mitigation costs are only one among the many different contribution to the common good that people pay – how is the rest of the societal cost burden distributed?

Need to view the cost of clean energy in context of other costs

- Clean energy policy support schemes have benefits as well as costs – how should those be distributed? Are participants doing a service or receiving a benefit?
- Clean energy has other purposes (e.g., energy security) – do they somehow lessen the need for distributive justice?

Need to view a fair distribution of costs alongside other objectives

- Can you give justice a 'score'?

Thank you for your attention

Granqvist and Grover (2014). 'Who should pay for clean energy? Distributive justice perspectives.' Under review.

[http://personal.lse.ac.uk/grover/Granqvist and Grover 2014 Who should pay for clean energy.pdf](http://personal.lse.ac.uk/grover/Granqvist%20and%20Grover%202014%20Who%20should%20pay%20for%20clean%20energy.pdf)

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