

FSR-Climate Annual Conference 2024



# Towards a Just Transition: The Role of Fiscal Policies

Xavier Labandeira

Universidade de Vigo

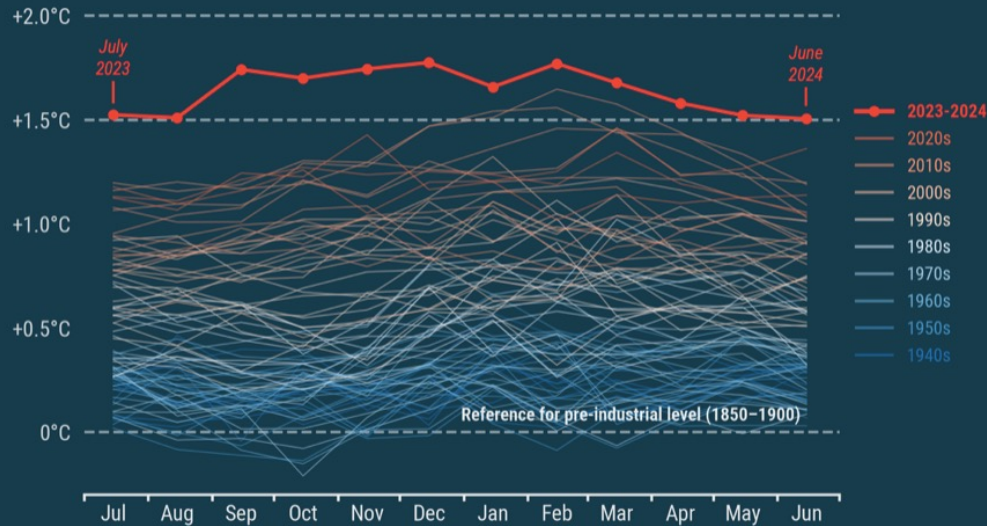
 **ECOBAS**  
Economics and Business Administration for Society

Firenze, 28 November 2024

- **The ‘perfect’ negative externality**
  - Mitigation, impacts, adaptation
  - Public intervention: fiscal policies
  - Trade-offs efficiency/equity
- **The policy discussion**
  - The costs of doing nothing
  - The costs of sub-optimal policies
  - Compensations with pricing approaches
    - How to compensate?
    - Constraints in practice: a lesson from Spain
    - New approaches?

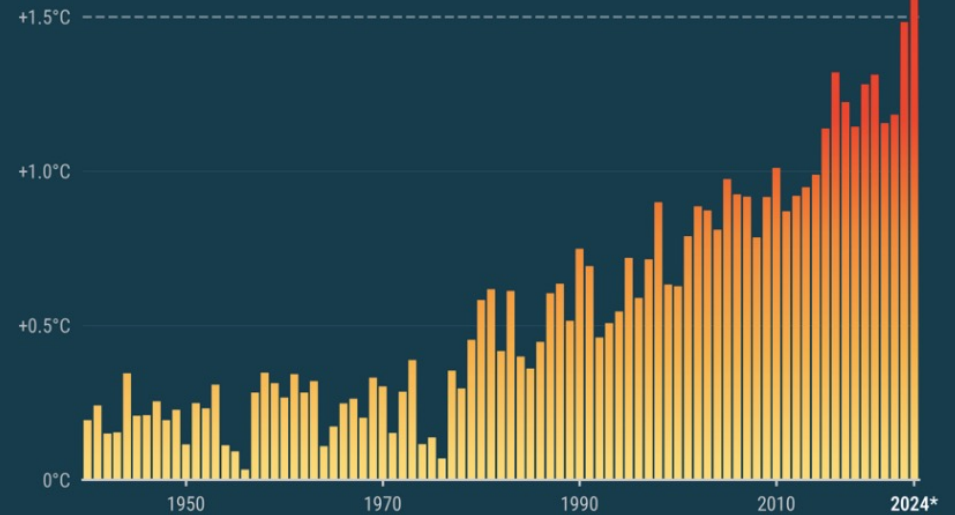
## Monthly global surface temperature increase above pre-industrial

Data: ERA5 1940–2024 • Reference period: 1850–1900 • Credit: C3S/ECMWF



## Annual global temperature anomalies relative to pre-industrial (1850–1900)

Data: ERA5 (1940–2024) • Credit: C3S/ECMWF



\* Provisional estimate for 2024 based on 10 months (January to October)



**Science** | Current Issue | First release papers | Archive | About | Submit manuscript

HOME > SCIENCE > VOL 377, NO. 6611 > EXCEEDING 1.5°C GLOBAL WARMING COULD TRIGGER MULTIPLE CLIMATE TIPPING POINTS

RESEARCH ARTICLE | CLIMATE CHANGE

### Exceeding 1.5°C global warming could trigger multiple climate tipping points

DAVID J. ARMSTRONG MCKAY • ABIE STAAI • JESSE F. ABRAMS • RICARDA WINKELMANN • BORIS SAKSCHIEWSKI • SINAI GHANEM • INGO FETZER  
SARAH E. CORNELL • JOHAN ROCKSTRÖM AND TIMOTHY M. LENTON | Authors Info & Affiliations

SCIENCE • 9 Sep 2022 • Vol 377, Issue 6611 | DOI: 10.1126/science.aba7950

139,389 | 99 | 9

#### Getting tipsy

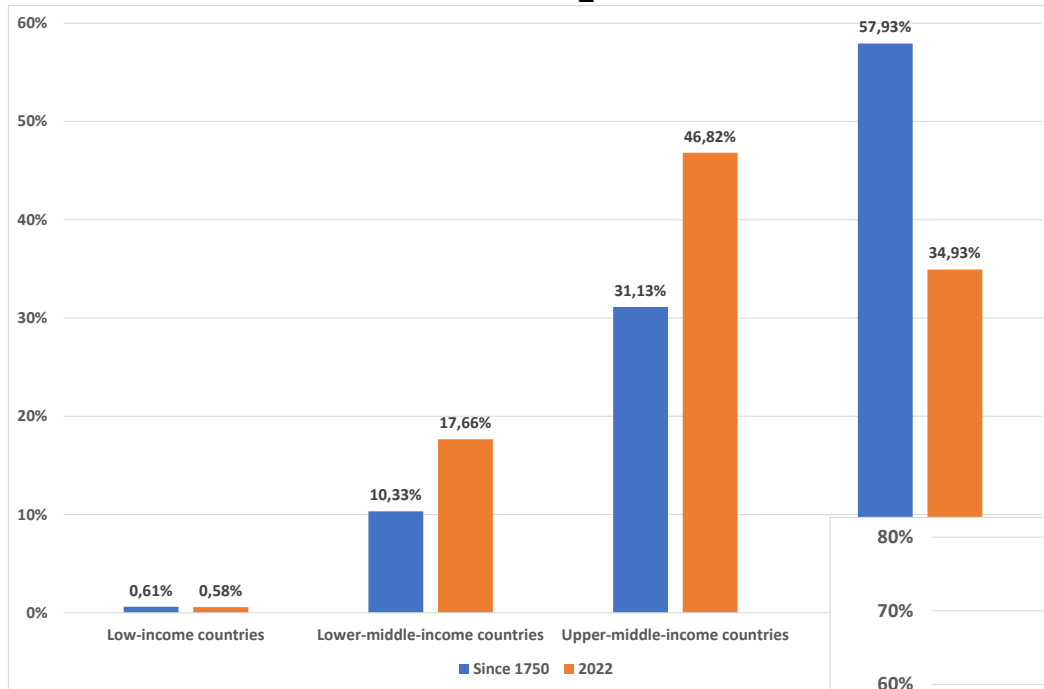
Climate tipping points are conditions beyond which changes in a part of the climate system become self-perpetuating. These changes may lead to abrupt, irreversible, and dangerous impacts with serious implications for humanity. Armstrong McKay *et al.* present an updated assessment of the most important climate tipping elements and their potential tipping points, including their temperature thresholds, time scales, and impacts. Their analysis indicates that even global warming of 1°C, a threshold that we already have passed, puts us at risk by triggering some tipping points. This finding provides a compelling reason to limit additional warming as much as possible. —HJS



Valencia, Spain, November 2024

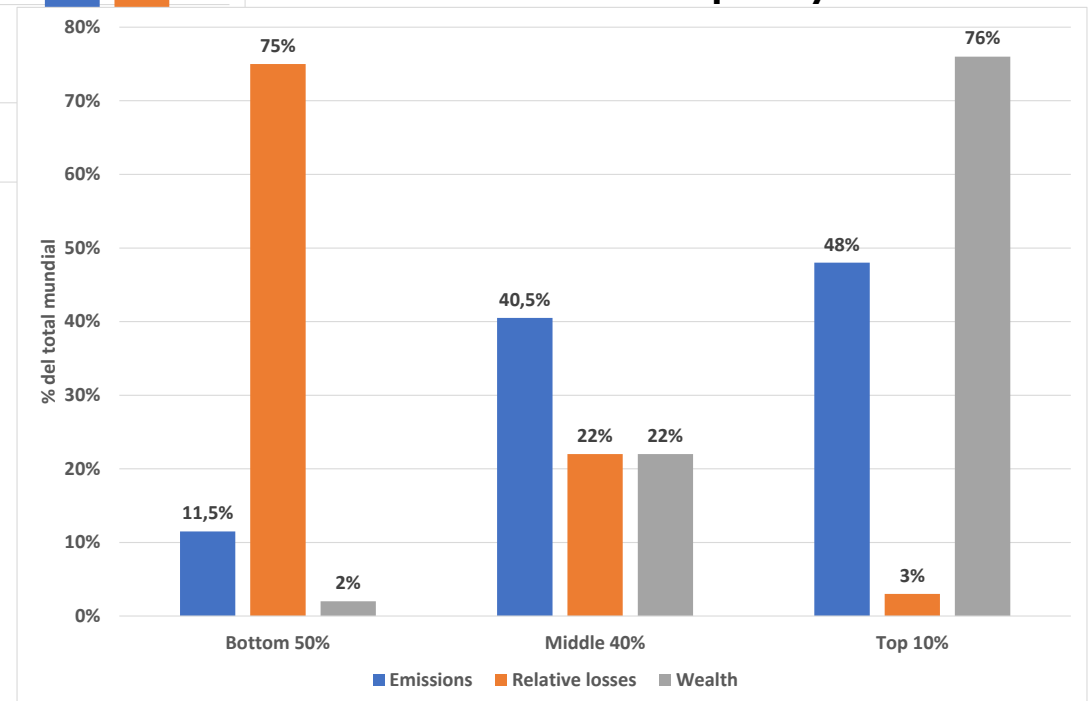
- **The ‘perfect’ negative externality**
  - Global, inter-generational, + thresholds & extreme events
  - Huge distributional issues:
    - Source of the problem
    - Impacts
    - Adaptation (autonomous or public policy)
    - Mitigation policies
    - *Loss and damage*
  - Pervasive Trade-offs Efficiency/equity
    - Equity, a central issue
    - Feasibility of actions

### Historical and current CO<sub>2</sub> emissions sources



Source: Global Carbon Budget (2023)

### Global carbon inequality. 2019



Source: Chancel et al. (2023)

STORMS IN SPAIN >

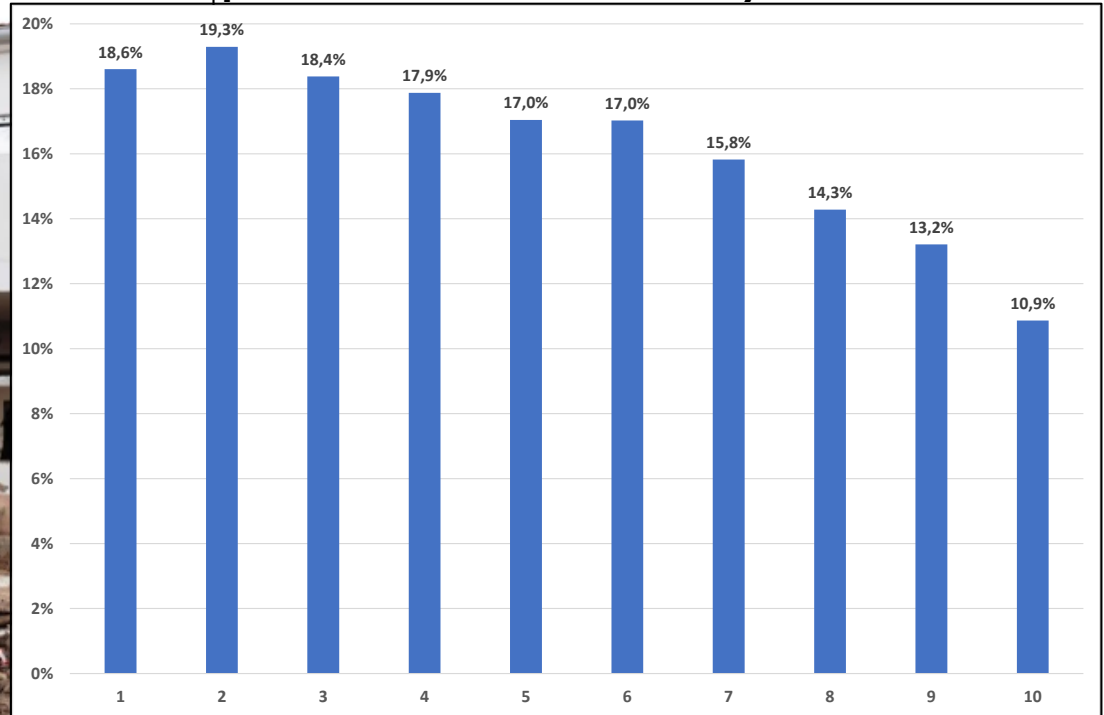
## Flooding in Spain: The homes that became death traps in a small Valencia town

The six people who died in Utiel were not out on the street or in underground garages, but at home where they believed they were safe. Many were elderly, and some tried desperately to save their spouses and children



A Utiel resident takes stock of the damage to her home. **ÁLVARO DEL OLMO (EFE)**

## Expenditure share of food by decile of EI



Source: INE (2023)



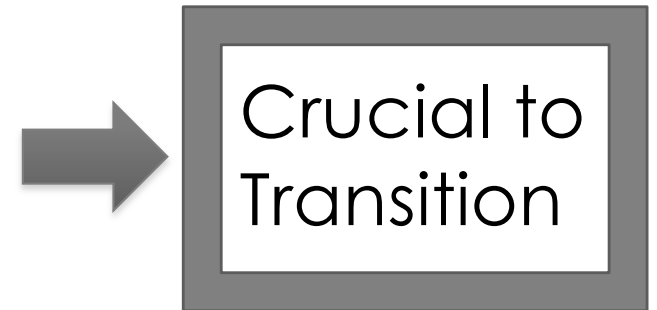
**MARÍA MARTÍN**

Utiel (Valencia) - NOV 15, 2024 - 15:34 CET

- **More on efficiency-equity:**
  - Measurement issues: Additionality, income/wealth, horizontal/vertical equity
  - Distributional pathways (Vona, 2023)
    - Sources of income (labour market)
    - Uses of income\*
- **Public policy discussions**
  - Distributional costs of doing nothing
    - Global loss; within the world and countries
    - More impacts, less adaptation (Bastien-Olvera et al., 2023; Hallegate et al., 2016)
  - The costs of sub-optimal policies
    - More costs to distribute
    - Distributional impacts: measurement and salience of different policy options (Zachmann and Frederiksson, 2018)

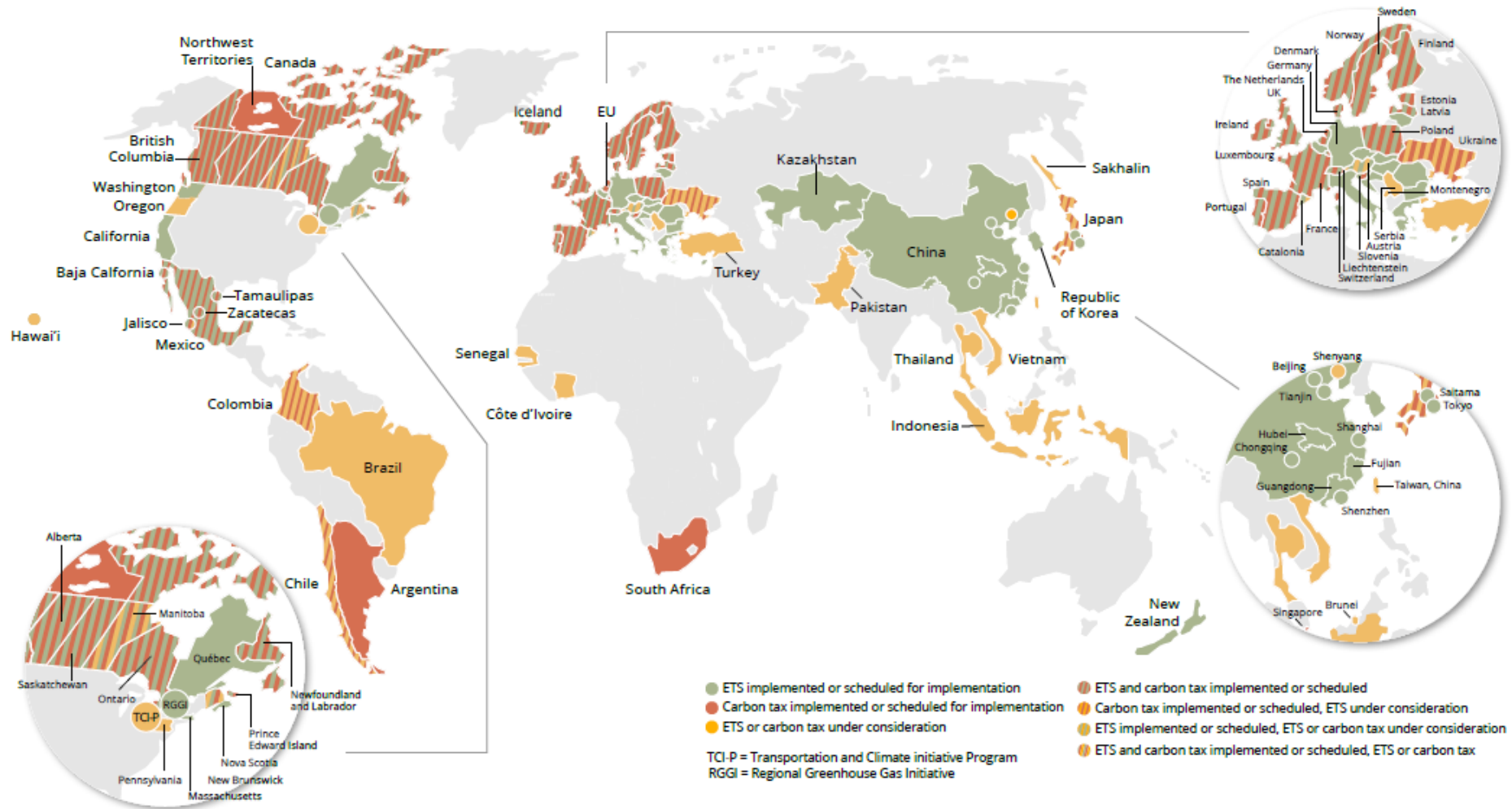
# Why prices for climate policies?

- Account for social costs
- Cost-effectiveness
- Salience
- Promote innovation
- Raise revenues for:
  - **Distributional compensations**
    - **Within the country**
    - **Global transfers**
  - Fund the transitions (Energy efficiency, etc.)
- Necessary (not sufficient) for the vast transformations





**FIGURE 2.1**  
Map of carbon taxes and emissions trading systems



Source: World Bank

INSTITUTO DE ESTUDIOS FISCALES

**LIBRO BLANCO  
SOBRE LA REFORMA TRIBUTARIA**



MINISTERIO  
DE HACIENDA  
Y FUNCIÓN PÚBLICA

COMITÉ DE PERSONAS EXPERTAS PARA ELABORAR EL  
LIBRO BLANCO SOBRE LA REFORMA TRIBUTARIA

Working Paper 9/2022  
30 December 2022



**Taxation and ecological transition  
during climate and energy crises:  
the main conclusions of the 2022  
Spanish White Book on tax reform**

Xavier Labandeira


economics for  
energy

WP 02a/2023

Alternativas Compensatorias  
para la Transición Energética:  
Lecciones de la Crisis de 2022

Alberio Gago  
Xavier Labandeira  
José M. Labeaga  
Xiral López-Otero

# Assessment

- Revenue and emissions impacts
  - **Distributional impacts and compensations (households)**
  - Particularly in electrification and mobility (in other areas, generic or no assessment)
- 

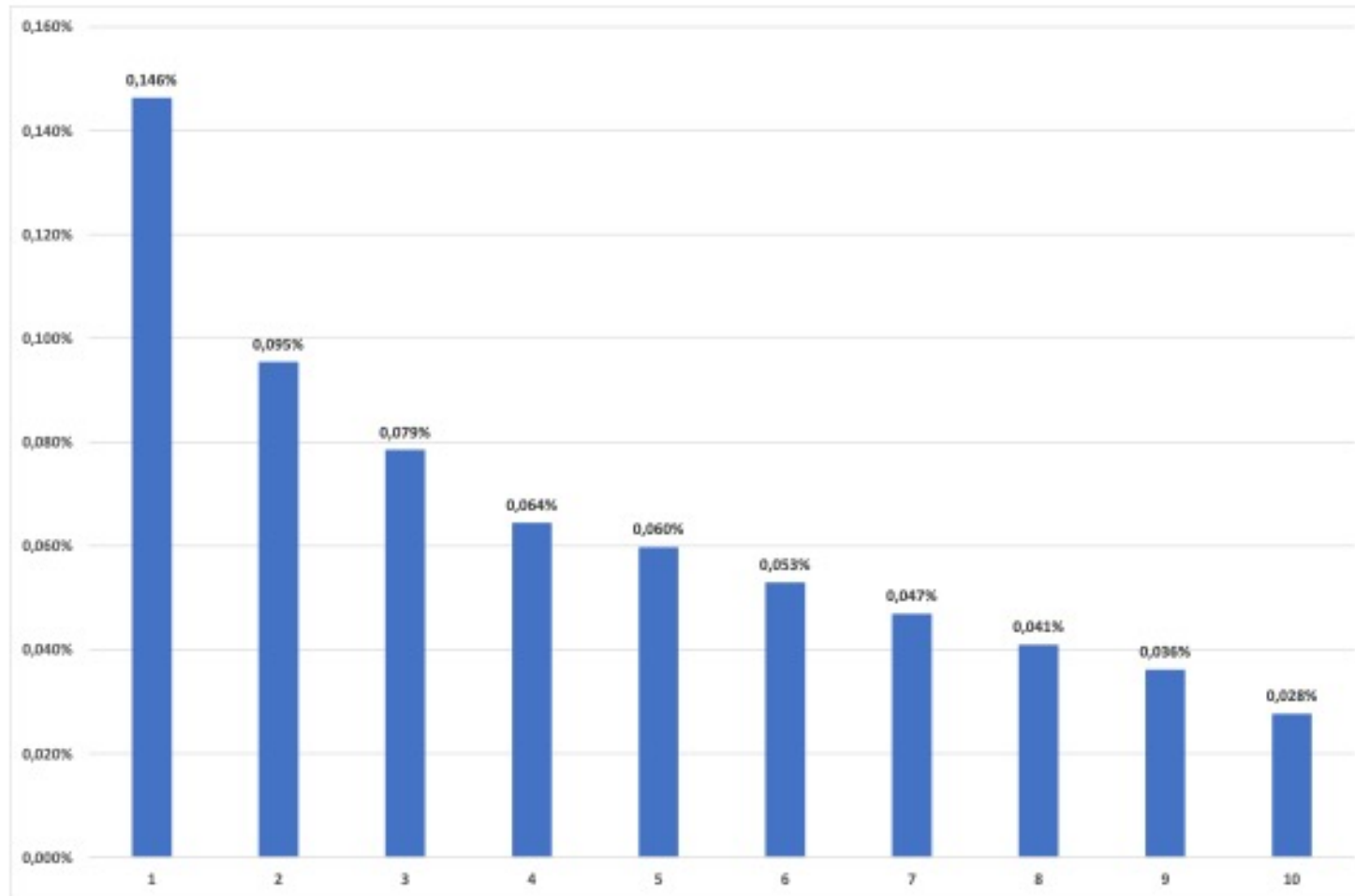
- **Priority Areas:**
  - ‘Sustainable Electrification’
  - ‘Mobility compatible with ecological transition’
  - ‘Increase in circularity’
  - ‘Recognition of environmental costs associated to water use’
- **“Roadmap” based on academic approach and detailed simulations:**

**Electricity tax reduction****Table 3. Impacts on prices, demand and revenues of P1**

	Final price (%)	Demand and CO <sub>2</sub> emissions (%)	Variation in revenues, Millions of euros (% of IVPEE, IEE and VAT revenues)			
			IVPEE	IEE	VAT	Total
<b>Residential electricity</b>	-2,46%	0,50%	-372,31	-15,27	-65,91	-453,48 (-10,1%)
<b>Non-residential non-electro-intensive electricity</b>	-3,74%	0,76%	-468,88	-19,29	-	-488,17 (-44,0%)
<b>Non-residential electro-intensive electricity</b>	-3,74%	0,76%	-286,86	-1,77	-	-288,63 (-83,49%)
<b>Total</b>	-	0,68%	-1.128,04	-36,32	-65,91	-1.230,28 (-20,7%)

### Electricity tax reduction

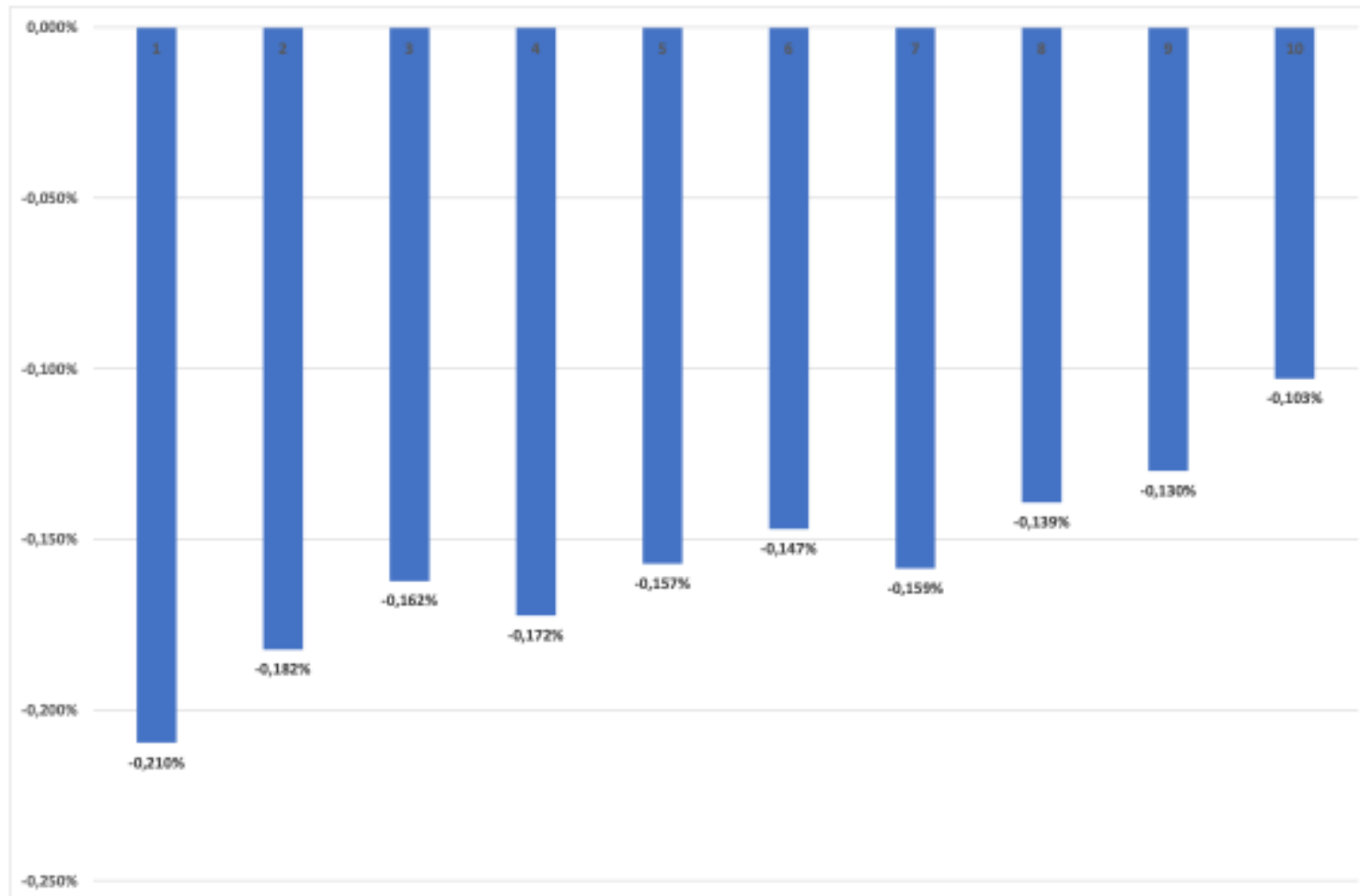
**Figure 2. Distributional impact of P1 by equivalent income deciles**



**Note:** Average percentage change in equivalent income by income deciles.

### Equal diesel and gasoline tax rates

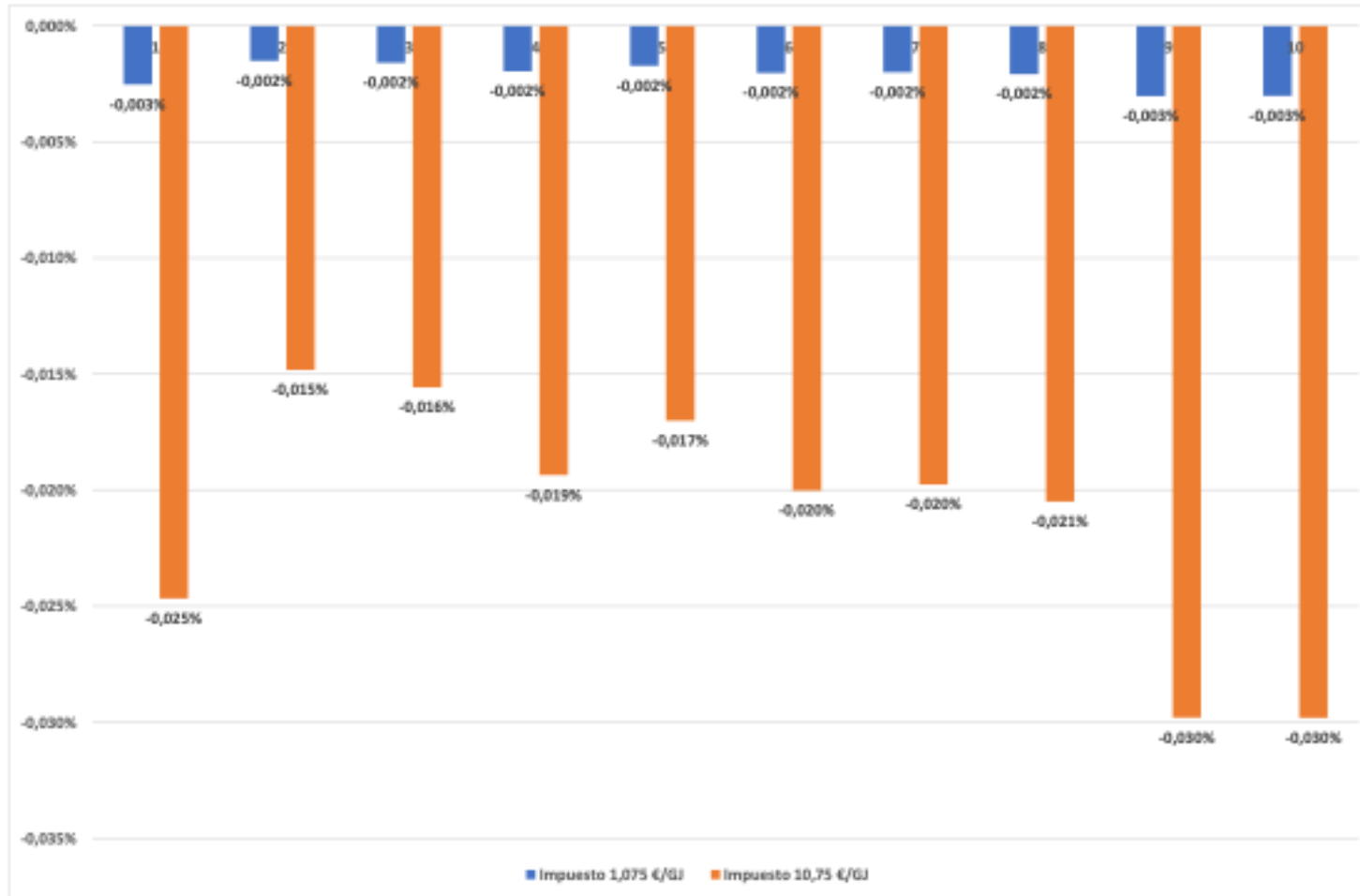
**Figure 7. Distributional impact by income deciles of equivalent income of P5**



**Note:** Average percentage change in equivalent income by income deciles.

### Kerosene tax (aviation)

**Figure 6. Distributional impact of P4A by equivalent income deciles**



**Note:** Average percentage change in equivalent income by income deciles.



Table 13. Impacts on prices, demand/emissions and revenues of P1, P3 and P6

	Final price (%)	Consumption and CO <sub>2</sub> emissions (%)	Additional revenues (Millions of euros)					Total
			IVPEE	LEE	I. CO <sub>2</sub>	FNSSE	VAT	
Residential electricity	-11,63%	2,36%	-372,31	-731,47	--	-912,12	-318,47	-1.422,25 (-31,7%)
Non-residential non-electro-intensive electricity	-17,37%	3,53%	-468,88	-583,69	--	-1.255,29	--	-1.052,57 (-94,8%)
Non-residential electro-intensive electricity	-14,18%	2,88%	-286,86	-53,60	--	-762,46	--	-340,45 (-98,5%)
Gasoline 95	15,47%	-3,91%	--	-116,63	692,87	311,42	155,37	1.043,03 (23,7%)
Residential diesel	27,76%	-5,58%	--	1.167,48	2.183,67	841,72	753,69	4.946,57 (48,4%)
Non-residential diesel	29,19%	-5,87%	--	713,21	1.300,58	501,32	--	2.515,11 (73,6%)
Residential natural gas	21,81%	-5,28%	--	42,58	503,48	276,64	129,76	952,45 (97,2%)
Non-residential natural gas Non-EU ETS sectors	48,55%	-11,75%	--	218,05	755,03	414,85	--	1.387,94 (2.733,8%)
Non-residential natural gas EU-ETS sectors	22,25%	-5,39%	--	311,72	--	583,91	--	895,63 (1.343,7%)
<b>Total</b>	--	-3,07% -3,90%*	-1.128,04	967,66	5. 435,63	--	720,34	8.925,47 (35,6%)

Note: \*Change in CO<sub>2</sub>

- **Fiscal policies and compensations**
  - Ad hoc (income groups, etc.) or general
  - Short-term or long-term (stock)
  - On prices or income
  
  - Within specific taxes (price or stock)
  - Green tax reform fashion
  - Use of expenditure
    - Price subsidy vs direct cash transfer
    - Subsidy to change of stock

## Una compensación justa en la transición verde

XAVIER LABANDEIRA

Para proteger los avances hacia la sostenibilidad se debe minimizar la desigualdad en el reparto de costes de la política climática, dando ayudas no en general, sino de manera selectiva a los más afectados

**E**n las últimas semanas ha quedado claro que el camino a la descarbonización de nuestras economías no será fácil. A pesar de que la población de los países avanzados declara una preocupación creciente por los problemas del cambio climático, se multiplican las protestas ante el aumento de los precios energéticos causados por las políticas climáticas y en algunos lugares empieza a discutirse la acelerada expansión de las renovables. El fenómeno, que empieza a sentirse con fuerza en España, es generalizado; como botón de muestra, el resultado negativo del referéndum suizo del pasado domingo sobre la ley de cambio climático, avalada por casi todas las fuerzas políticas. En la disparidad entre deseos y praxis de la población, sin duda las cuestiones distributivas (quiénes, aparentemente, se benefician y quiénes asumen los costes de la transición) representan un papel fundamental.

No deja de sorprender que la solución a un problema esencialmente distributivo como el cambio climático, causado por las mayores emisiones de los más pudientes y

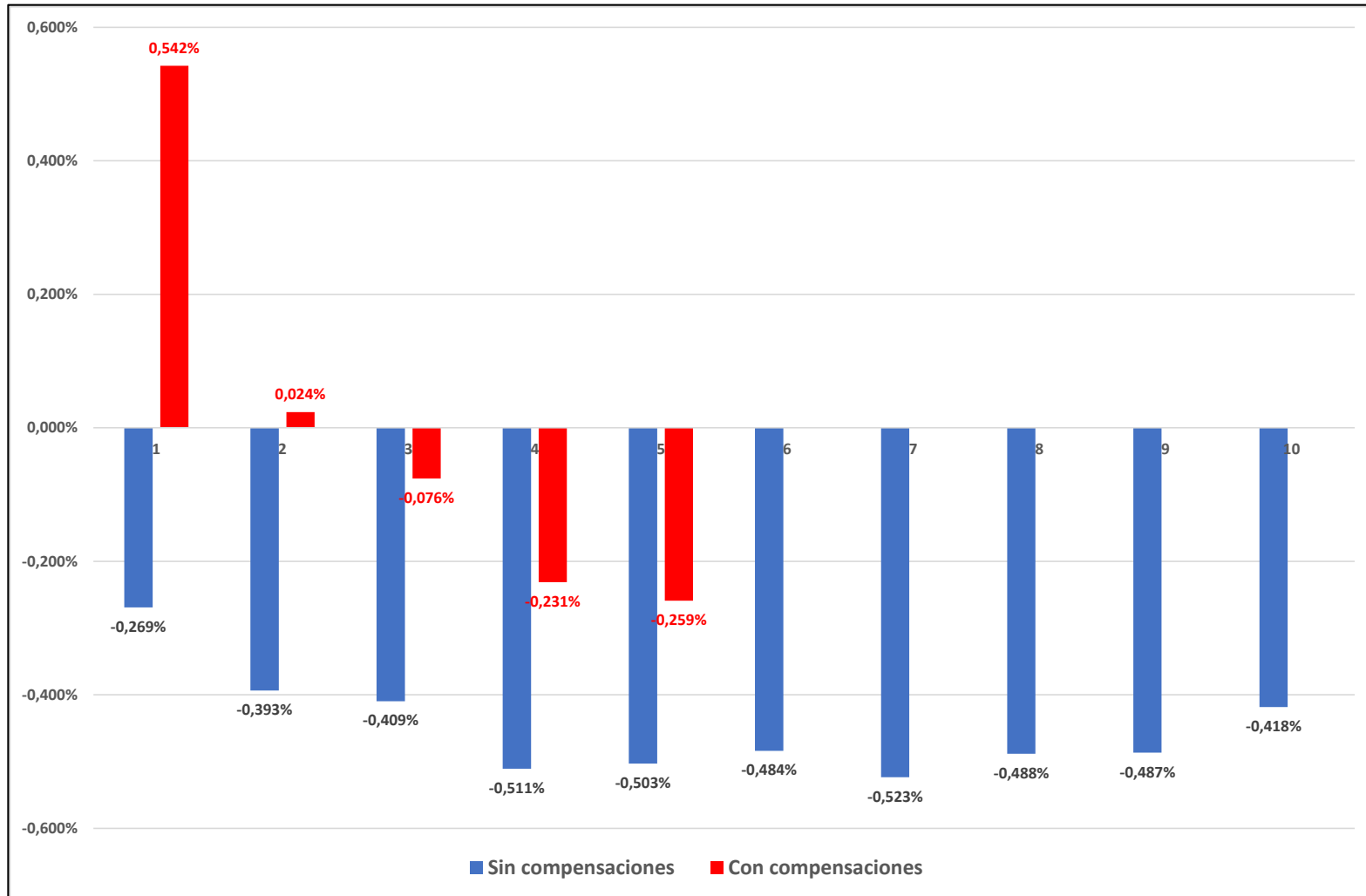


tuación correctora de la política climática; deben concentrarse exclusivamente sobre los más vulnerables (territorios, sectores y grupos de renta); y deben ser capaces de revertir íntegramente los efectos negativos en el corto plazo y de resolver el problema distributivo en el medio plazo.

No tiene sentido, por ello, retrasar el progreso de la transición manteniendo artificialmente bajos los precios de los productos energéticos, en particular los combustibles fósiles, para proteger a los que menos tienen. Primeramente, porque esto evita que se adopten los cambios de comportamiento e inversión necesarios para la corrección climática, engordando aún más la bola de nieve a la que me referí antes. Por si fuera poco, estas medidas tan burdas acaban beneficiando, con la excusa de proteger a ciertas capas sociales, a los que más tienen por sus elevados consumos energéticos. Precisamente, por eso no tienen sentido estrategias compensatorias generalizadas, de *café para todos*, y urge ser muy selectivo en su aplicación. Entre ellas destaca lo que podríamos denominar *cheque verde*, una cantidad monetaria que sirva para

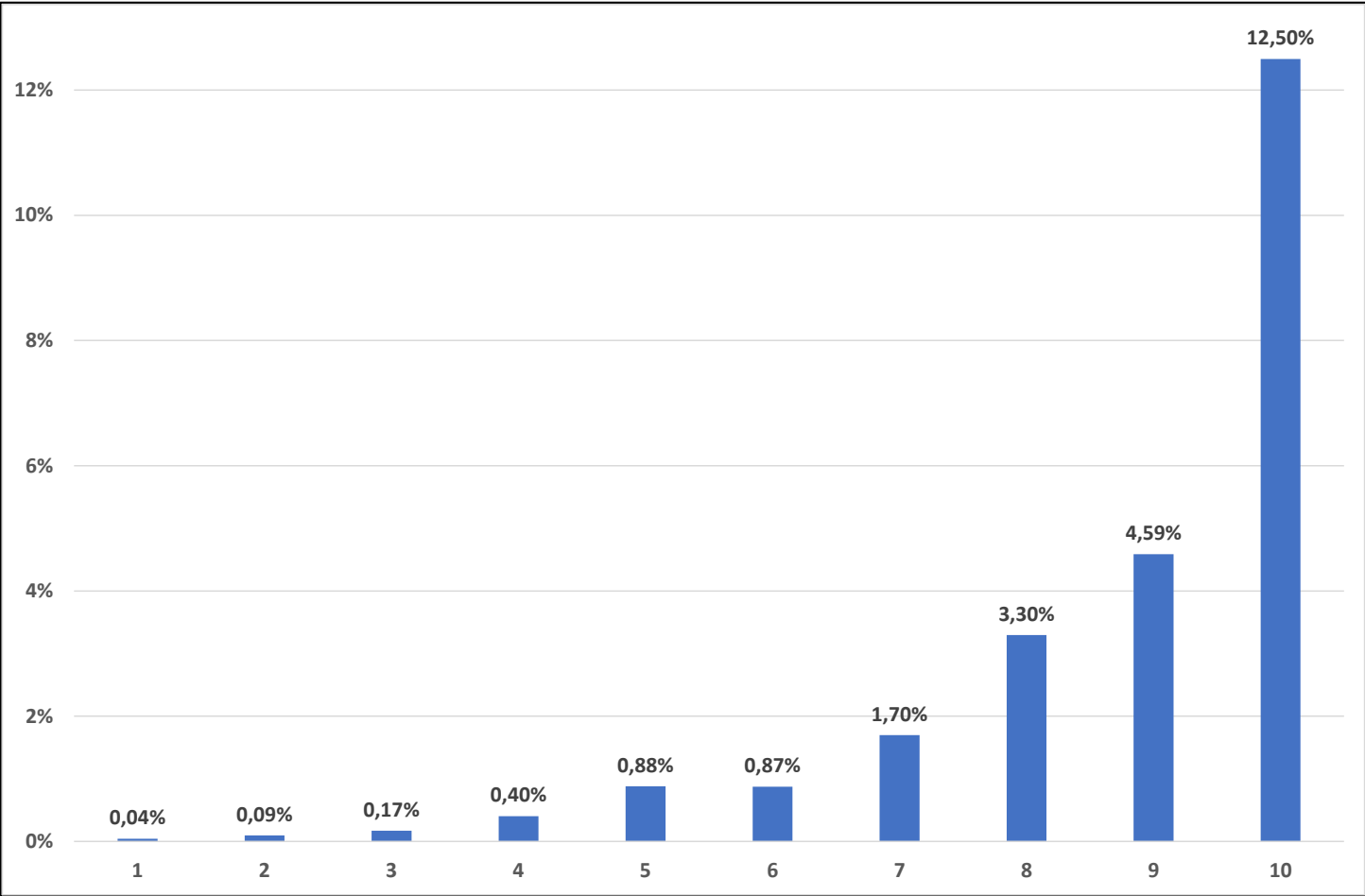
<https://n9.cl/aumb1>

### Compensations through transfers unrelated to prices



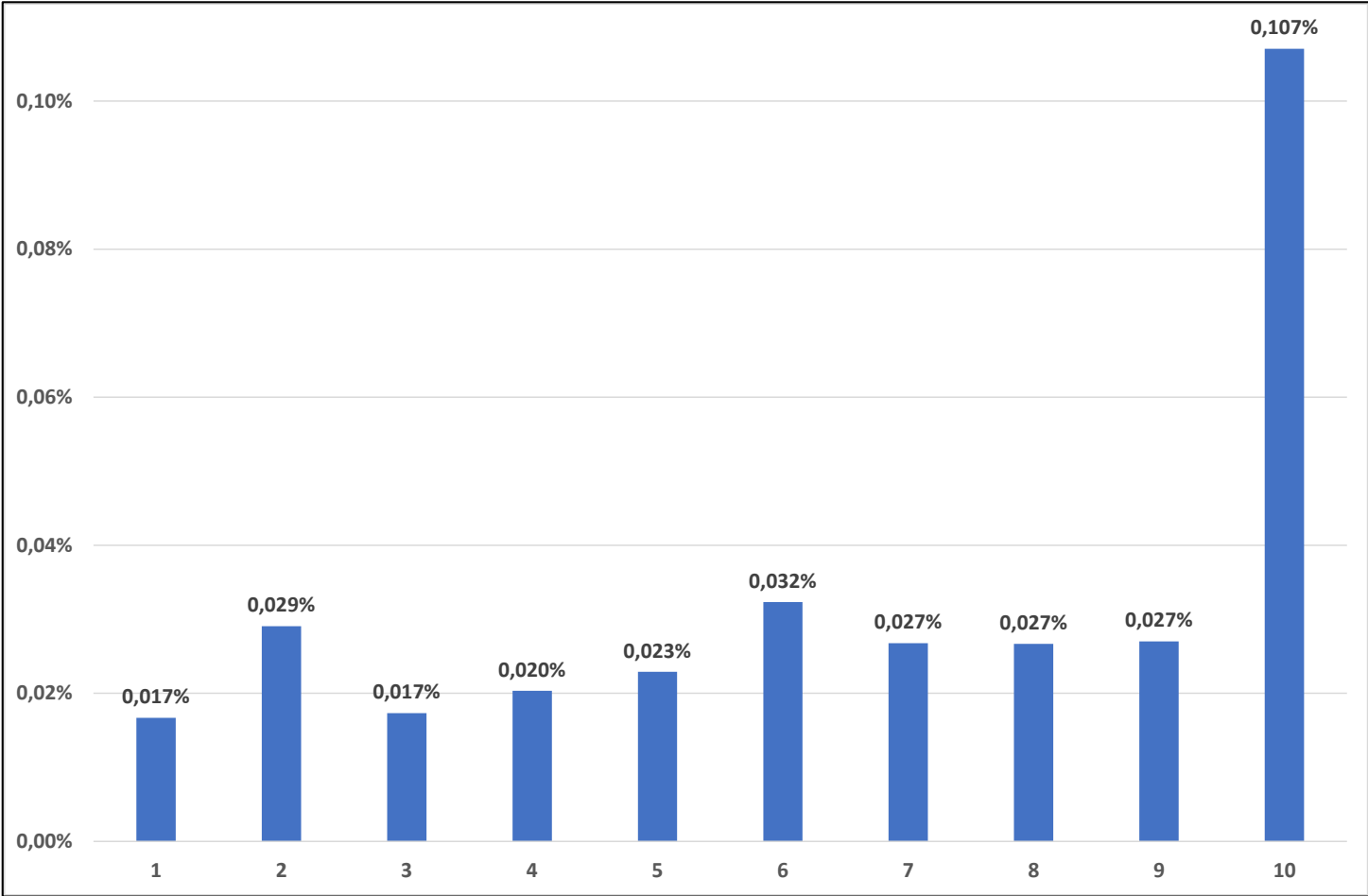


### Households who purchased cars by decile of equivalent income. Spain 2023 (EPF)





### Change in household income by decile from clean vehicle subsidies in Spain, 2023



# Constraints in practice...

Measures implemented by European countries to tackle the 2022 energy crisis and expenses

	Reduced energy tax/VAT	Retail price regulation	Wholesale price regulation	Transfers vulnerable groups	Mandates to state-owned firms	Windfall profits tax/regulation	Business support	Other	Expenses (% GDP)
Austria	X	X		X			X	X	2.6
Belgium	X	X		X			X	X	0.8
Bulgaria	X	X		X		X	X		5.3
Croatia	X			X			X		4.2
Cyprus	X			X	X				0.8
Czech R.	X	X		X			X	X	3.4
Denmark	X	X		X					2.1
Estonia	X	X		X			X		1.0
Finland	X			X			X	X	0.5
France	X	X	X	X	X		X	X	2.8
Germany	X	X		X			X		7.4
Greece	X			X	X		X		5.7
Hungary	X	X				X	X		-
Ireland	X			X		X	X	X	0.9
Italy	X			X		X	X		5.1
Latvia	X			X			X		3.2
Lithuania				X			X	X	6.6
Luxemburg	X	X		X			X		3.3
Malta			X		X				7.0
Netherlands	X	X		X					5.1
Norway	X			X			X		2.0
Poland	X	X		X		X			2.2
Portugal	X		X	X	X		X		3.3
Romania	X	X		X		X	X		3.5
Slovakia		X		X	X		X		3.7
Slovenia	X			X			X		1.0
Spain	X	X	X	X			X		3.2
Sweden	X			X		X		X	0.3
United Kingdom	X	X		X			X	X	3.5

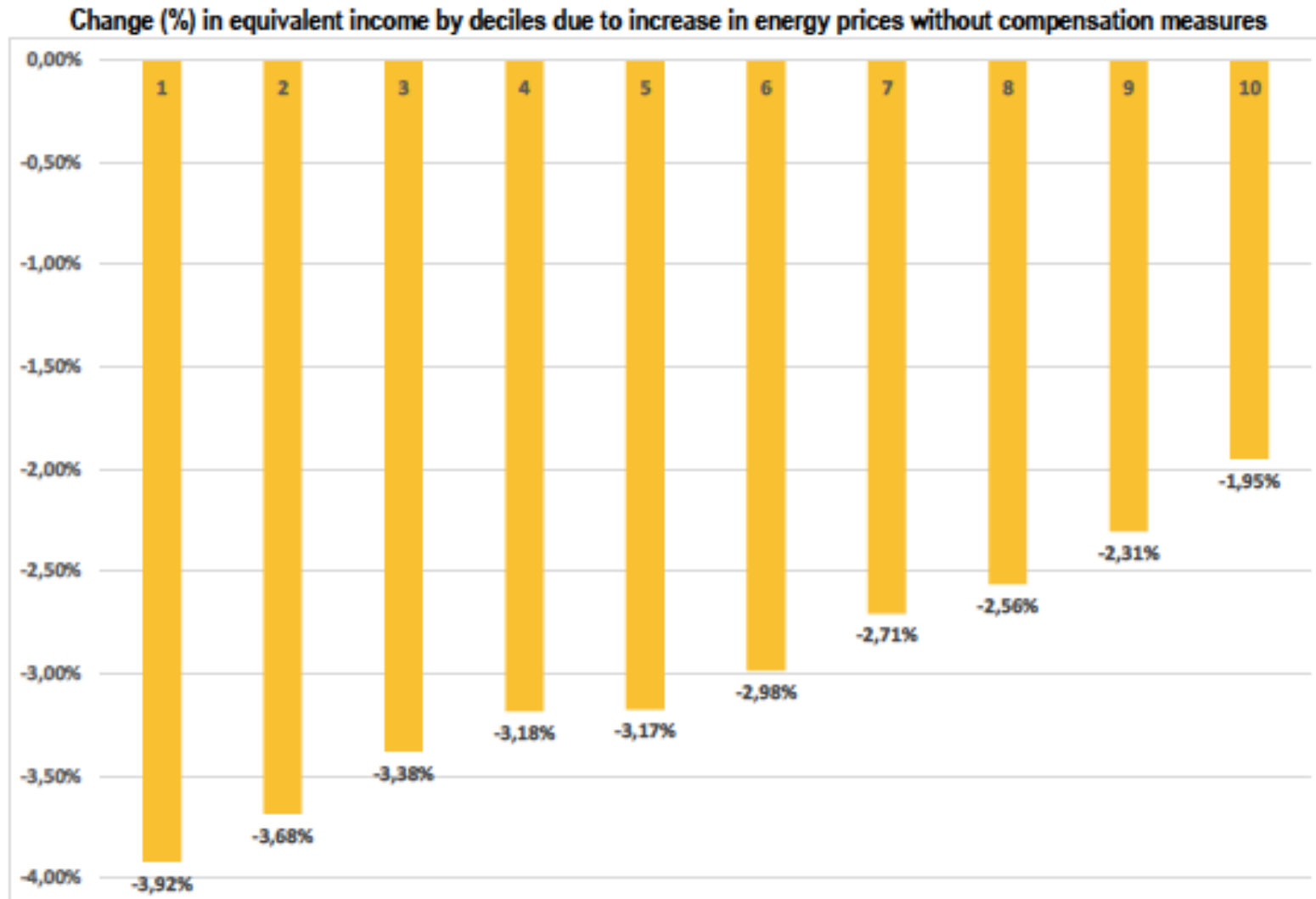
Source: Sgaravatti *et al.* (2022)

**Residential impacts of energy price increases, without compensatory interventions, on demand, emissions and public receipts**

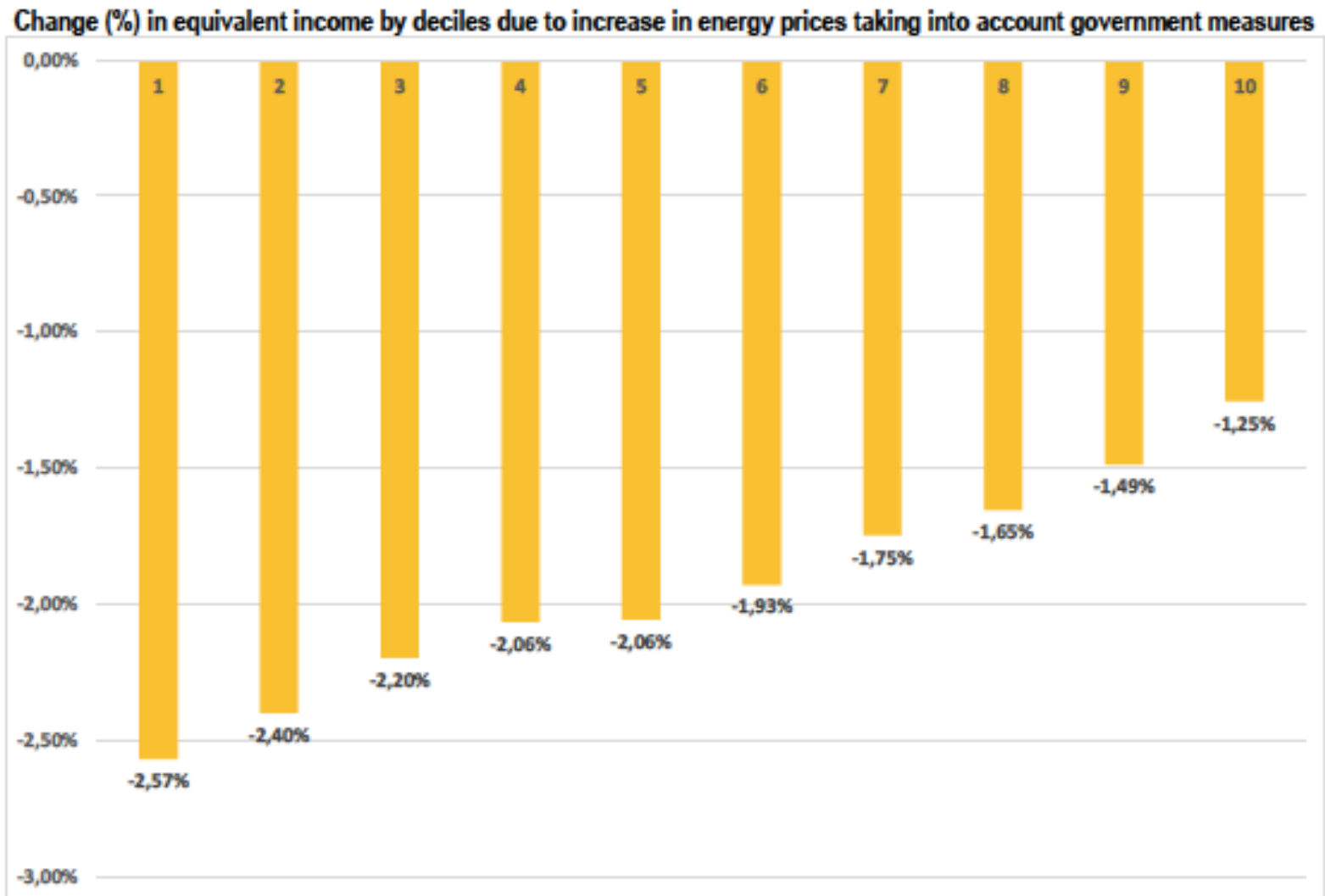
	Price increase (%)	Demand/ emissions (%)	Change in public receipts (million euro and % increase)			
			Generation tax	Excise tax	VAT	Total
<b>Electricity</b>	96.30%	-19.55%	370.02 (58.09%)	482.67 (57.93%)	2083.90 (57.93%)	2936.60 (57.95%)
<b>Gasoline 95</b>	36.20%	-9.16%	-	-268.56 (-9.16%)	351.96 (23.73%)	83.39 (1.89%)
<b>Diesel</b>	40.50%	-8.14%	-	-569.95 (-8.14%)	1157.89 (29.06%)	587.95 (5.35%)
<b>Natural gas</b>	40.60%	-9.83%	-	-15.05 (-9.83%)	252.53 (26.79%)	237.48 (21.67%)
<b>Total</b>	-	-10.77% (demand) -9.91% (emissions)	370.02 (58.09%)	-370.88 (-3.40%)	3846.28 (38.43%)	3845.42 (17.83%)



### No compensatory policies

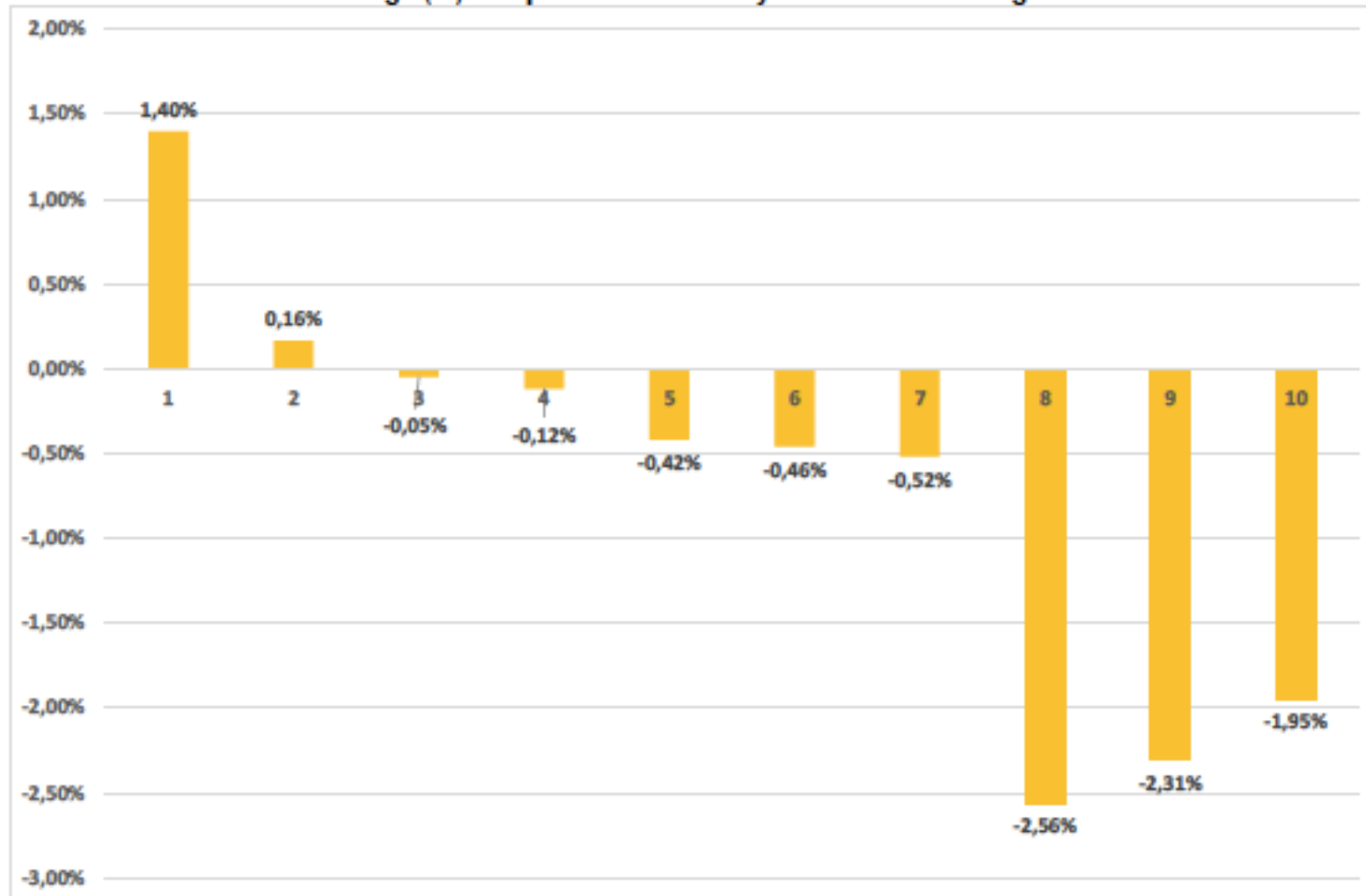


## Actual compensations by the Spanish government



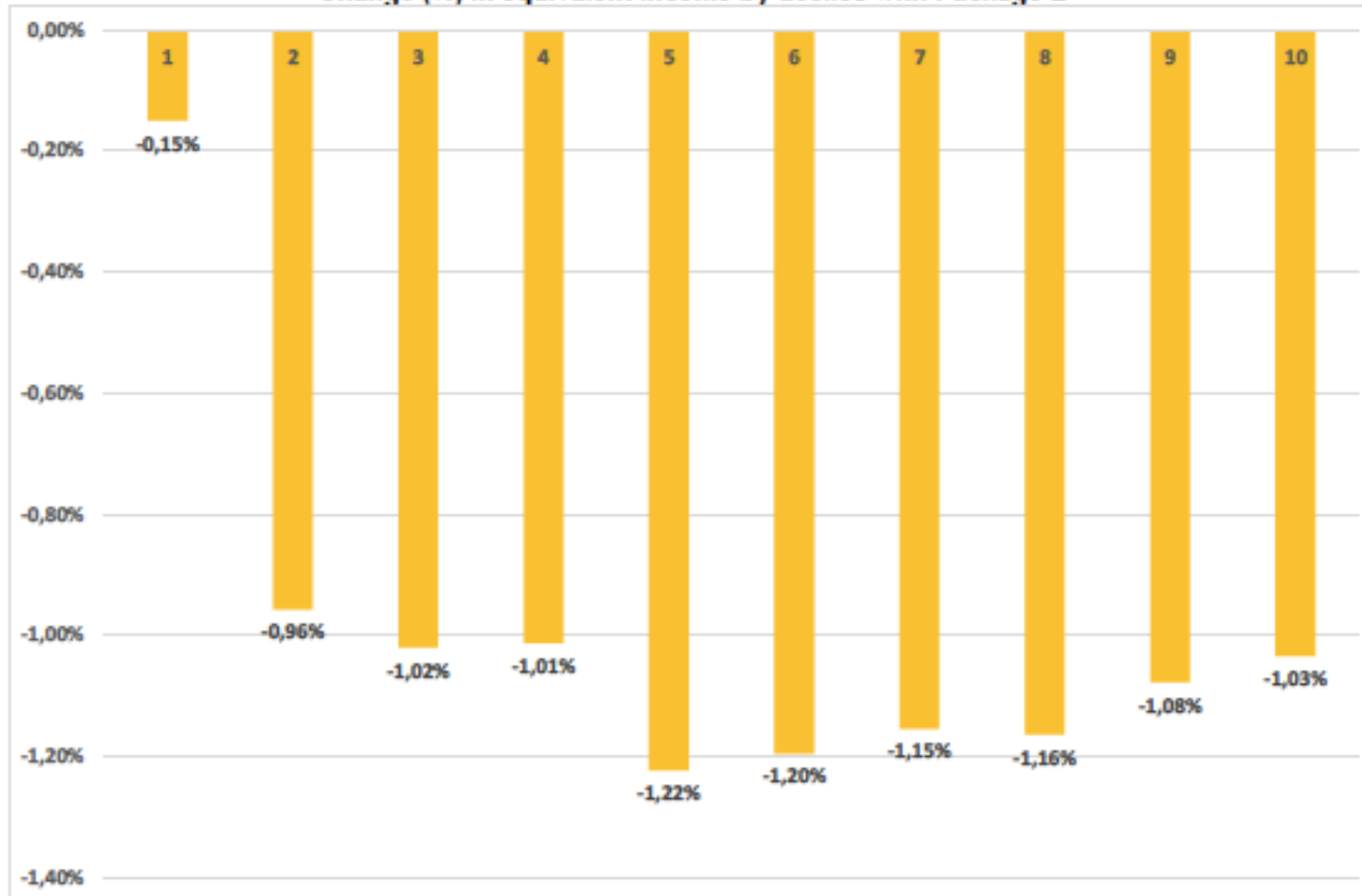
### 'White-book' type compensation

Change (%) in equivalent income by deciles with Package A

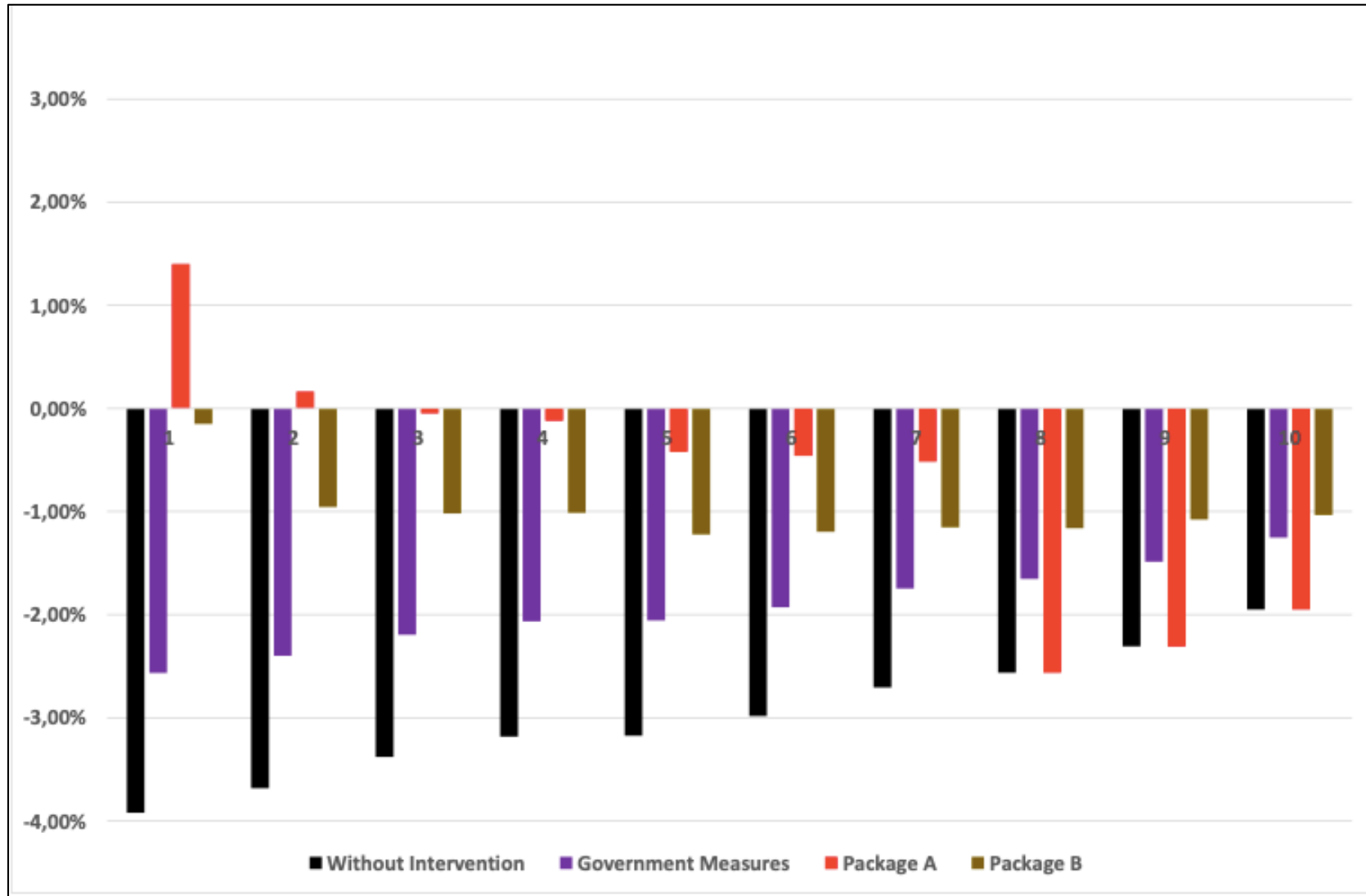


### Equal lump-sum to all households

Change (%) in equivalent income by deciles with Package B



### Comparison of distributional outcomes



- **New approaches**
  - Why?
    - Income and wealth polarisation
    - Poverty
    - Unequal climate responsibilities and impacts
  - How?
    - Selection of 'less-damaging' instruments
    - Changes in the design of environmental instruments
    - Taxing wealth for climate change mitigation?

Selección: ESPAÑA

SUSCRÍBETE INICIAR SESIÓN

EL PAÍS

**Clima y Medio Ambiente**

CAMBIO CLIMÁTICO · MEDIO AMBIENTE · ÚLTIMAS NOTICIAS

TRIBUNA | 1

**Cambio climático, impuestos y equidad: instrucciones de uso**

No tenemos que inventar nada nuevo ni generar confusión innecesaria, simplemente emplear desde ya los impuestos existentes




Un grupo de residentes lleva sus pertenencias en la provincia de Punjab durante las inundaciones de Pakistán del verano pasado.  
SHAHID SAEED MIRZA (AFP)

XAVIER LABANDEIRA  
10 FEB 2023 - 12:27 CET

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<https://n9.cl/ozpkc>

# Conclusions

- Climate change brings about huge distributional effects, from many angles
  - Offsetting negative distributional impacts is crucial for a feasible transition
  - Fiscal policies should play a big role
  - Proper design and implementation are needed: well-targeted, incentive-compatible and long-term approaches
  - Public sectors must adapt deeply to this new compensatory landscape
  - Sub-optimal policies might be occasionally necessary to facilitate progress in decarbonisation due to pervasive trade-offs
- 



# Xavier Labandeira

[www.labandeira.eu](http://www.labandeira.eu)

[xavier@uvigo.gal](mailto:xavier@uvigo.gal)

Universidade de Vigo

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