

AERNA 2nd Young Day



On Distributional Impacts and Compensations from Climate Policies

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 **ECOBAS**
Economics and Business Administration for Society

Girona 17 May 2024

INSTITUTO DE ESTUDIOS FISCALES

LIBRO BLANCO SOBRE LA REFORMA TRIBUTARIA



MINISTERIO
DE HACIENDA
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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

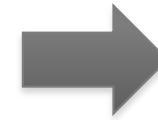
WP 02a/2023

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

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

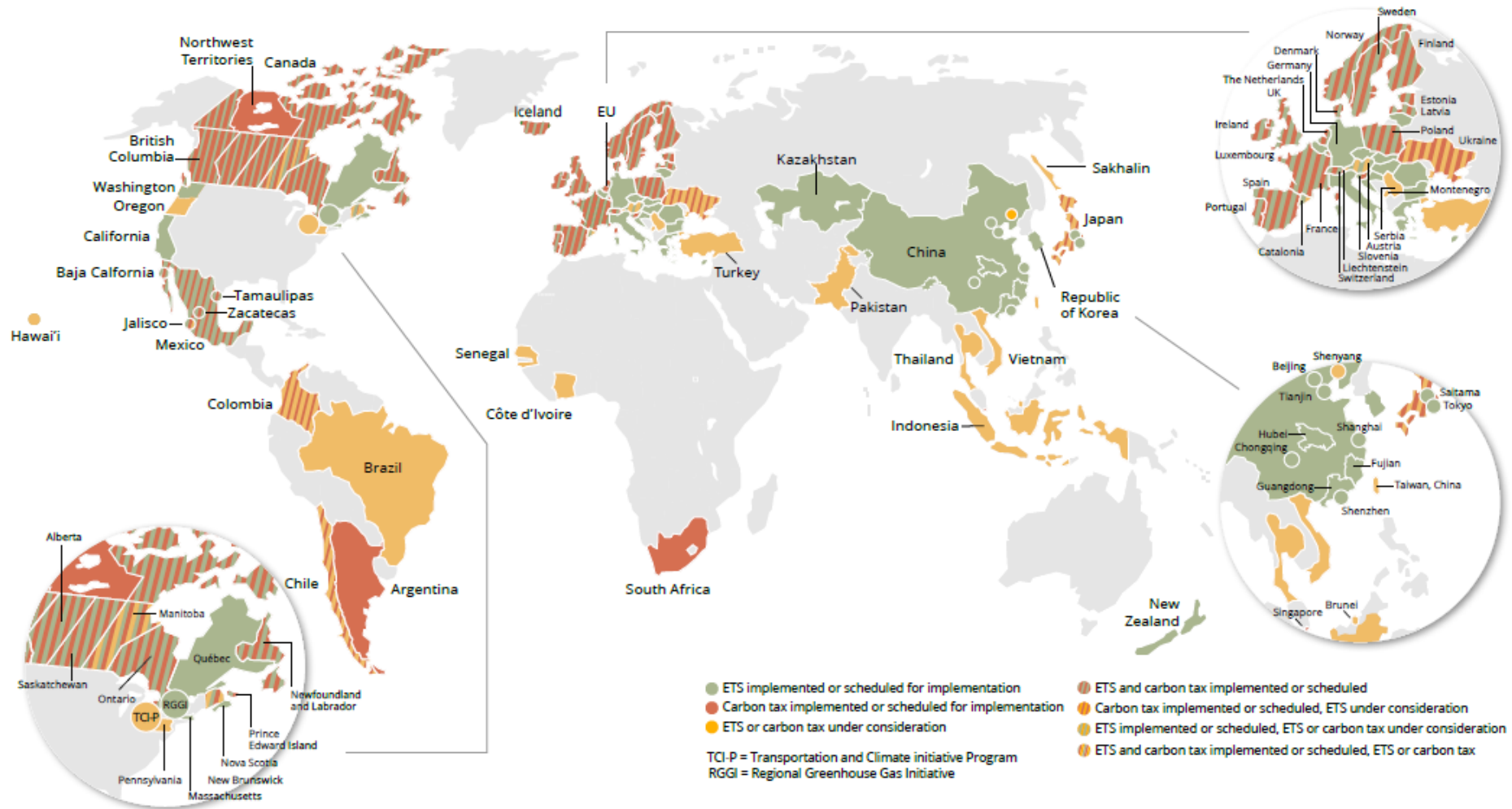
Why prices for climate policies?

- Account for social costs
- Cost-effectiveness
- Salience
- Promote innovation
- Raise revenues for
 - Distributional compensations
 - Energy efficiency/renewables...
- **Necessary for the vast transformation**
- (in any case, price effects)



Crucial to
Transition

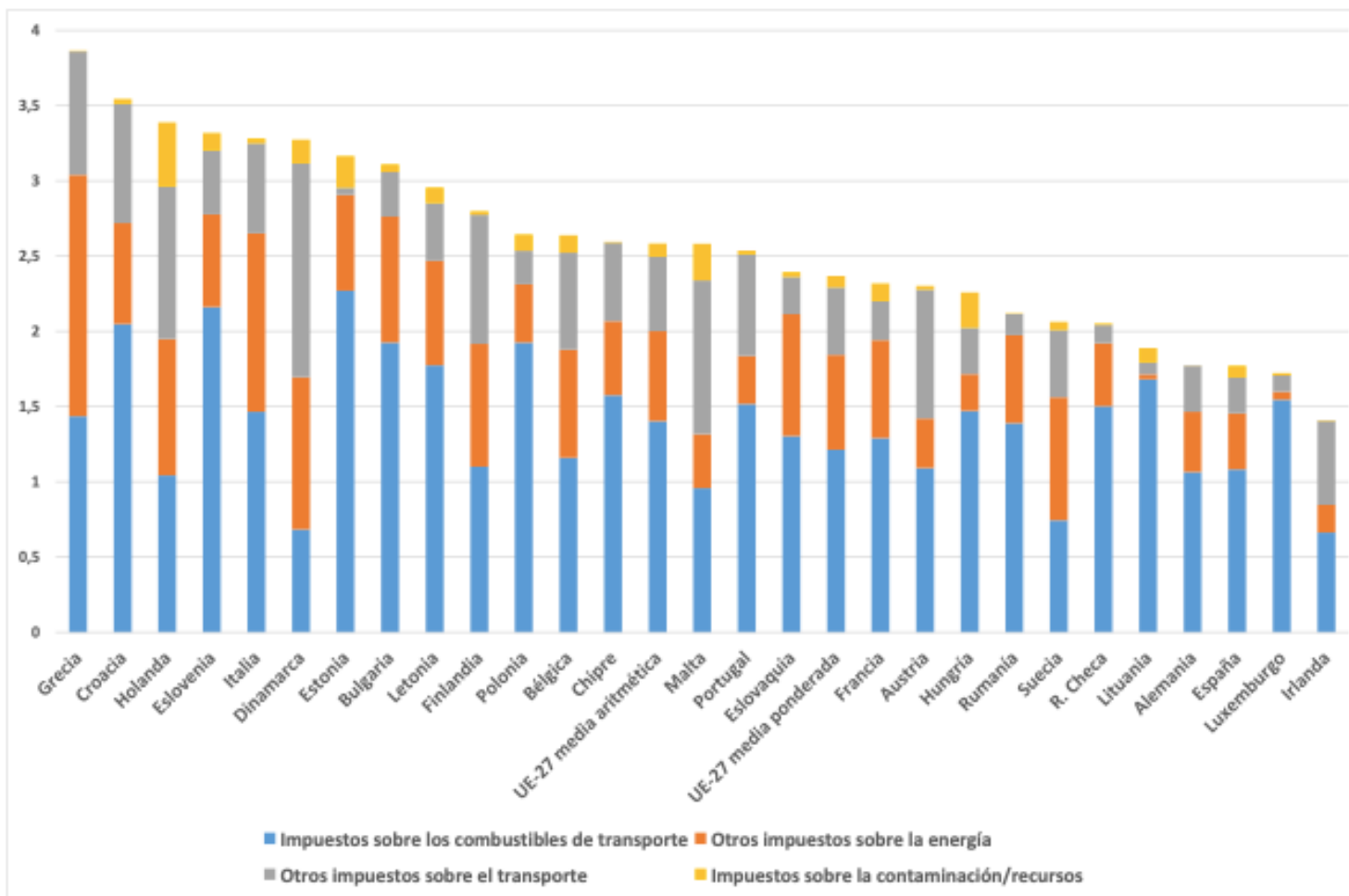
FIGURE 2.1
Map of carbon taxes and emissions trading systems



Fuente: Banco Mundial


- **Diagnosis: Spain**

Environmental revenues in relation to GDP. 2019



Source: European Commission (2021c)

- **Environmental chapter of the WB**
 - (environmental) Objectivity
 - No to “sacred cows” or “price fundamentalism”
 - Common approximation
 - Distribution and Compensations

- Realistic and feasible solutions
 - Non on a blank page (*reform*)
 - Roadmap for policymakers: it does not substitute in-depth exploration
 - **Academic method: foundations, evidence and empirical illustration**
- 

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

Table 1. Spanish Environmental Commitments and Current Situation

Environmental Problem / Reference Year	Target	Latest data
1. Greenhouse Gas Emissions (GHG) / 1990	-23% in 2030	+8,5% (2019)
1b. GHG emissions diffuse sectors/2005	-26% in 2030 (-37.7% in 2030, <i>Fit for 55</i>)	-15,1% (2019)
2. Emissions of Nitrogen Oxides (NOx) / 2005	-41% between 2020-2029 -62% from 2030	-50,3% (2019)
3. Emissions of Volatile Organic Compounds other than Methane (NMVOC) / 2005	-22% between 2020-2029 -39% from 2030	-23,3% (2019)
4. Ammonia (NH ₃) Emissions / 2005	-3% between 2020-2029 -16% from 2030	-2,8% (2019)
5. Particulate Matter 2.5 (PM _{2,5}) Emissions / 2005	-15% between 2020-2029 -50% from 2030	-8,6% (2019)
6. Energy efficiency (Mtoe)	Primary energy: 122.6 (2020); 98.5 (2030) Final Energy: 87.23 (2020); 73.60 (2030)	Primary energy: 120.75 (2019) Final energy: 86,30 (2019)
7. Weight of waste produced / 2010	-10% in 2020 -15% by 2030	-8,1%* (2018) -6,9%** (2018)
8. Household and similar wastes destined for preparation for reuse and recycling.	50% <u>by</u> 2020	35%*** (2018)
9. Non-hazardous construction wastes destined for preparation for reuse and recycling.	70% in 2020	47%**** (2018)
10. Recovery of the costs of water-related services.	100%	67,9%

Data sources: MITECO, *Inventario Nacional de Emisiones a la Atmósfera*; INE, *Estadísticas sobre Recogida y Tratamiento de Residuos*; MITECO, *Memoria Anual de Generación y Gestión de Residuos*; European Commission, *Commission Assessment for Spain's NECP*; Eurostat, *Energy Efficiency*; MITECO, *Síntesis de los Planes Hidrológicos Españoles. WFD Second Cycle (2015-2021)*

Notes: * Amount of non-hazardous and hazardous waste managed; ** Amount of municipal waste collected; *** Weight of waste recycled and composted out of total municipal waste collected; **** Weight of waste destined for recovery and backfilling operations out of total non-hazardous waste.

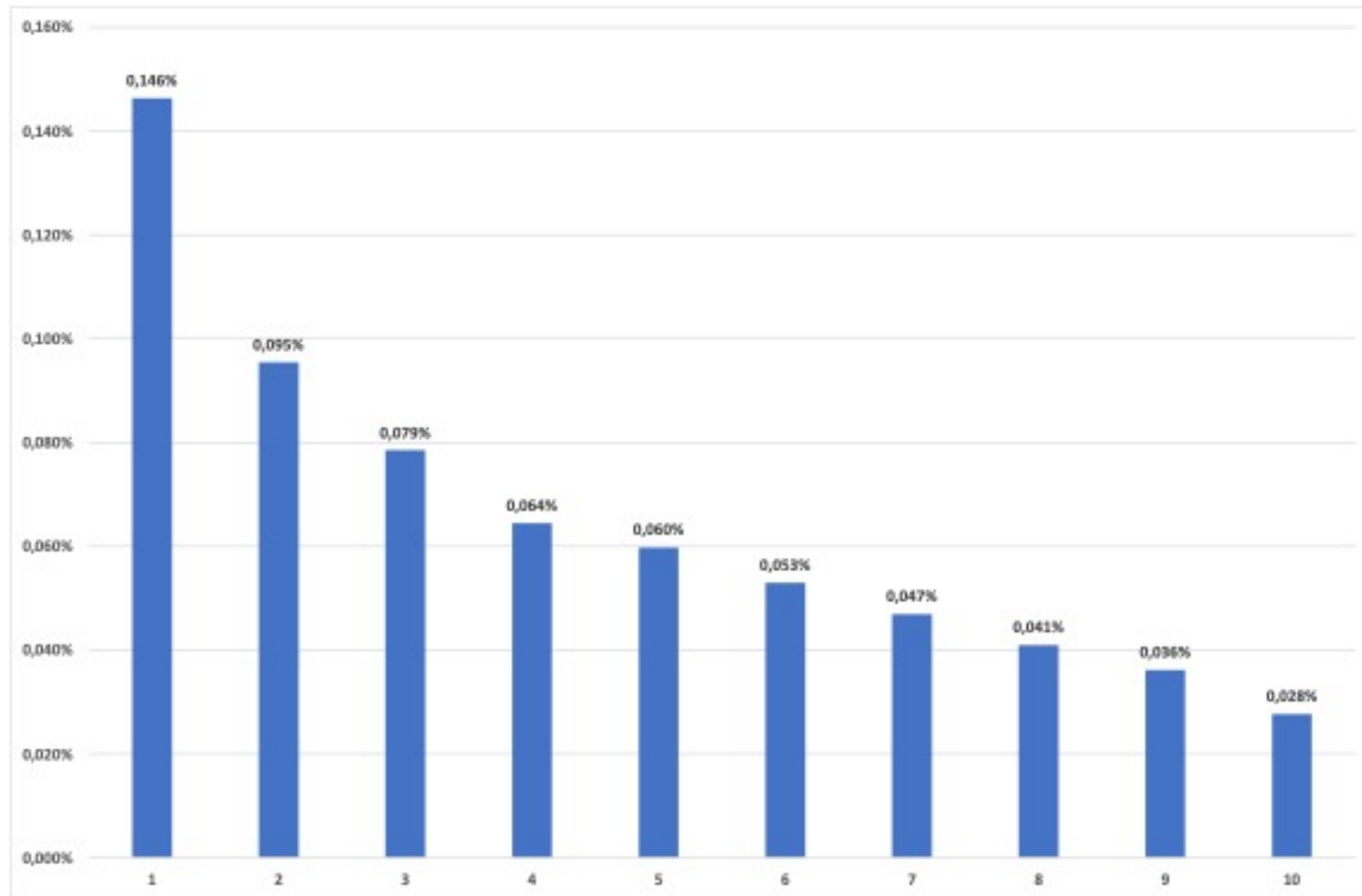
- **Priority Areas:**
 - ‘Sustainable Electrification’
 - ‘Mobility compatible with ecological transition’
 - ‘Increase in circularity’
 - ‘Recognition of environmental costs associated to water use’
- **“Roadmap” based on academic approach and detailed simulations:**

- **Proposals**
- **Sustainable electrification**
 - Why?
 - How? Removing barriers to electrification, but full coverage of environmental costs
 - *Suppression of IVPEE (P1) and reduction IEE (P3)*
 - *Improvement of regional environmental taxes (P2); nuclear charges (R1)*

Table 3. Impacts on prices, demand and revenues of P1

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

Figure 2. Distributional impact of P1 by equivalent income deciles



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

- **Mobility compatible with the transition**
- Why? →
- How? Generalized actions on tax rates on transport modes, fuels and vehicles
- *Taxation of aviation, maritime and agriculture-related fuels (P4)*
- *Equalization of excise taxes on diesel and gasoline (P5); general increase of fuel taxation (P6)*



Press room / Fit for 55: Deal on stricter rules for member states' greenhouse gas emissions

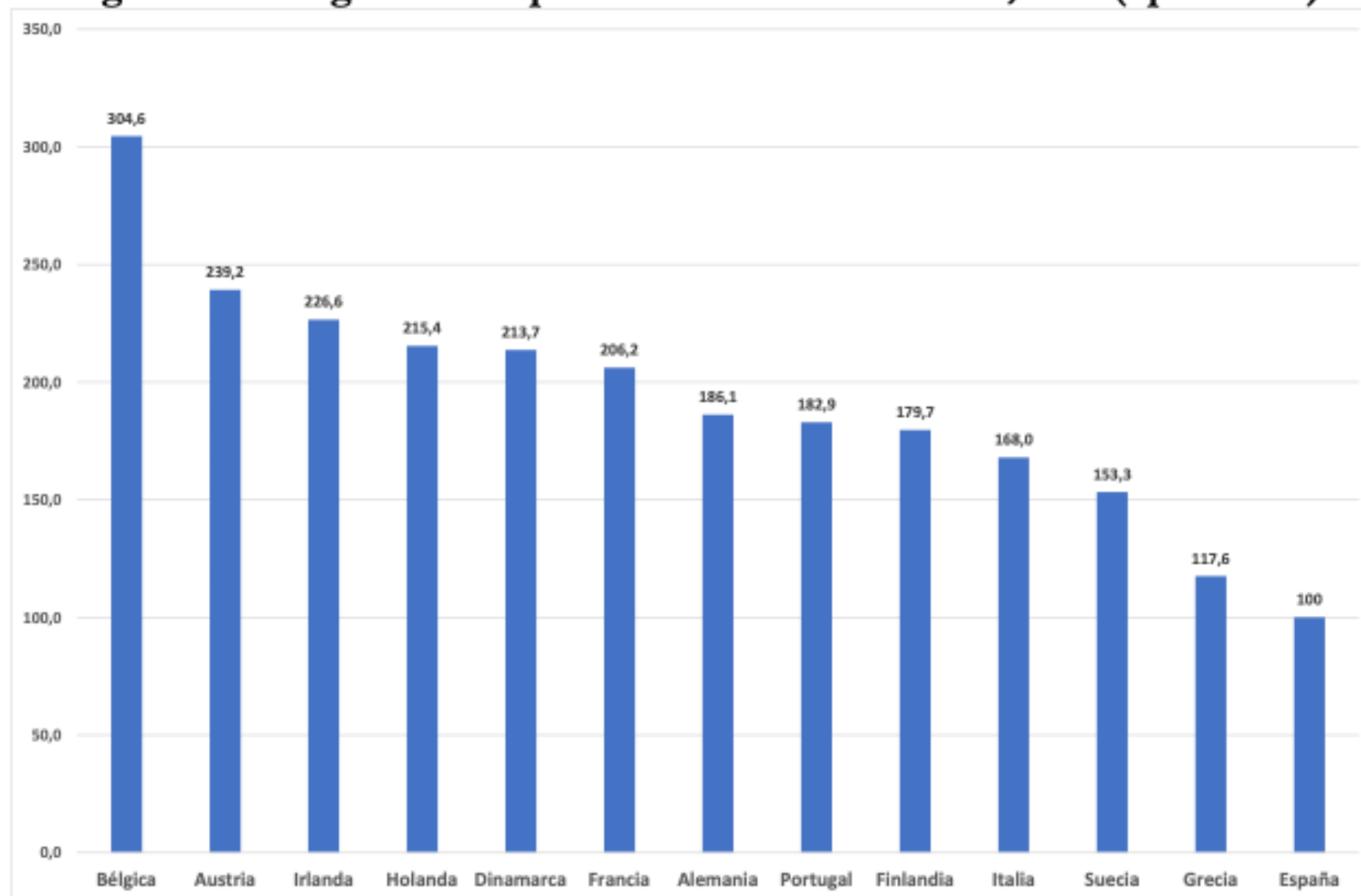
Fit for 55: Deal on stricter rules for member states' greenhouse gas emissions

Press Releases ENVI Yesterday



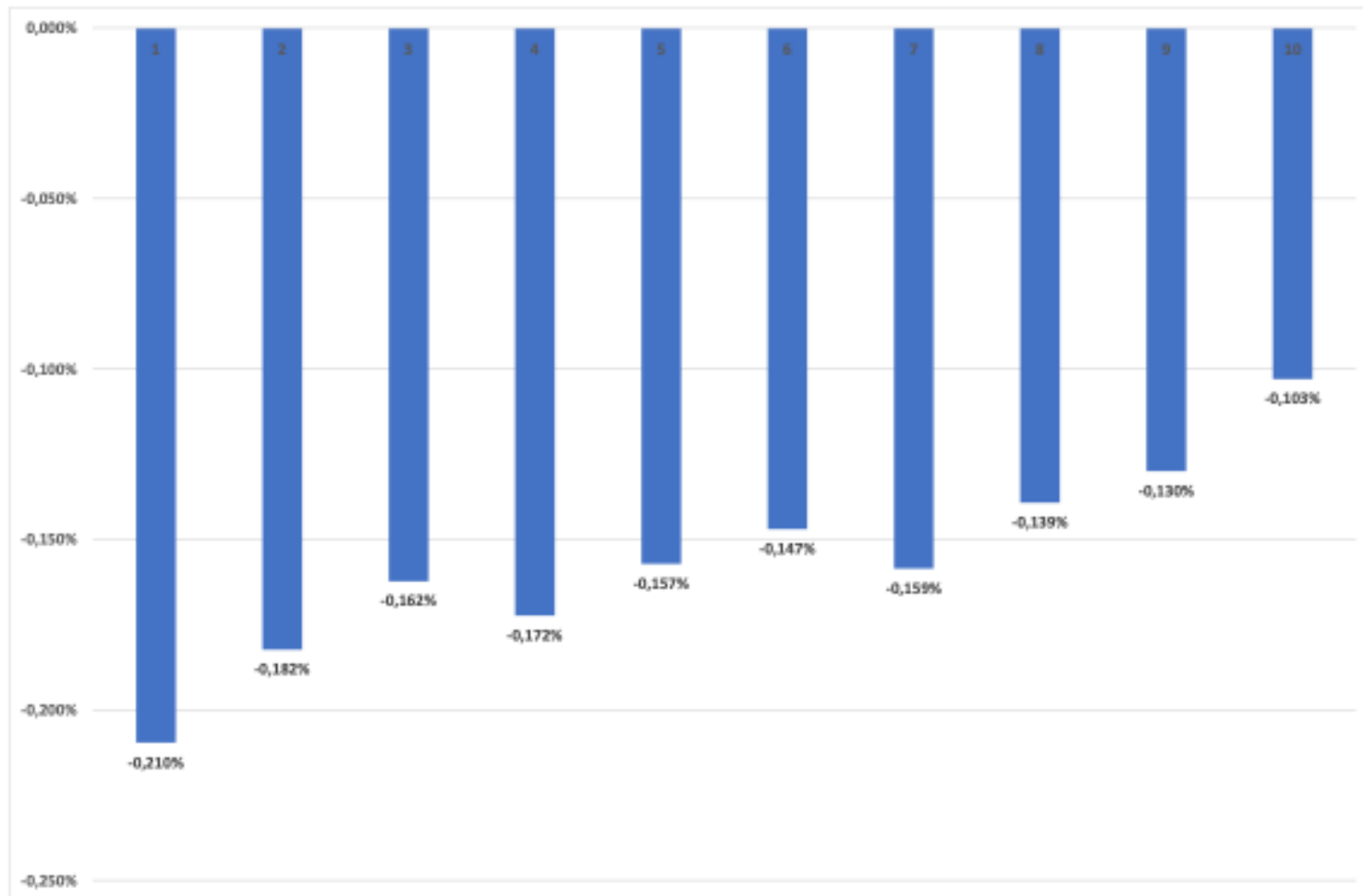
- All EU countries must reduce greenhouse gas emissions in line with a stricter trajectory
- Fewer possibilities to transfer, borrow and bank emission allowances
- More transparency: information on national actions to be made public

Parliament and Council agree on stricter regulation of greenhouse gas emissions in member states including less flexibility and more transparency.


Figure 4. Average revenue per vehicle in EU countries, 2019 (Spain=100)

Sources: Revenue from motor vehicles (VAT on sales, services and repairs, sales and registration taxes, road taxes, fuel taxes, and others) from ACEA (2021a) divided by vehicle stock from Eurostat (2021d).

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



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

- *Changes in IEDMT to promote a sustainable fleet (P7)*
 - *Changes in IVTM to penalize polluting technologies (P8)*
 - *Creation of a local tax on (transport) congestion (P9)*
 - *New charges for the use of motorways (P10)*
- 



MARTES, 5 DE ABRIL DE 2022

Tribuna de opinión firmada por José López-Tafall, director general de ANFAC ejecutiva de Faconauto; José Portilla, director general de Sernauto; José María Anesdor y Jaime Barea, director corporativo de Ganvam publicada en [Expansión](#)

Imagen diseñada por [Froepik](#)

La ciudadanía está viviendo un claro proceso de cambio en sus opciones para ejercer el derecho al cambio nace vinculado a dos elementos fundamentales: **el desarrollo tecnológico y la tr**

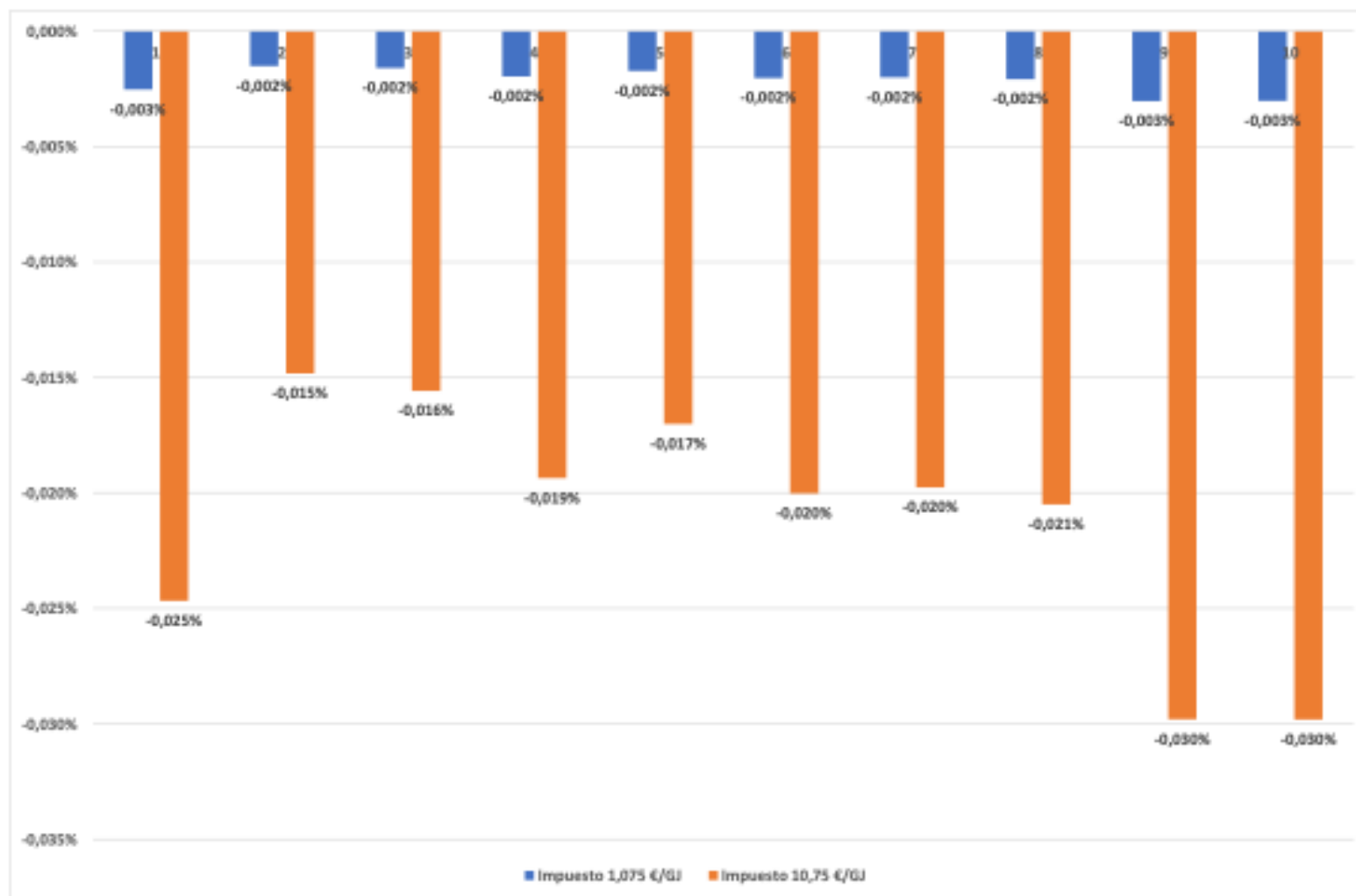
En este contexto, donde la reflexión y el análisis riguroso deben adquirir un protagonismo contenido del **“Libro Blanco para la Reforma del Sistema Tributario”**, elaborado por el Gobierno de España. En lo que respecta a nuestro sector, la puesta en marcha de esta aportar certidumbre y definir unas nuevas bases sobre las que avanzar hacia la descarbonización de la movilidad, que es el objetivo compartido por todos. Sin embargo, consideramos que no ha sido así.

Desde nuestro punto de vista, **la reforma fiscal planteada por el comité de expertos parte de una lectura equivocada del proceso y, en consecuencia, ofrece un diagnóstico erróneo y una solución inconveniente, al menos para España.** Se propone una fiscalidad que se limita a incrementar todos los costes de la movilidad para los ciudadanos y compromete la hoja de ruta de la descarbonización asumida por España y la Unión Europea. Más aún, creemos que pone en riesgo el futuro desarrollo de la automoción, un sector que hoy es estratégico para la economía y el empleo de nuestro país.

«La reforma fiscal planteada por el comité de expertos pone en riesgo el futuro desarrollo de la automoción, un sector que hoy es estratégico para la economía y el empleo de nuestro país»



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 ₂ emissions (%)	Additional revenues (Millions of euros)					Total
			IVPEE	LEE	I. CO ₂	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%)
Total	--	-3,07% -3,90%*	-1.128,04	967,66	5. 435,63	--	720,34	8.925,47 (35,6%)

Note: *Change in CO₂

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

En 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

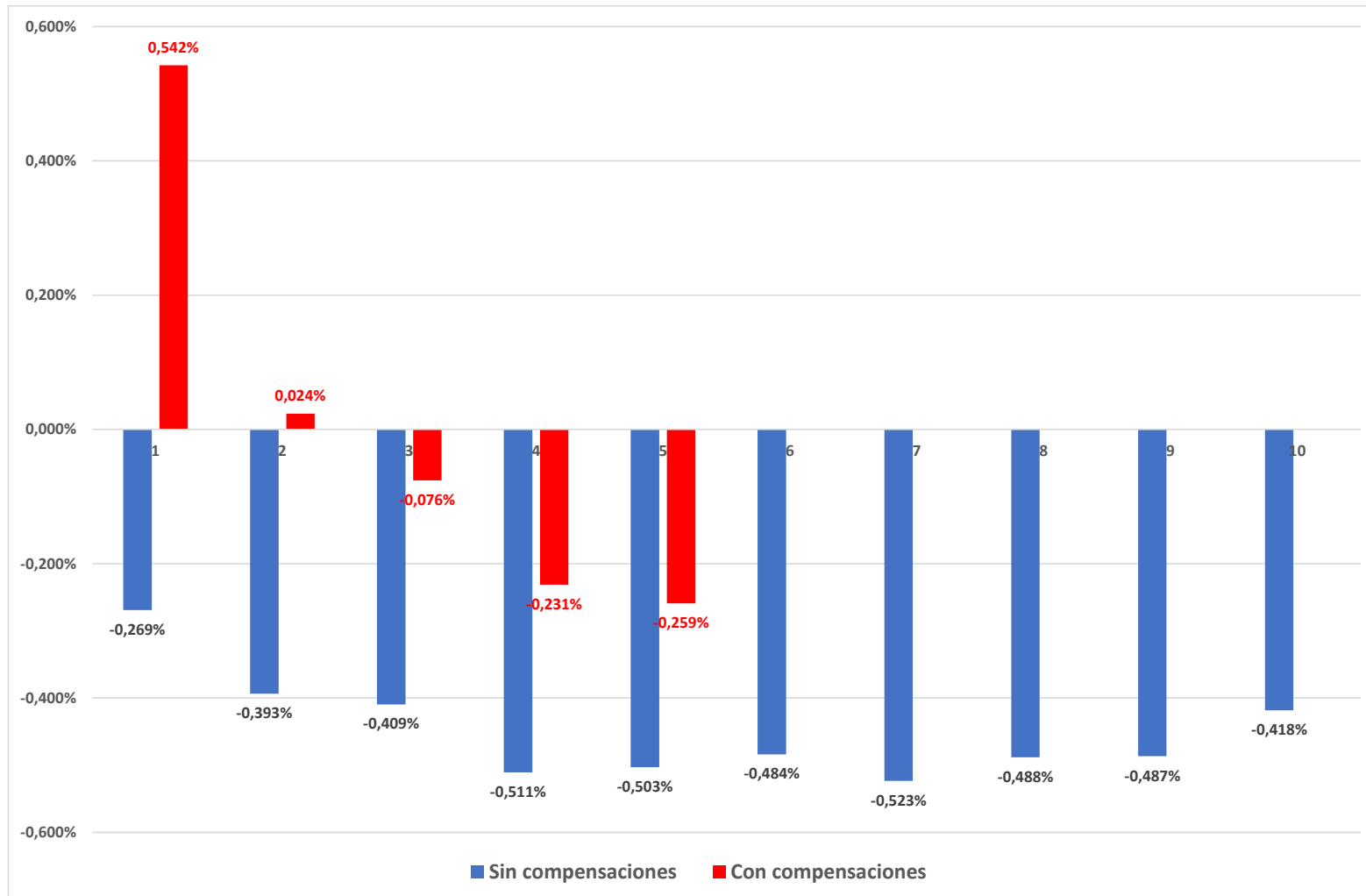


tuación correctora de la política climática; deben concentrarse exclusivamente sobre los más vulnerables (territorios, sectores y grupos de renta); y deben ser capaces de revertir íntegramente los efectos negativos en el corto plazo y de resolver el problema distributivo en el medio plazo.

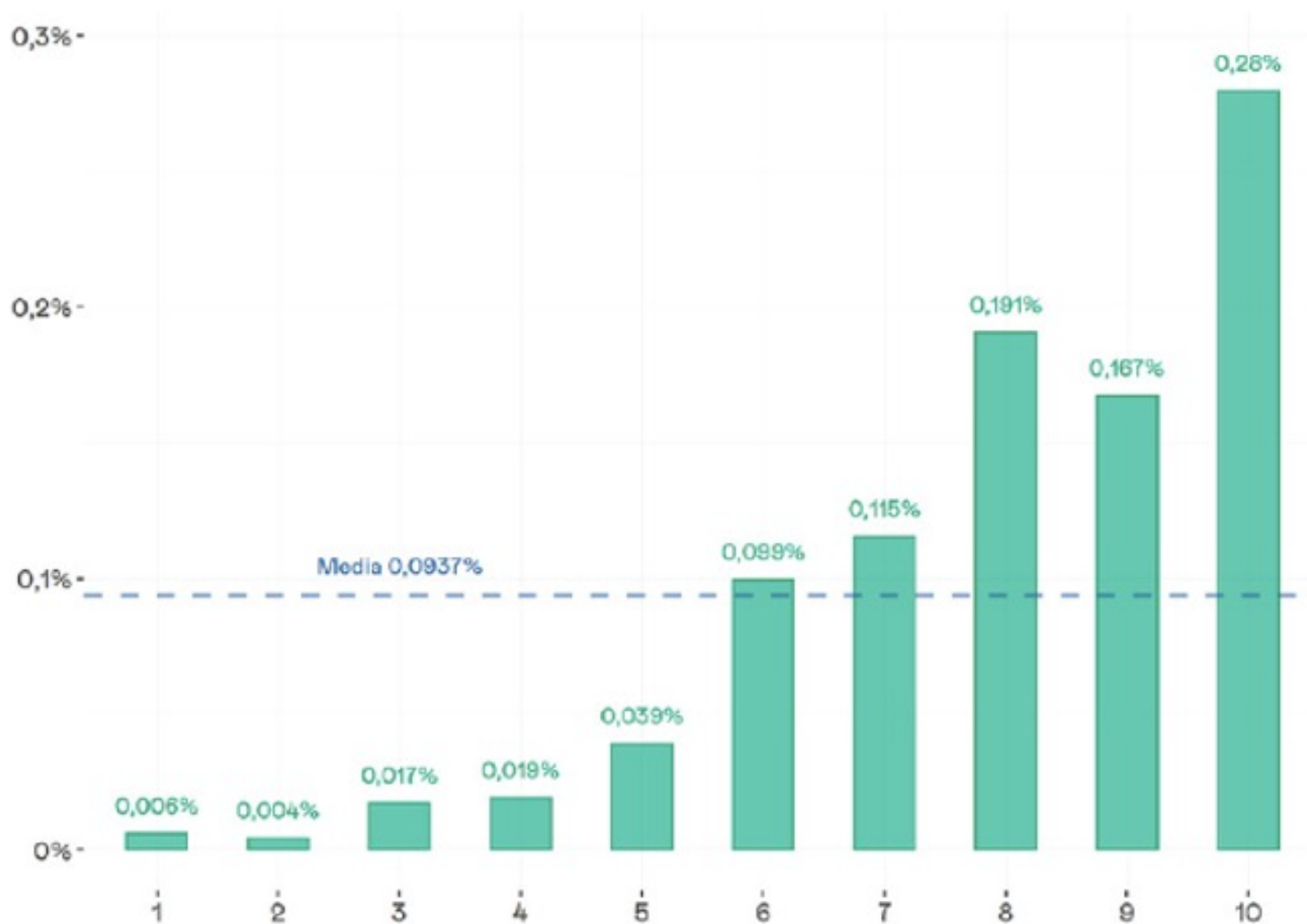
No tiene sentido, por ello, retrasar el progreso de la transición manteniendo artificialmente bajos los precios de los productos energéticos, en particular los combustibles fósiles, para proteger a los que menos tienen. Primeramente, porque esto evita que se adopten los cambios de comportamiento e inversión 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



Impacts of subsidies to purchase “clean” automobiles by deciles of equivalent income



Datos de Gago et al. (2020a) | EsadeEcPol

U-turn:

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)



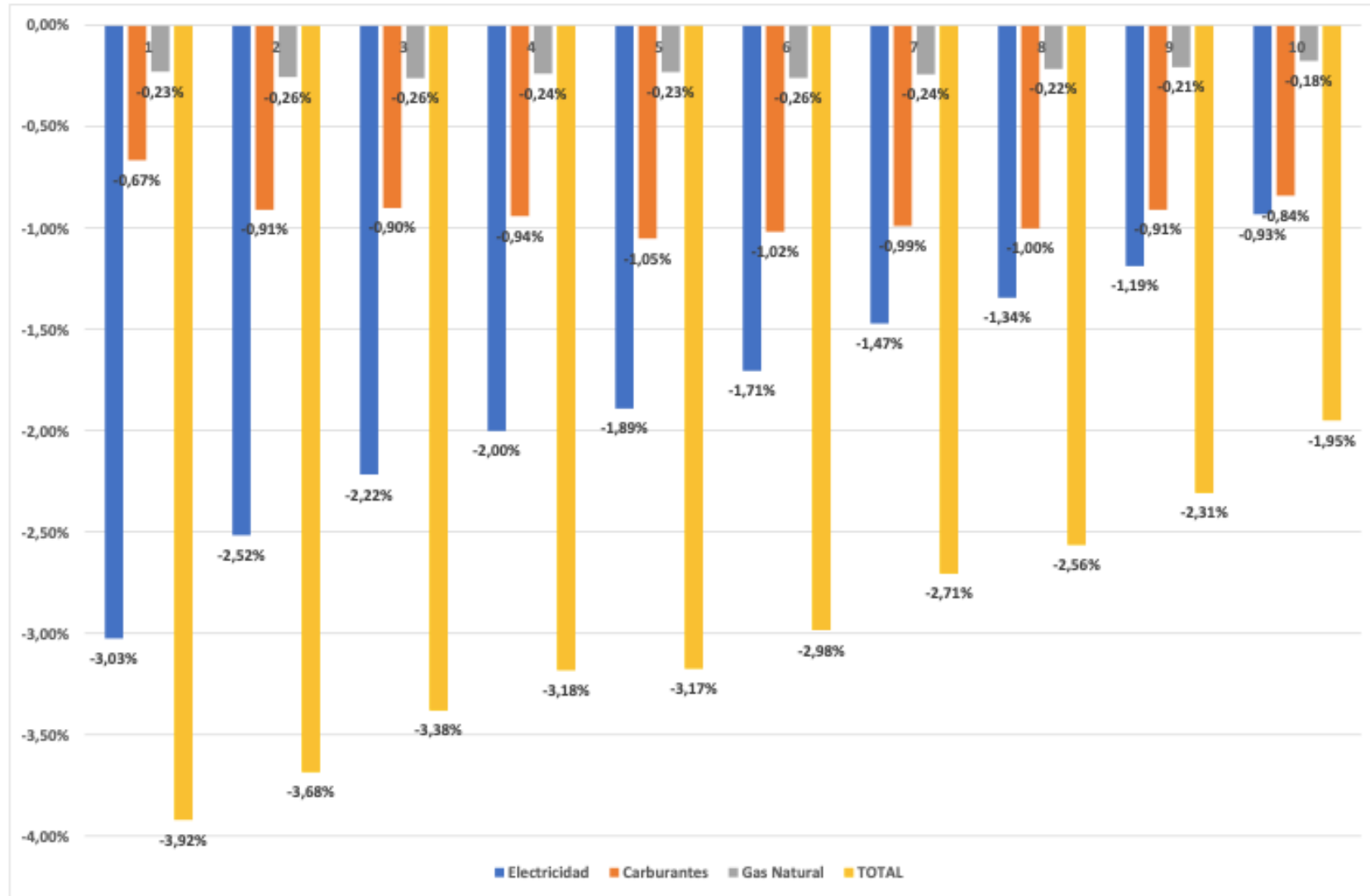
- **Distributional impacts of energy price increases:**
 - Direct or indirect
 - Factors and measurement issues
- **Compensation measures:**
 - *Ad hoc* or **general**
 - On **prices** or direct transfers
 - **Short term** or medium term

- **Our previous assessment:**
 - Revenue costs (and their distribution)
 - Environmental and energy implications
- **This paper:**
 - Similar methodological approach, but
 - Distributional effectiveness (wrt no action), and
 - Comparable alternatives (such as those in the WB)

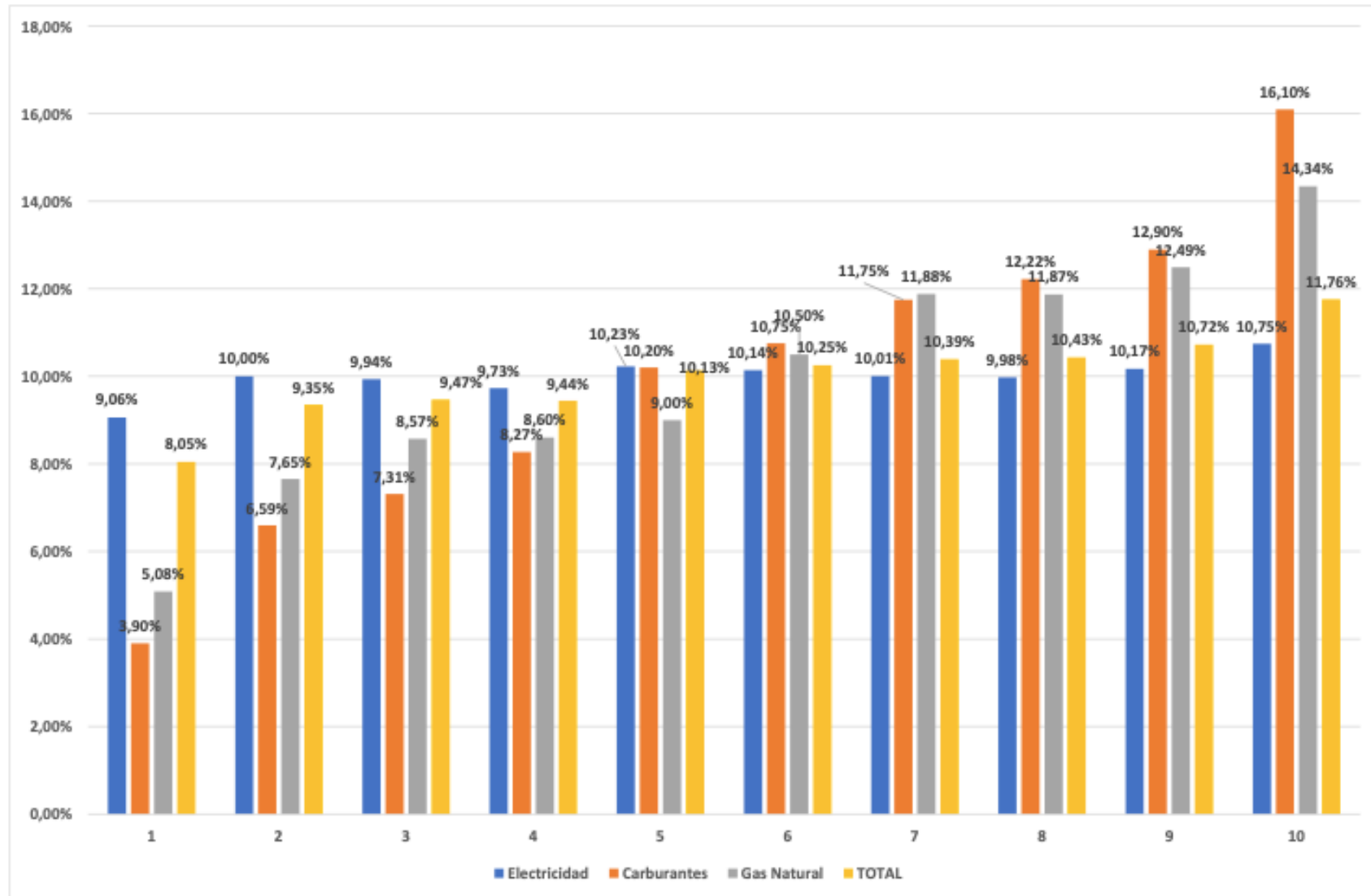
Residential impacts of energy price increases, without compensatory interventions, on demand, emissions and public receipts

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

Change (%) in equivalent income by deciles due to increase in energy prices without compensation measures



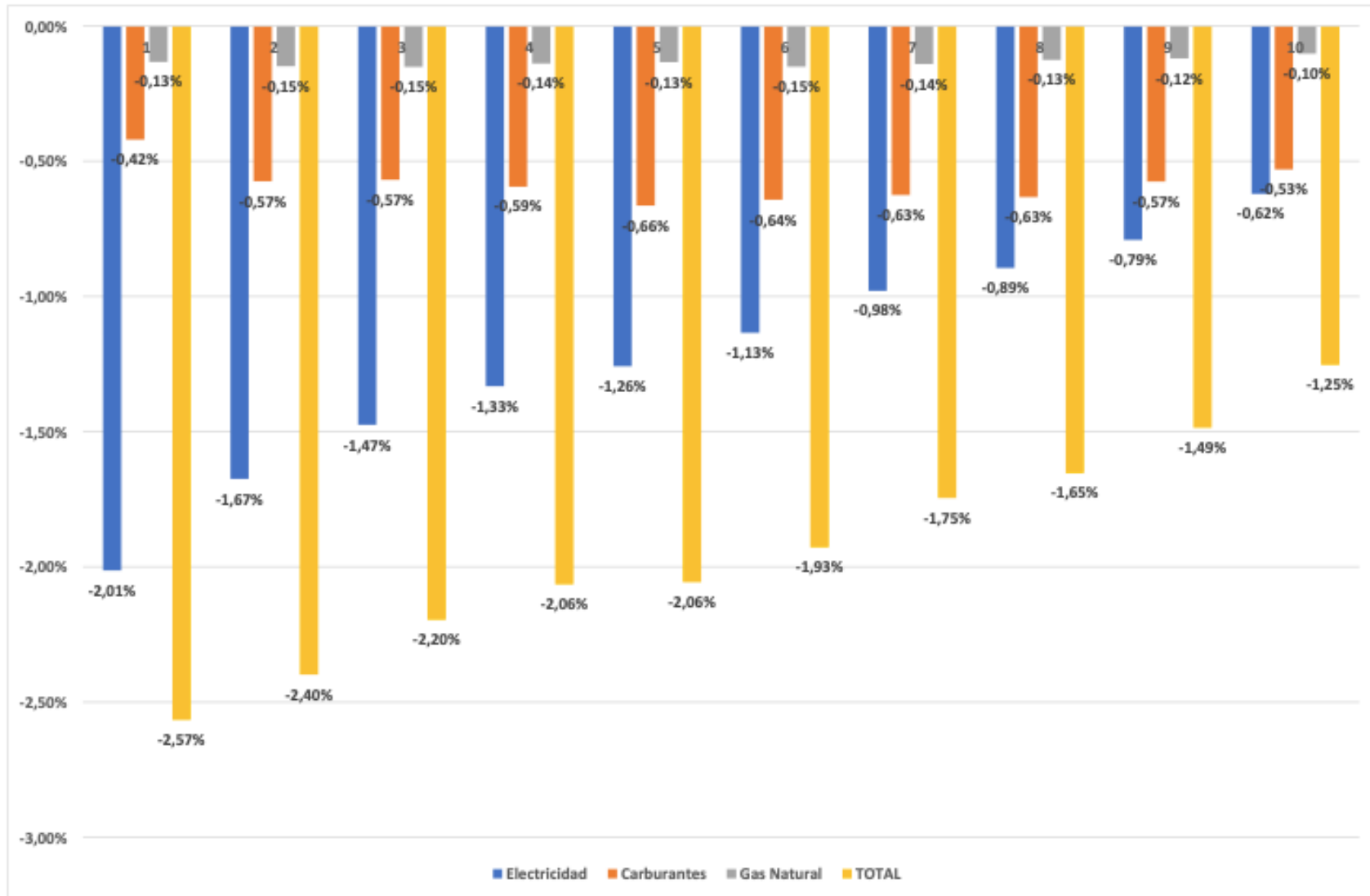
Public revenue gain by decile of equivalent income without compensatory measures



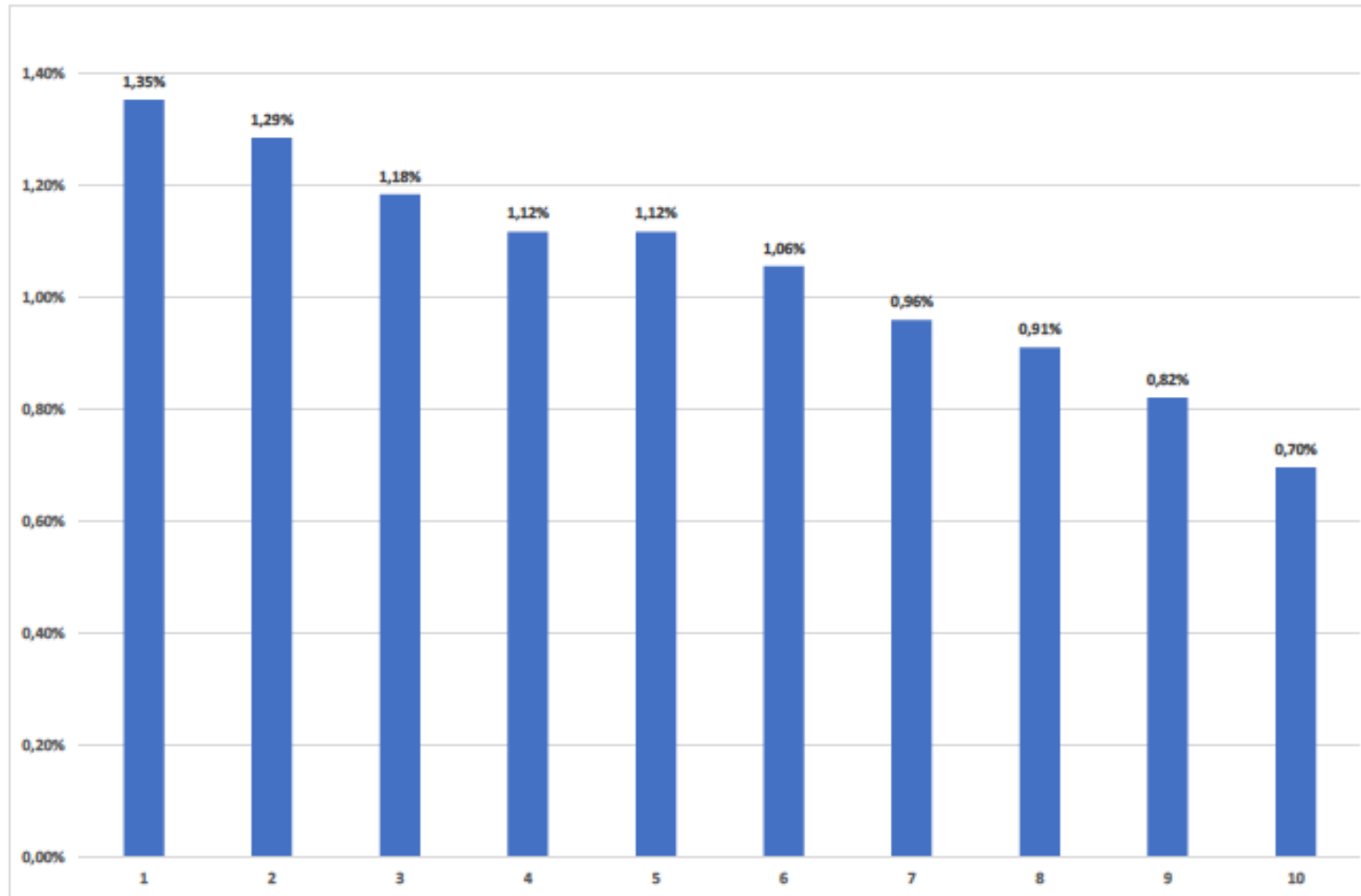
Impacts of residential energy price increases after compensatory public intervention

	Price increase (%)	Demand/ emissions (%)	Change in public receipts (million euro and % reduction)				
			Generation tax	Excise tax	VAT	Subsidy	Total
Electricity	56.50%	-11.47%	-637.02 (-100%)	-697.19 (-83.67%)	-2229.97 (-61.99%)	-	-3564.18 (-70.33%)
Gasoline 95	21.68%	-5.49%	-	-160.87 (-5.49%)	426.16 (28.73%)	-1172.64	-907.36 (-20.55%)
Diesel	24.41%	-4.91%	-	-343.45 (-4.91%)	1338.98 (33.61%)	-3513.41	-2517.89 (-22.92%)
Natural gas	22.01%	-0.05%	-	-8.16 (-5.33%)	-643.98 (-68.31%)	-	-652.14 (-59.51%)
Total	-	-6.32% (demand) -5.85% (emissions)	-637.02 (-100%)	-1209.67 (-11.08%)	-1108.82 (-11.08%)	-4686.06	-7641.57 (-35.43%)

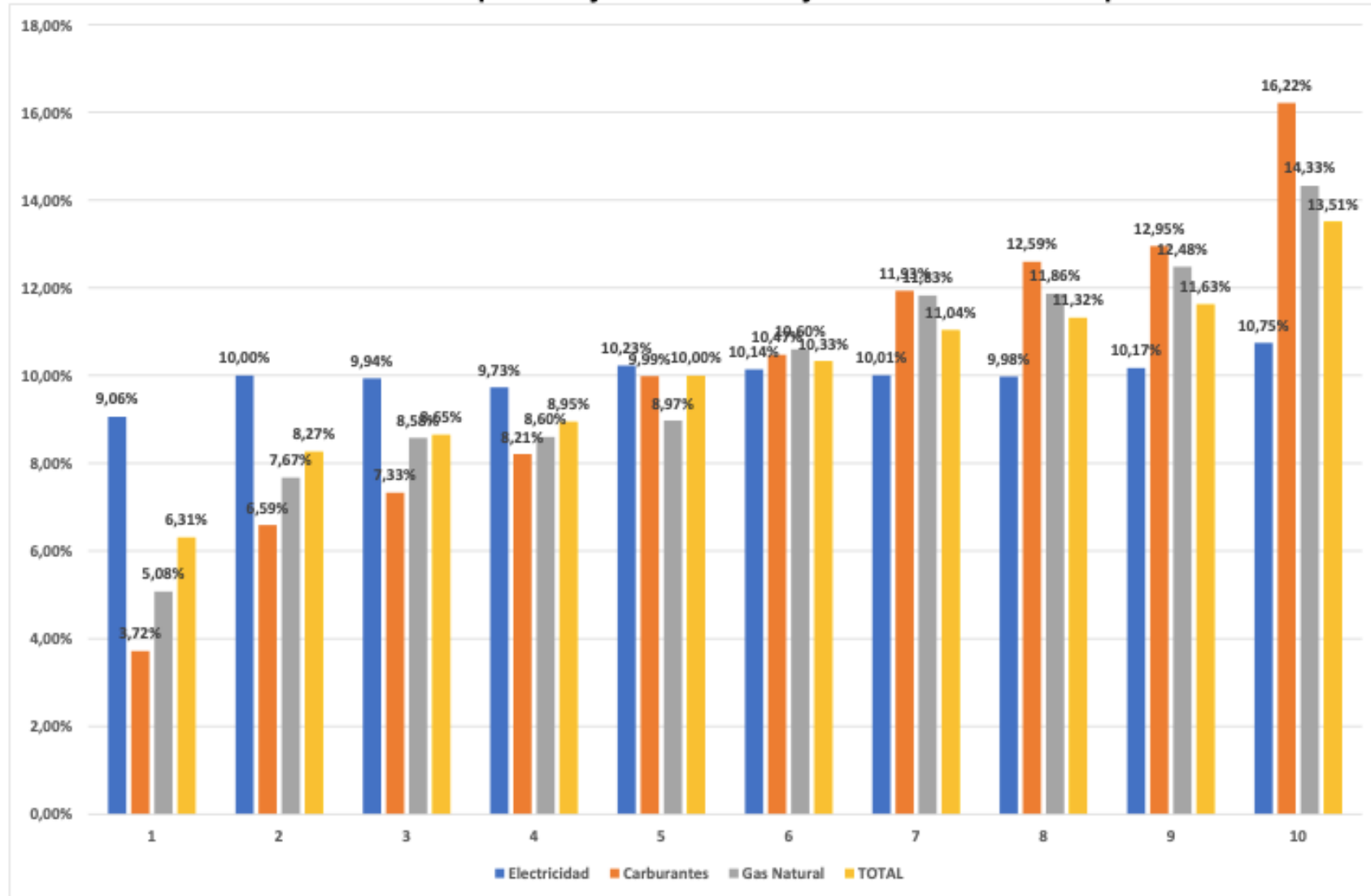
Change in household equivalent income by decile, incorporating public compensatory measures



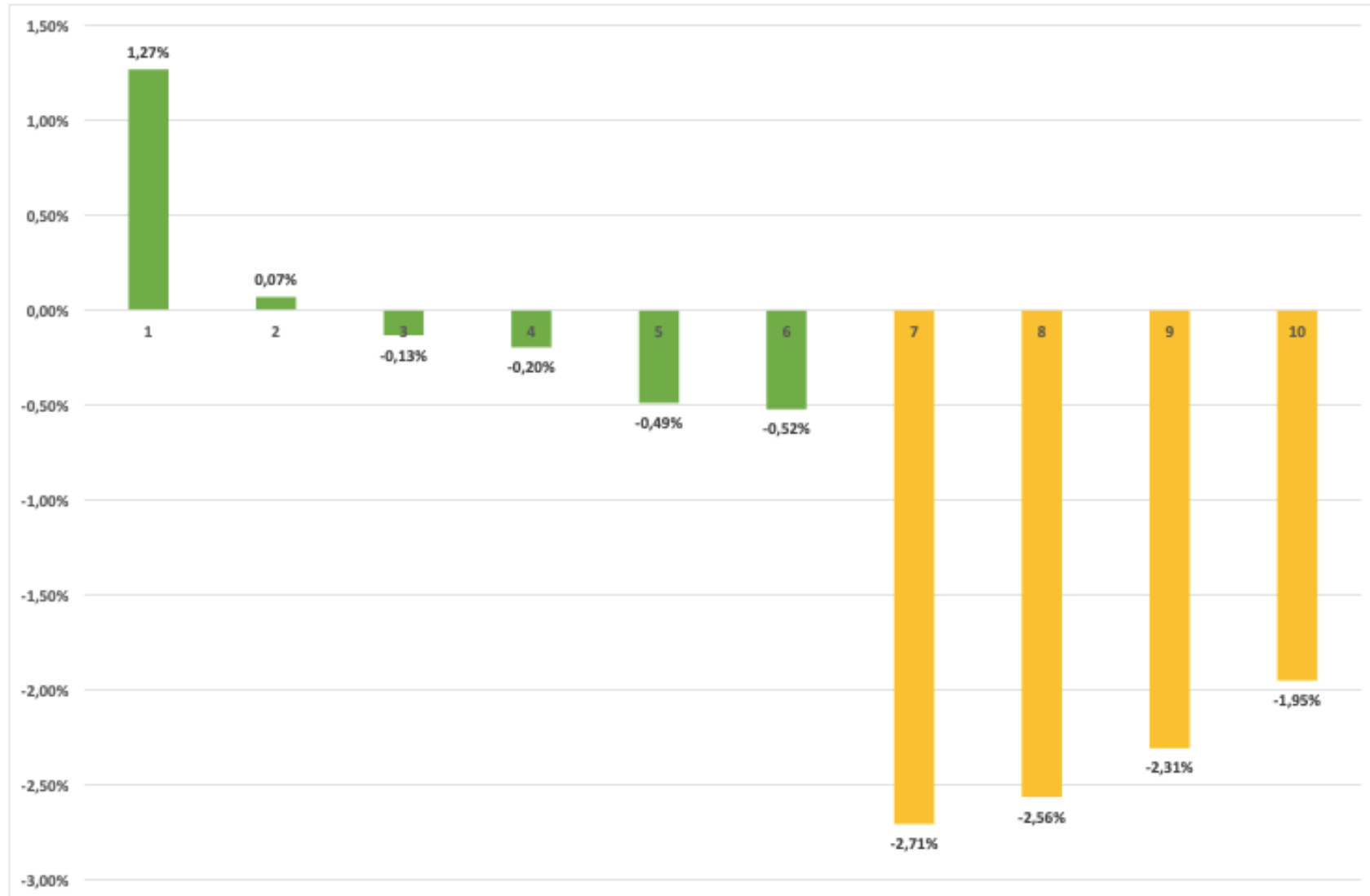
Change in equivalent income by deciles brought about by the compensatory package



Distribution of the costs of compensatory interventions by decile of household equivalent income

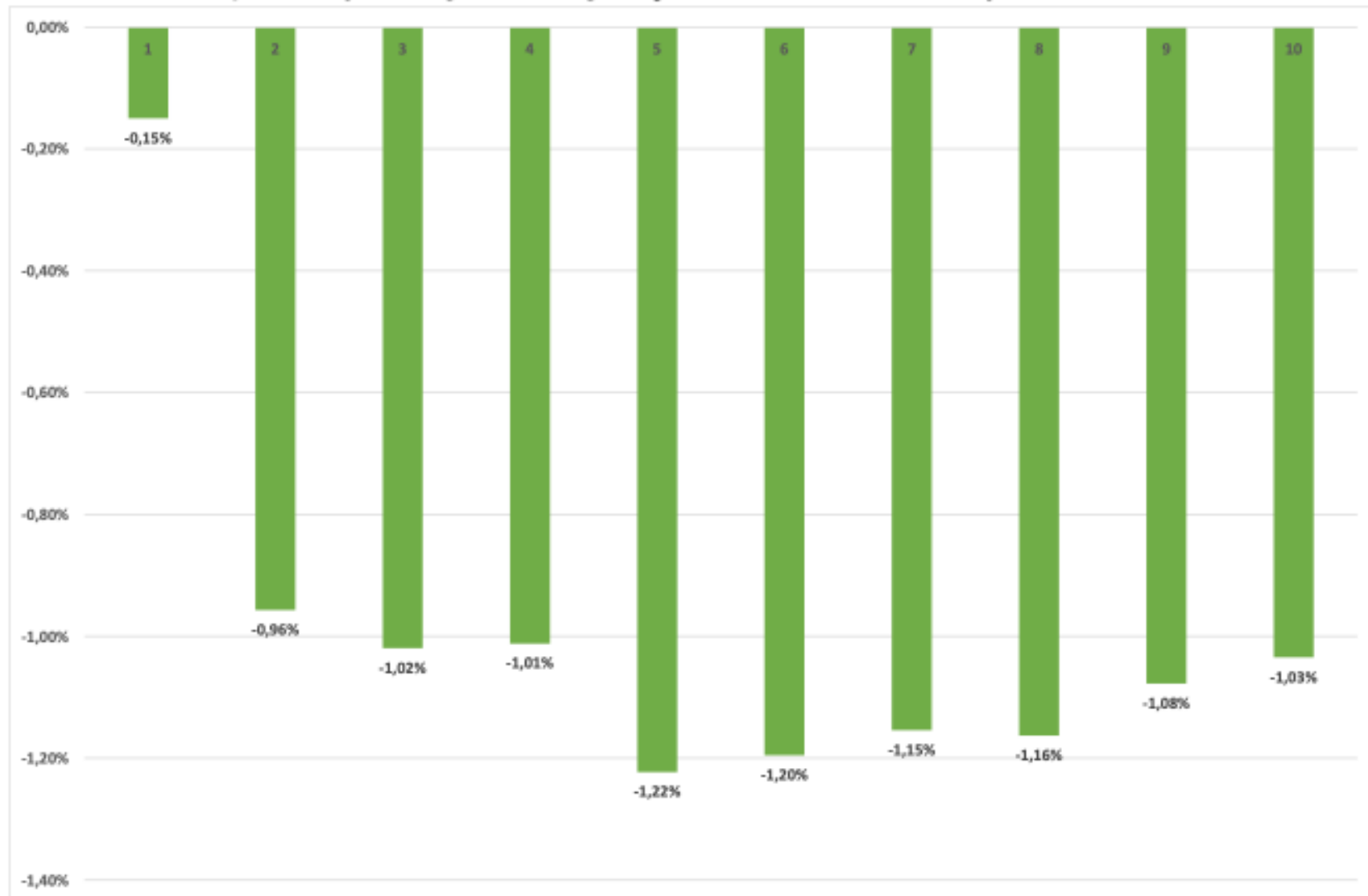


Compensatory Package A: Changes by decile of household equivalent income



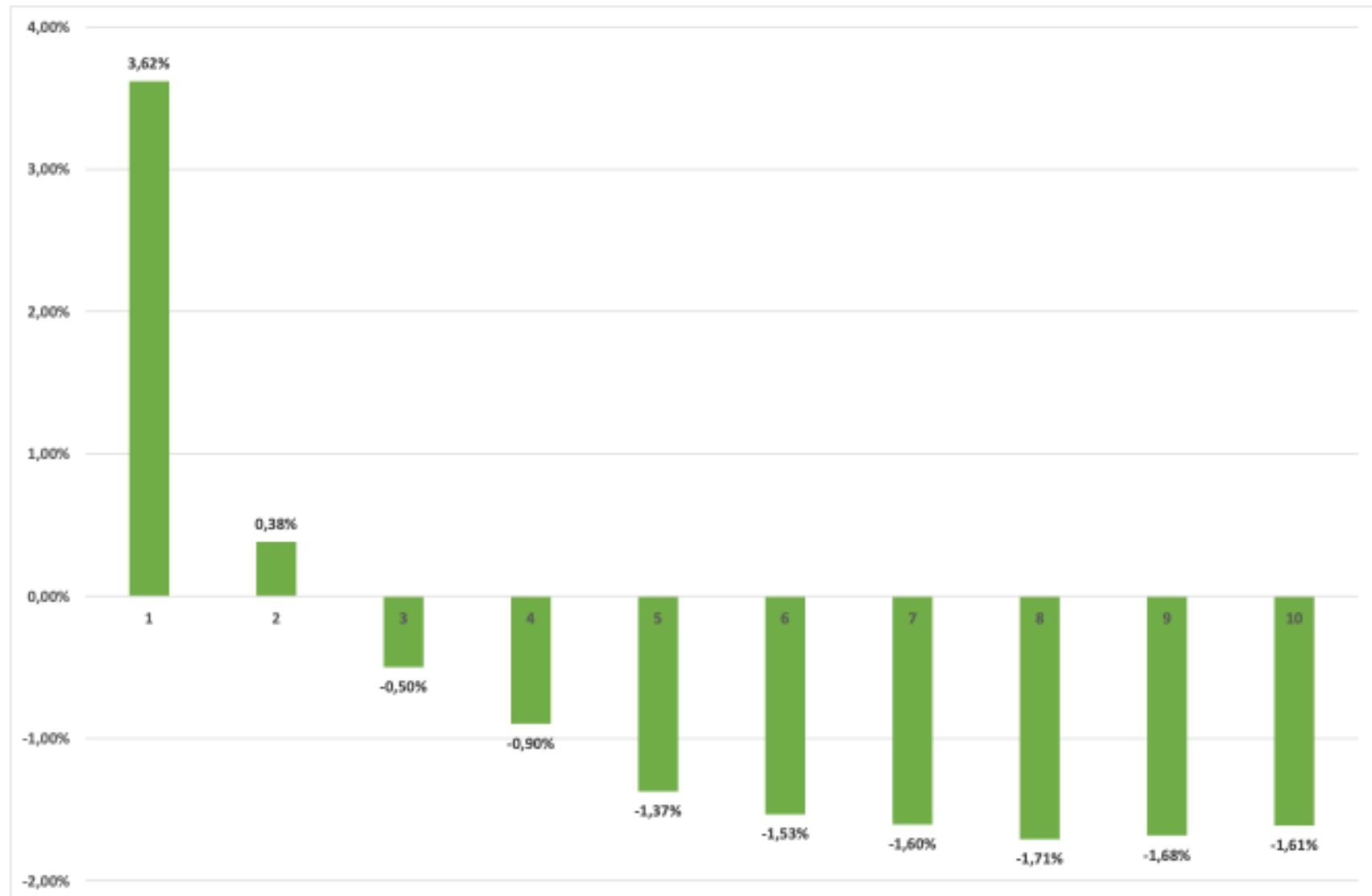
Note: Deciles that experiment change are colored in green.

Compensatory Package B: Changes by decile of household equivalent income




Note: Deciles that experiment change are colored in green.

Compensatory Package C: Changes by decile of household equivalent income

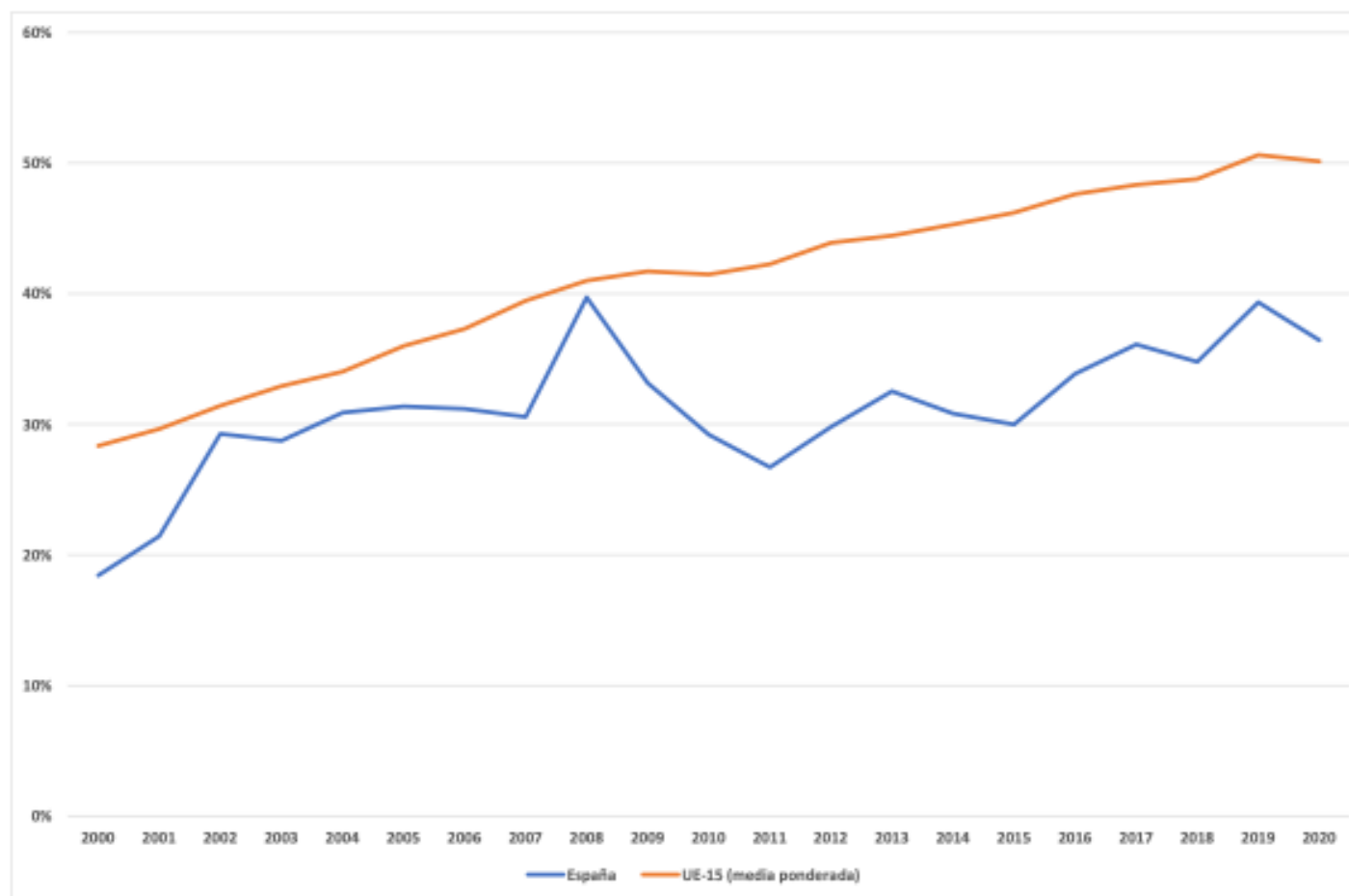


Note: Deciles that experiment change are colored in green.

- **Conclusions**

- Offsetting distributional issues is crucial for the transition to a low-carbon economy
 - Proper design and implementation are needed: well-targeted, incentive-compatible and long-term approaches
 - The Spanish case, similar to other European countries, shows important room of improvement: more efficient outcomes are possible.
- 

- **Increase in circularity**
- *Why? →*
- *Extension and increase of taxes included in the LRySC (P12)*
- *Local taxation based in payment on waste generation (P13)*

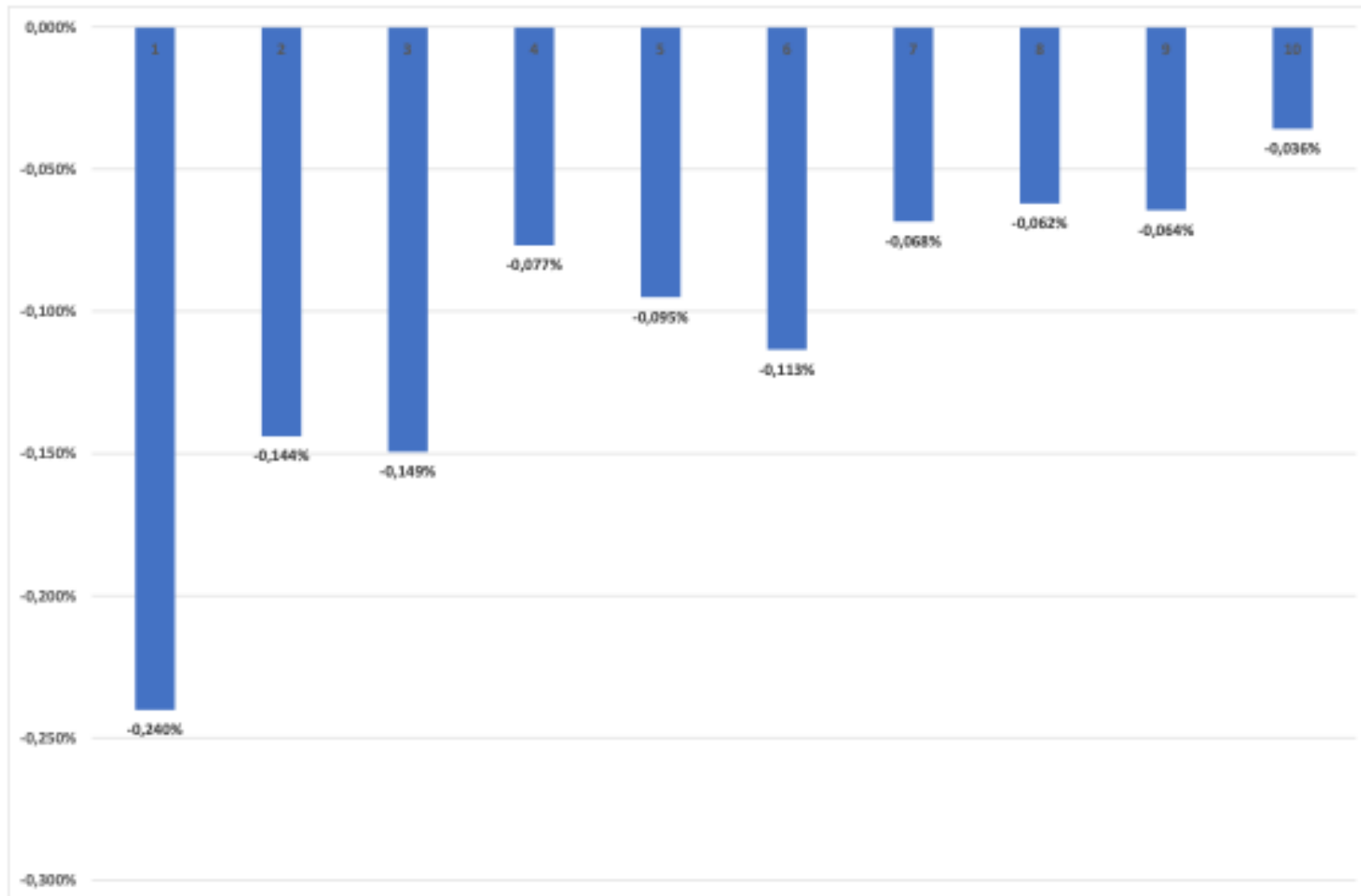
Graph 21. Percentage of urban waste recycled in Spain and EU-15 (2000-2020)

Source: Eurostat (2021c)

Notes: Population-weighted average of EU-15 countries.

Data are not available for Denmark (2012) Ireland (2013, 2015, 2019 and 2020), Greece, [Italy](#) and Austria (2020) and United Kingdom (2019 and 2020), so they are not included in the averages for the corresponding years.

Figure 22. Distributional impact of P13



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


- *Creation of an aggregates tax (P14)*
 - *Creation of a tax on nitrogenous fertilizers (P15)*
 - *Extension and harmonisation of regional taxes on emissions from large industries and cattle farms (P16)*
- 

Table 22. Impacts on consumption and collection of P15

Fertilizer	Tax rate	Final price	Consumption/emissions	Additional collection (Millions of euros)
Ammonium nitrate	0,268	26,45%	-7,01%	11,34
Calcium ammonium nitrate	0,219	23,00%	-6,09%	39,58
Ammonium nitrosulfate	0,487	35,15%	-9,32%	13,07
Nitrogen solutions	0,503	58,06%	-15,39%	39,74
Ammonium sulfate	0,705	67,68%	-17,94%	32,49
Urea	0,740	99,35%	-26,33%	143,69
Total		-	-14,49% (-16,38%)	279,92

Note: Overall emission reductions in parentheses.

Table 23. Emissions, tax rates and revenue from P16

Pollutant	Emissions (tons)	Tax rate (€/kg)	Revenues (million euros)
NH ₃	2.783,50	3,5	9,74
	<i>66.449,4</i>		<i>232,57</i>
COVDM	52.925,07	0,23	12,17
CH ₄	165.640,36	0,348	57,64
	<i>232.380,2</i>		<i>80,87</i>
CO	261.026,34	0,011	2,75
N ₂ O	2.220,21	3	6,66
	<i>987</i>		<i>2,96</i>
NO _x	178.012,09	2,96	526,91
Total	810.740,56	-	615,88
			<i>316,41</i>

Note: In italics P16B, rest P16A.

- **Incorporation of environmental costs associated to water use**
- Why? →
- *Improvements in regional taxes on environmental impacts on waters (P17)*
- *Reform in charges for cost coverage of water infrastructures (P18)*
- *Creation of a tax on the extraction of water resources (P19)*

Table 24. Annual water costs and revenues (million euro)

Hydrological region	Financial Cost			Environmental cost AEC	Total Cost	Revenues	Cost recovery rate
	Operating and maintenance costs	AEC of investment	Total				
Miño-Sil	55,98	101,19	157,17	6,42	163,59	143,46	87,69%
Western Cantabrian	288,94	223,71	512,65	35,17	547,82	473,83	86,49%
Eastern Cantabrian	210,61	226,34	436,95	34,80	471,75	347,35	73,63%
Duero	421,95	379,54	801,49	251,76	1053,25	664,20	63,06%
Tagus	1.071,05	672,74	1.743,79	202,45	1946,24	1.386,57	71,24%
Guadiana	245,67	292,14	537,81	48,57	586,38	353,06	60,21%
Guadalquivir	627,90	404,10	1.032,00	69,88	1101,88	870,76	79,02%
Segura	538,01	267,69	805,70	237,67	1043,37	700,02	67,09%
Júcar	1.032,85	348,67	1.381,52	184,54	1566,06	1.311,17	83,72%
Ebro	796,50	846,71	1.643,21	281,63	1924,84	1.317,00	68,42%
Ceuta	17,91	6,59	24,49	0,61	25,11	16,52	65,80%
Melilla	15,57	9,51	25,08	1,22	26,30	8,75	33,28%
Galicia Coast	n.a.	n.a.	260,13	41,95	302,08	189,78	62,82%
Eastern Cantabrian (PV)	178,21	199,58	377,80	15,74	393,54	294,00	74,71%
Andalusian Mediterranean	500,50	243,40	743,90	78,70	822,60	659,65	80,19%
Guadalete-Barbate	140,95	22,83	163,78	14,46	178,24	154,11	86,46%
Red, Odiel and Stones	95,75	25,40	121,15	10,47	131,62	109,37	83,10%
Catalonia	n.a.	n.a.	1.175,95	188,89	1364,84	1.080,20	79,14%
I. Balears	167,53	119,63	287,16	88,65	375,81	236,23	62,86%
Gran Canaria	167,82	36,15	203,97	7,54	211,51	165,61	78,30%
Lanzarote	33,04	12,29	45,33	3,47	48,79	33,30	68,26%
Fuerteventura	n.a.	n.a.	n.a.	n.a.	20,20	15,69	77,67%
Tenerife	255,68	67,94	323,62	n.a.	323,62	231,06	71,40%
La Palma	15,02	14,51	29,53	0,58	30,11	14,82	49,22%
La Gomera	2,44	6,44	8,88	0,78	9,66	2,58	26,70%
El Hierro	3,17	1,31	4,48	2,02	6,50	1,74	26,77%
TOTAL	6.883,04	4.528,42	12.847,54	1.807,98	14.675,72	10.780,83	73,46%

Note: CAE: Annual equivalent cost; n.a.: not available.

Source: Hydrological Plans (2022-2027) of the river basin districts (in approval process), available at:

https://www.miteco.gob.es/es/agua/temas/planificacion-hidrologica/planificacion-hidrologica/PPHH_tercer_ciclo.aspx.

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