The impact of climate transition policies on Belgian firms
What can we learn from a survey?

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Previous business surveys

Our paper in a nutshell

- The burning **research question**:

  How are Belgian firms preparing for and responding to current and planned climate transition policies as they approach the 2030 milestone set by the European Green Deal?

The European Green Deal
Striving to be the first climate-neutral continent

The first climate-neutral continent
by 2050

At least 55% less
net greenhouse gas emissions by 2030, compared to 1990 levels

Our paper in a nutshell

- The burning **research question**:

    How are Belgian firms preparing for and responding to current and planned climate transition policies as they approach the 2030 milestone set by the European Green Deal?

- Data from an **ad hoc business survey**:

Our paper in a nutshell

- The burning **research question**:

  How are Belgian firms preparing for and responding to current and planned climate transition policies as they approach the 2030 milestone set by the European Green Deal?

- Key **insights**:

  - Classic 'negative supply shock'

  - Shifting production capacity outside the EU

  - Scepticism about feasibility of 'Fit for 55'

  - Obstacles include 'costs', 'unclear policies', and 'administrative burdens'
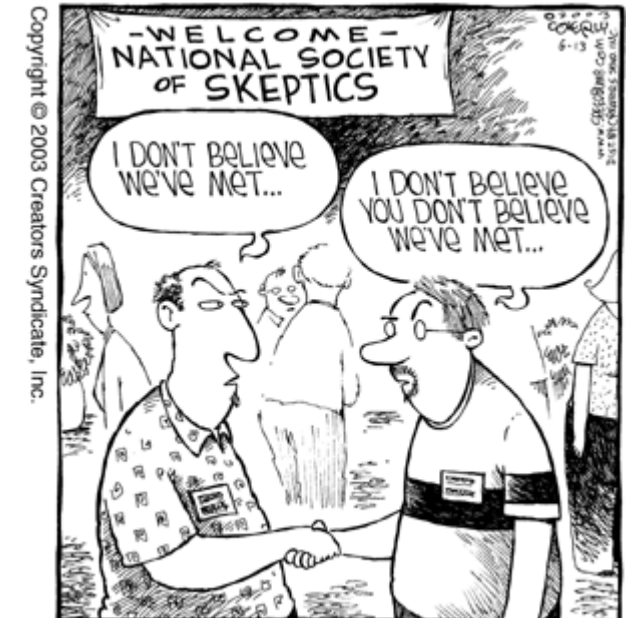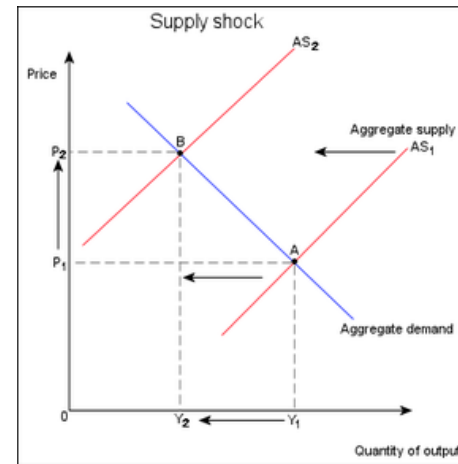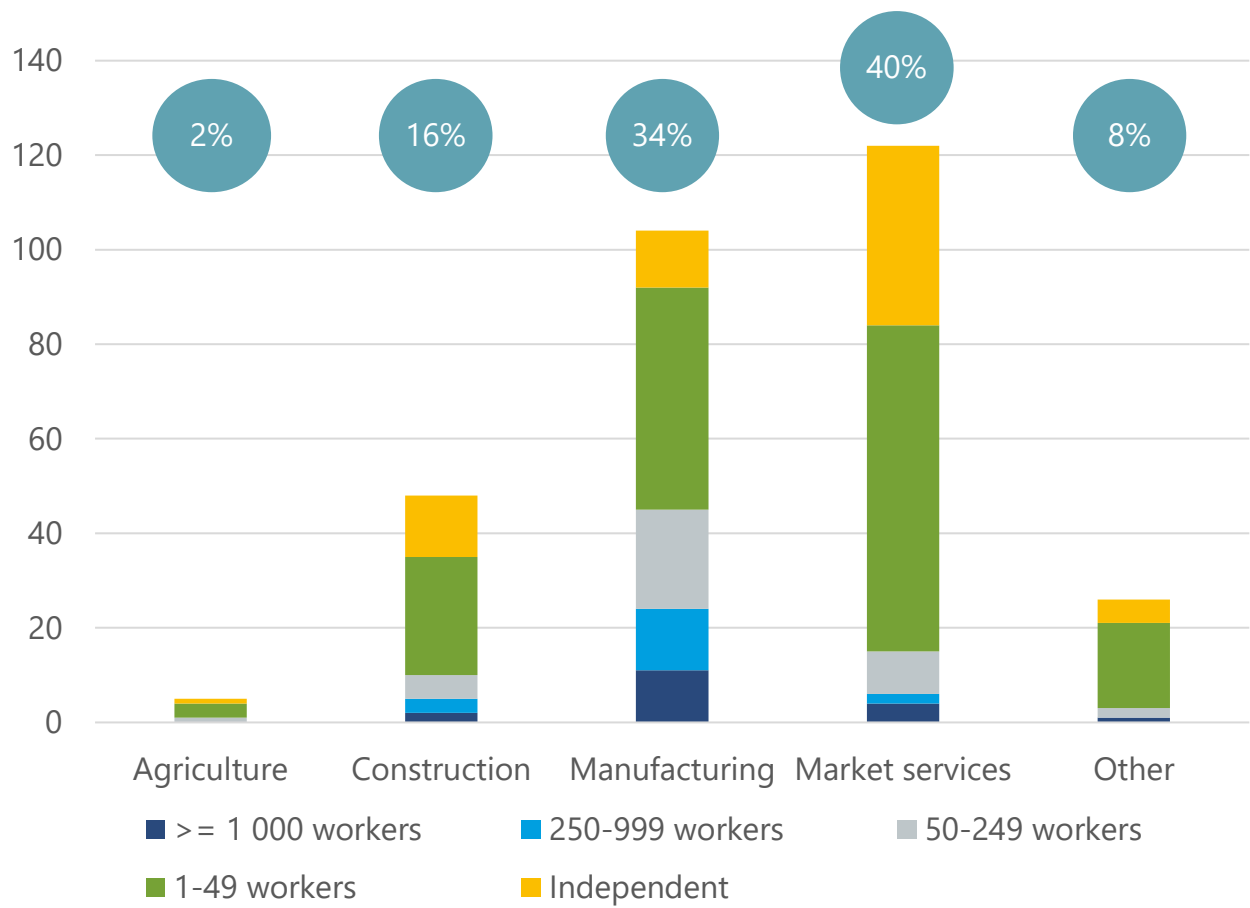
Overview of previous business surveys on the impact of the climate change and the transition

Entity	Which survey?	Focus of survey	Geography	Sample size
ECB	Part of ECB Economic Bulletin (4/2022)	Impact of climate change and related measures and policies on activity and prices	Euro Area	90
San Francisco Fed	2021 ad-hoc business survey	Climate-related risks (revenues, costs, investments, risk mitigation)	Western US States	100
Dallas Fed	Part of the 2023 Monthly Texas Manufacturing outlook survey	Traditional business survey supplemented with topical questions on the impact of the summer 2023 heat wave	Southern US States	80
EIB	Part of 2021 Investment Survey	Physical and transition risk perceptions, energy costs, and investments	European Union	13 500
LSE/Grantham	2020 Climate Risk Business Survey	Current and future climate risk/opportunities, financial impact, adaptation, preparedness, reporting, and engagement	United Kingdom	225
Ernst & Young	2019 Climate Risk Disclosure Barometer	Disclosures on governance, strategy, risk, and measures	Belgium	56
KPMG	Survey of Sustainability Reporting	Reporting of Sustainable Development Goals, climate risk and decarbonisation (in reports and on websites)	52 countries	5 200 (100 in Belgium)
PWC	EU Green Deal Survey	Familiarly with and preparedness to EU Green Deal	13 countries in EU	300 (20 in Belgium)
Chapter Zero Brussels, Roland Berger, and Potloc	Climate Survey	Climate risk action in Boards	Belgium and Luxemburg	154

Overview of our sample
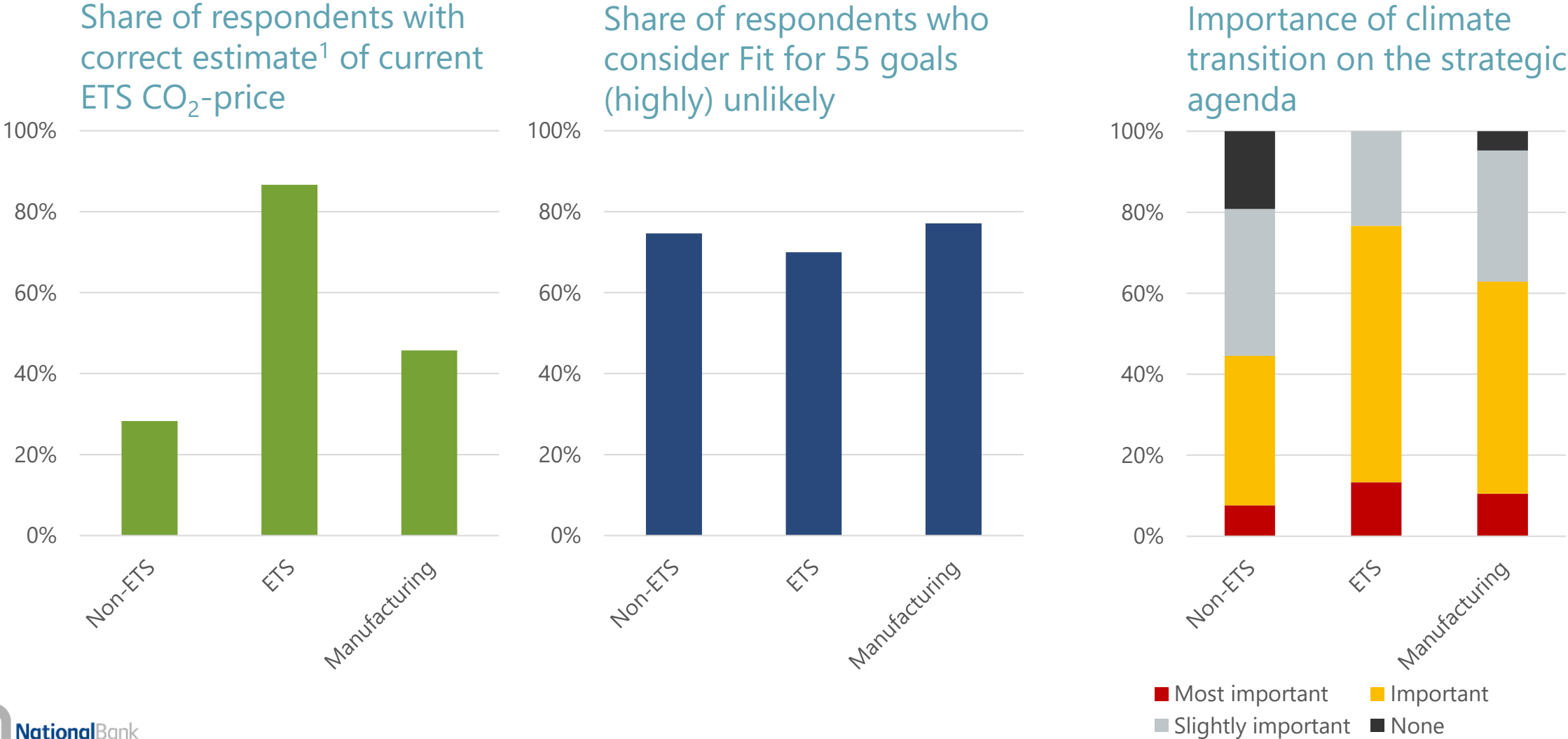
Number of respondents per industry and size

Bar chart showing number of respondents per industry (y-axis 0–140) with percentage bubbles above each bar: Agriculture 2%, Construction 16%, Manufacturing 34%, Market services 40%, Other 8%.

Legend:
- ■ >= 1 000 workers
- ■ 250-999 workers
- ■ 50-249 workers
- ■ 1-49 workers
- ■ Independent

27% of sample considered their firm "energy-intensive"

(mostly manufacturing)

EU ETS — European Union Emission Trading System

10% of sample within EU-ETS

(largely manufacturing)

! 17% "doesn't know"

Many are unfamiliar with carbon pricing and sceptical of 'Fit for 55' goals, but they rank climate transition high on the agenda

Share of respondents with correct estimate[1] of current ETS CO_2-price

Share of respondents who consider Fit for 55 goals (highly) unlikely

Importance of climate transition on the strategic agenda

- Most important
- Important
- Slightly important
- None

[1] We consider an estimate of the current ETS CO_2-price between 25 and 125 EUR/ton CO2 to be correct.

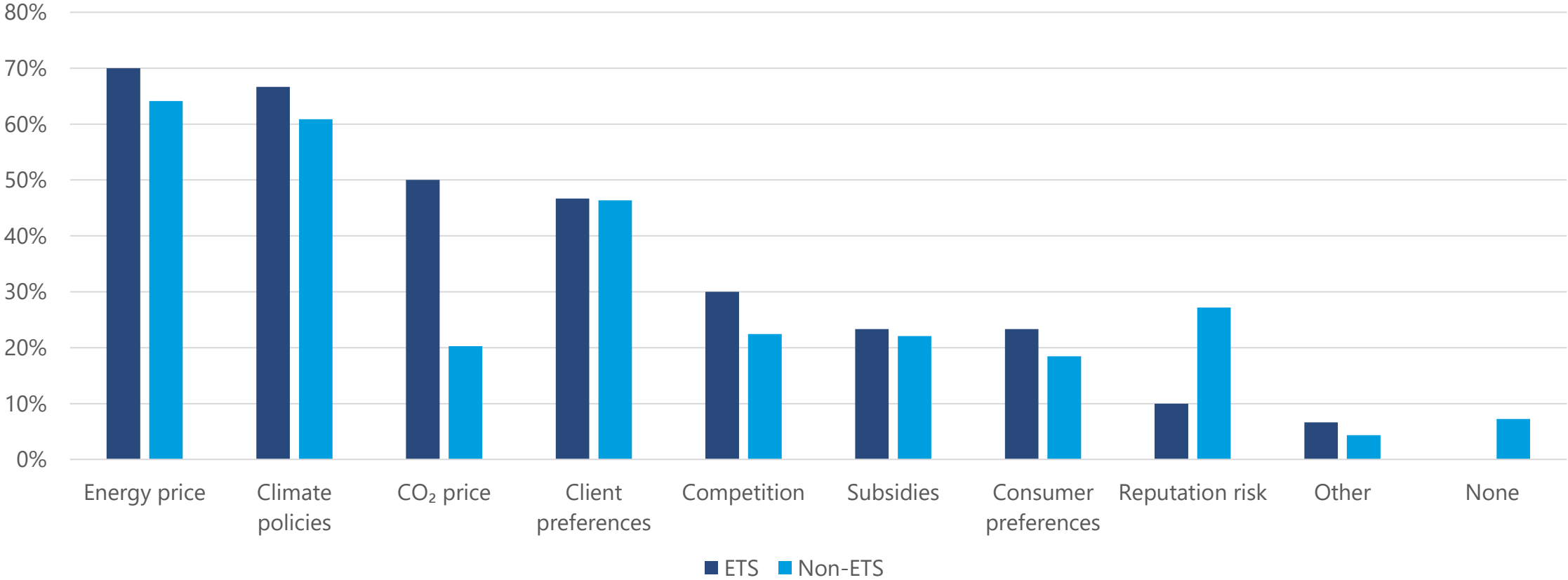# Climate-related decisions are impeded by several factors

What **obstacles** does your company face when making climate-related decisions?
(in % of sample, multiple replies possible)

Legend: ■ ETS ■ Non-ETS
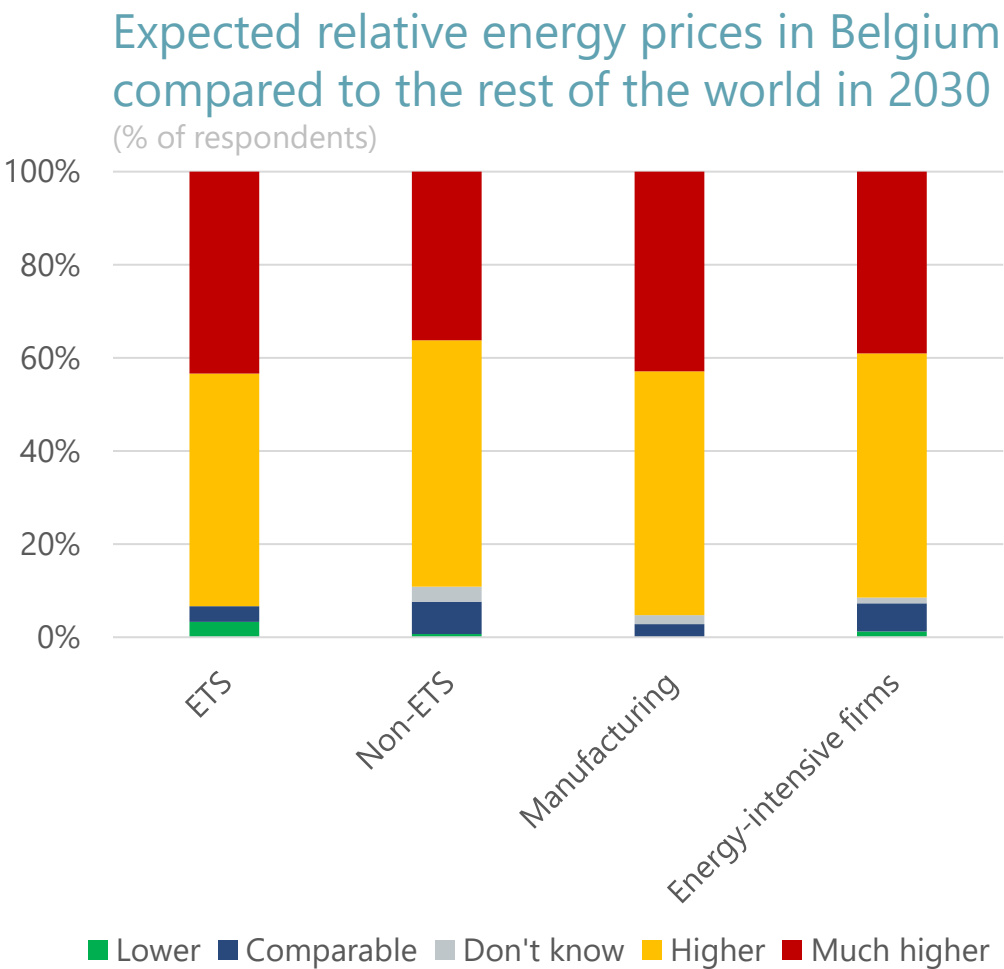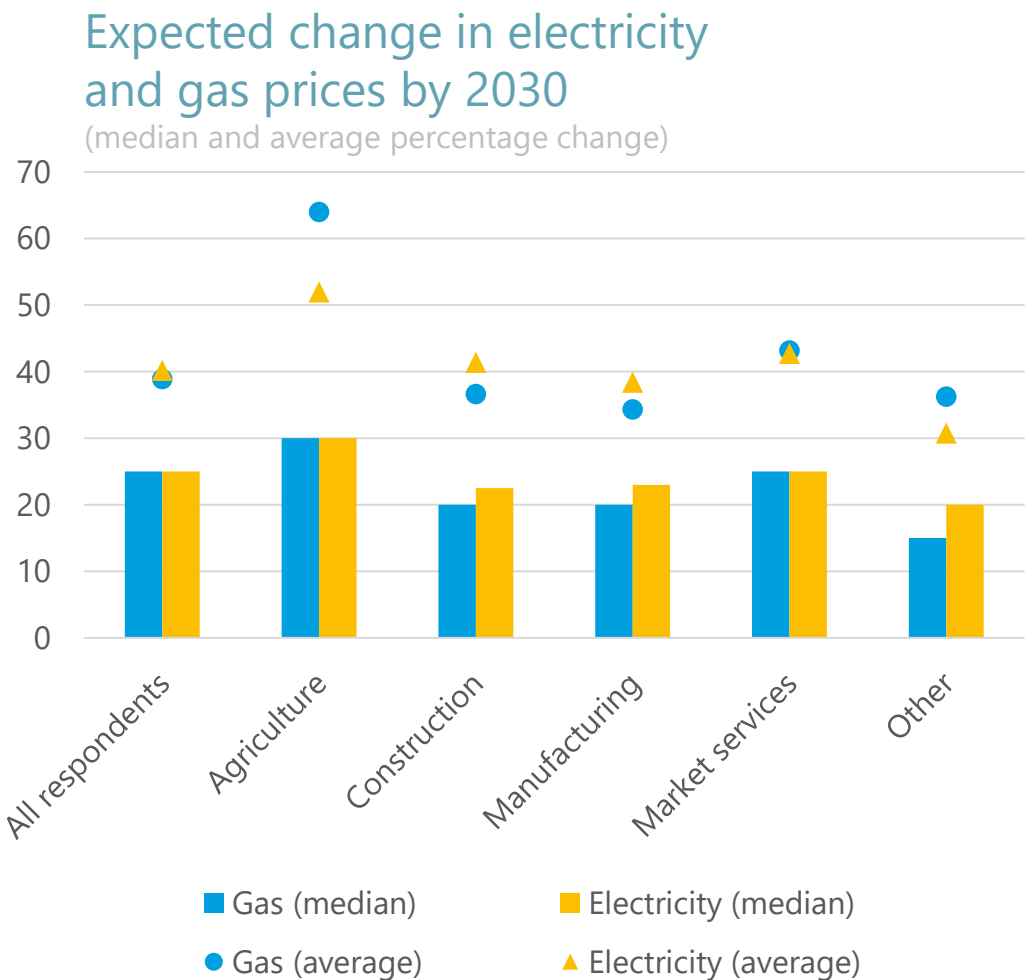
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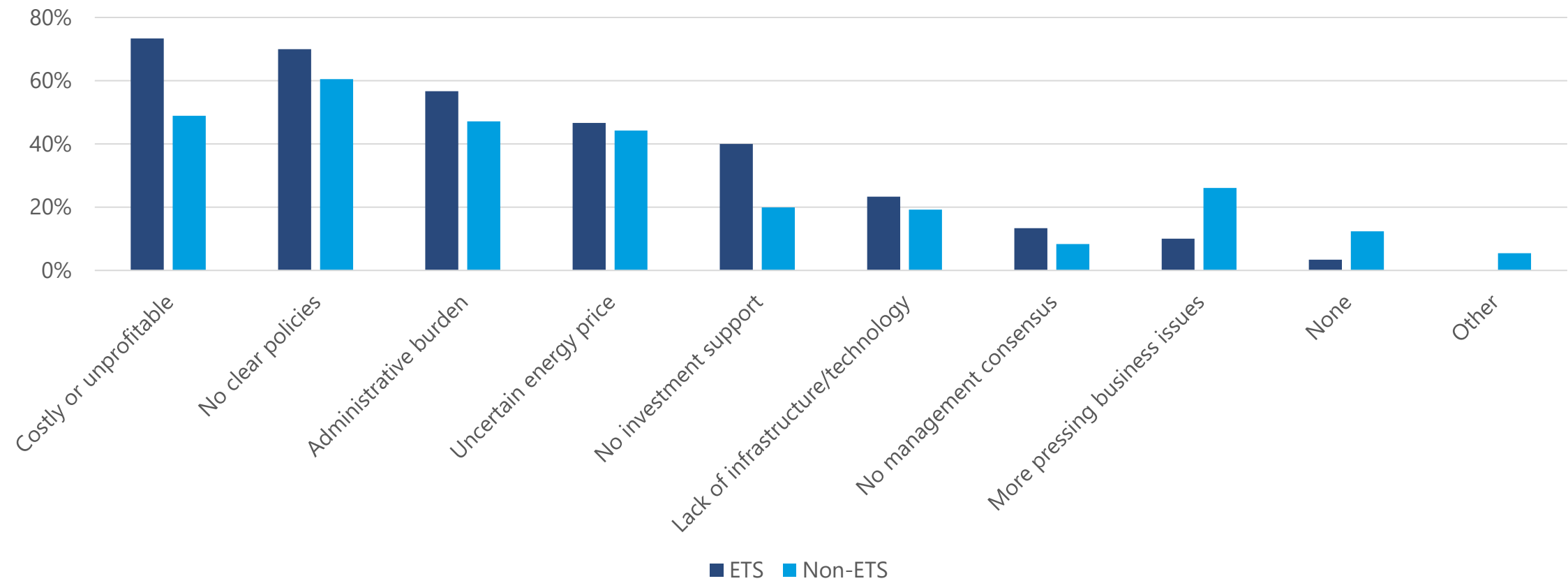
The main drivers of climate-related investments

Which factors are expected to **most influence** your company's climate-related investments in Belgium until 2030?
(in % of sample, multiple replies possible)

ETS ■ Non-ETS

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Energy prices are expected to increase and be (much) higher than in the rest of the world by 2030

Expected change in electricity and gas prices by 2030
(median and average percentage change)

Expected relative energy prices in Belgium compared to the rest of the world in 2030
(% of respondents)

Gas (median) Electricity (median)
● Gas (average) ▲ Electricity (average)

■ Lower ■ Comparable ■ Don't know ■ Higher ■ Much higher
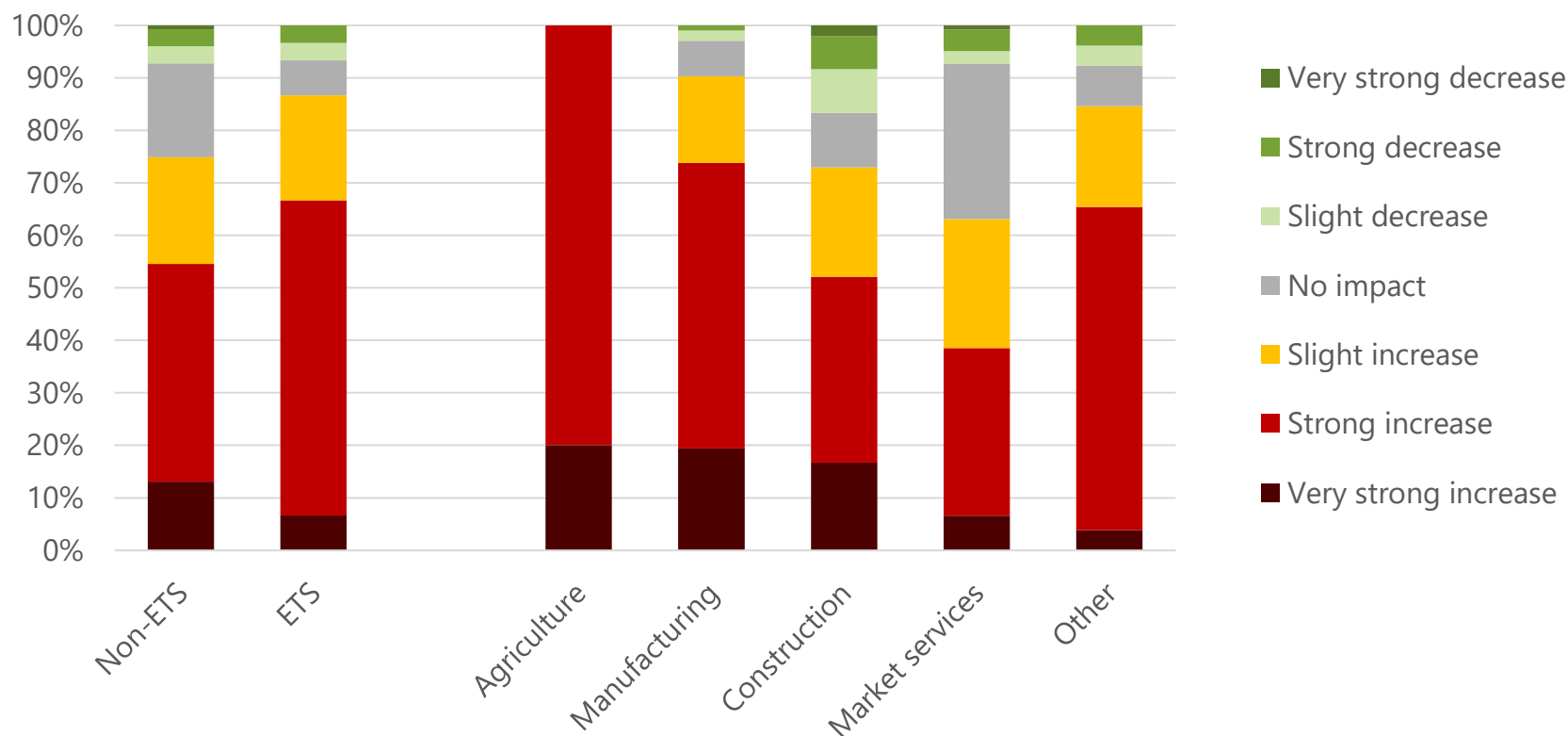
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The past impact of the climate transition on firm operations

Over the <u>past three years</u>: 70% of manufacturing firms saw strong input cost increases due to the impact of climate transition ...

Past impact of climate transition[1] on input costs
(input costs were defined as costs of energy, intermediate products, raw materials, transport and packaging but NOT labour costs)


Legend:
- Very strong decrease
- Strong decrease
- Slight decrease
- No impact
- Slight increase
- Strong increase
- Very strong increase

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... but pass-through is more difficult for firms in manufacturing
(due to international competition) – pressure on margins

- Pass-through proxy = reported increase in sales price minus reported increase in input costs

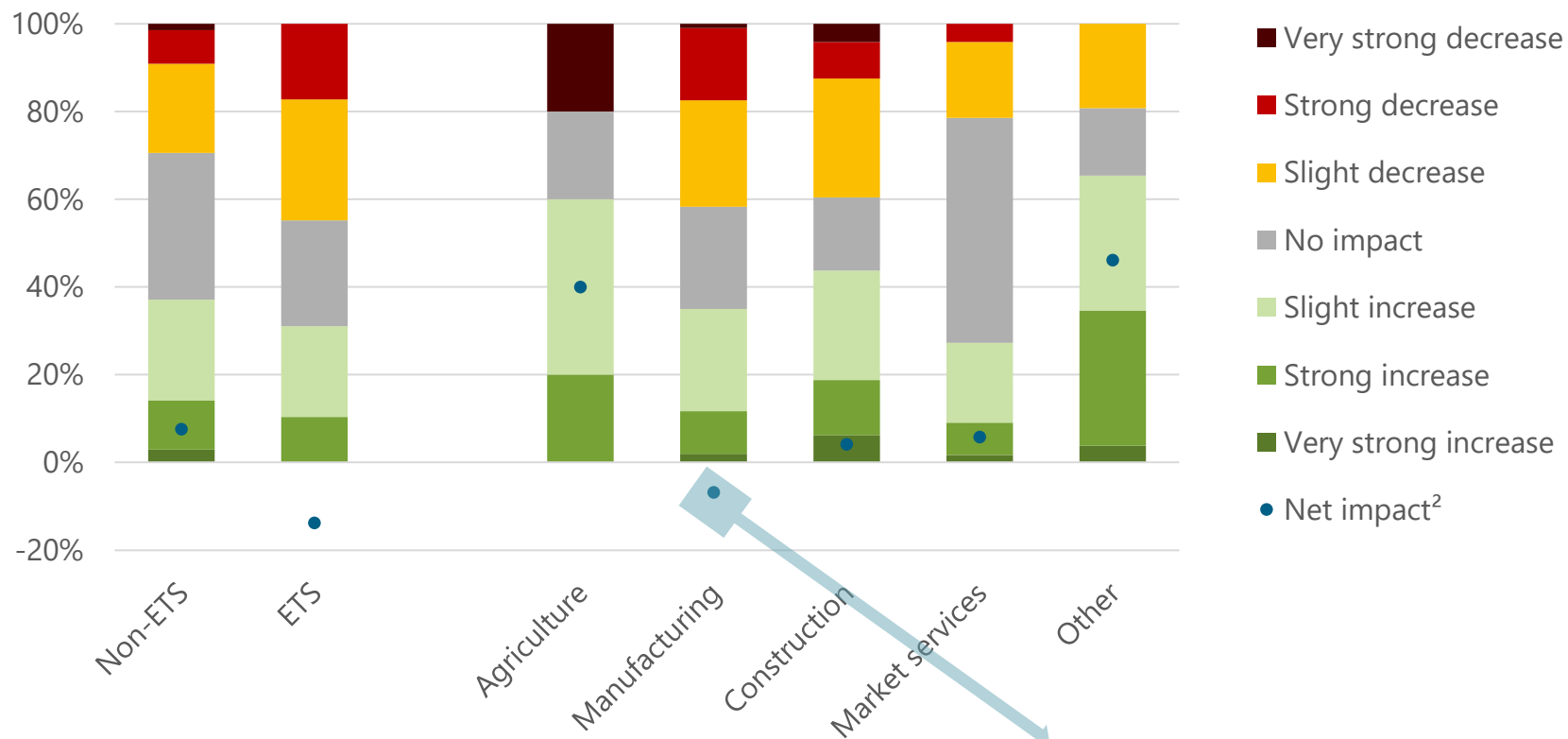|	Sales price	—	Input cost
Very strong increase	3		3
Strong increase	2		2
Slight increase	1		1
No impact	0		0
Slight decrease	-1		-1
Strong decrease	-2		-2
Very strong decrease	-3		-3

- Proxy can range from +6 (very strong increase in sales price despite very strong decrease in input costs) to -6

Share of respondents with negative pass-through proxy
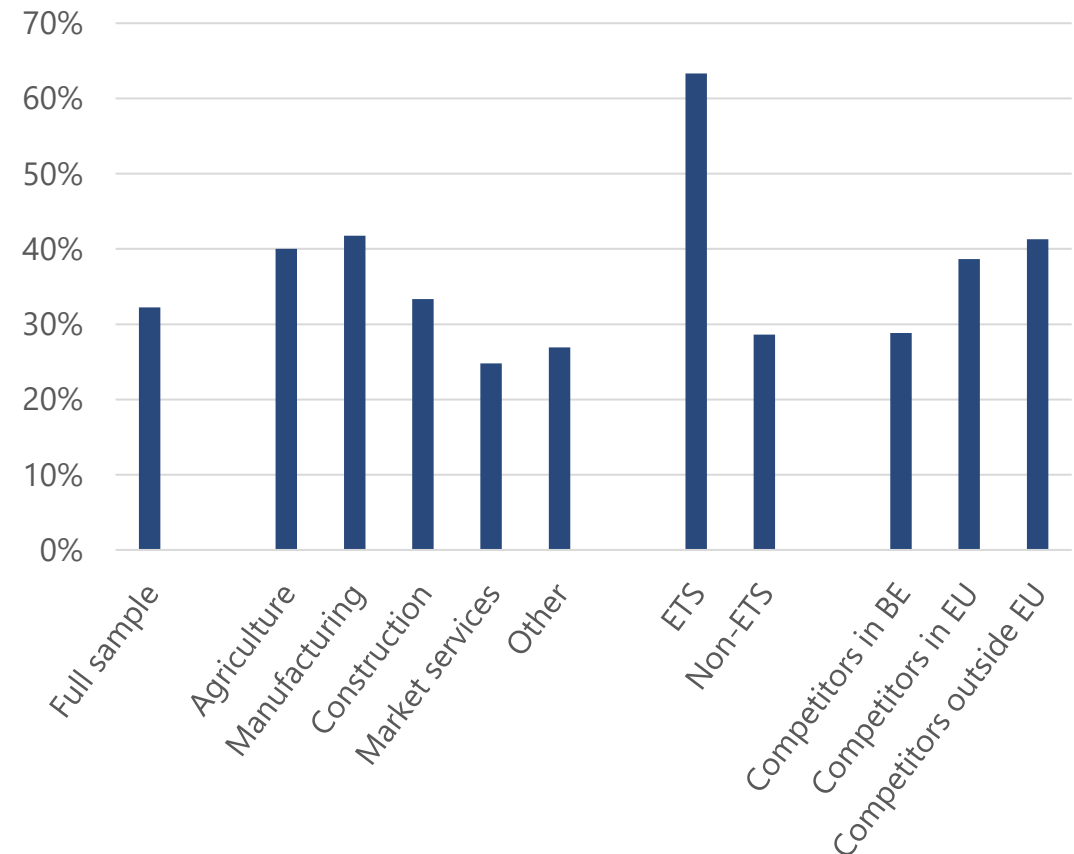
The impact on **demand** over the <u>past three years</u> is assessed to be largely neutral (yet slightly negative for ETS-firms & manufacturing)
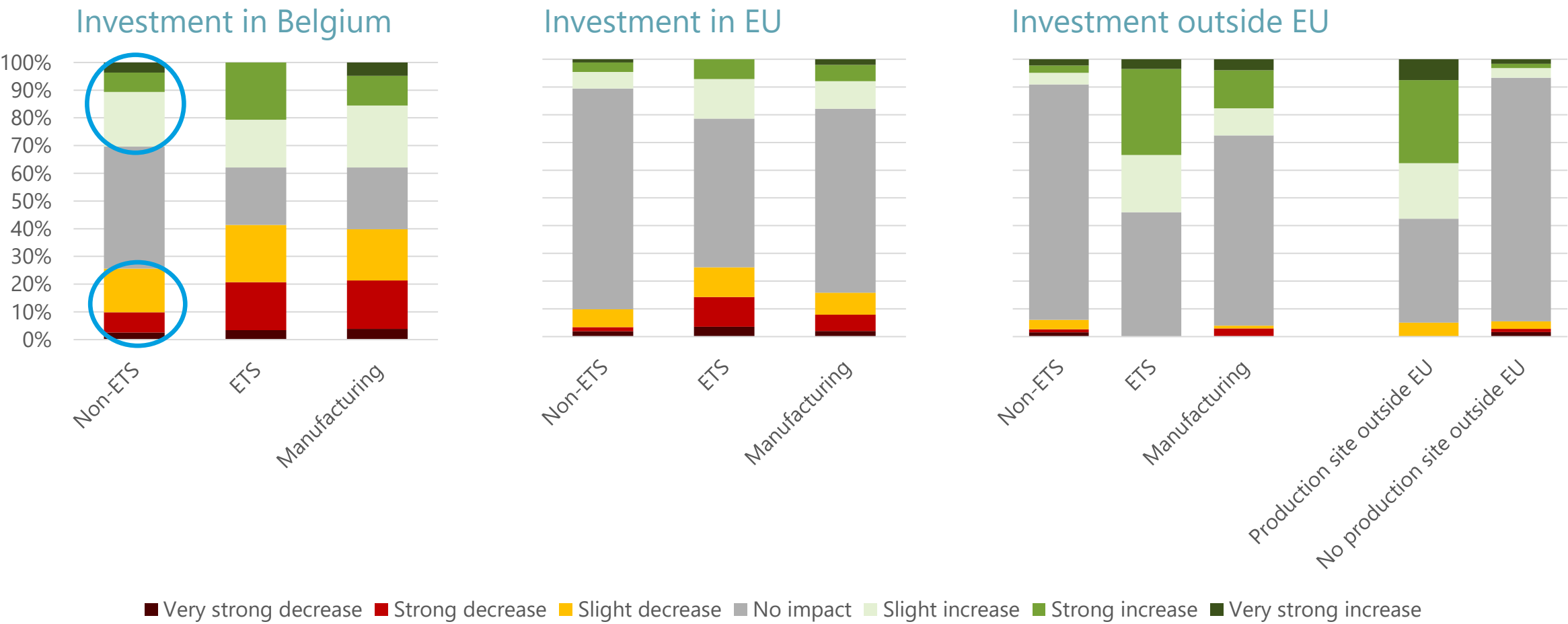
Past impact of climate transition[1] on demand

Legend:
- **Very strong decrease** (dark red)
- **Strong decrease** (red)
- **Slight decrease** (orange)
- **No impact** (grey)
- **Slight increase** (light green)
- **Strong increase** (medium green)
- **Very strong increase** (dark green)
- **Net impact²** (blue dot)

Even with only partial pass-through of costs to sales prices, there is a negative impact on demand

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# Impact on investment in Belgium ambiguous, but investment outside EU became more important ETS firms

Investment in Belgium

Investment in EU

Investment outside EU

■ Very strong decrease ■ Strong decrease ■ Slight decrease ■ No impact ■ Slight increase ■ Strong increase ■ Very strong increase

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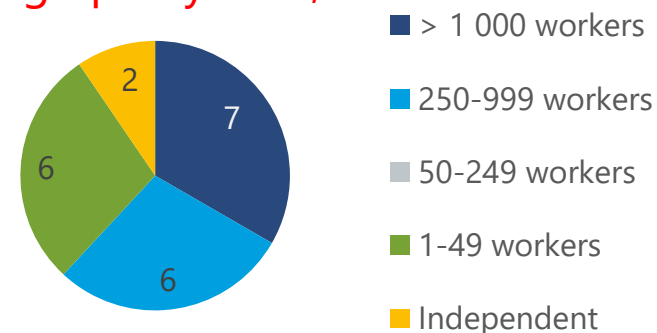# Companies that have reduced investment in Belgium mostly relocated capacity outside the EU rather than to other EU countries

Share of 82 firms having **reduced** investment in Belgium in the past 3 years that have increased/decreased investment in/outside EU

Increased | Decreased
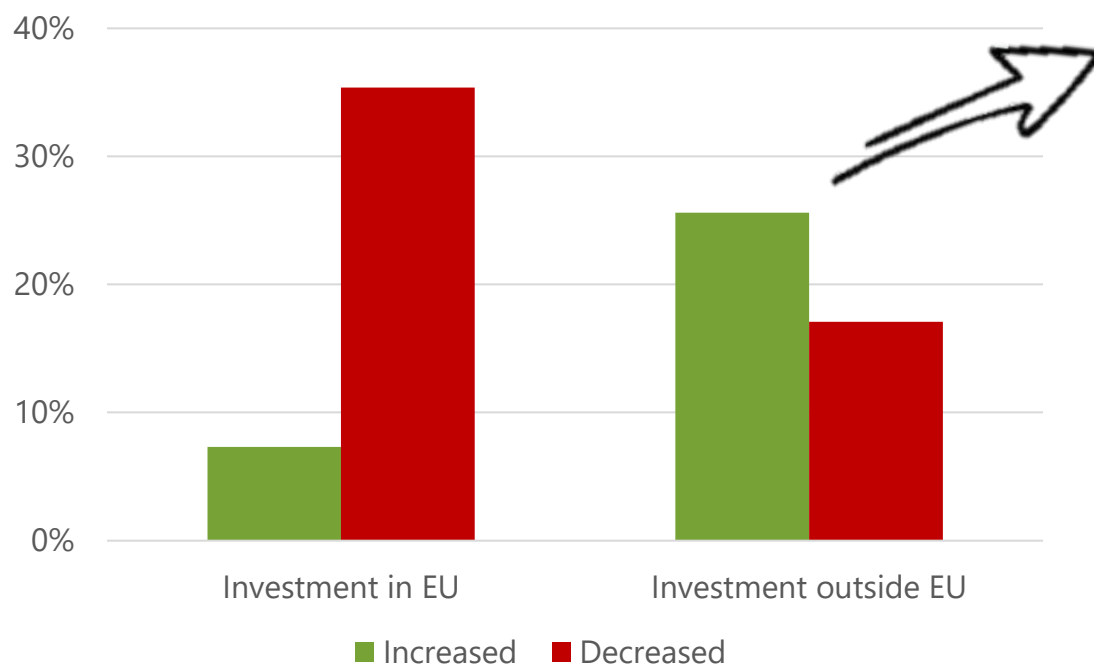
Zoom on 21 relocalized firms:

- 16 manufacturing, 4 market services, 1 construction
- 10 ETS, 11 non-ETS
- 11 are well-informed about current CO_2-price
- 12 are energy-intensive
- 13 already have production sites outside EU and have main competitors outside EU

Pass-through proxy = -1,3

- > 1 000 workers
- 250-999 workers
- 50-249 workers
- 1-49 workers
- Independent

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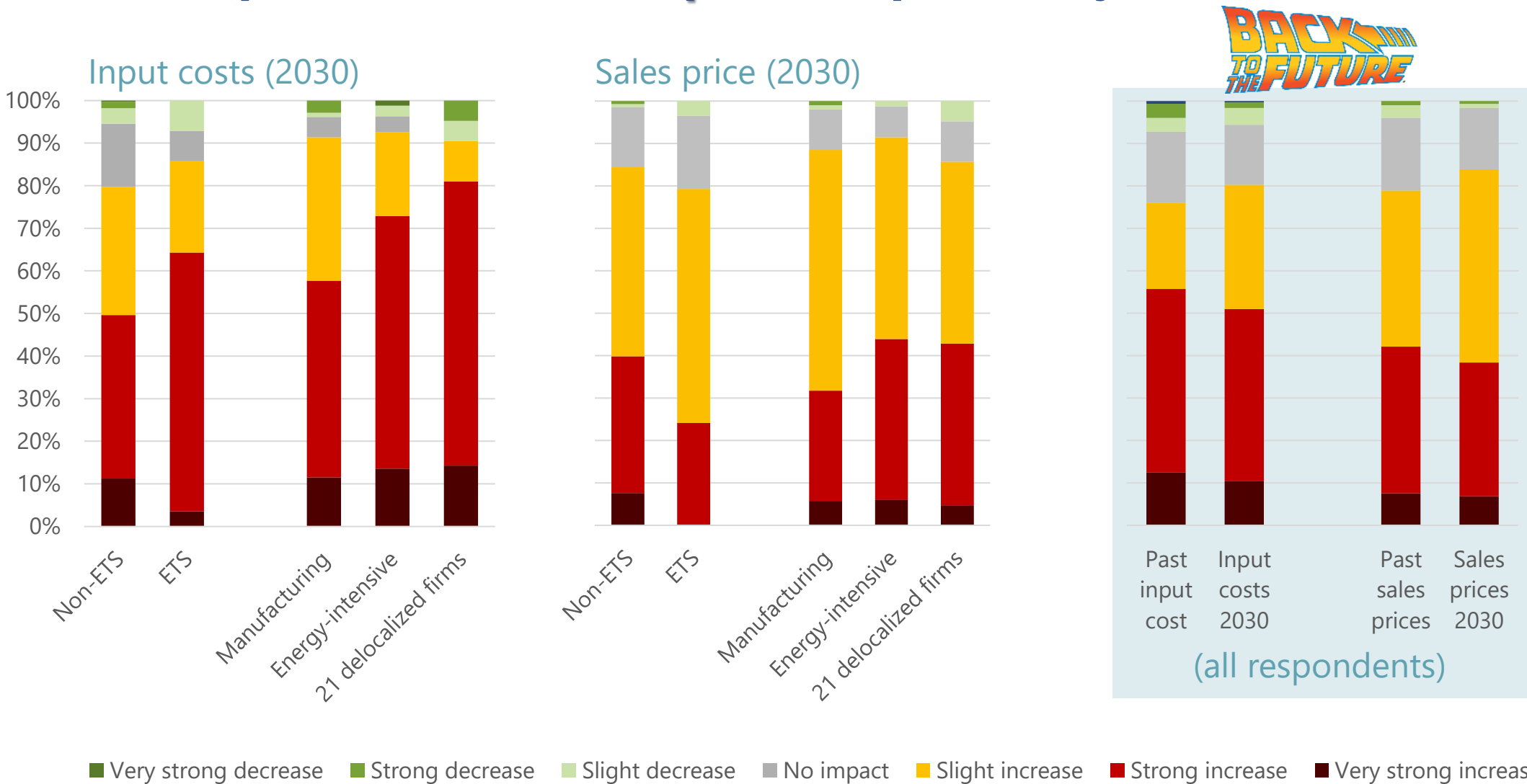Eurosystem

The anticipated impact of the climate transition on firm operations

Similar impacts on **costs and prices** expected <u>**by 2030**</u>

Input costs (2030)

Sales price (2030)

(all respondents)

Legend: Very strong decrease · Strong decrease · Slight decrease · No impact · Slight increase · Strong increase · Very strong increase

As for the recent past, the __expected__ impact on **demand** is assessed to be largely neutral (yet slightly negative for ETS-firms and manufacturing)

Expected impact of climate transition on demand by 2030

Legend:
- Very strong decrease
- Strong decrease
- Slight decrease
- No impact
- Slight increase
- Strong increase
- Very strong increase
- Net impact[1]

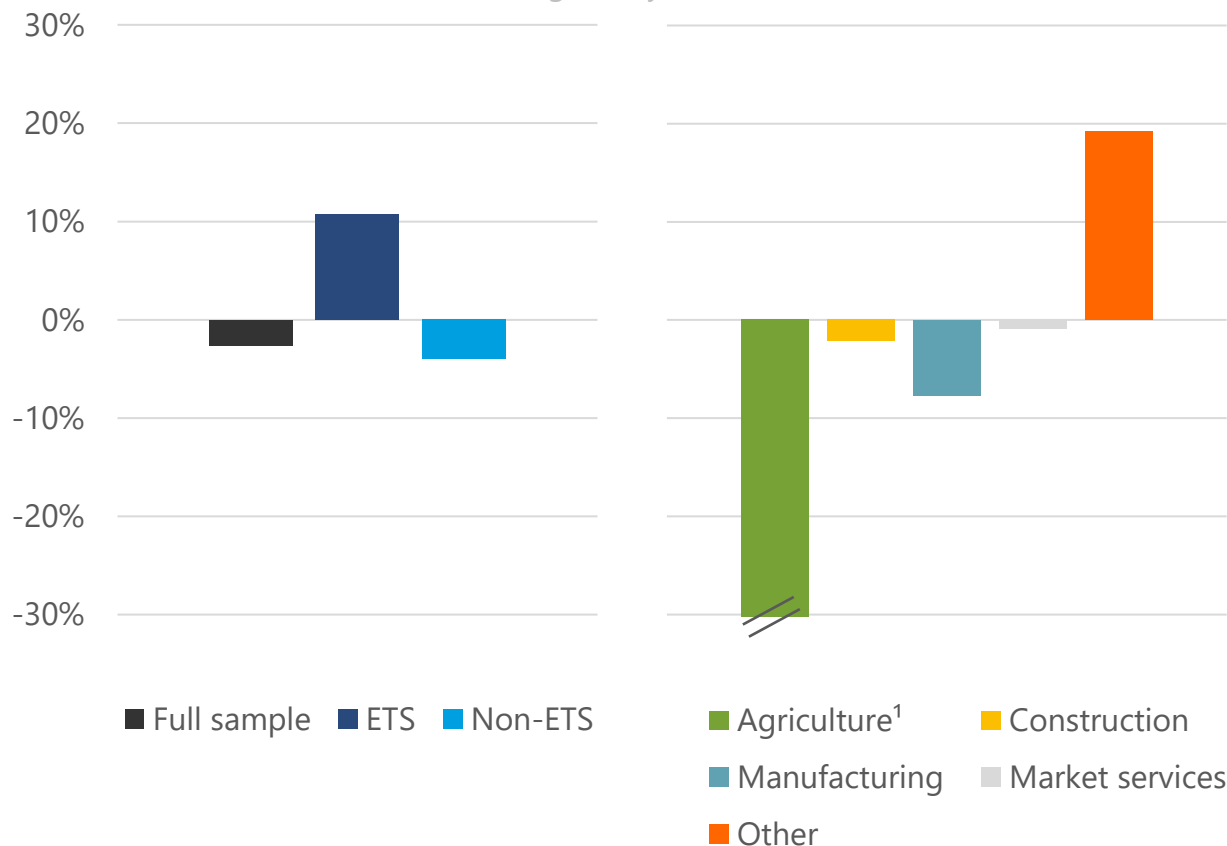[1] Difference in percentage points between the share of firms expecting an increase and the share of firms expecting a decrease in demand in Belgium by 2030 due to climate transition.
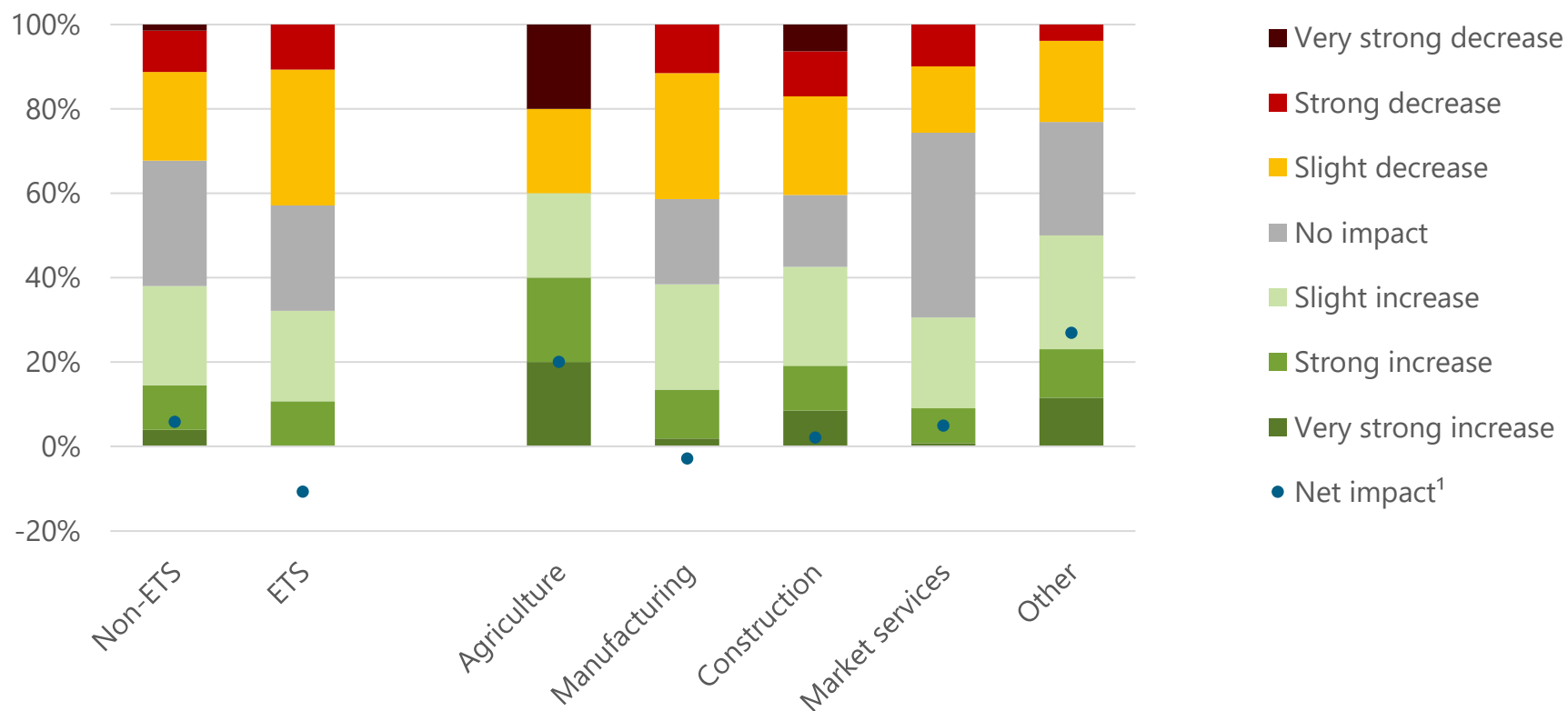
Expected impact on investment is neutral for average respondent but clearly negative for the manufacturing industry (= the most productive industry)
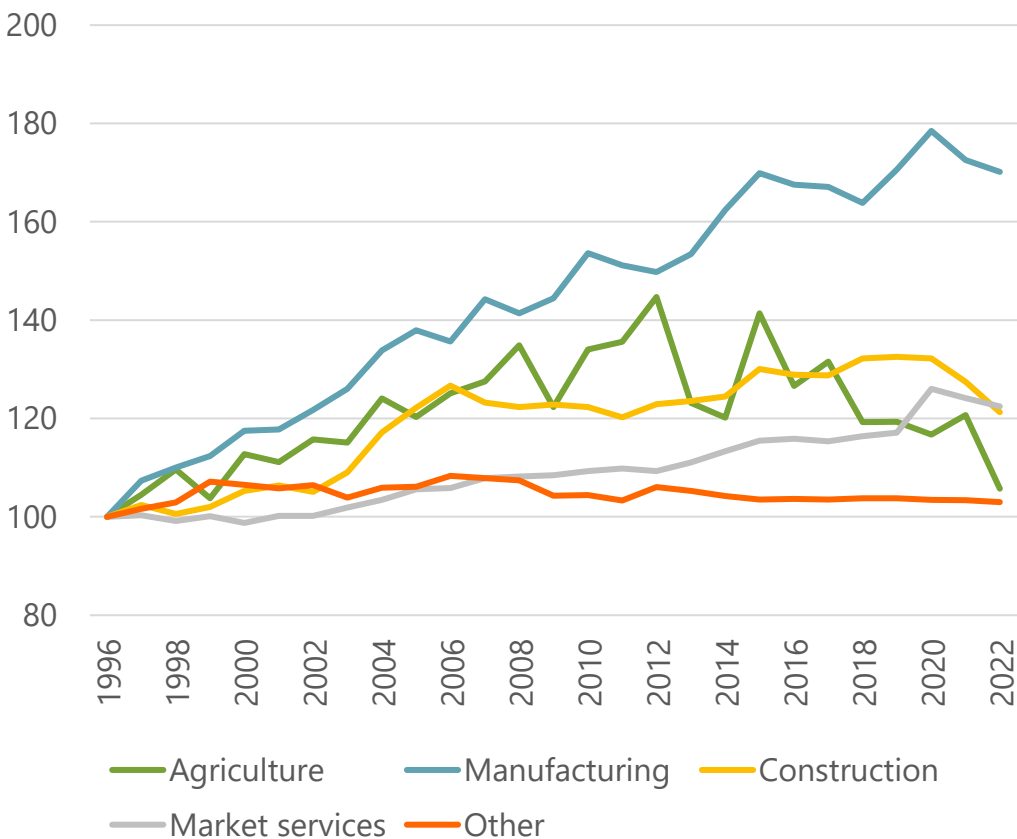

Net investment intent in Belgium by 2030
(difference between share of firms seeing an increase and share of firms seeing a decrease in investment in Belgium by 2030 due to climate transition)

Full sample · ETS · Non-ETS

Agriculture[1] · Construction · Manufacturing · Market services · Other

p.m. Hourly labour productivity per industry
(real value added per hour worked in the private sector)

Agriculture · Manufacturing · Construction · Market services · Other

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[1] The net investment intent in agriculture goes to -60% (of a very small sample of respondents).

The average respondent plans to increase **investment** outside the EU, all the more so for ETS firms

Net investment intent by 2030
(difference in percentage points between share of firms expecting an increase and share of firms expecting a decrease in investment by 2030 due to climate transition)
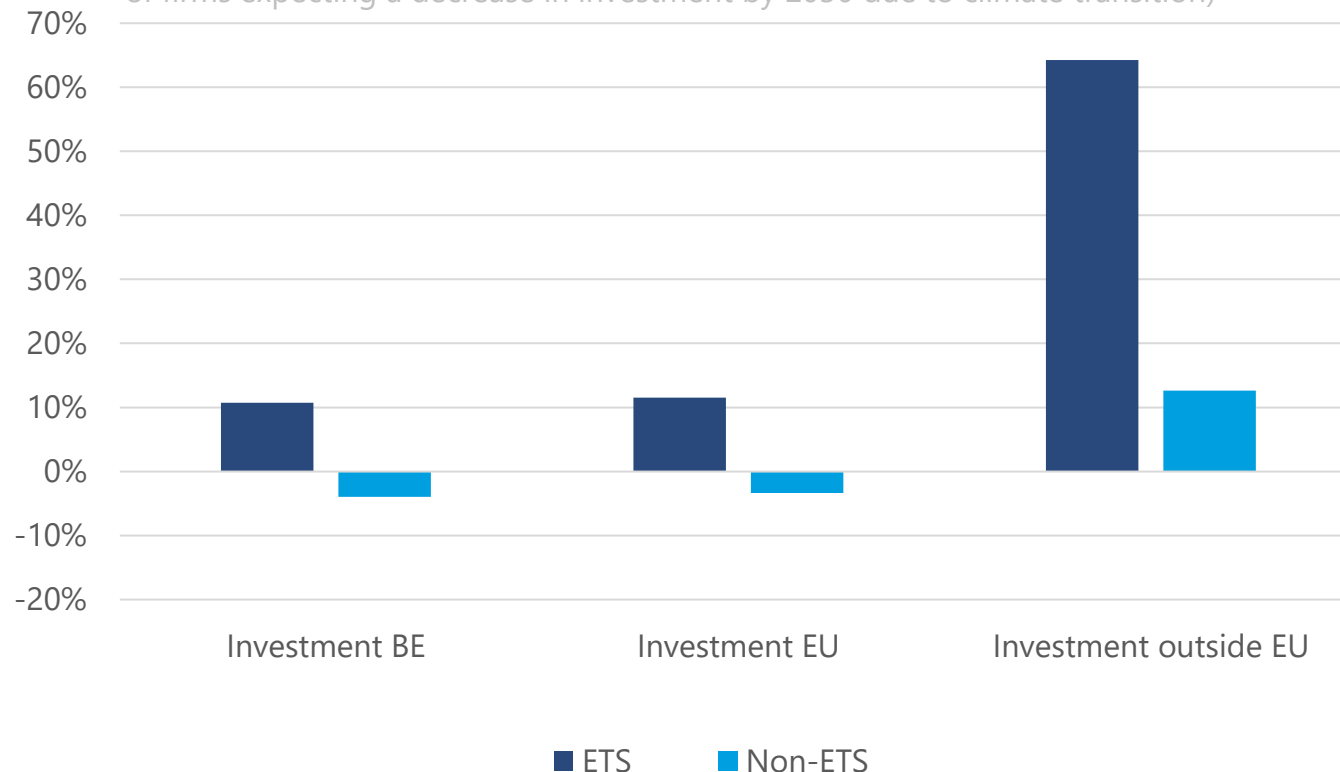
44 firms[1] plan to decrease investment in Belgium BUT increase investment outside EU

Legend: ETS, Non-ETS

Categories: Investment BE, Investment EU, Investment outside EU

Y-axis: 70%, 60%, 50%, 40%, 30%, 20%, 10%, 0%, -10%, -20%

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The causal impact of policy stringency on firm operations

Information experiments and scenario analysis can simulate the potential impact of a substantial carbon price increase
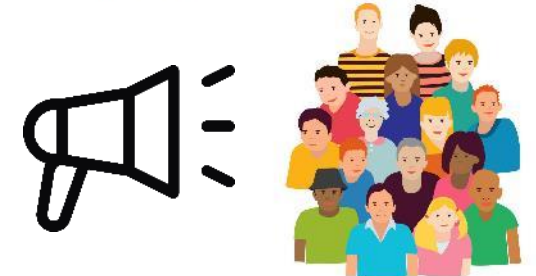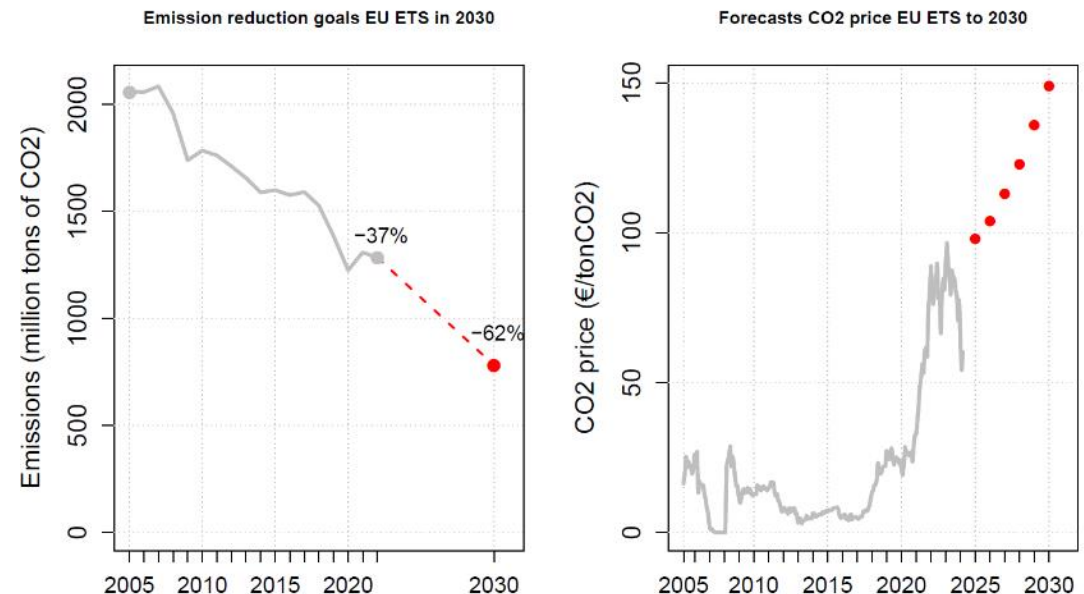
Why information experiments?

Traditional surveys fall short in revealing *causal* relationships between stricter climate policies and firm operations

The **3 stages of the experiment**:

1. Measure **prior expectations:**
2. Randomized **informational provision**.
3. Test how receiving new or different information influences their **posterior expectations**

+ Bonus round with **'What if' questions?**

Information content signalling increased stringency in climate policy

Emission reduction goals EU ETS in 2030

−37%

−62%

Forecasts CO2 price EU ETS to 2030

Note: The figures includes additional information on emission reduction goals EU ETS by 2030 (left) and predicted carbon prices until 2030 (right)

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Messaging about climate policy stringency has a noticeable impact on posterior expectations of respondents

Summary statistics of carbon prices and energy price changes in 2030
(prior expectations vs. posterior expectations)

	Group	Sample size	Median		Mean	
			Prior	*Post.*	*Prior*	*Post.*
Carbon prices (in €/tonCO_2)	Treatment	257	120	130	130.9	139.4
	Control	23	100	100	108.3	110.2
Gas prices (in %)	Treatment	245	25	25	39.2	45.7
	Control	22	30	30	53.3	55.5
Electricity prices (in %)	Treatment	251	25	25	39.9	44.9
	Control	22	30	30	60.0	55.5

Note: Carbon price expectations are expressed in €/tonCO2, while energy prices changes are expressed as percentage increases compared to today's levels.

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The diverse responses to the information treatment highlight heterogeneous effects in belief updates

## Revision of carbon price expectations by 2030
(in EUR / tonCO$_2$)
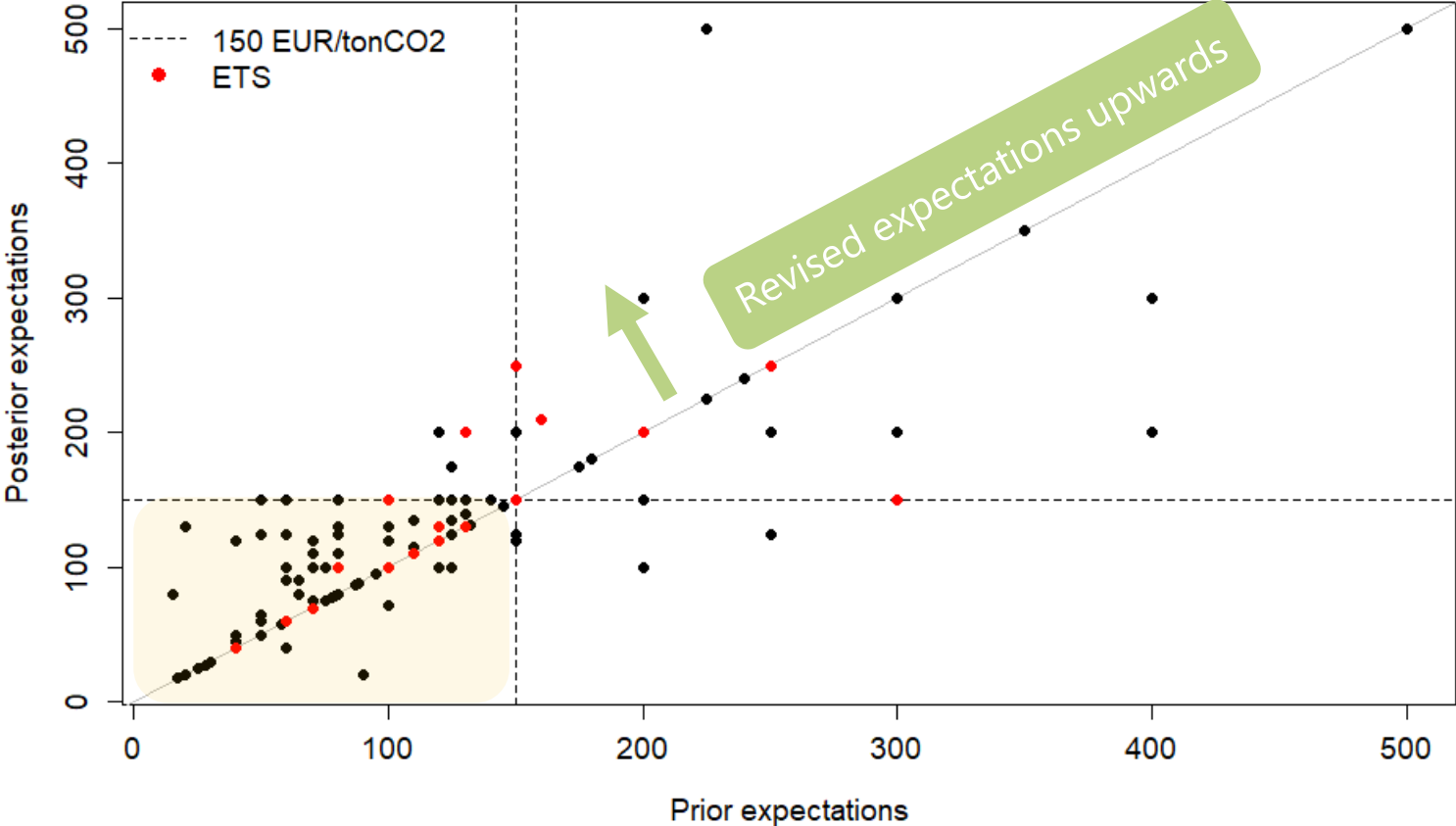
Carbon price expectations by 2030
(in EUR / tonCO$_2$)

|	Prior expectations	Posterior expectations
Mean	131.40	**138.10**
Median	120.00	**125.00**
St. Dev.	80.32	**76.26**

Many firms disregard the information, showing modest adjustments compared to the larger revisions seen in the scenario

Difference in carbon price expectations
(in % of sample)
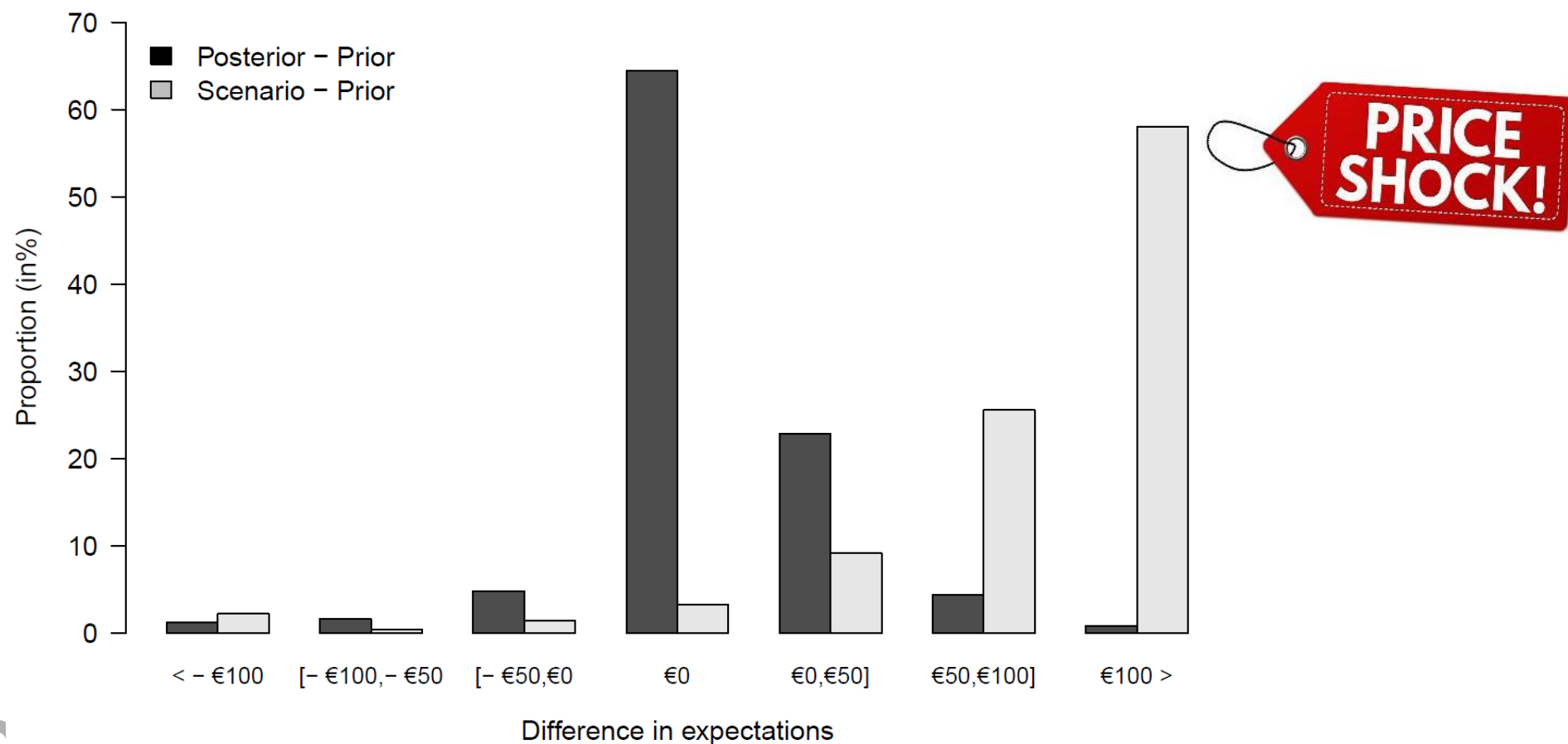
A carbon price of €250/ton CO_2 exacerbates the adverse effects on firm operations

Histograms of belief updates (updates in expectations)
in firm-level variables (posterior minus prior)
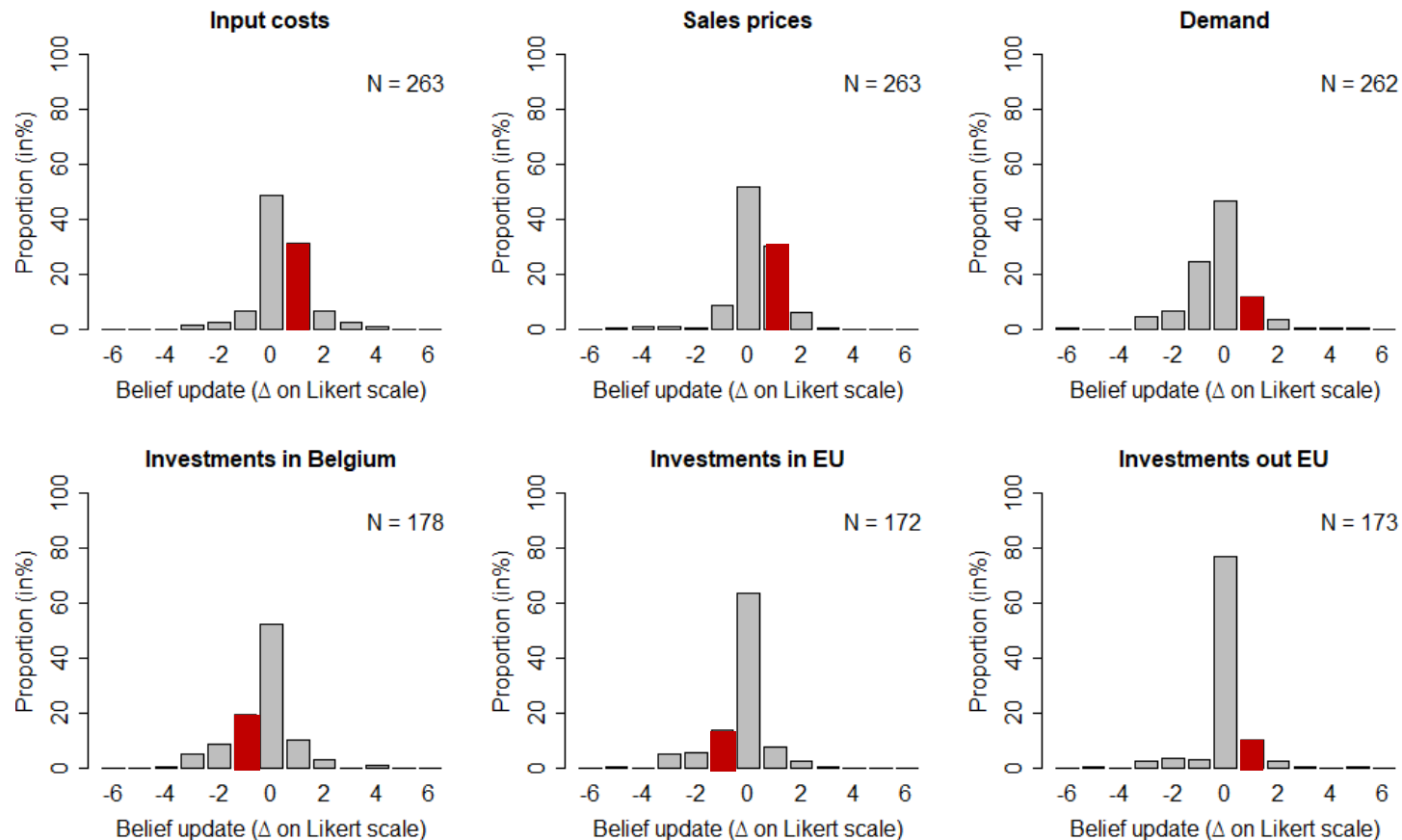
Original Likert scale response scales ranged from "Very large decrease" (-3) to "Very large increase" (+3)
Plots only show treated individuals and those **who revised their carbon price expectations in both directions.**
For investments we also condition on having production facilities.

The causal effect of climate policy stringency on firm operations

Regression results
(hypothetical minus prior)

Firm-level variable:	Input costs	Sales prices	Demand	Investments in BE	Investments in EU	Investments out EU
D_i^+	0.43 ***	0.28 ***	-0.33 **	-0.32 ***	-0.28 ***	0.03
D_i^0	-0.57	-0.43	-0.57	0.29	0.43	0.14
D_i^-	-0.45	-0.18	0.00	0.55	0.20	-0.30
$D_i^+ : \Delta \ln x_i$	0.02	0.14	0.04	-0.08	-0.11	0.04
$D_i^+ : y_{i,\text{prior}}$	-0.46 ***	-0.31 ***	-0.11 *	-0.05	-0.12 *	-0.13 **
R^2	0.33	0.14	0.08	0.08	0.08	0.03

Respondents with more extreme priors have less room to adjust their expectations in response to the information provided

The results of the regression equation, $\Delta y_i = \beta_1 D_i^+ + \beta_2 D_i^0 + \beta_3 D_i^- + \beta_4 (D_i^+ : \Delta \ln x_i) + \beta_5 (D_i^+ : y_{i,\text{prior}}) + \epsilon_i$, estimated via ordinary least squares. Δy_i represents the belief update in firm-level variables (e.g., input costs, $D_i +$ is a dummy variable for respondents with a positive price shock (i.e., prior expectations are below the hypothetical price), $D_i 0$ is a dummy for respondents whose expectations are at the hypothetical price level, and $D_i -$ is a dummy for respondents with prior expectations above the hypothetical price. The significance codes are as follows: '***' $p < 0.01$, '**' $p < 0.05$, '*' $p < 0.1$. Significant coefficients are shaded in grey.

Other factors beyond the price shock and prior expectations may also influence belief updates

Regression results
(hypothetical minus prior)

Firm-level variable:	Input costs	Sales prices	Demand	Investments in BE	Investments in EU	Investments out EU
$+ D_i^+ : y_{i,past}$	0.05	0.21 ***	0.19 **	-0.03	0.10	0.30 ***
$+ D_i^+ : y_{i,certitude}$	0.01	0.01	0.08 **	-0.01	-0.05 *	0.03
$+ D_i^+ : size_i$	0.05	0.09	0.06	0.01	-0.02	0.17 **
$+ D_i^+ : D_i^{construct}$	0.42 ***	-0.05	0.01	-0.01	-0.02	-0.13
$+ D_i^+ : D_i^{manufacturing}$	0.09	0.23 *	0.07	-0.13	-0.28 *	0.22 *
$+ D_i^+ : D_i^{services}$	-0.35 ***	-0.26 **	-0.07	0.01	0.19	0.00
$+ D_i^+ : D_i^{Energy\ Intensity}$	0.28 **	0.33 **	0.06	0.08	-0.11	0.15
$+ D_i^+ : D_i^{Trust\ in\ Fit\ for\ 55}$	0.07	-0.03	0.02	0.01	0.13 **	-0.04
$+ D_i^+ : D_i^{Strategic\ .Priority}$	0.10	0.03	0.32 **	0.17	0.16	0.18 *
$+ D_i^+ : D_i^{European\ Activity}$	0.64 *	0.13	0.05	0.18	-0.02	-0.34
$+ D_i^+ : D_i^{European\ Production}$	0.14	-0.08	-0.09	-0.11	-0.07	-0.22 *

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Results of the scenario analysis align with the information experiment

Regression results
(posterior minus prior)

Firm-level variable:	Input costs	Sales prices	Demand	Investments in BE	Investments in EU	Investments out EU
D_i^+	0.18 **	0.01	0.14	-0.08	0.00	0.18 **
D_i^0	0.16 ***	-0.09 *	0.02	0.01	0.02	-0.02
D_i^-	-0.05	0.05	-0.05	0.00	0.00	0.00
D_i^C	0.05	0.05	0.13	-0.07	-0.07	-0.01
$D_i^+ : \Delta \ln x_i$	-0.02	-0.08	-1.38 ***	0.12	-0.04	-0.22
$D_i^+ : y_{i,\text{prior}}$	-0.12	-0.19 *	-0.37 ***	-0.24 ***	-0.02	0.01
R^2	0.07	0.03	0.19	0.01	0.00	0.03

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What did we learn from the survey?

- Provides a **snapshot** of how firms are preparing for the 2030 milestone of the European Green Deal:

  - Classical negative **supply shock**

  - A portion of production capacity – particularly manufacturing expected to **relocate outside the EU**

  - **Carbon price increases**, beyond firms' current expectations, could exacerbate these adverse effects

  - Strategically important, but many are **unfamiliar** with carbon pricing and **sceptical** of 'Fit for 55' goals

  - Key barriers include high costs, reduced profitability, unclear policy guidance, and administrative burdens

The future of European competitiveness
Part A | A competitiveness strategy for Europe

SEPTEMBER 2024

"What if we don't change at all ... and something magical just happens?"