The impact of climate transition policies on Belgian firms

What can we learn from a survey?

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National Bank OF BELGIUM
Eurosystem

Setting the scene

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?

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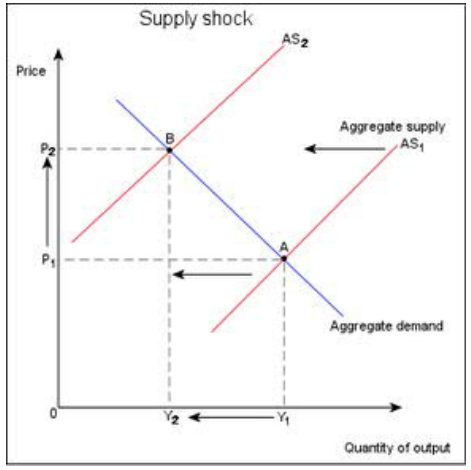
- Data from an ad hoc business survey:

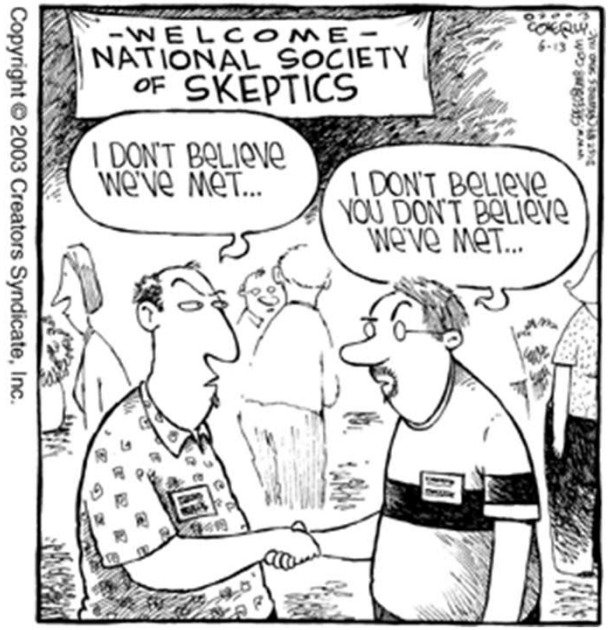
Our paper in a nutshell

- 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?

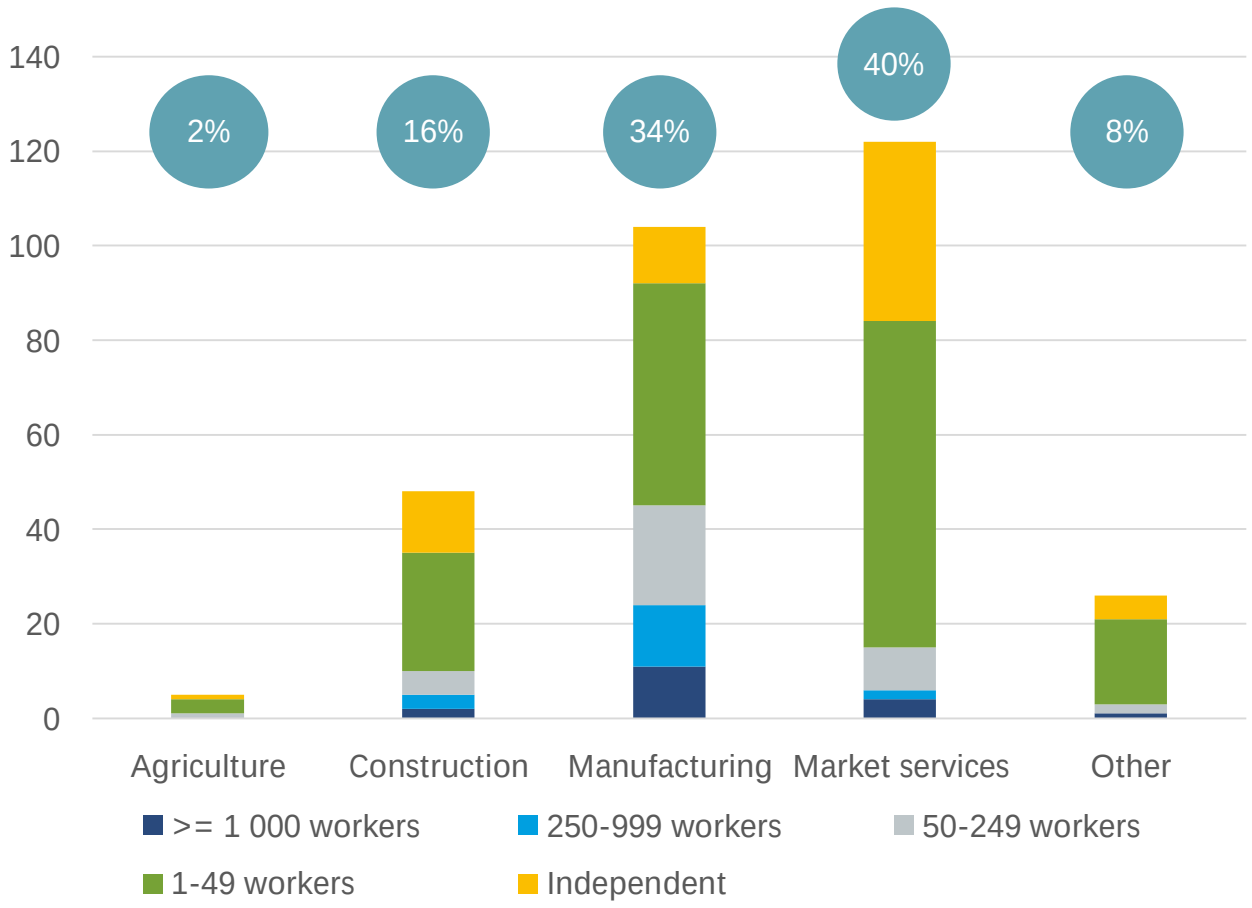
- Key insights:
  - Classic ‘negative supply shock’
  - Shifting production capacity outside the EU
  - Scepticism about feasibility of ‘Fit for 55’
  - Obstacles include ‘costs’, ‘unclear policies’, and ‘administrative burdens’





Overview of our sample

Number of respondents per industry and size



27% of sample considered their firm “energy-intensive”

(mostly manufacturing)

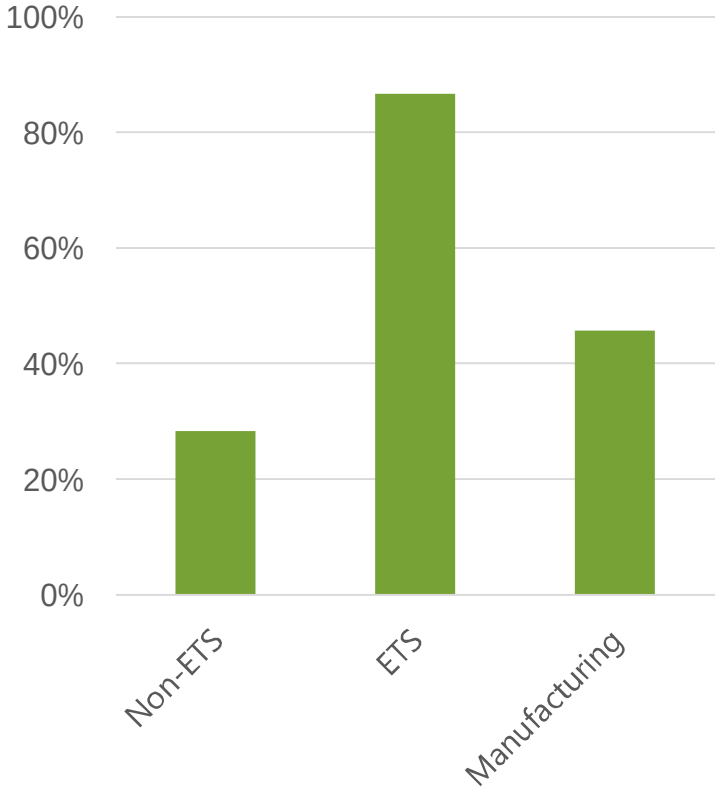
10% of sample within EU-ETS

(largely manufacturing)

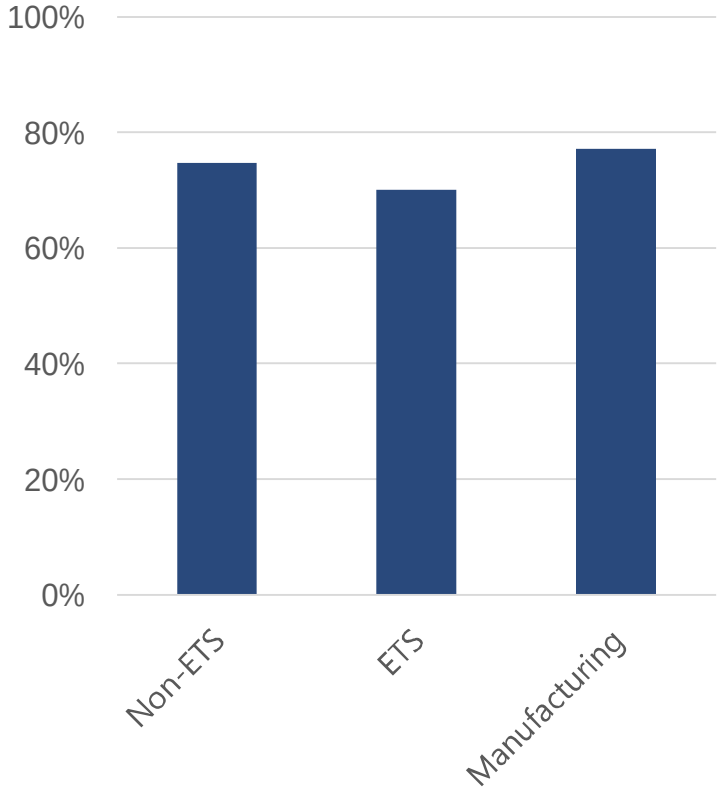
! 17% “doesn’t know”

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

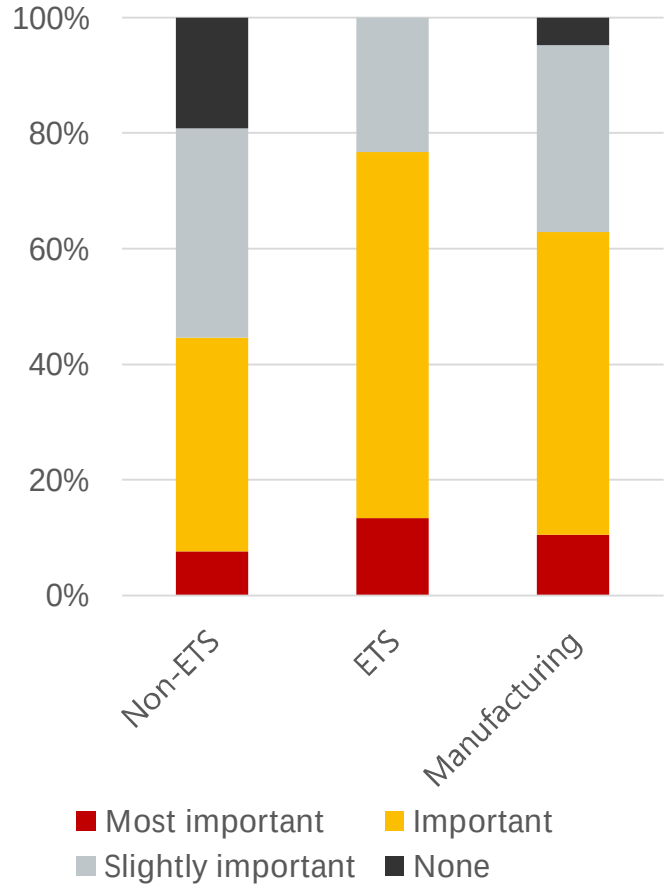
Share of respondents with correct estimate[1] of current ETS CO_2-price



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



Importance of climate transition on the strategic agenda

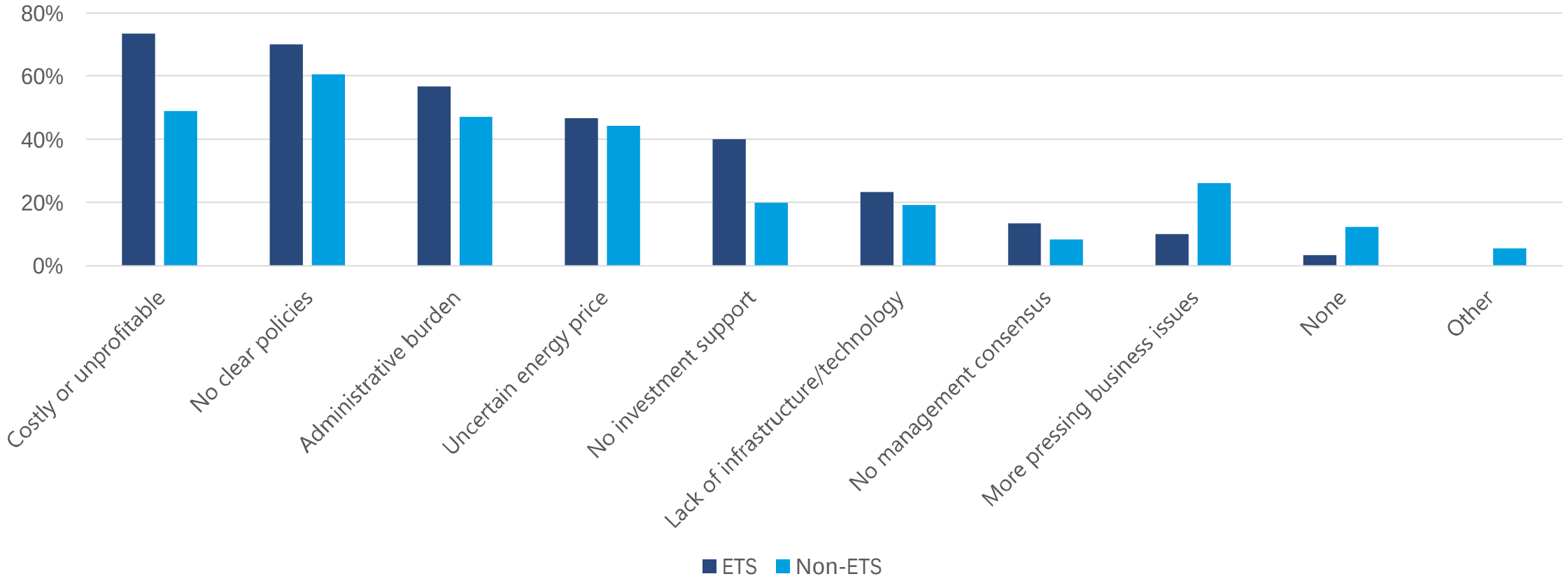


[1] We consider an estimate of the current ETS CO_2-price between 25 and 125 EUR/ton CO2 to be correct.

Climate-related decisions are impeded by several factors

What obstacles does your company face when making climate-related decisions?

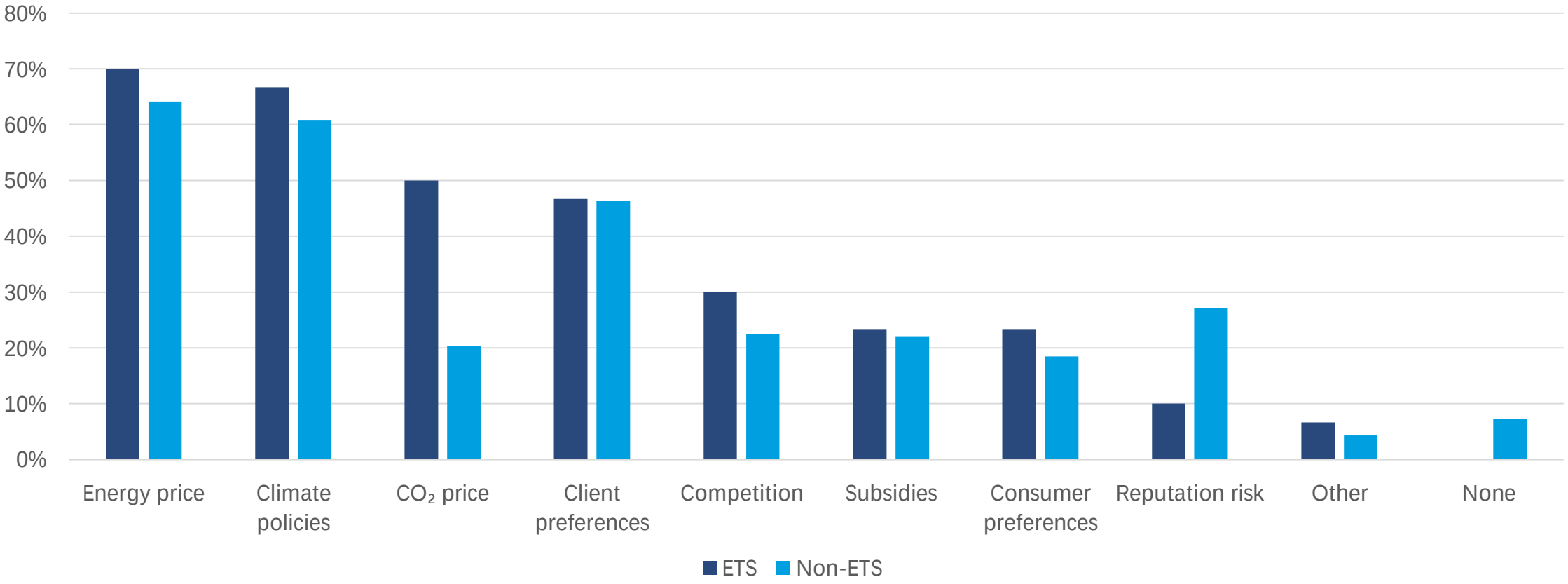
(in % of sample, multiple replies possible)



The main drivers of climate-related investments

Which factors are expected to most influence your company's climate-related investments in Belgium until 2030?

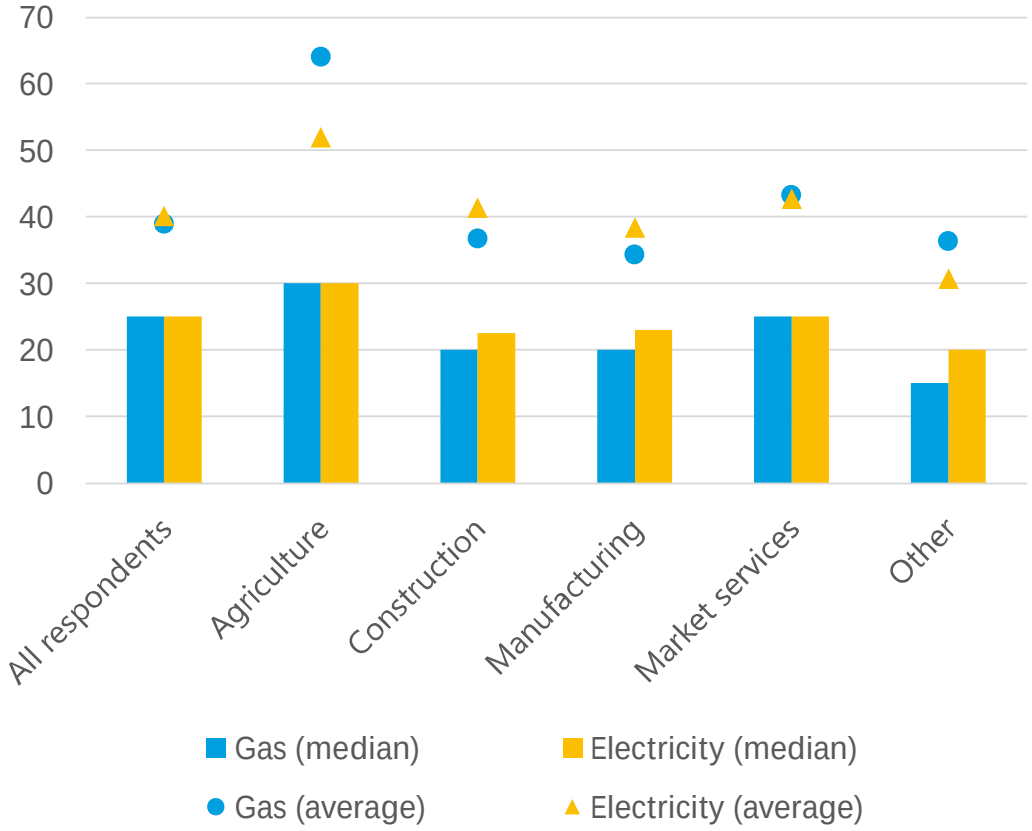
(in % of sample, multiple replies possible)



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

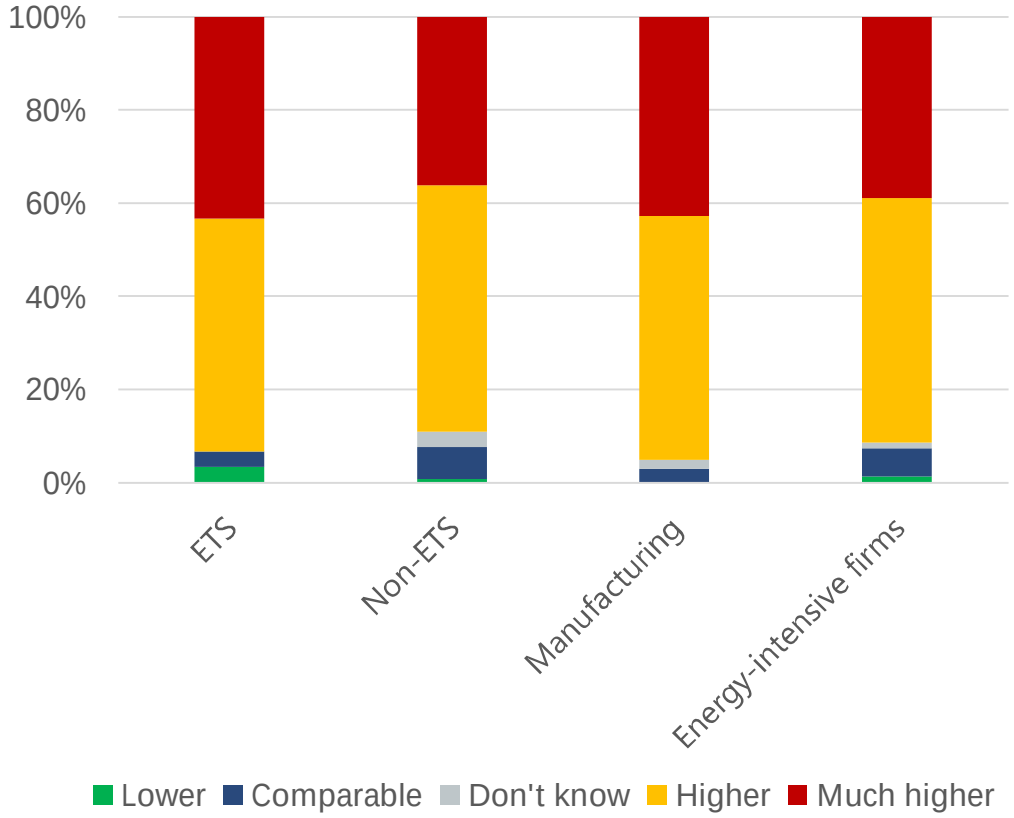
Expected change in electricity and gas prices by 2030

(median and average percentage change)



Expected relative energy prices in Belgium compared to the rest of the world in 2030

(% of respondents)

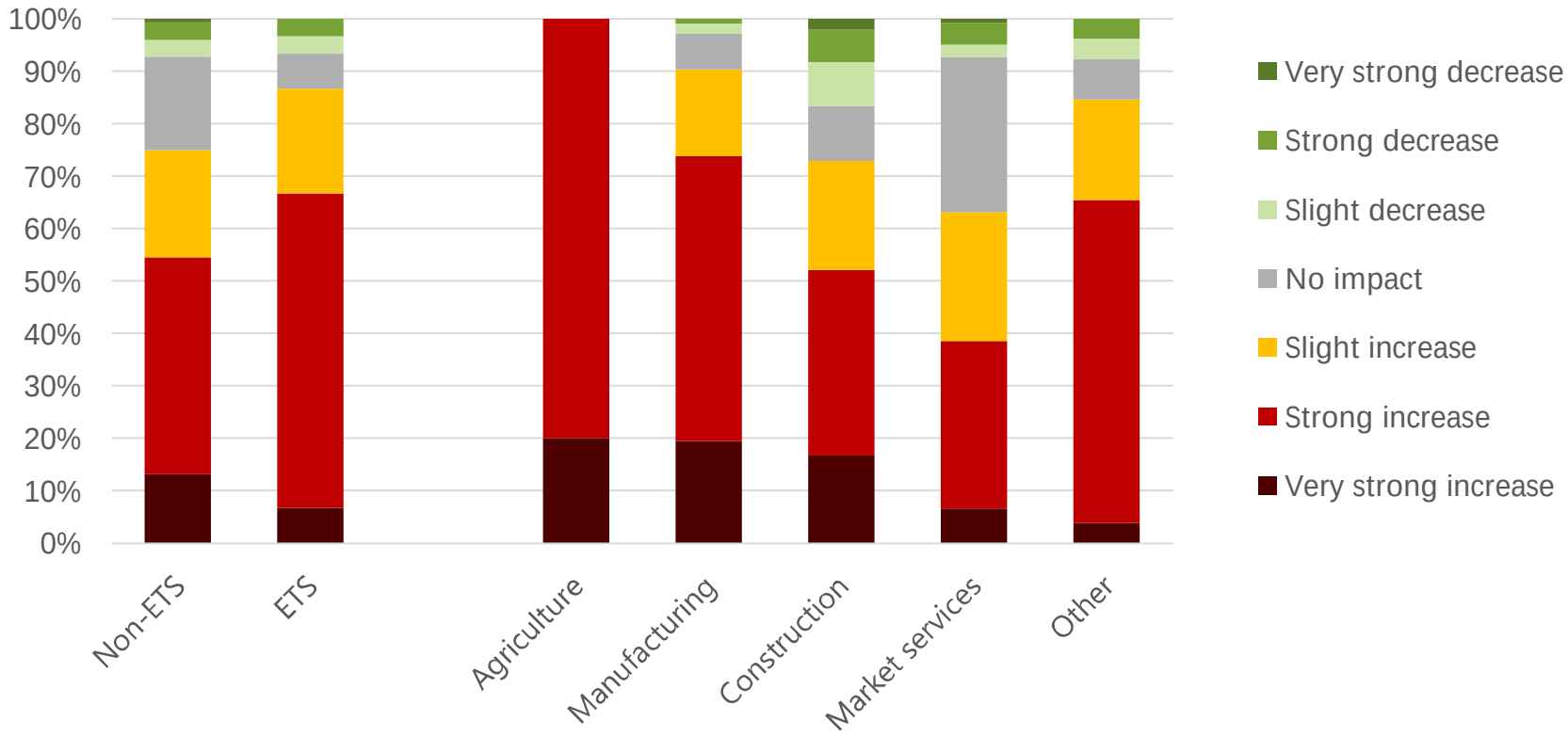


The past impact of the climate transition on firm operations

Over the past three years: 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)



[1] We asked participants to try to disentangle the impact of climate transition from that of other recent economic events such as the energy crisis.

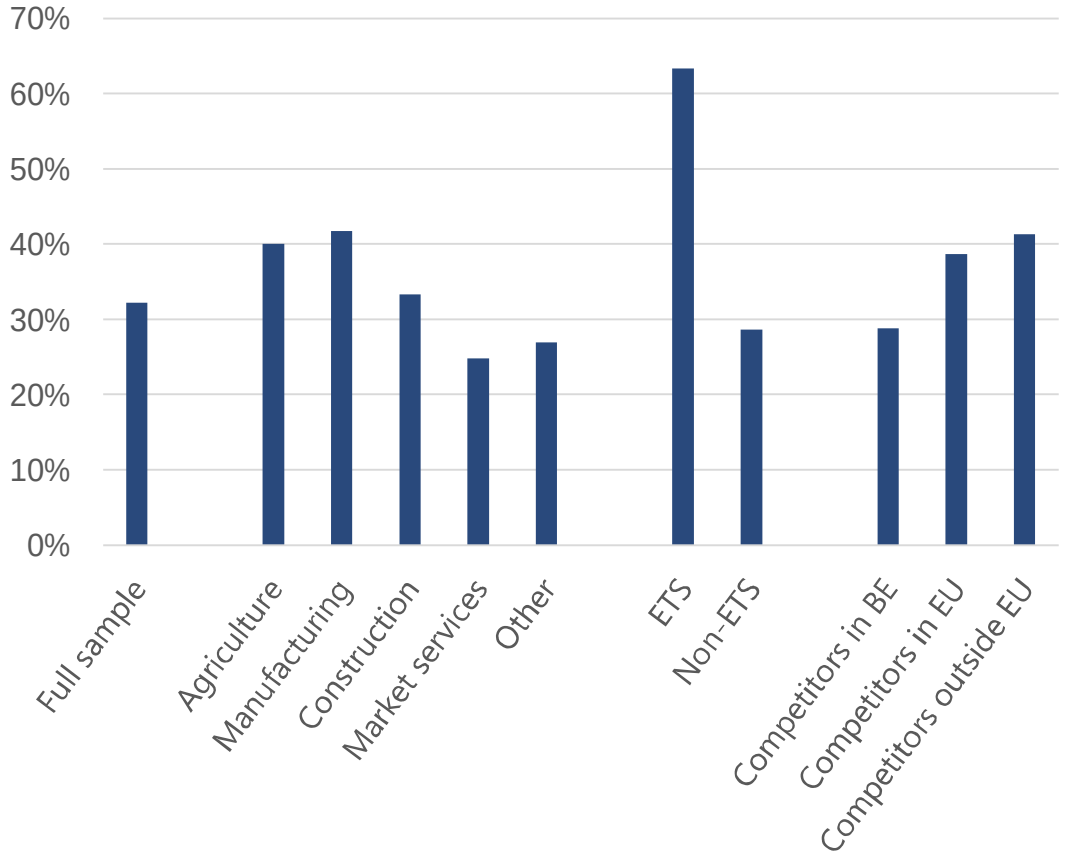
… but pass-through is more difficult for firms in manufacturing (due to international competition) – pressure on margins

- 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

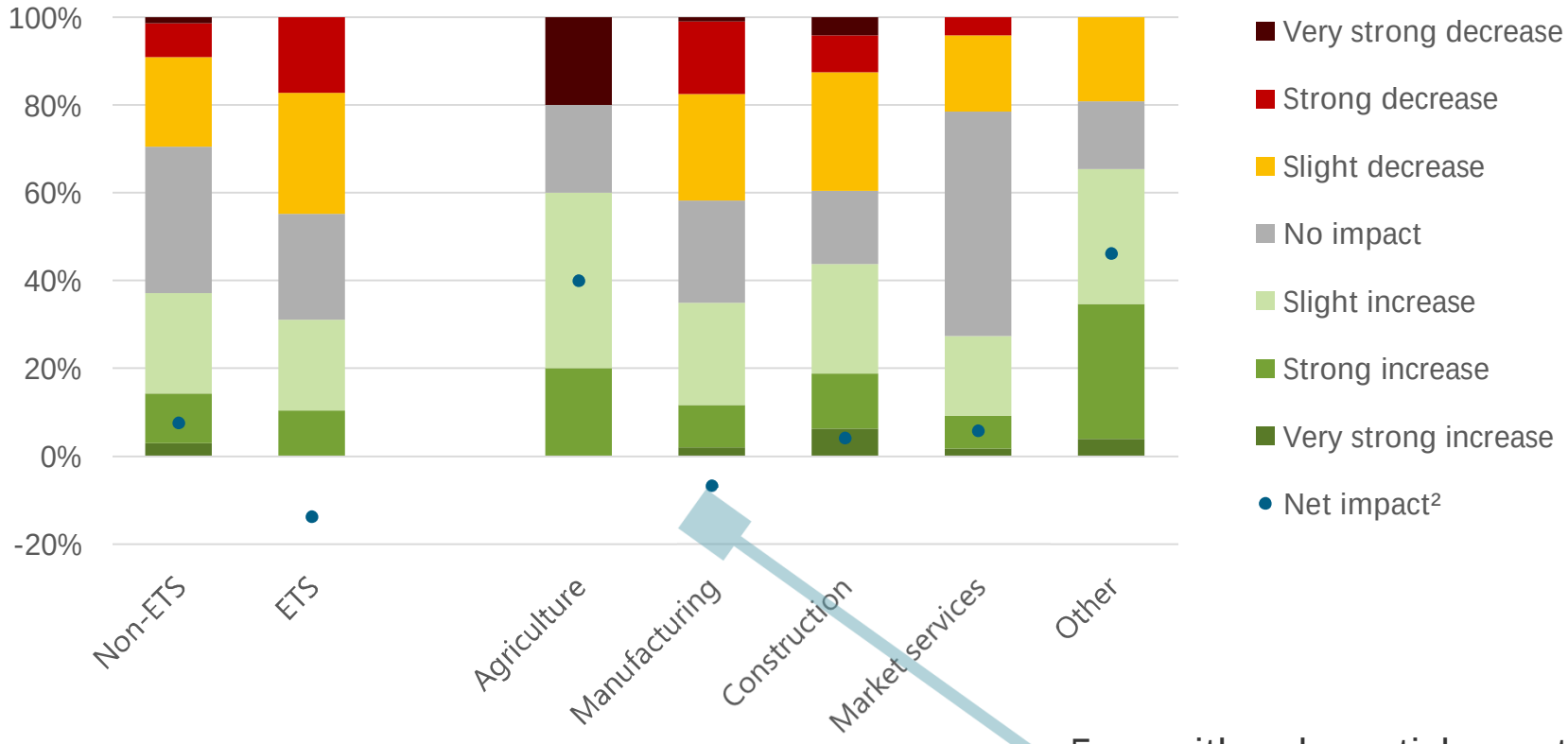
- Proxy can range from +6 (very strong increase in sales price despite very strong decrease in input costs) to -6

Share of respondents with negative pass-through proxy



The impact on demand over the past three years is assessed to be largely neutral (yet slightly negative for ETS-firms & manufacturing)

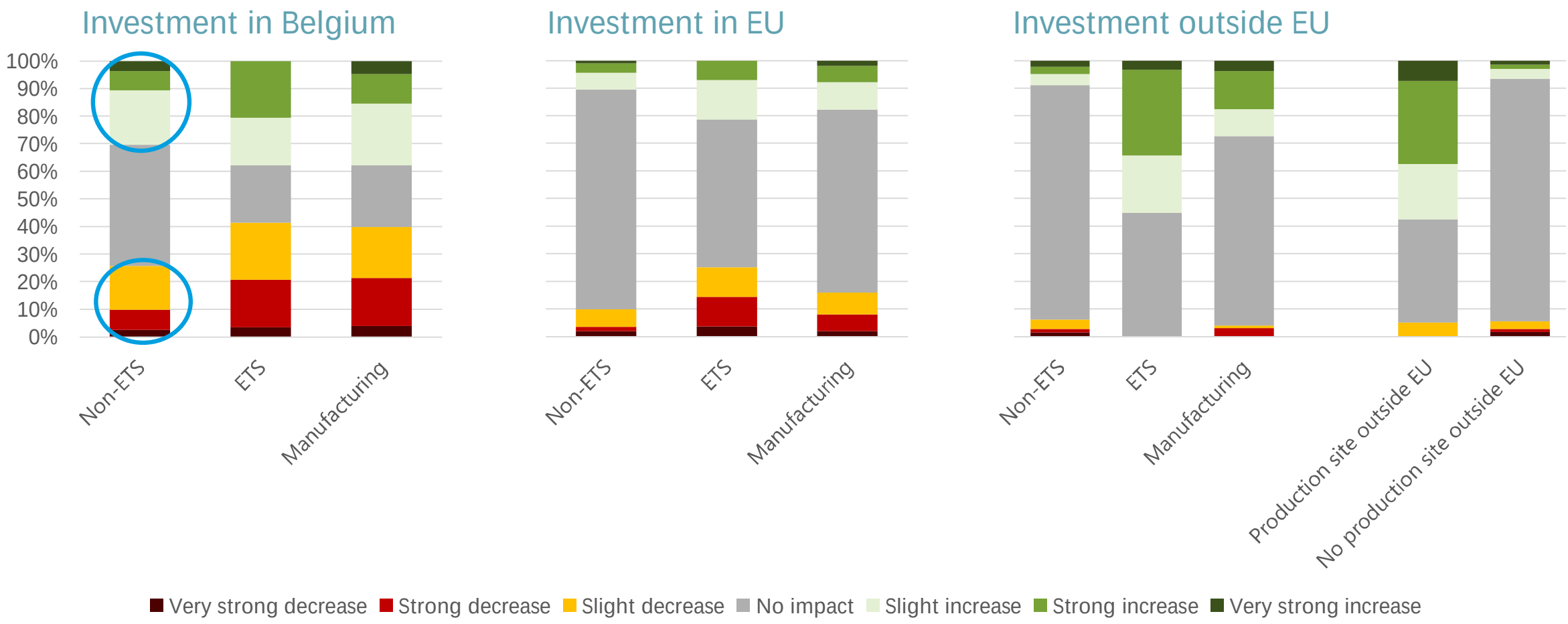
Past impact of climate transition[1] on demand



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

[1] We asked participants to try to disentangle the impact of climate transition from that of other recent economic events such as the energy crisis.
[2] Difference in percentage points between the share of firms seeing an increase and the share of firms seeing a decrease in demand in Belgium over the past three years due to climate transition

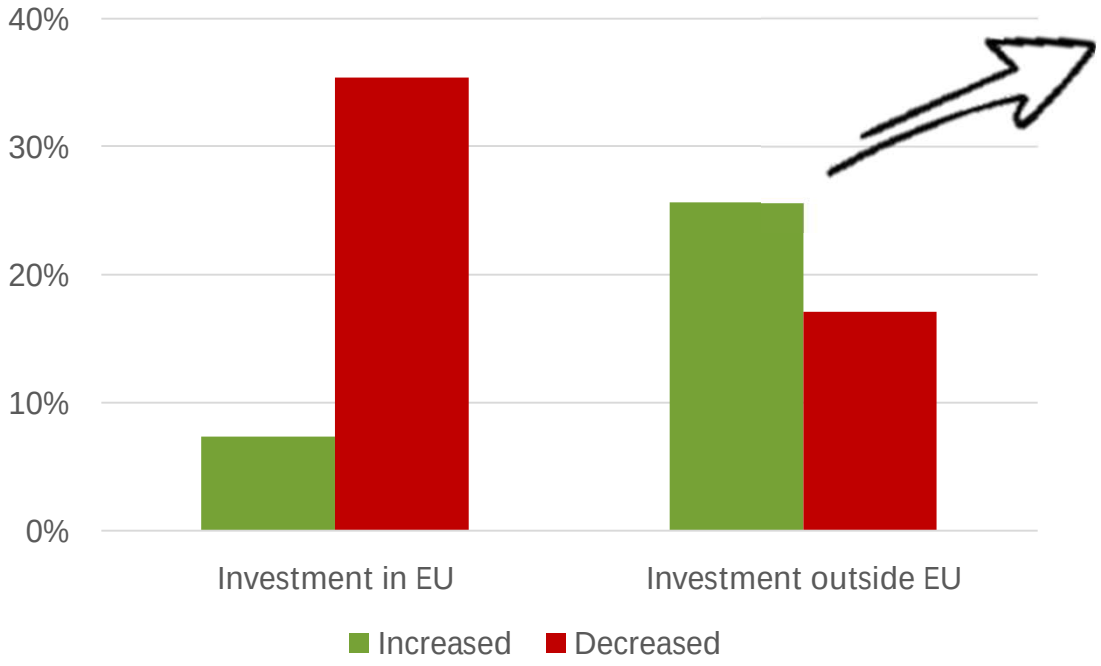
Impact on investment in Belgium ambiguous, but investment outside EU became more important ETS firms



Note: impact on investment due to climate transition. We asked participants to try to disentangle the impact of climate transition from that of other recent economic events such as the energy crisis.

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

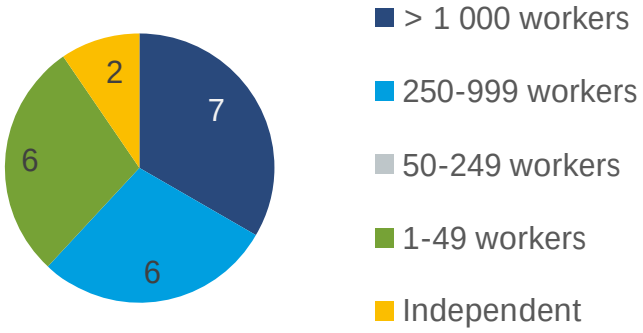
Share of 82 firms having reduced investment in Belgium in the past 3 years that have increased/decreased investment in/outside EU



Zoom on 21 relocalized firms:

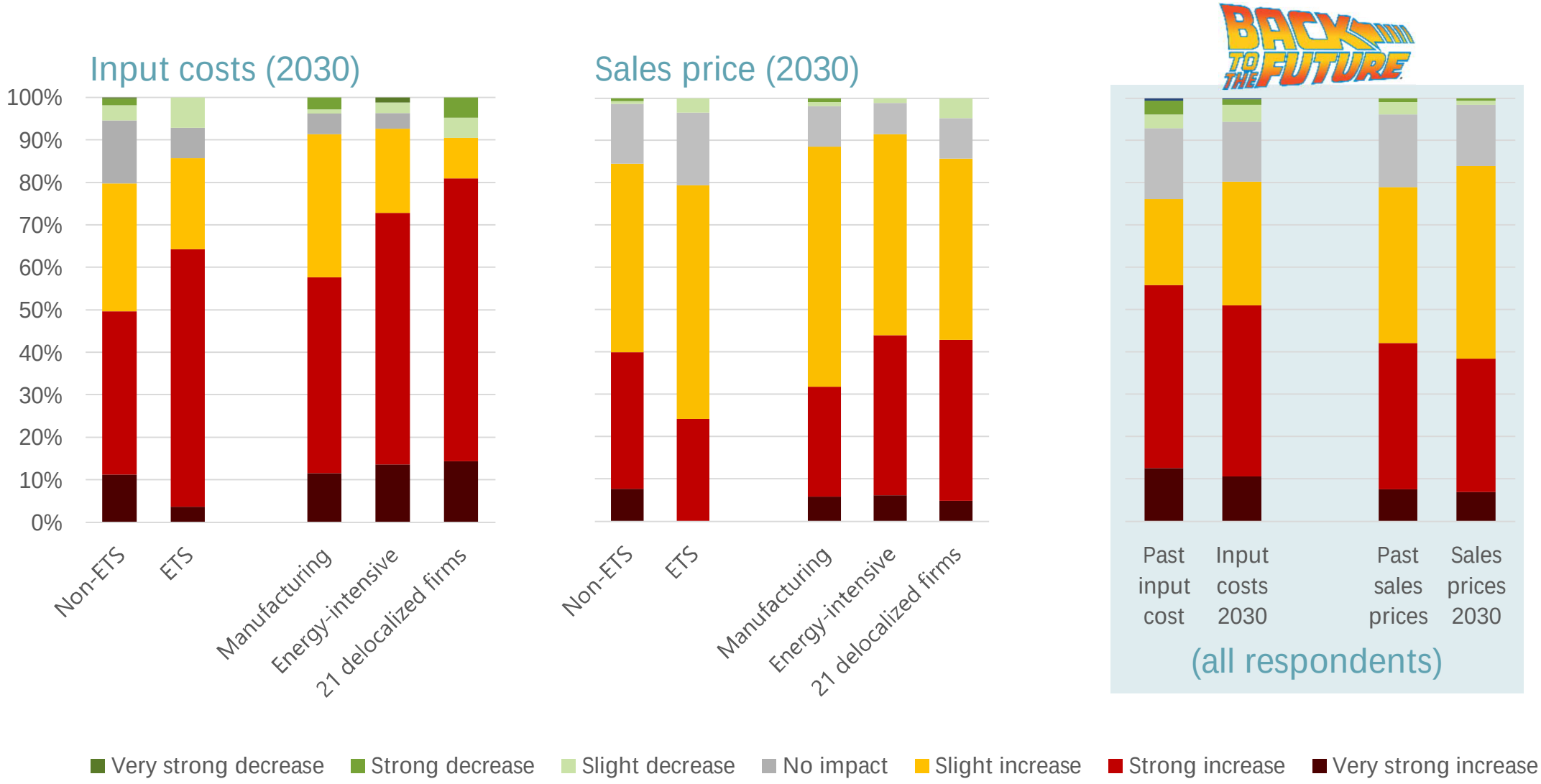
- 16 manufacturing, 4 market services, 1 construction
- 10 ETS, 11 non-ETS
- 11 are well-informed about current CO_2-price
- 12 are energy-intensive
- 13 already have production sites outside EU and have main competitors outside EU

Pass-through proxy = -1,3



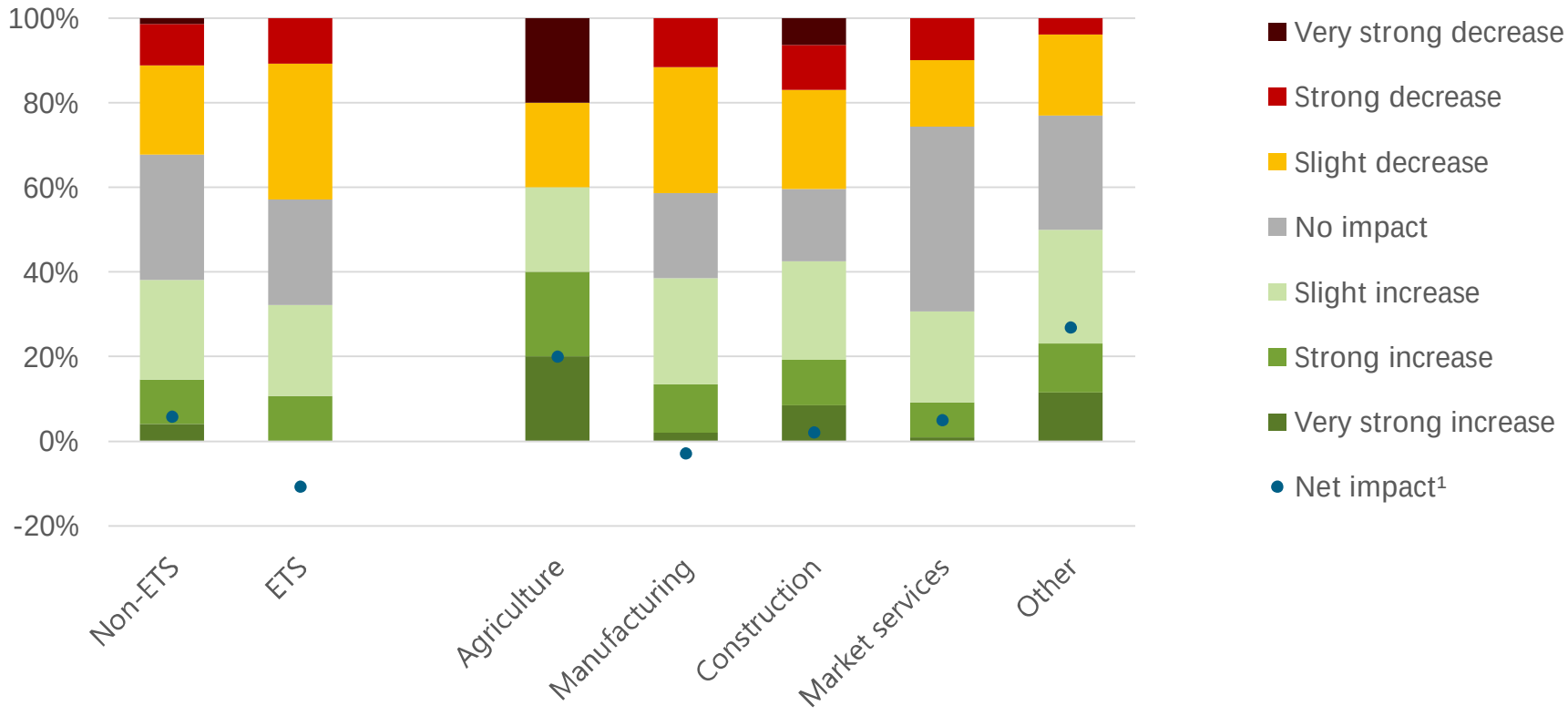
The anticipated impact of the climate transition on firm operations

Similar impacts on costs and prices expected by 2030



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

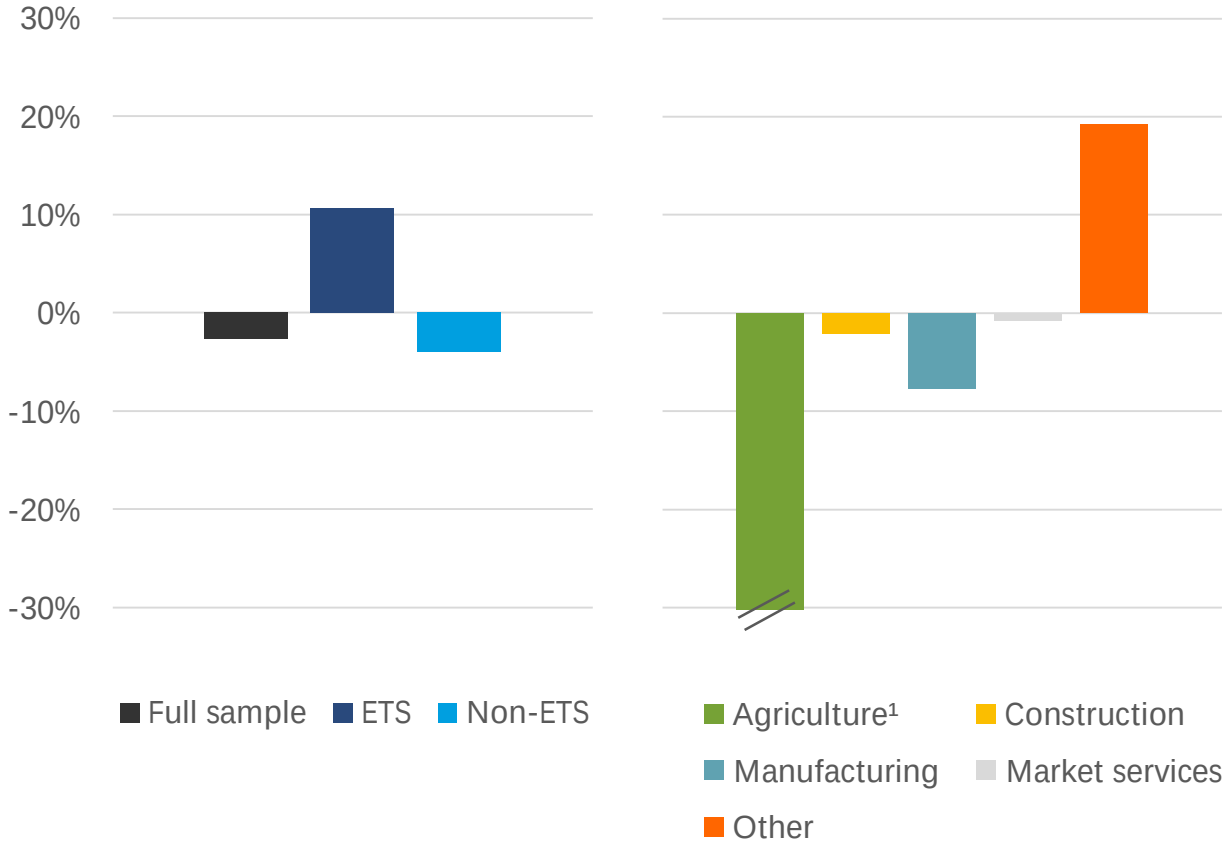


[1] Difference in percentage points between the share of firms expecting an increase and the share of firms expecting a decrease in demand in Belgium by 2030 due to climate transition.

Expected impact on investment is neutral for average respondent but clearly negative for the manufacturing industry (= the most productive industry)

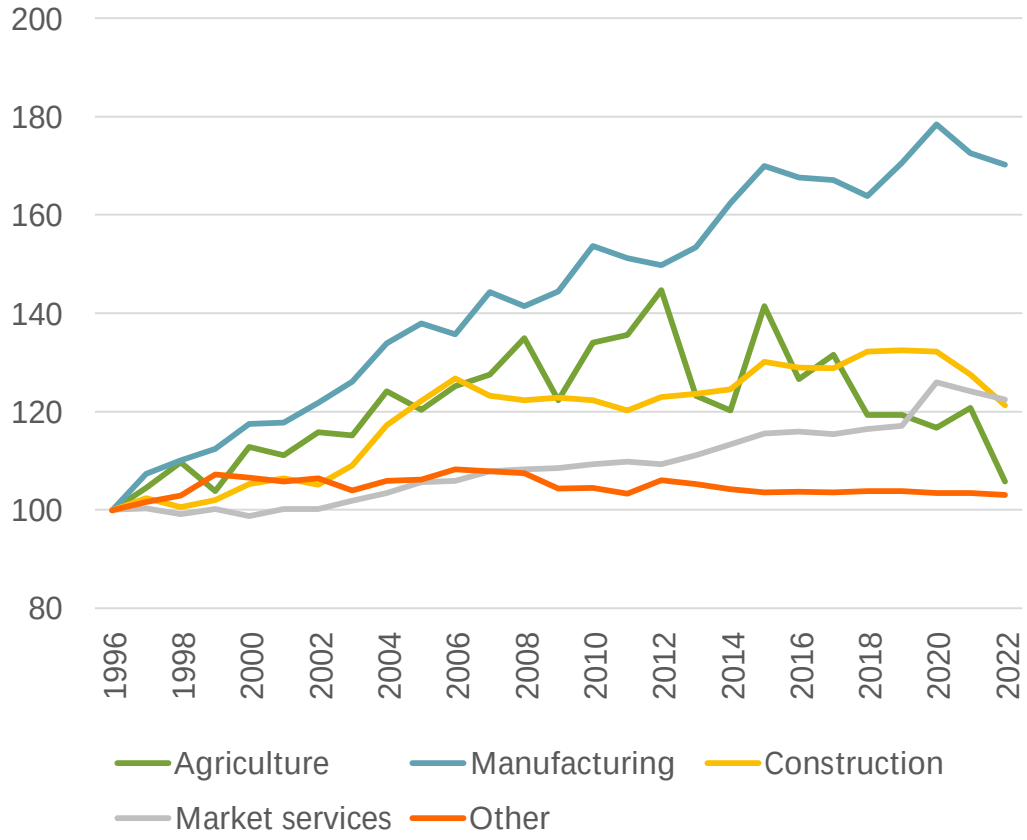
Net investment intent in Belgium by 2030

(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)



p.m. Hourly labour productivity per industry

(real value added per hour worked in the private sector)

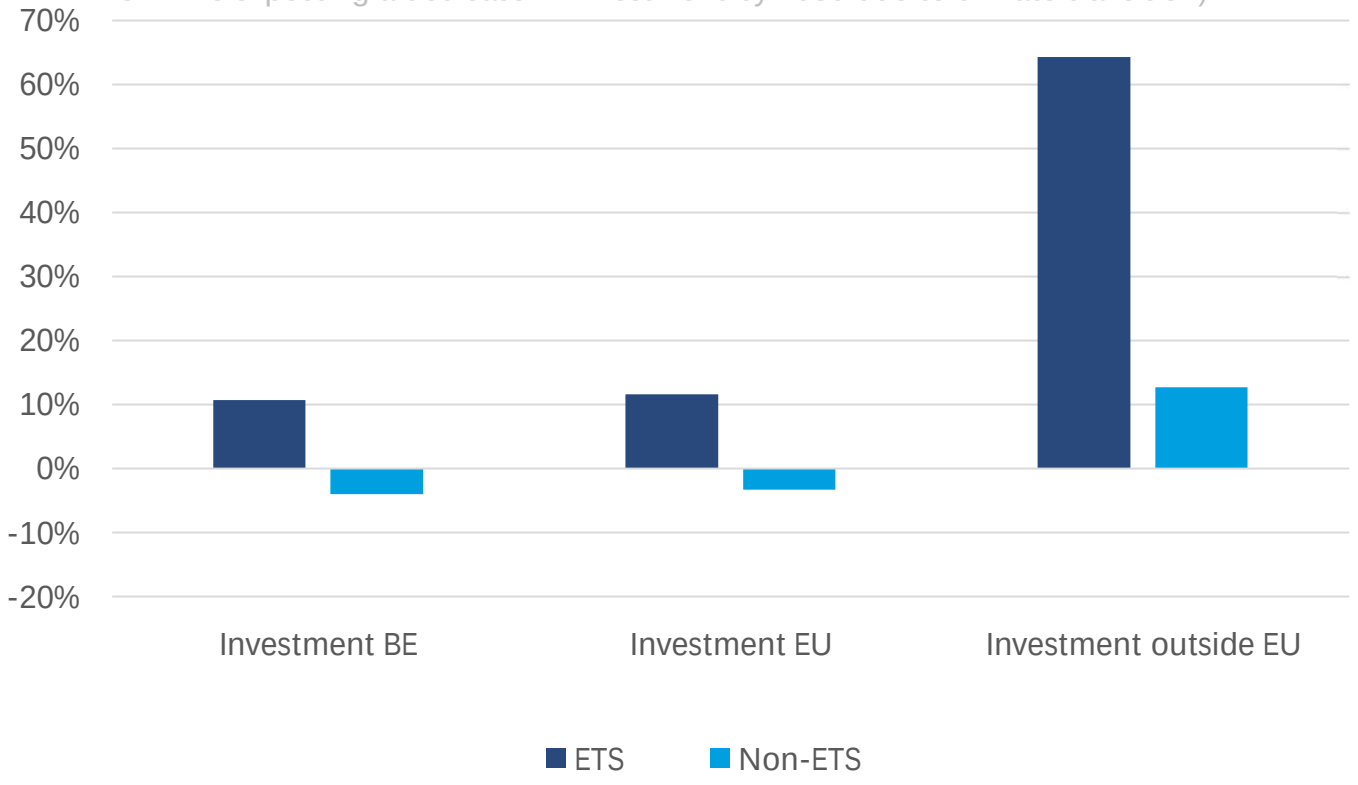


[1] The net investment intent in agriculture goes to -60% (of a very small sample of respondents).

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

[1] This corresponds to nearly 15% of the overall sample; to 42% of respondents who plan to decrease investment in Belgium and to 58% of respondents who plan to increase investment outside the EU by 2030.

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?

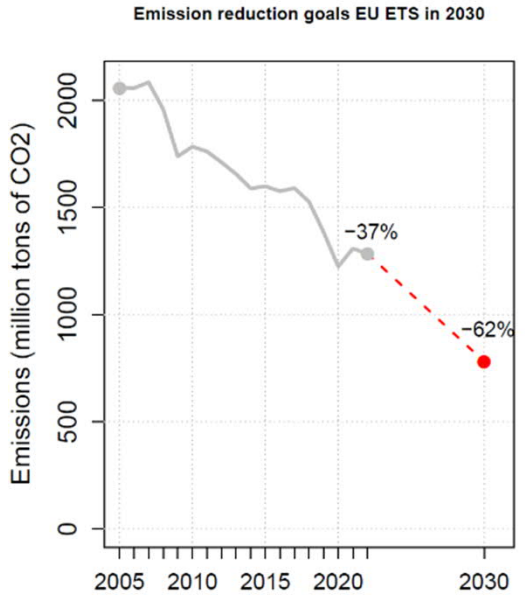
Traditional surveys fall short in revealing *causal* relationships between stricter climate policies and firm operations

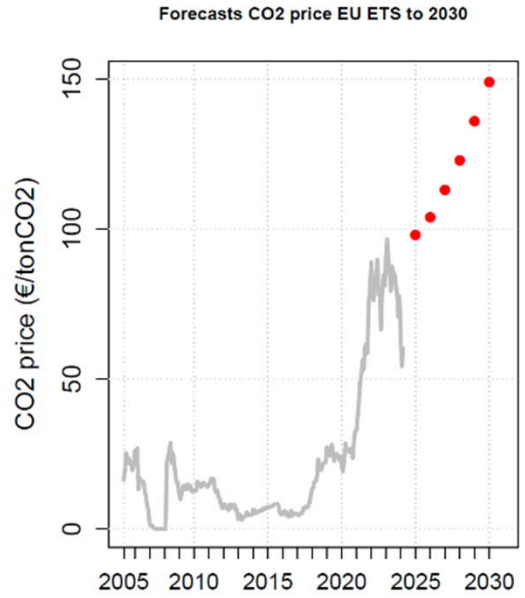
The 3 stages of the experiment:

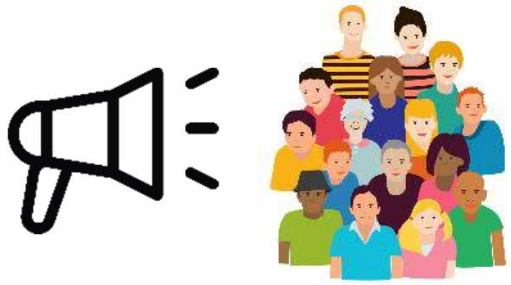
1. Measure prior expectations:
2. Randomized informational provision.
3. Test how receiving new or different information influences their posterior expectations

\+ Bonus round with 'What if' questions?

Information content signalling increased stringency in climate policy







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

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)

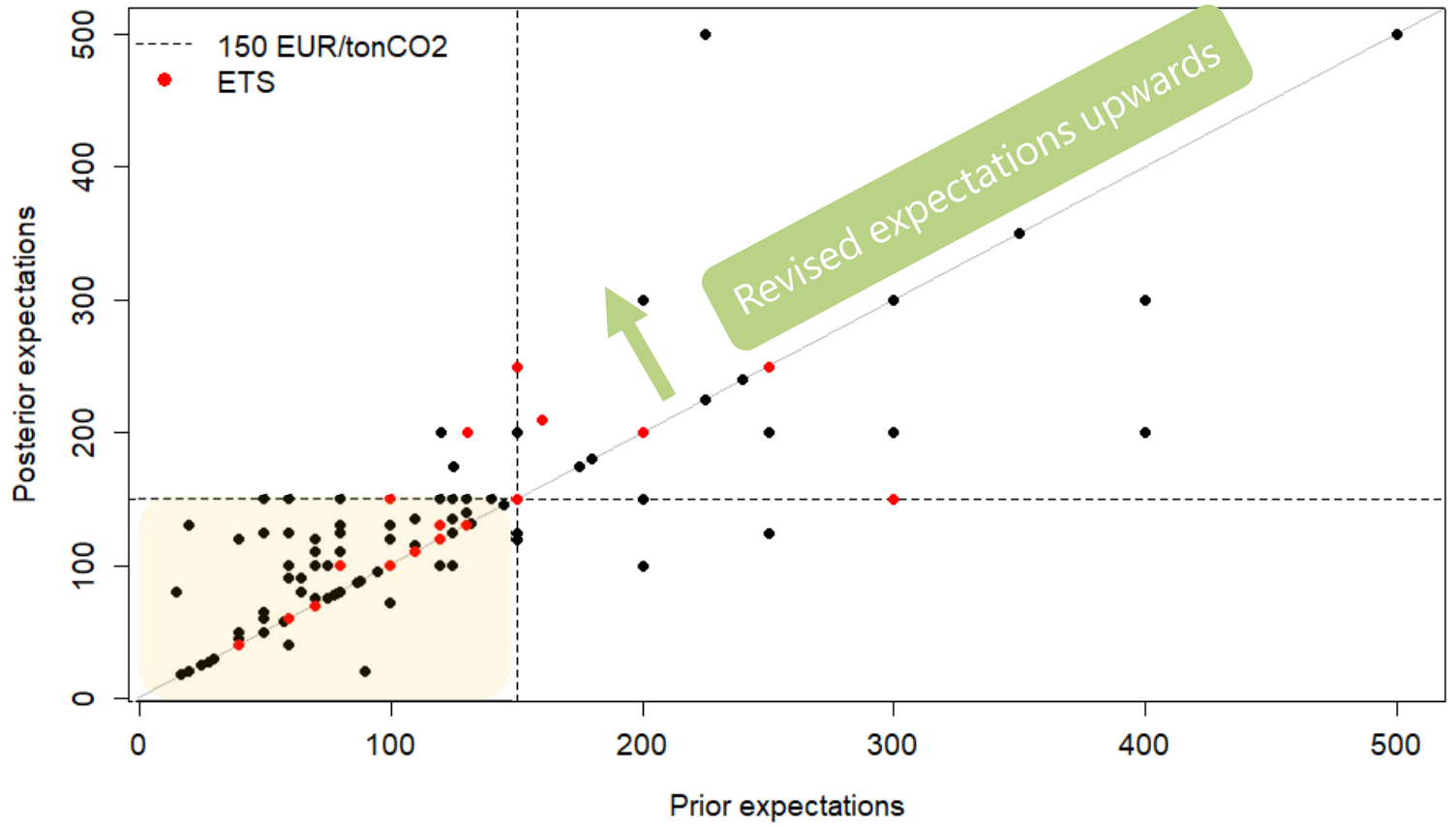
	Group	Sample size	Median		Mean	
			Prior	*Post.*	*Prior*	*Post.*
Carbon prices (in €/tonCO_2)	Treatment	257	120	130	130.9	139.4
	Control	23	100	100	108.3	110.2
Gas prices (in %)	Treatment	245	25	25	39.2	45.7
	Control	22	30	30	53.3	55.5
Electricity prices (in %)	Treatment	251	25	25	39.9	44.9
	Control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

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

Revision of carbon price expectations by 2030

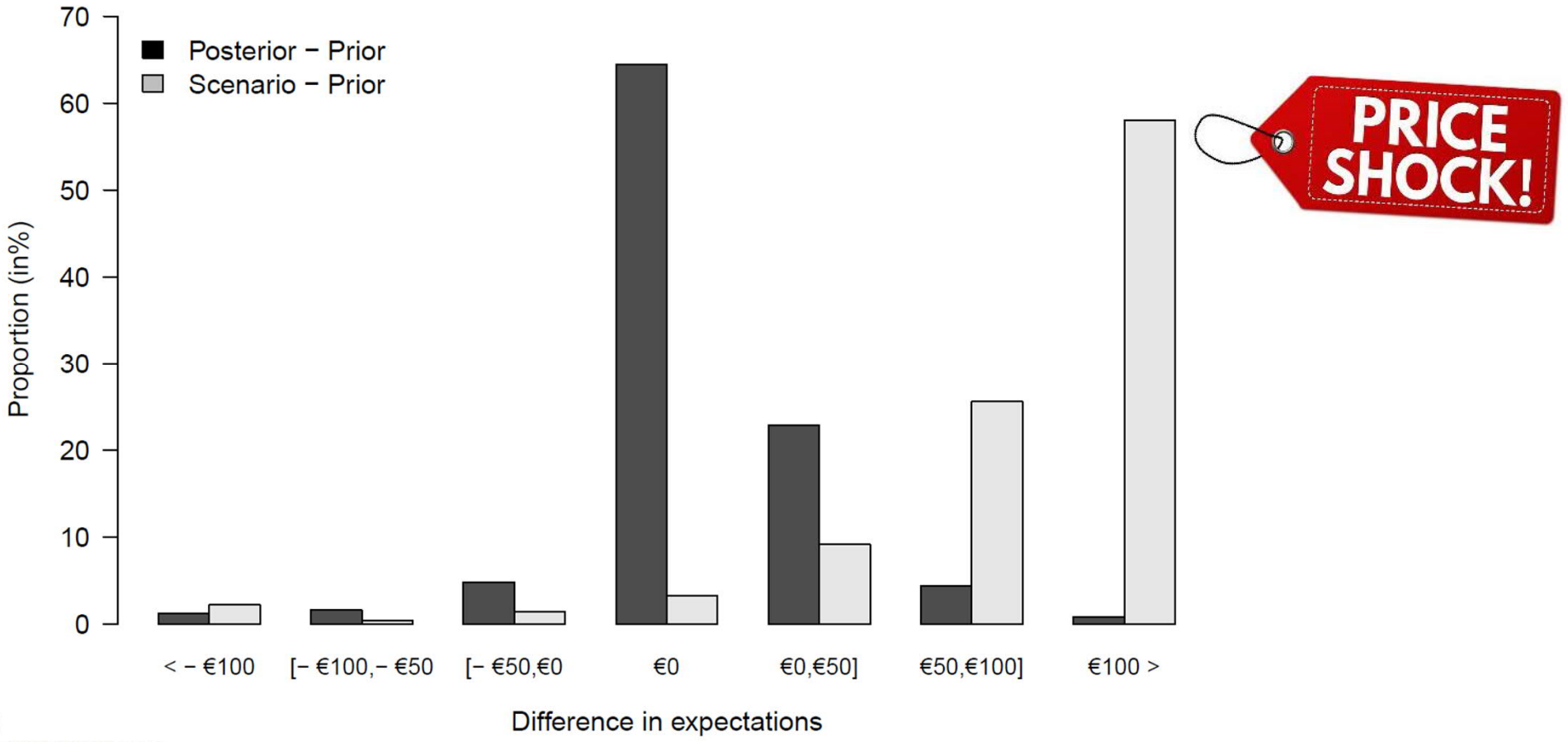
(in EUR / $tonCO_2$)



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

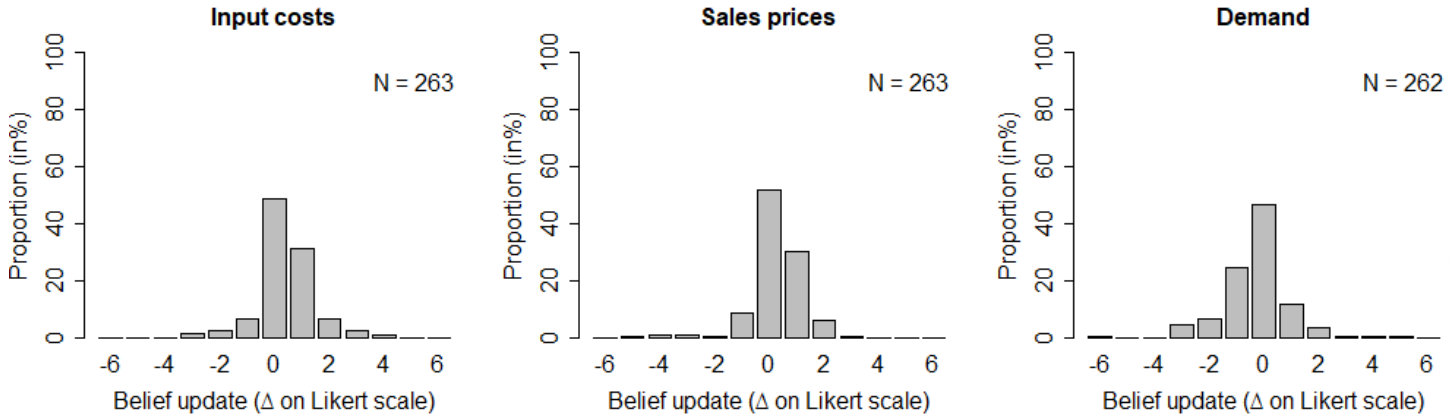
Difference in carbon price expectations

(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)



"We ran the numbers on how climate change will affect economic growth, but the numbers got so spooked they just kept running."

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
$D_i^+ : \mathrm{y_{i,prior}}$	-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

The results of the regression equation, $\Delta y_i = \beta_1 D_i^+ + \beta_2 D_i^0 + \beta_3 D_i^- + \beta_4 (D_i^+ : \Delta \ln x_i) + \beta_5 (D_i^+ : \mathrm{y_{i,prior}}) + \epsilon_i$, estimated via ordinary least squares. 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 *

: The results of the regression equation, $\Delta y_i = \beta_1 D_i^+ + \beta_2 D_i^0 + \beta_3 D_i^- + \beta_4 (D_i^+ : \Delta \ln x_i) + \beta_5 (D_i^+ : y_{i,prior}) + \beta_6 (D_i^+ : y_{i,prior}) + \epsilon_i$, estimated via ordinary least squares. The significance codes are as follows: '***' $p < 0.01$, '**' $p < 0.05$, '*' $p < 0.1$. Significant coefficients are shaded in grey. The base effects are not reported but remain consistent across the different specifications.

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
$D_i^+ : \mathrm{y_{i,prior}}$	-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

The results of the regression equation, $\Delta y_i = \beta_1 D_i^+ + \beta_2 D_i^0 + \beta_3 D_i^- + \beta_4 D_i^C + \beta_5 (D_i^+ : \Delta \ln x_i) + \beta_6 (D_i^+ : \mathrm{y_{prior}}) + \epsilon_i$, estimated via ordinary least squares. The significance codes are as follows: '***' $p < 0.01$, '**' $p < 0.05$, '*' $p < 0.1$. Significant coefficients are shaded in grey.

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

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