

# Survey results

Study on the trends in terms of investments, jobs and turnover in the Fuel cells and Hydrogen sector

October 5th, 2012

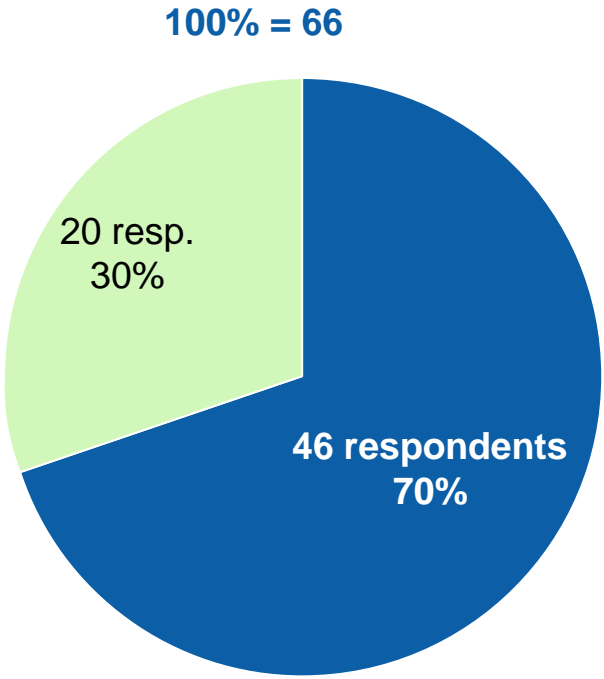
# Survey response Monday Oct 1<sup>st</sup>

Response rate (%)

- Survey Completed
- Survey not completed

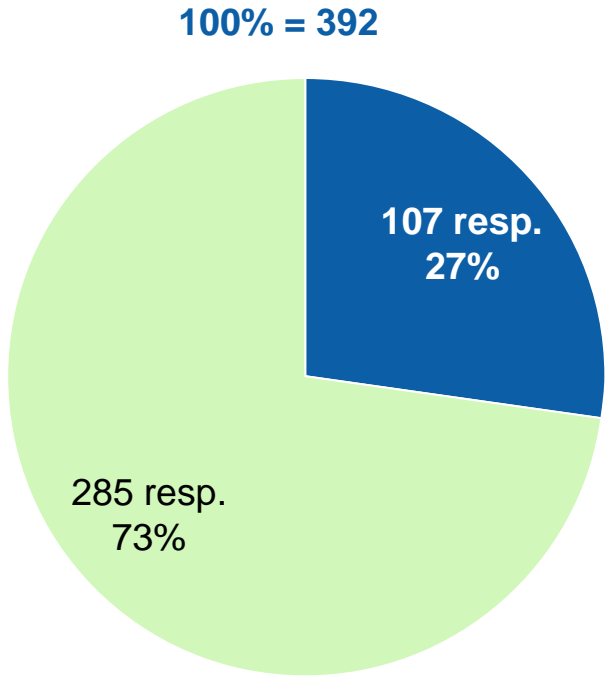
## Status survey 1: Industrial Grouping

Unique organisations



## Status survey 2: Beneficiaries

Unique organisations



## List of participating industrial groupings, which completed the survey and agreed to sharing their name

- Abengoa Hidrógeno
- Adelan
- Advanced Energy Technologies
- AFC Energy
- Air Liquide
- Air Products
- Alstom
- CETH2
- Daimler
- EFCF
- Electro power systems
- Green Vision / HyGear
- H2 Logic
- Honda R&D Europe (Deutschland)
- Hydrogenics
- HyET
- Hyundai Motor Company
- Iberdrola
- INEA
- Institut Pierre vernier
- Intelligent Energy
- IRD
- ITM Power
- Johnson Matthey
- LBST
- MES
- Nedstack
- NuCellSys
- Powercell Sweden
- Riversimple
- Shell
- SolviCore
- Sunfire
- Topsoe Fuel cell
- Umicore AG&Co KG
- Vattenfall
- Wärtsilä

# List of participating beneficiaries, which completed the survey and agreed to sharing their name

## Companies

- 1515
- Ballard Power Systems
- Bitron
- British Gas
- DBI - Gastecnologisches Institut gGmbH Freiberg
- Domel
- DONG Energy A/S
- ElringKlinger AG
- GETT Fuel Cells International AB
- Hexagon Composites ASA
- hySOLUTIONS GmbH
- IHT
- INOVA+
- Ion Power
- Madden
- MARION TECHNOLOGIES
- MBN nanomaterialia
- PAXITECH
- PLANET GbR
- Riesaer Brennstoffzellentechnik GmbH
- Riviera Trasporti spa
- serenergy
- synergies consult.ing
- TecnimontKT Spa
- TÜV SÜD Industrie Service GmbH
- VAN HOOL N. V.
- Vattenfall Europe Innovation GmbH
- Vestel Savunma Sanayi A.S.

## Research organisations

- Aalborg University
- Aalto university
- AIJU
- CEA
- Centre for Researcha and Technology Hellas
- CENTRO SVILUPPO MATERIALI CSM
- CIRPS- Sapienza
- CNRS Montpellier
- CPERI/CERTH
- DTU
- EIFER
- ENEA
- Fondazione Bruno Kessler
- FORTH/ICE-HT
- Fraunhofer ISE
- Fundacion Hidrogeno Aragon
- Gas- und Wärme-Institut Essen e.V.
- German Aerospace Center
- Helmholtz-Zentrum Geesthacht
- Institut für Mikrotechnik Mainz GmbH
- Institute for Energetics and Interphases (IENI-CNR)
- Institute for Energy Technology
- Institute of High Temperature Electrochemistry
- Instytut Chemii Przemysłowej im. prof. Ignacego Moscickiego

- INTA
- Istituto di Tecnologie Avanzate per l'Energia "Nicola Giordano" of Consiglio Nazionale delle Ricerche
- Karlsruher Institut für Technologie, Institut für Werkstoffe der Elektrotechnik
- Lucerne University of Applied Sciences and Arts
- Matres scrI
- NEXT ENERGY - EWE-Forschungszentrum für Energietechnologie e. V.
- Paul Scherrer Institut
- Politecnico di Torino
- SINTEF
- Swerea IVF
- TECNALIA
- Università di Torino
- University of Birmingham
- University of La Laguna
- University of Perugia
- University of Salerno
- University of Stuttgart, LBP
- University of Ulster
- Vienna University of Technology
- VTT
- West Pomeranian University of Technology, Szczecin

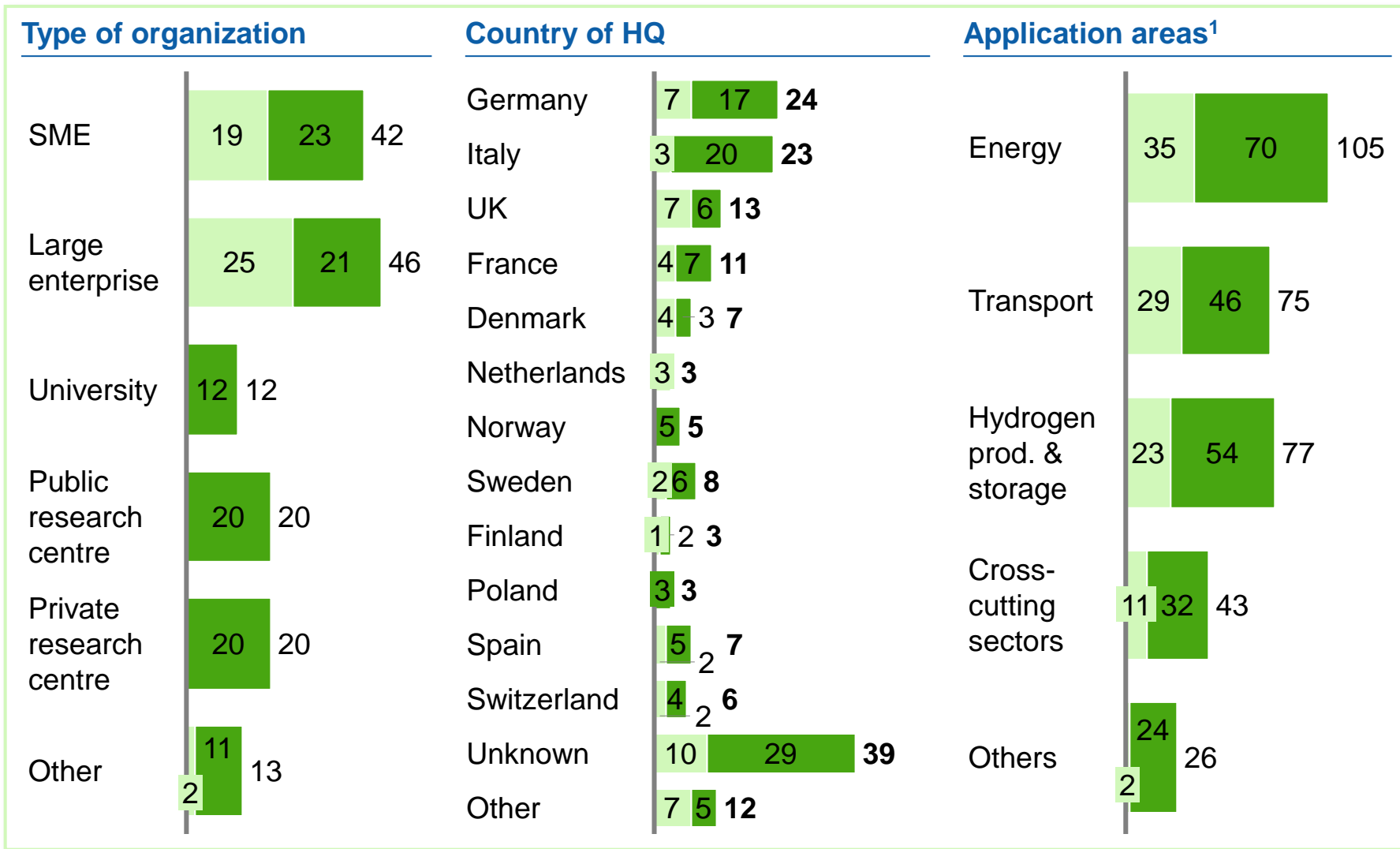
## Others

- Aberdeen City Council
- ARMINES
- Birmingham city council
- FAST
- Hydrogen Sweden
- International Center for Hydrogen Energy Technologies (ICHET)
- Transport for London
- WasserstoffNet

# Respondents represent the entire industry

Number of responses, N = 46 (IG), N = 107 (Beneficiaries)

IG Beneficiaries

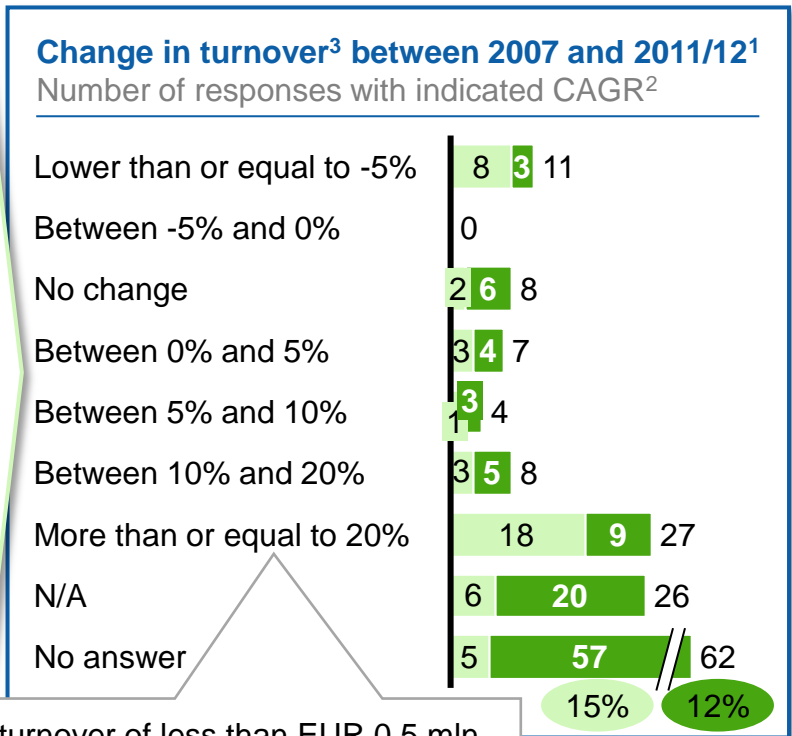
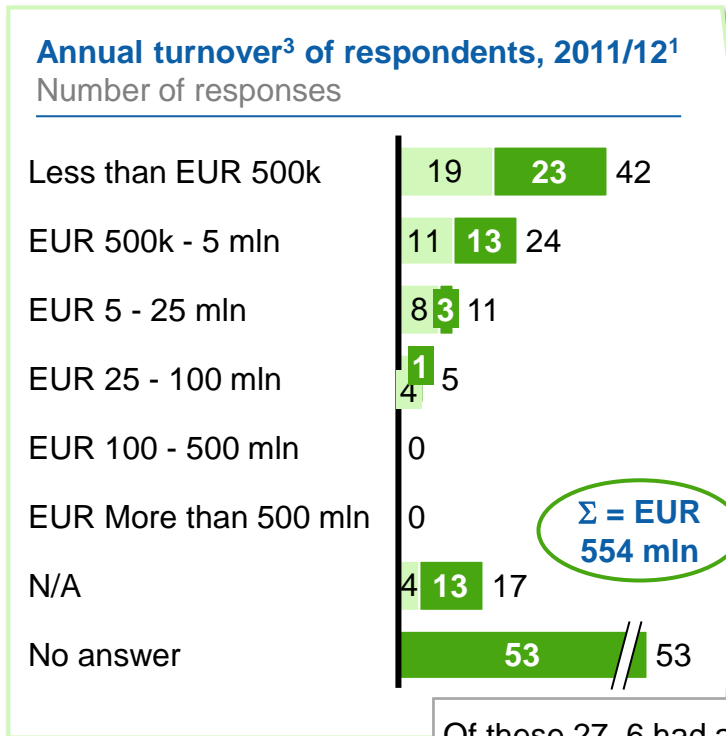


<sup>1</sup> More than 1 one application area can apply to one organization

# More than half of the respondents saw an increase in annual turnover in the FC&H sector of more than 10% per year from 2007 to 2011/12

N = 46 (IG), N = 107 (Beneficiaries)

Industry Grouping ■ Beneficiaries XX% Average CAGR 2007-2011/12



Of these 27, 6 had a turnover of less than EUR 0.5 mln in 2011/12, 10 a turnover of 0.5-5 mln, 8 a turnover of 5-25 mln, and 2 companies with a turnover higher than EUR 25 mln. 1 turnover is unknown.

Question I.1.1.1 What is your latest (commercial) annual turnover on FC&H technologies? N/a for research organisations.  
 Question I.1.1.3 What was your annual turnover in 2007 on FC&H technologies? If you cannot provide it, what was the average annual growth since 2007 of FC&H turnover? If your organization was started after 2007, please indicate your growth since the start year

1 Latest year provided  
 2 Compound Annual Growth Rate  
 SOURCE: FCH JU survey

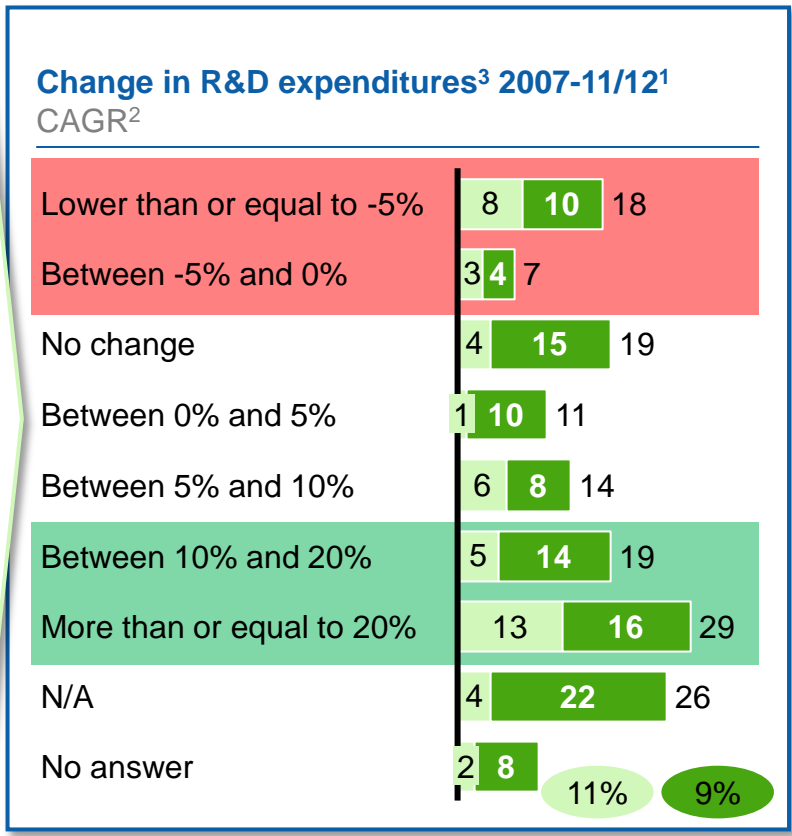
3 Annual turnover for the FC&H activities only, excluding hydrogen activities unrelated to fuel cells

# 41% of the respondents saw an increase in annual R&D expenditures in the FC&H sector of more than 10% per year from 2007 to 2011/12

N = 46 (IG), N = 107 (Beneficiaries)

2007-12

Industrial Grouping    Beneficiaries    Average CAGR 2007-2011/12



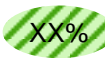
Question I.1.2.1 How much do you currently spend annually on research for FC&H technologies? If you are a research centre, please provide your current annual budget for FC&H research  
 Question I.1.2.3 What was your spend on research/budget for FC&H technologies in 2007? If you cannot provide it, what was the average annual growth since 2007 of FC&H research spend/budget? If your organization was started after 2007, please indicate your growth since the start year

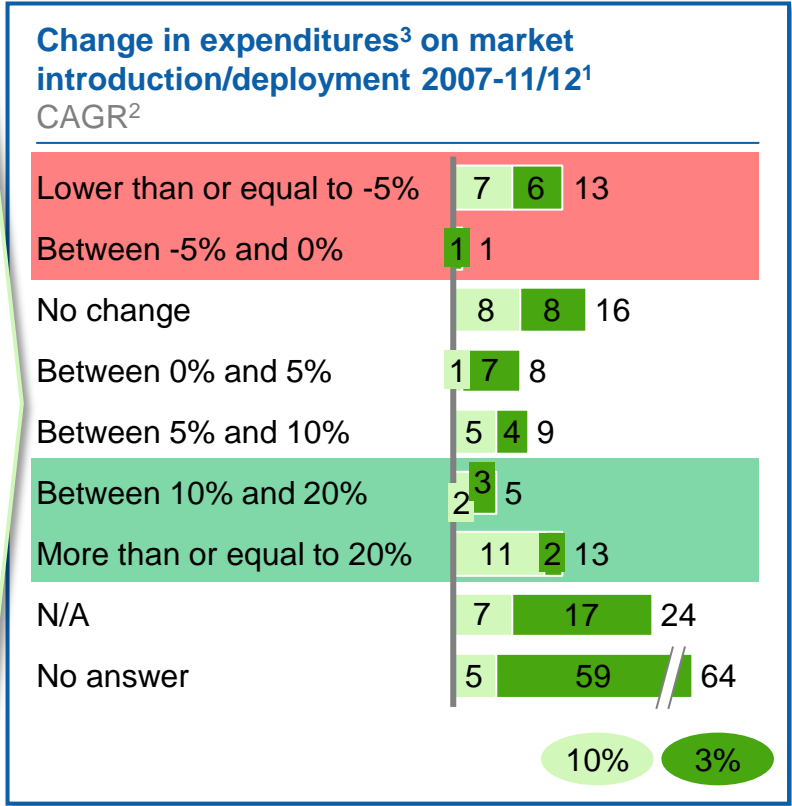
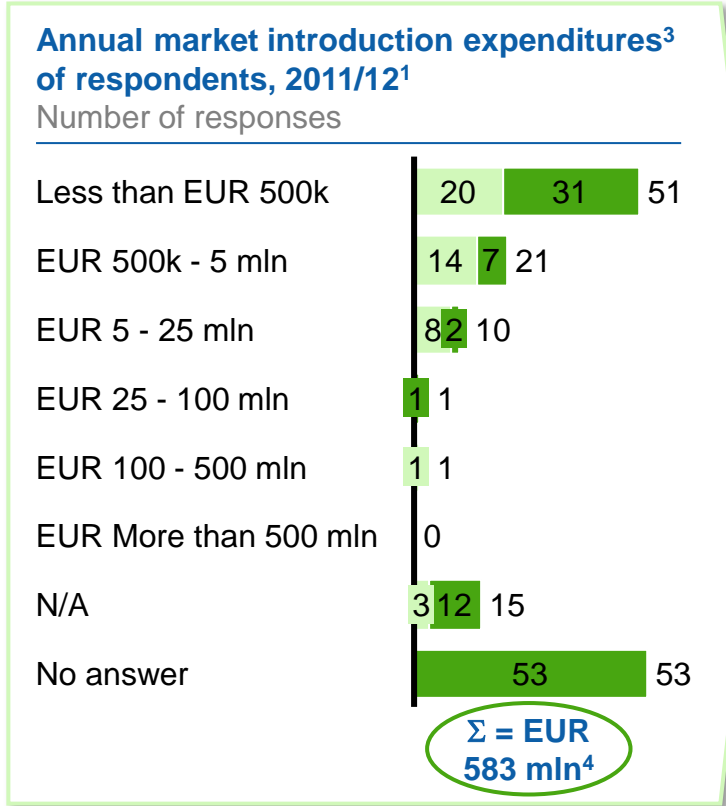
1 Latest year provided  
 2 Compound Annual Growth Rate  
 SOURCE: FCH JU survey

3 Annual expenditures on FC&H activities only, excluding hydrogen activities unrelated to fuel cells  
 4 See pages 10 and 11

# 28% of the respondents saw an increase in annual Market introduction/ deployment expenditures in the FC&H sector of more than 10% per year from 2007 to 2011/12

N = 46 (IG), N = 107 (Beneficiaries)

Industrial Grouping Beneficiaries  Average CAGR 2007-2011/12



Question I.1.3.1 How much do you currently spend annually on market-introduction/deployment related activities for FC&H related technologies?  
 Question I.1.3.3 What were the FC&H expenditures on market-introduction/deployment related activities in 2007? If you cannot provide it, what was the average annual growth since 2007 of FC&H market-introduction/deployment expenditures?


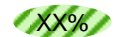
1 Latest year provided  
 2 Compound Annual Growth Rate  
 SOURCE: FCH JU survey

3 Annual expenditures on FC&H activities only, excluding hydrogen activities unrelated to fuel cells  
 4 See pages 10 and 11



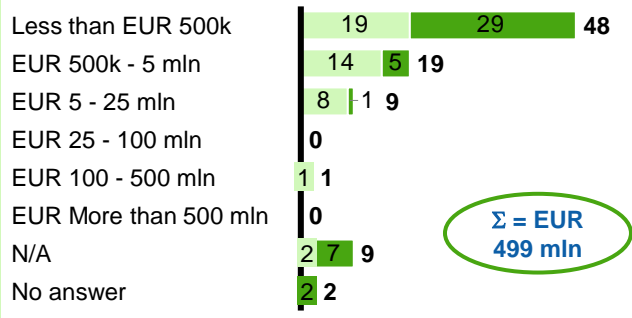
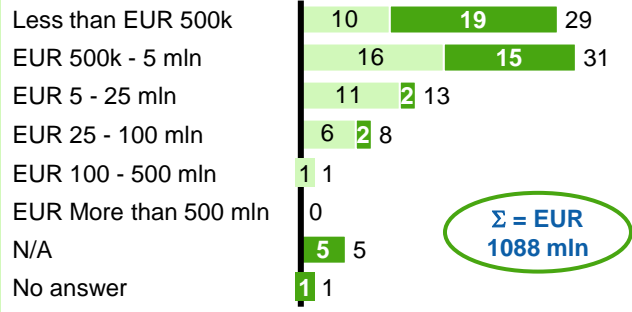
# 36% of the private respondents saw an increase in annual RD&D expenditures in the FC&H sector of more than 10% per year from 2007 to 2011/12

N = 44 (IG), N = 44 (Beneficiaries)

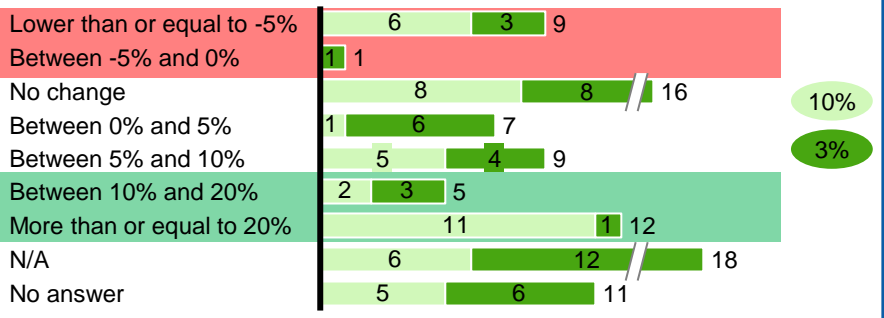
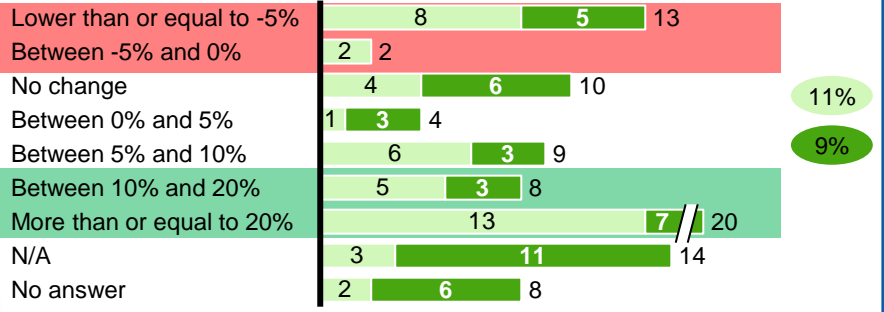
Industrial Grouping  Average CAGR 2007-2011/12   
 Beneficiaries 

2007-12

### Number of responses



### CAGR<sup>2</sup>



- Question I.1.2.1:** How much do you currently spend annually on research for FC&H technologies? If you are a research centre, please provide your current annual budget for FC&H research
- Question I.1.2.3:** What was your spend on research/budget for FC&H technologies in 2007? If you cannot provide it, what was the average annual growth since 2007 of FC&H research spend/budget? If your organization was started after 2007, please indicate your growth since the start year
- Question I.1.3.1:** How much do you currently spend annually on market-introduction/deployment related activities for FC&H related technologies?
- Question I.1.3.3:** What were the FC&H expenditures on market-introduction/deployment related activities in 2007? If you cannot provide it, what was the average annual growth since 2007 of FC&H market-introduction/deployment expenditures?

1 Latest year provided  
 2 Compound Annual Growth Rate  
 SOURCE: FCH JU survey

3 Annual expenditures on FC&H activities only, excluding hydrogen activities unrelated to fuel cells

# If we would have to compare figures, there are 4 possibilities

Estimate of missing IG members

Only 2012 respondents that also completed 2007 survey

All 2012 respondents

**Total RD&D spend of 59 organizations**  
2007-13, EUR billions

**=**

**Number of respondents**

**×**

**Number of years**

**×**

**Average annual RD&D spend per organisation**  
2007-12, EUR millions

**Explanation (detailed on next page)**

2007 survey

3.2

**=**

59

**×**

7

**×**

7.8<sup>5</sup>

2012 survey

1

4.4

10.7

2

11.3

**=**

59<sup>1</sup>

**×**

7

**×**

27.5

3

5.4

2.4

~3

3 big IG members did not fill out question I.1.4  
Impact is estimated at EUR 3 bln

4.4

7.4

4

2.7

5.7

~3

4.4

11.0

6.6

- Average RD&D spend = total divided by number of respondents
- Based on 2012 spend<sup>2</sup> and 2007-12 growth<sup>2</sup> of all respondents
- Based on 2012 spend<sup>2</sup> and 2007-12 growth<sup>2</sup>, includes only respondents that also participated in 2007 survey
- Based on 2007-12 spend<sup>3</sup>. All respondents are included. 3 big IG members are missing<sup>4</sup>
- Based on 2007-12 spend<sup>3</sup>. Includes only respondents that also participated in 2007 survey. 3 big IG members are missing<sup>4</sup>

**Option 1 is preferred:**

- Options 2 and 4 are biased upward because companies that responded in both 2007 and 2012 are big companies
- Options 3 and 4 are biased downward because some big players did not answer survey question I.1.4

1 Although the 2012 survey had a different number of respondents, we took 59 in order to compare to the 2007 survey

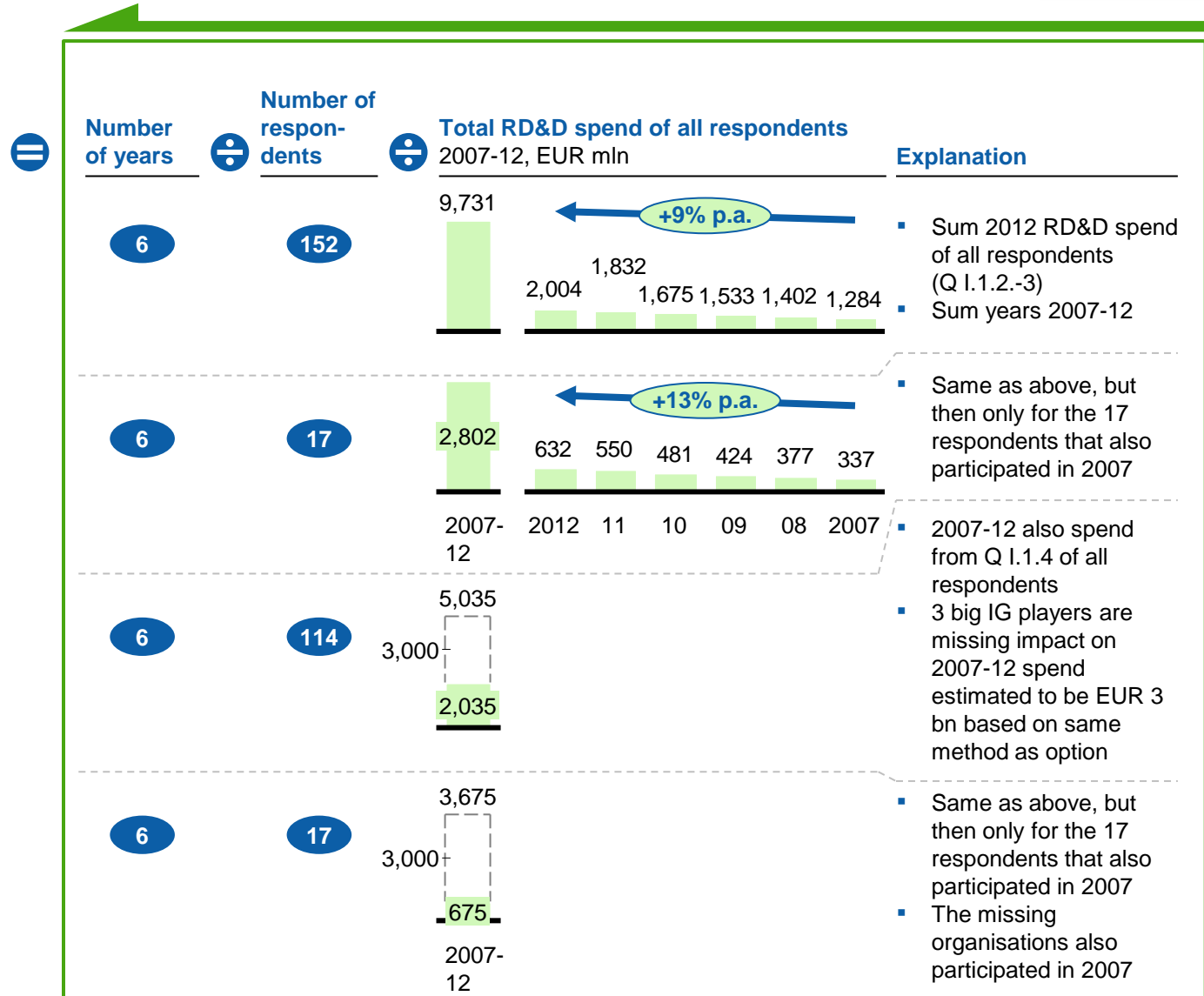
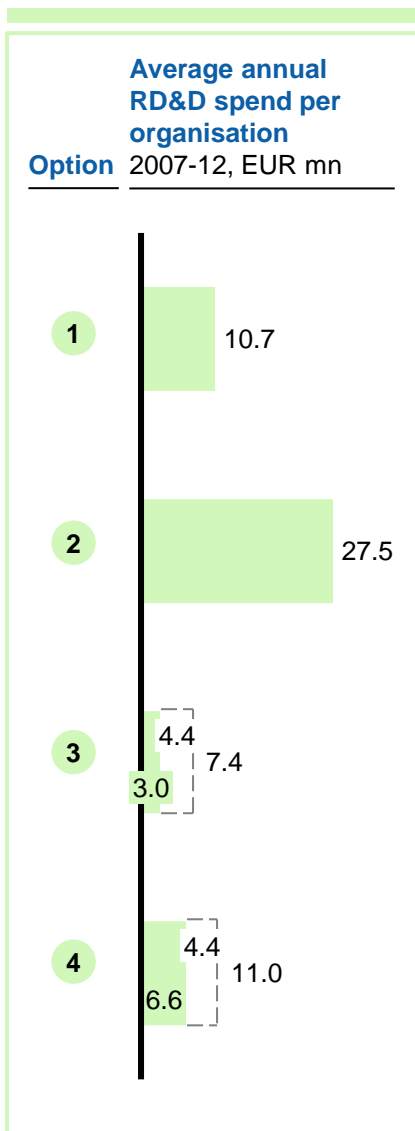
2 Survey question I.1.2-3

3 Survey question I.1.4

4 Daimler, Siemens, and Enel

5 2007-13 average

# Calculation of average annual RD&D spend per organisation over 2007-12

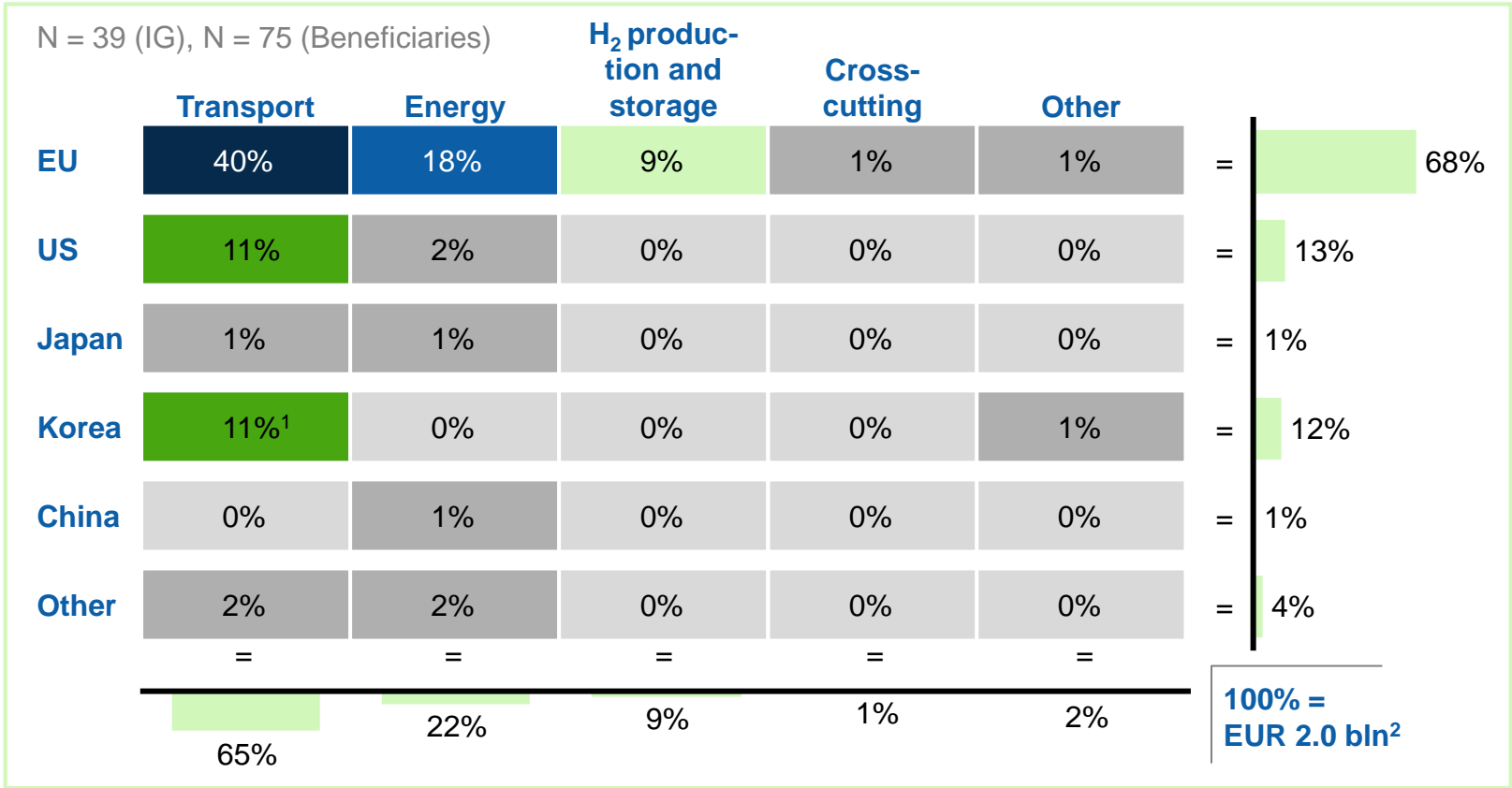
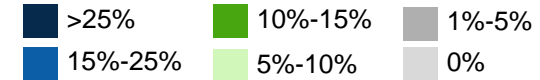


# R&D and Market introduction/deployment expenditures in the FC&H sector of respondents focus on transport in the EU

2007-12



Percentage of the total expenditure from 2007 till 2012



Question I.1.4.1 What were your TOTAL FC&H expenditures over the period 2007-2012? The TOTAL FC&H expenditure are the FC&H R&D and market introduction/deployment expenditures. For research institutes, the TOTAL FC&H expenditures is the FC&H research budget. If an exact number is not available, please give your best estimate.

Question I.1.4.2 Please provide the breakdown of the TOTAL FC&H expenditures over 2007-2012 (as given above) by application and region. Only give the breakdowns for the regions in which you are active. The total calculated in the bottom-right cell should be 100%. If exact numbers are not available, please give your best estimate.

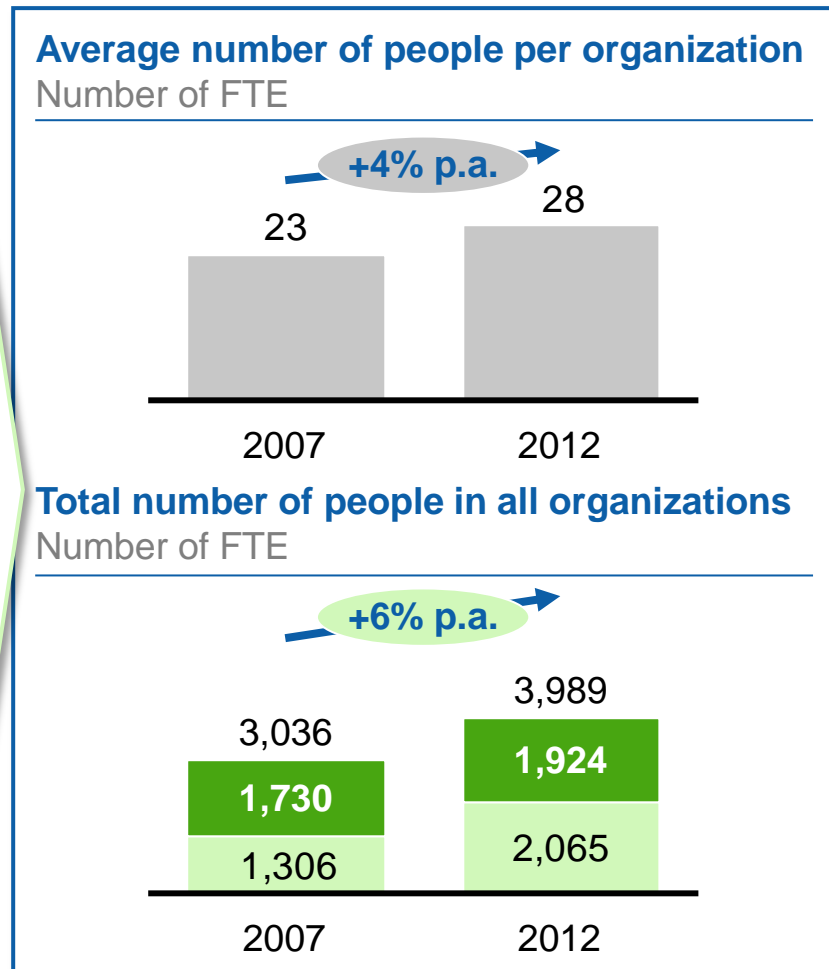
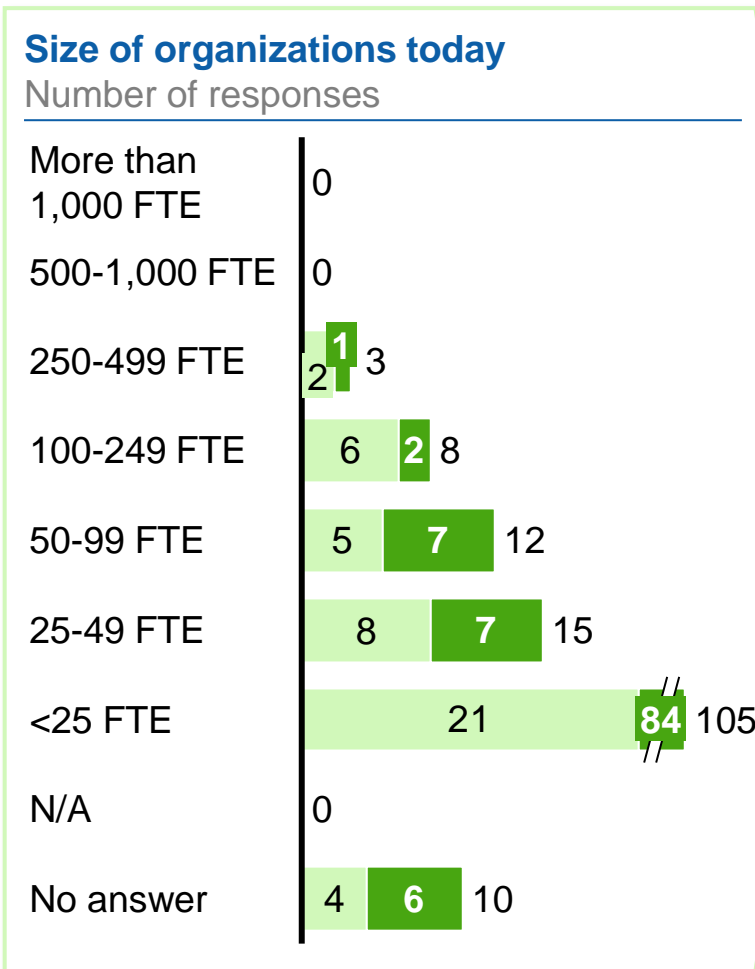
1 16% for Transport – Korea is caused by player

2 See pages 10 and 11

# Total employment of respondents increased at 6% per year from 2007-2012, although 73% still employ less than 25 FTE in 2012

N = 46 (IG), N = 107 (Beneficiaries)

Industry Grouping (light green) Beneficiaries (dark green)



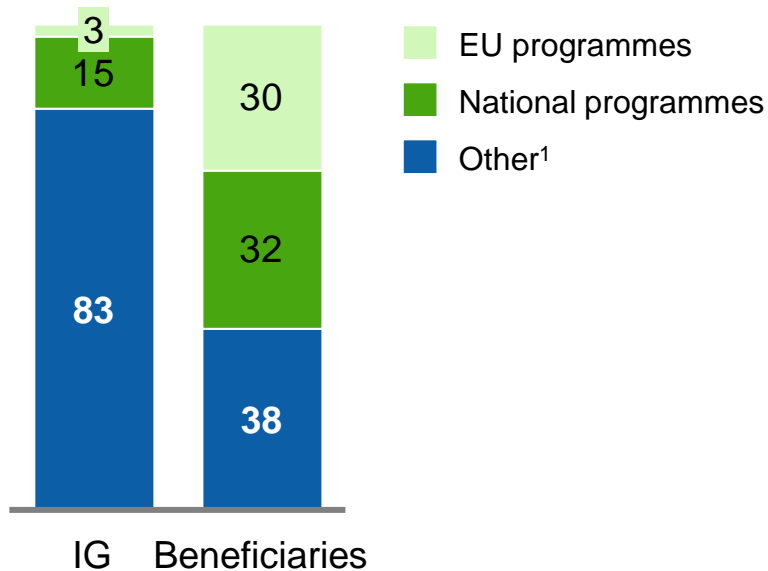
Question I.2.1. How many people (FTE) does your organisation employ in the FC&H sector today (2012)?  
 Question I.2.2. How many people (FTE) did your organisation employ in the FC&H sector in 2007?

# Although most respondents get the largest part of their budget from other sources than EU/national programmes, the establishment of FCH JU has had a positive effect on R&D expenditures/budget

## Origin of budget for R&D and market introduction/deployment expenditures

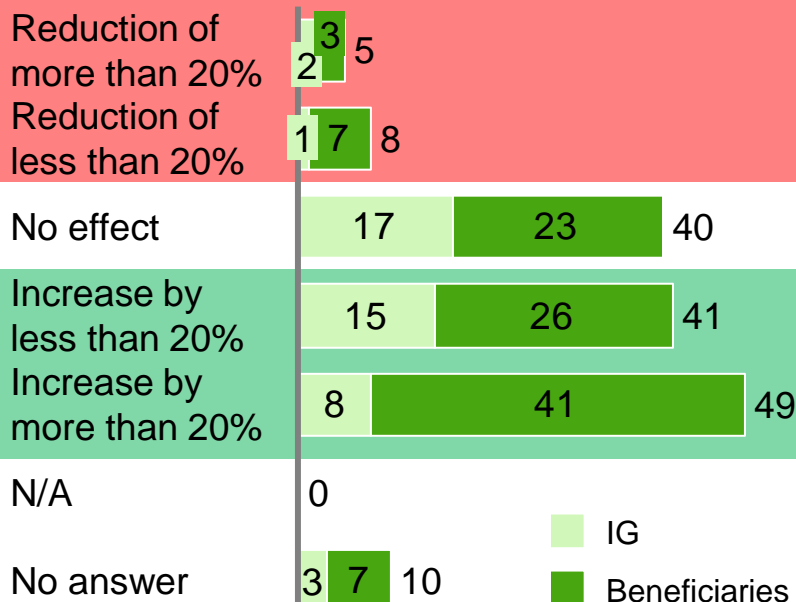
Percentage

N = 35 (IG), N = 75 (Beneficiaries)



## Effect on R&D expenditures/budget caused by establishment FCH JU

N = 46 (IG), N = 107 (Beneficiaries)



Question I.3.1. What average percentage of your TOTAL FC&H expenditures (on R&D and market introduction)/budget was financed by EU programmes from 2007-2012 (FCH JU or European Commission)?

Question I.3.2. What average percentage of your TOTAL FC&H expenditures (on R&D and market introduction)/budget was financed by national programmes from 2007-2012?

Question I.3.3. Compared to your current spend/budget on research for FC&H technologies: Can you provide an estimation of the total additional/reduced amount you invest in R&D on FC&H technologies as a result of the establishment of the FCH JU over the period 2007 - 2013?

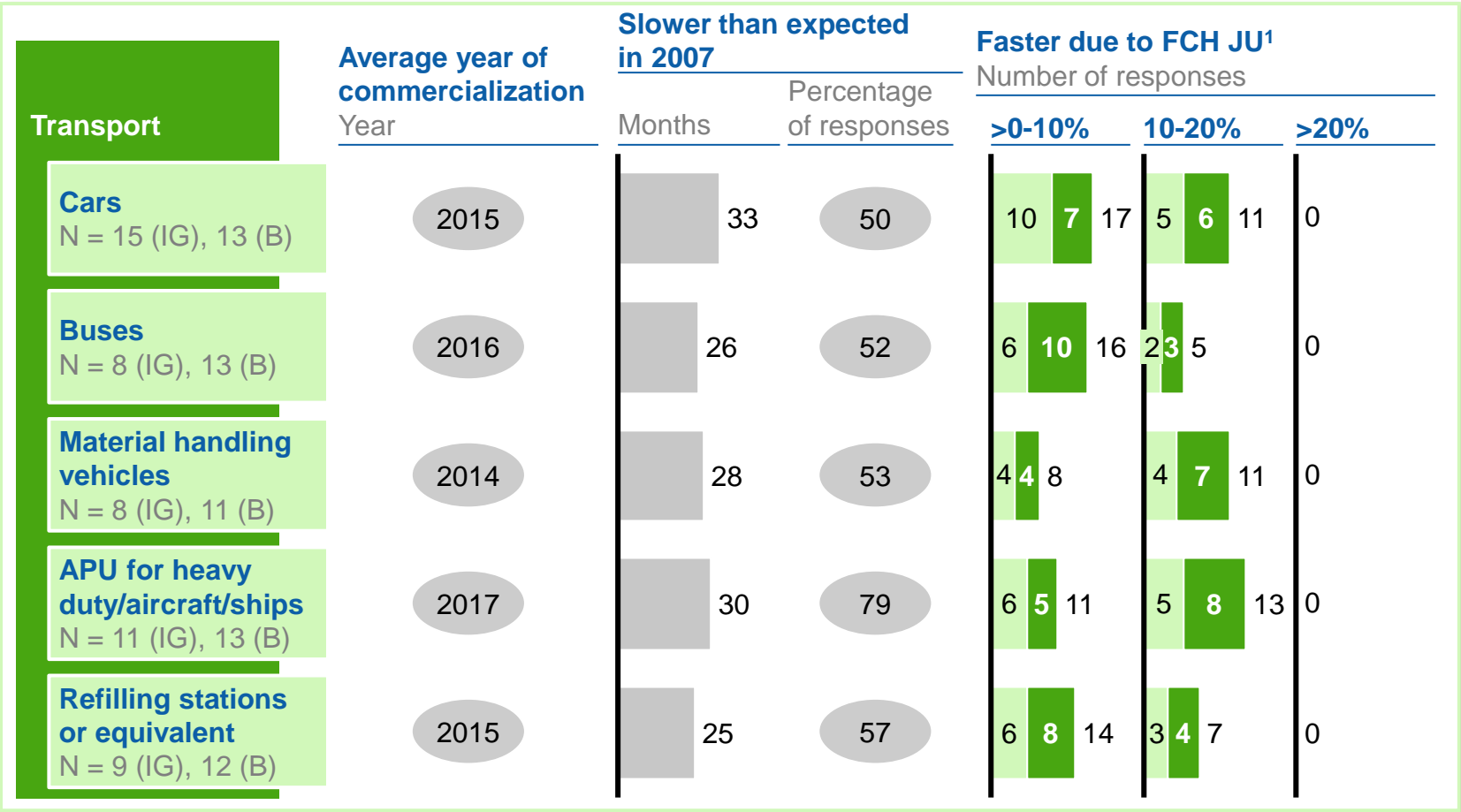
<sup>1</sup> Mainly private

# Respondents expect commercialization of Transport technology in the coming 2-5 years

Industry Grouping  
Beneficiaries  
Combined



2007-12



Question I.4.1. When do you expect your product(s)/application(s)/research project(s) to be commercialised (please split by product line)?  
 Question I.4.2. How has this timeframe evolved since 2007? Insert a positive number when it took longer than expected and a negative number if it took less time than expected.  
 Question I.4.3. To your opinion, has the time-to-market of your commercial products/applications decreased thanks to the establishment of the FCH JU?  
 Question I.4.4. If the time-to-market has decreased thanks to the FCH JU, can you provide an estimation of the time reduction, by product line?

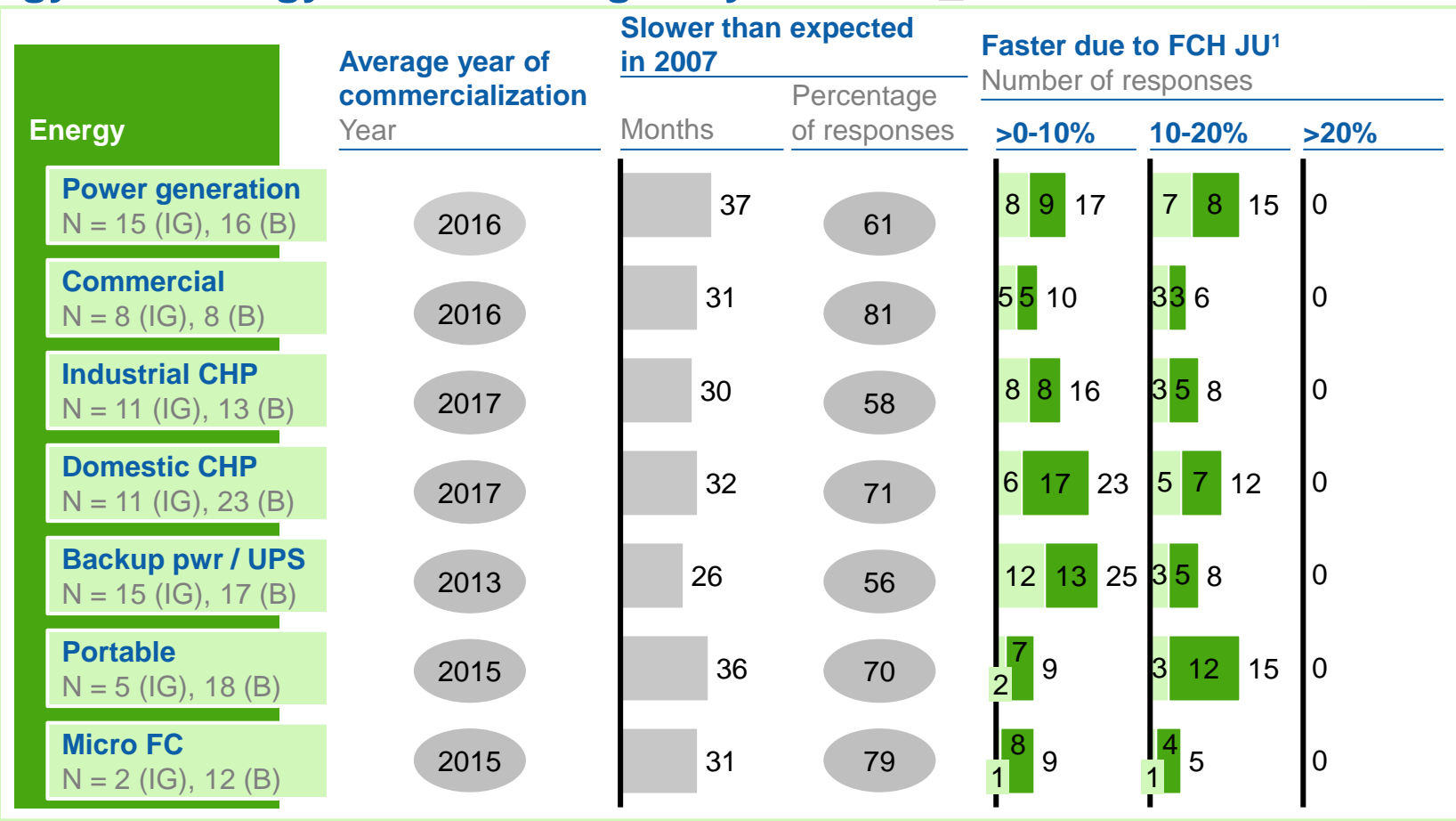
1 Note that respondents can think the FCH JU sped up commercialisation, and also believe that, overall, commercialisation is still slower than expected in 2007

# Respondents expect commercialization of Energy technology in the coming 1-5 years

- Industry Grouping
- Beneficiaries
- Combined



2007-12



Question I.4.1. When do you expect your product(s)/application(s)/research project(s) to be commercialised (please split by product line)?  
 Question I.4.2. How has this timeframe evolved since 2007? Insert a positive number when it took longer than expected and a negative number if it took less time than expected.  
 Question I.4.3. To your opinion, has the time-to-market of your commercial products/applications decreased thanks to the establishment of the FCH JU?  
 Question I.4.4. If the time-to-market has decreased thanks to the FCH JU, can you provide an estimation of the time reduction, by product line?

<sup>1</sup> Note that respondents can think the FCH JU sped up commercialisation, and also believe that, overall, commercialisation is still slower than expected in 2007

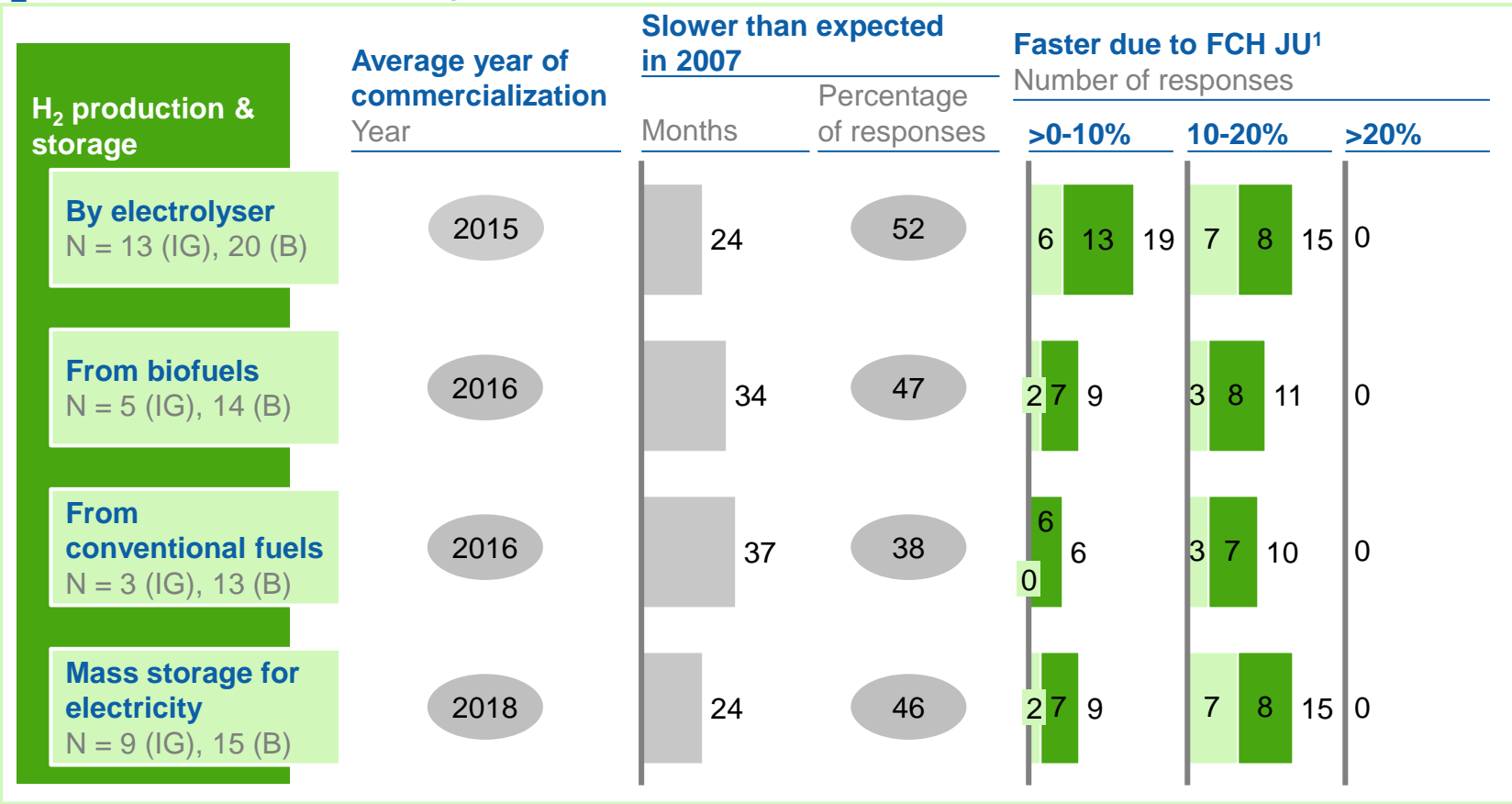


Industry Grouping  
Beneficiaries  
Combined



2007-12

# Respondents expect commercialization of H<sub>2</sub> production<sup>1</sup> in 3-6 years



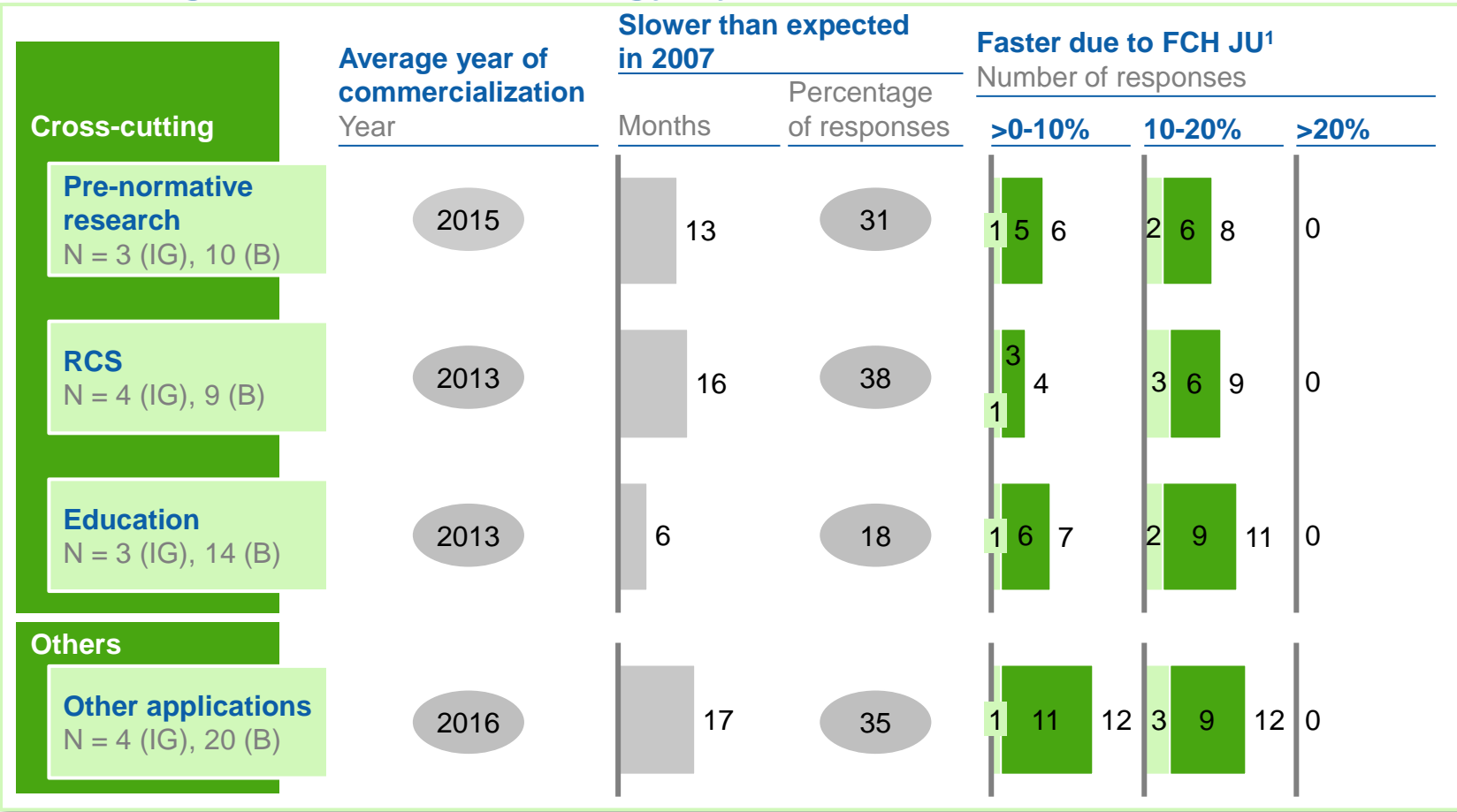
Question I.4.1. When do you expect your product(s)/application(s)/research project(s) to be commercialised (please split by product line)?  
 Question I.4.2. How has this timeframe evolved since 2007? Insert a positive number when it took longer than expected and a negative number if it took less time than expected.  
 Question I.4.3. To your opinion, has the time-to-market of your commercial products/applications decreased thanks to the establishment of the FCH JU?  
 Question I.4.4. If the time-to-market has decreased thanks to the FCH JU, can you provide an estimation of the time reduction, by product line?

<sup>1</sup> Except Mass storage for electricity<sup>2</sup>

<sup>2</sup> Note that respondents can think the FCH JU sped up commercialisation, and also believe that, overall, commercialisation is still slower than expected in 2007

# Respondents expect commercialization of cross-cutting and other technology by the mid-2010's

Industry Grouping  
Beneficiaries  
Combined 2007-12



Question I.4.1. When do you expect your product(s)/application(s)/research project(s) to be commercialised (please split by product line)?  
 Question I.4.2. How has this timeframe evolved since 2007? Insert a positive number when it took longer than expected and a negative number if it took less time than expected.  
 Question I.4.3. To your opinion, has the time-to-market of your commercial products/applications decreased thanks to the establishment of the FCH JU?  
 Question I.4.4. If the time-to-market has decreased thanks to the FCH JU, can you provide an estimation of the time reduction, by product line?

1 Note that respondents can think the FCH JU sped up commercialisation, and also believe that, overall, commercialisation is still slower than expected in 2007

# Annual turnover forecast for 2020 by respondents shows growth in all sectors

EUR, mln



N = 33 (IG), N = 30 (Beneficiaries)

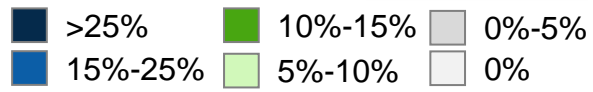
|              | Transport                | Energy                   | Hydrogen production and storage | Cross-cutting      | Other                | Total                    |
|--------------|--------------------------|--------------------------|---------------------------------|--------------------|----------------------|--------------------------|
| <b>EU</b>    | 198 (2013), 864 (2020)   | 68 (2013), 694 (2020)    | 44 (2013), 736 (2020)           | 2 (2013), 1 (2020) | 1 (2013), 41 (2020)  | 313 (2013), 2,337 (2020) |
| <b>U.S.</b>  | 23 (2013), 358 (2020)    | 9 (2013), 145 (2020)     | 6 (2013), 78 (2020)             | 0 (2013), 0 (2020) | 3 (2013), 9 (2020)   | 40 (2013), 590 (2020)    |
| <b>Japan</b> | 8 (2013), 84 (2020)      | 3 (2013), 10 (2020)      | 0 (2013), 23 (2020)             | 0 (2013), 0 (2020) | 3 (2013), 2 (2020)   | 14 (2013), 118 (2020)    |
| <b>Korea</b> | 4 (2013), 65 (2020)      | 3 (2013), 68 (2020)      | 0 (2013), 1 (2020)              | 0 (2013), 0 (2020) | 5 (2013), 2 (2020)   | 12 (2013), 135 (2020)    |
| <b>China</b> | 2 (2013), 22 (2020)      | 10 (2013), 73 (2020)     | 0 (2013), 1 (2020)              | 0 (2013), 0 (2020) | 1 (2013), 3 (2020)   | 12 (2013), 99 (2020)     |
| <b>Other</b> | 11 (2013), 88 (2020)     | 25 (2013), 110 (2020)    | 8 (2013), 19 (2020)             | 0 (2013), 0 (2020) | 1 (2013), 4 (2020)   | 45 (2013), 220 (2020)    |
| <b>Total</b> | 246 (2013), 1,481 (2020) | 117 (2013), 1,099 (2020) | 57 (2013), 857 (2020)           | 2 (2013), 2 (2020) | 13 (2013), 61 (2020) | 437 (2013), 3,500 (2020) |

Question II.1.1. What are your annual turnover forecasts for YOUR different products or applications in FC&H (your expected annual turnover in 2013 & 2020)? N/A for research organisations

1 Not shown if turnover is below EUR 1 mln

# Respondents forecast their turnover till 2020 to grow strongest in hydrogen production and storage in the EU

Percentage of the increase in annual turnover from 2013 to 2020



N = 33 (IG), N = 30 (Beneficiaries)

|              | Transport | Energy | Hydrogen production and storage | Cross-cutting | Other |
|--------------|-----------|--------|---------------------------------|---------------|-------|
| <b>EU</b>    | 22%       | 20%    | 23%                             | 0%            | 1%    |
| <b>U.S.</b>  | 11%       | 4%     | 2%                              | 0%            | 0%    |
| <b>Japan</b> | 2%        | 0%     | 1%                              | 0%            | 0%    |
| <b>Korea</b> | 2%        | 2%     | 0%                              | 0%            | 0%    |
| <b>China</b> | 1%        | 2%     | 0%                              | 0%            | 0%    |
| <b>Other</b> | 3%        | 3%     | 0%                              | 0%            | 0%    |

**100% = EUR 3063 mln**

Question II.1.1. What are your annual turnover forecasts for YOUR different products or applications in FC&H (your expected annual turnover in 2013 & 2020)? N/A for research organisations

# Respondents forecast their expenditures<sup>1</sup> till 2020 to grow strongest in energy and H<sub>2</sub> production & storage in the EU

EUR, mln

2013-20



■ 2013    ■ 2020  
■ CAGR <10%<sup>2</sup>    ■ CAGR 10-20%<sup>2</sup>    ■ CAGR >20%<sup>2</sup>

N = 33 (IG), N = 30 (Beneficiaries)

|              | Transport |     | Energy |     | Hydrogen production and storage |     | Cross-cutting |   | Other |    | Total |       |
|--------------|-----------|-----|--------|-----|---------------------------------|-----|---------------|---|-------|----|-------|-------|
| <b>EU</b>    | 295       | 364 | 108    | 272 | 36                              | 227 | 4             | 6 | 24    | 35 | 467   | 905   |
| <b>U.S.</b>  | 27        | 145 | 7      | 17  | 0                               | 17  | 0             | 0 | 0     | 2  | 35    | 181   |
| <b>Japan</b> | 11        | 34  | 1      | 3   | 0                               | 7   | 0             | 0 | 0     | 1  | 13    | 44    |
| <b>Korea</b> | 10        | 61  | 1      | 1   | 0                               | 0   | 0             | 0 | 0     | 0  | 11    | 63    |
| <b>China</b> | 1         | 1   | 2      | 2   | 0                               | 0   | 0             | 0 | 0     | 2  | 3     | 6     |
| <b>Other</b> | 8         | 5   | 7      | 15  | 0                               | 1   | 0             | 0 | 0     | 0  | 15    | 21    |
| <b>Total</b> | 353       | 610 | 125    | 311 | 37                              | 252 | 5             | 7 | 25    | 40 | 544   | 1,221 |

Question II.1.2. What is your forecast in terms of YOUR expenditure per year in FC&H (including R&D projects and market-introduction) for 2013-2020? For research organisations, please provide your expected annual budget.

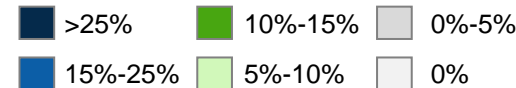
<sup>1</sup> Includes R&D and market introduction/deployment

<sup>2</sup> Not shown if expenditures are below EUR 1 mln

# Respondents expect their expenditures till 2020 to grow fastest in the EU, especially in H<sub>2</sub> production & storage and energy

2013-20

Percentage of the increase in annual expenditures from 2013-20



N = 32 (IG), N = 82 (Beneficiaries)

|              | Transport | Energy | Hydrogen production and storage | Cross-cutting | Other |
|--------------|-----------|--------|---------------------------------|---------------|-------|
| <b>EU</b>    | 10%       | 24%    | 28%                             | 0%            | 2%    |
| <b>U.S.</b>  | 17%       | 2%     | 2%                              | 0%            | 0%    |
| <b>Japan</b> | 3%        | 0%     | 1%                              | 0%            | 0%    |
| <b>Korea</b> | 7%        | 0%     | 0%                              | 0%            | 0%    |
| <b>China</b> | 0%        | 0%     | 0%                              | 0%            | 0%    |
| <b>Other</b> | -1%       | 1%     | 0%                              | 0%            | 0%    |

**100% = EUR 676 mln**

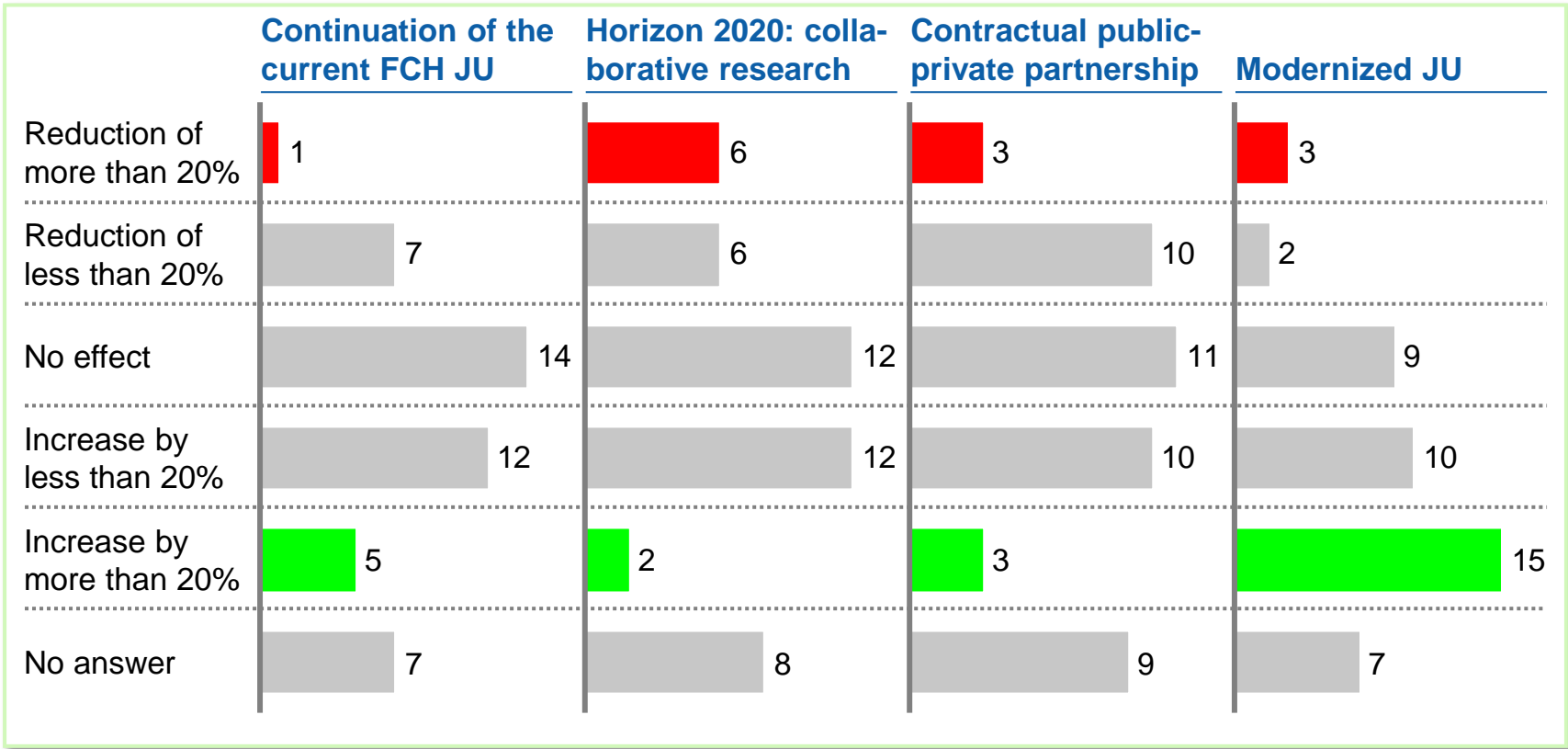
Question II.1.2. What is your forecast in terms of YOUR expenditure per year in FC&H (including R&D projects and market-introduction) for 2013-2020? For research organisations, please provide your expected annual budget.

# IG members assess the impact of policy options for Horizon 2020 on R&D expenditures to be highest for a modernized JU



2013-20

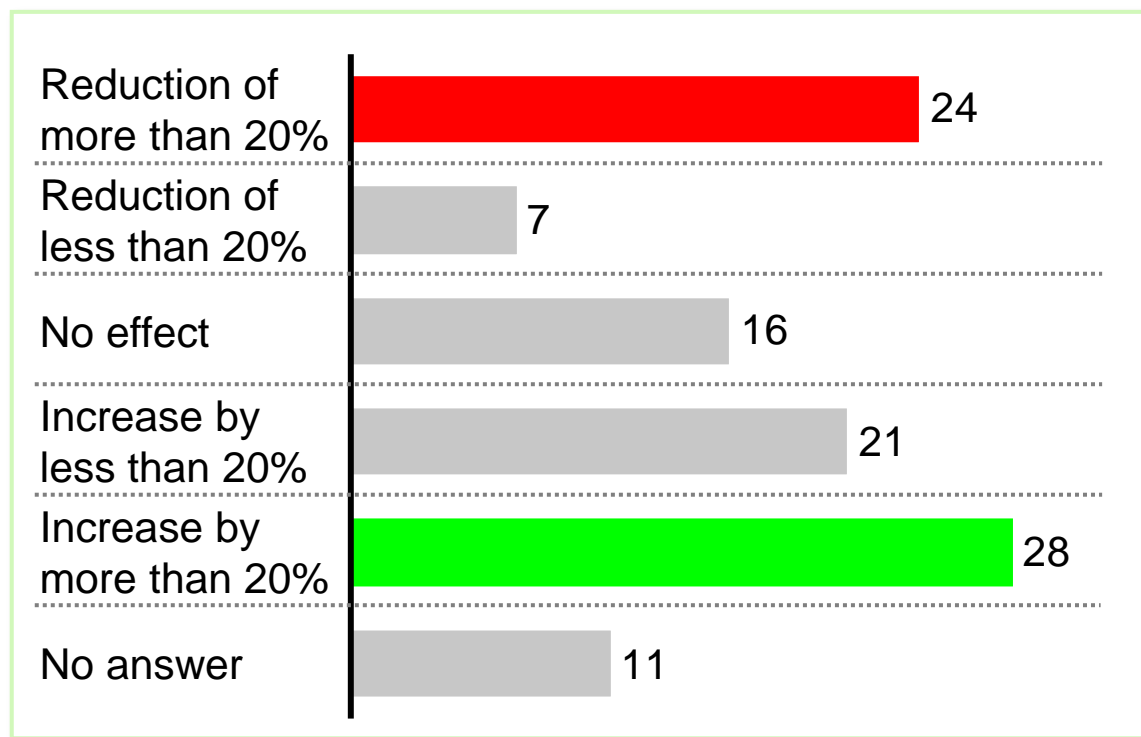
N = 46 (IG)



Question II.1.3. How would the four different options for the continuation of EU research funds for FC&H impact YOUR research expenditures (or budget for research organisations) in this field over the period 2013 - 2020?

# Impact on R&D expenditures of beneficiaries of continuation of FCH JU varies

N = 107 (Beneficiaries)



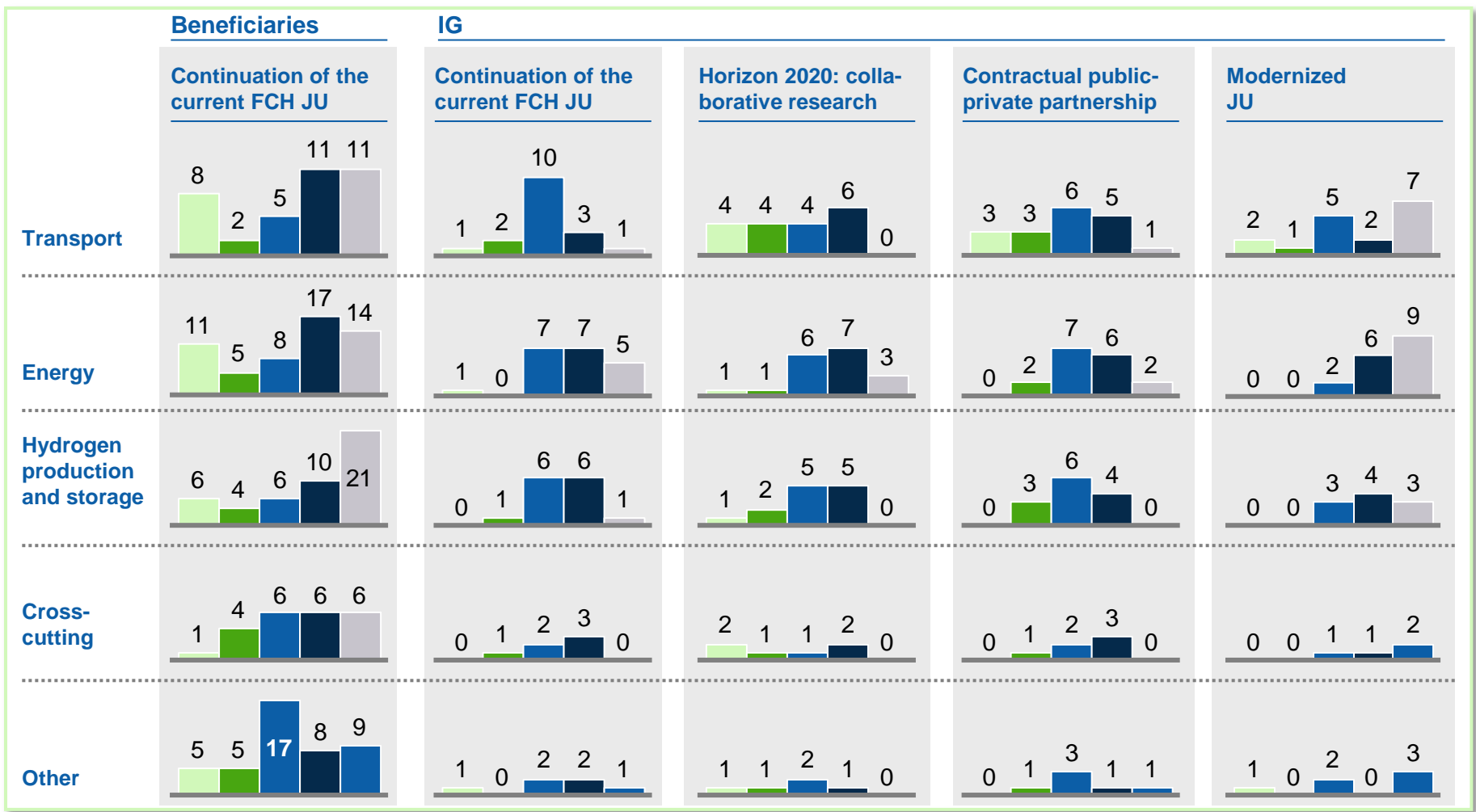
Question II.1.3. Compared to a possible termination of the FCH JU, how would a continuation of the FCH JU impact YOUR research expenditures on FC&H (or budget for research organisations) over the period 2013-2020?



# Respondents assess impact of policy options on expenditures to be highest in a modernized JU for all technologies

N = 46 (IG), N = 107 (B)<sup>1</sup>

■ Reduction >20%   
 ■ Reduction <20%   
 ■ No effect   
 ■ Increase <20%   
 ■ Increase >20%



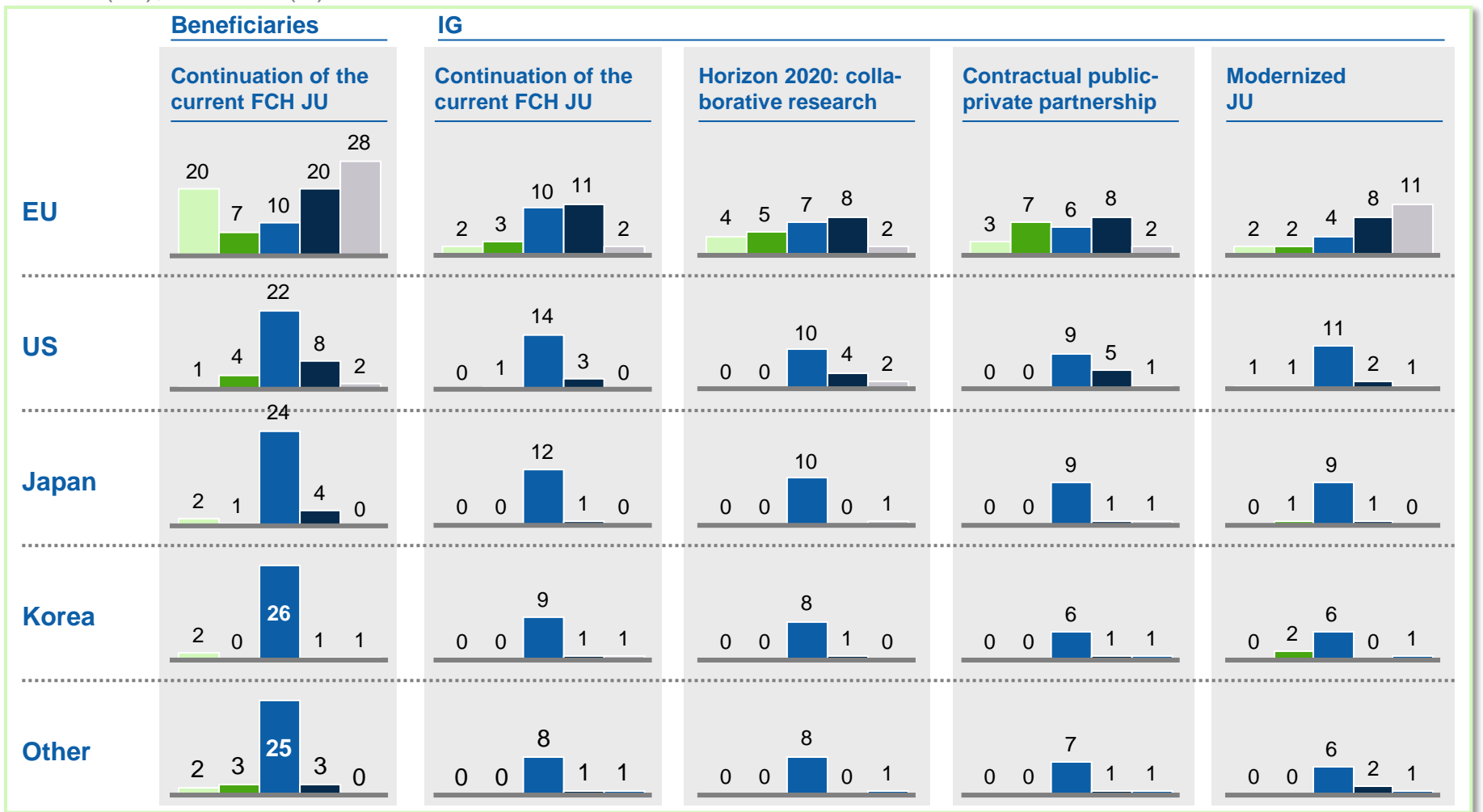
Question II.1.4. Can you classify the impact of the four different options with regard to the different applications?

<sup>1</sup> Respondents that did not answer are not shown

# Respondents assess impact of policy options on expenditures in the EU to be highest with a modernized JU; for the rest of world the impact differences are less pronounced

N = 46 (IG), N = 107 (B)<sup>1</sup>

■ Reduction >20%   
 ■ Reduction <20%   
 ■ No effect   
 ■ Increase <20%   
 ■ Increase >20%

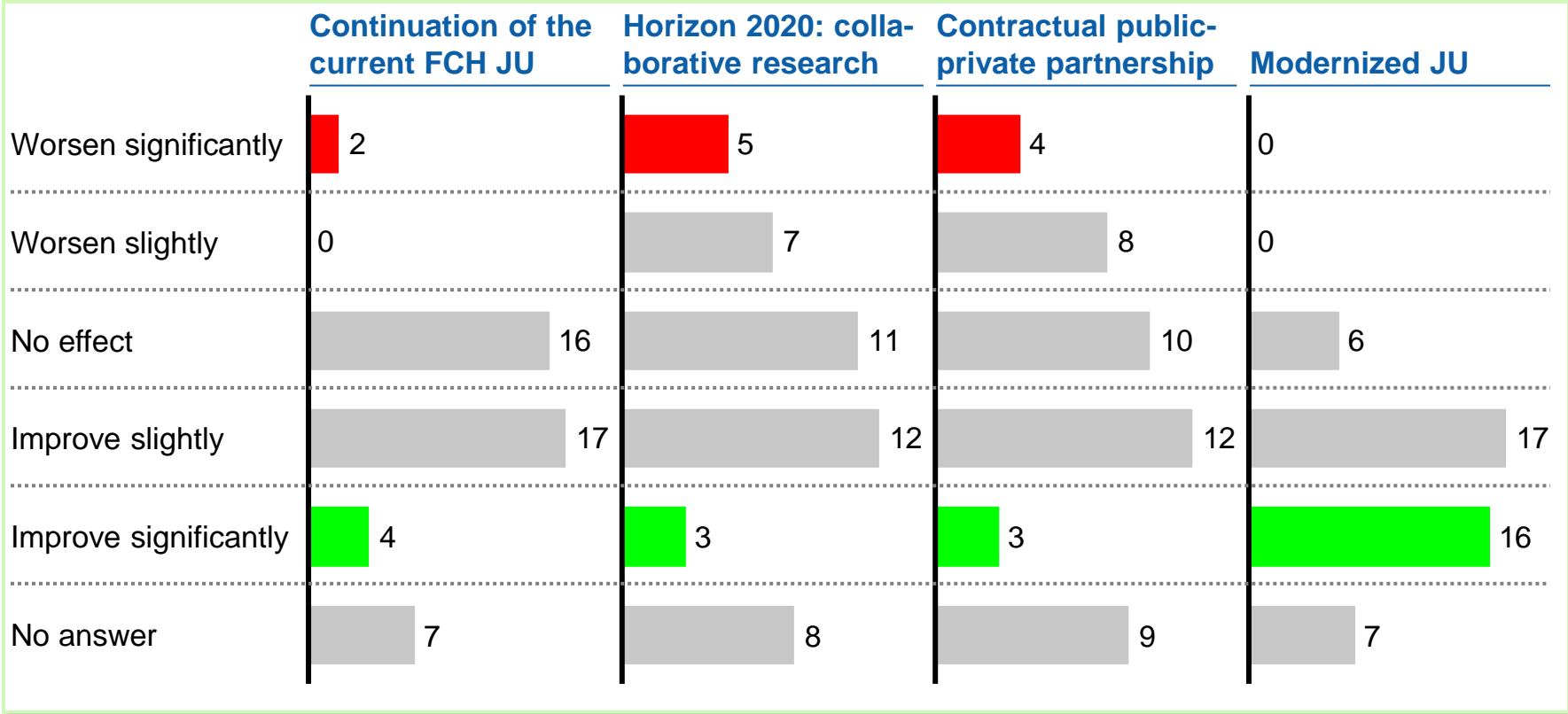


Question II.1.5. Can you classify the impact of the four different options by geographical area?

<sup>1</sup> Respondents that did not answer are not shown

# IG members assess impact of policy options for Horizon 2020 on research efficiency to be highest with a modernized JU

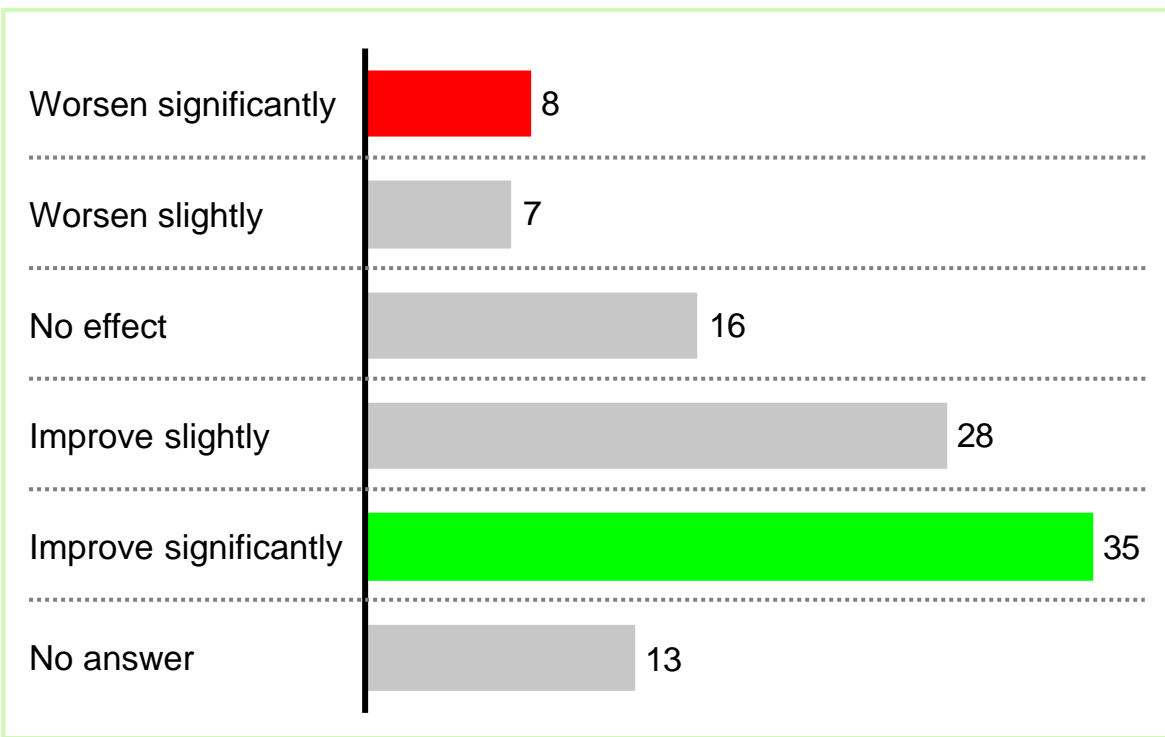
N = 46 (IG)



Question II.2.1. How would the following four options impact your research efficiency in the field of FC&H over the period of 2013 - 2020? Efficiency is understood to be the relationship between resources used and the results obtained (in other terms, to what extent does the cooperative research reduce (in your opinion) the amount of effort required to reach a given research objective (as a consequence of sharing of knowledge, spill-overs, synergies etc.)).

# Continuation of the FCH JU improves research efficiency of beneficiaries

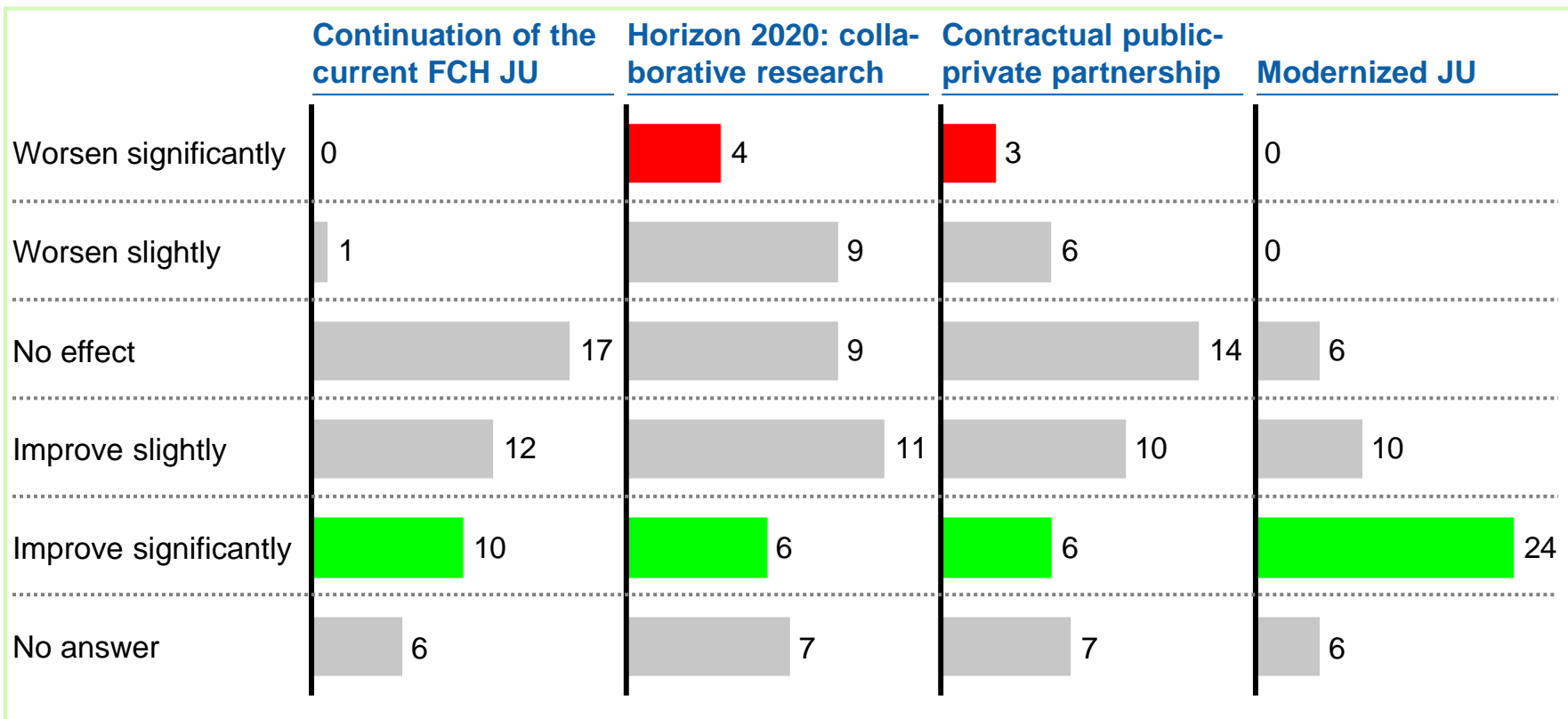
N = 107 (Beneficiaries)



Question II.2.1. How would a continuation of the FCH JU impact your research efficiency in the field of FC&H over the period of 2013 - 2020? Efficiency is understood to be the relationship between resources used and the results obtained (in other terms, to what extent does the cooperative research reduce (in your opinion) the amount of effort required to reach a given research objective (as a consequence of sharing of knowledge, spill-overs, synergies etc.)

# IG members assess impact of policy options for Horizon 2020 on product development to be highest with a modernized JU

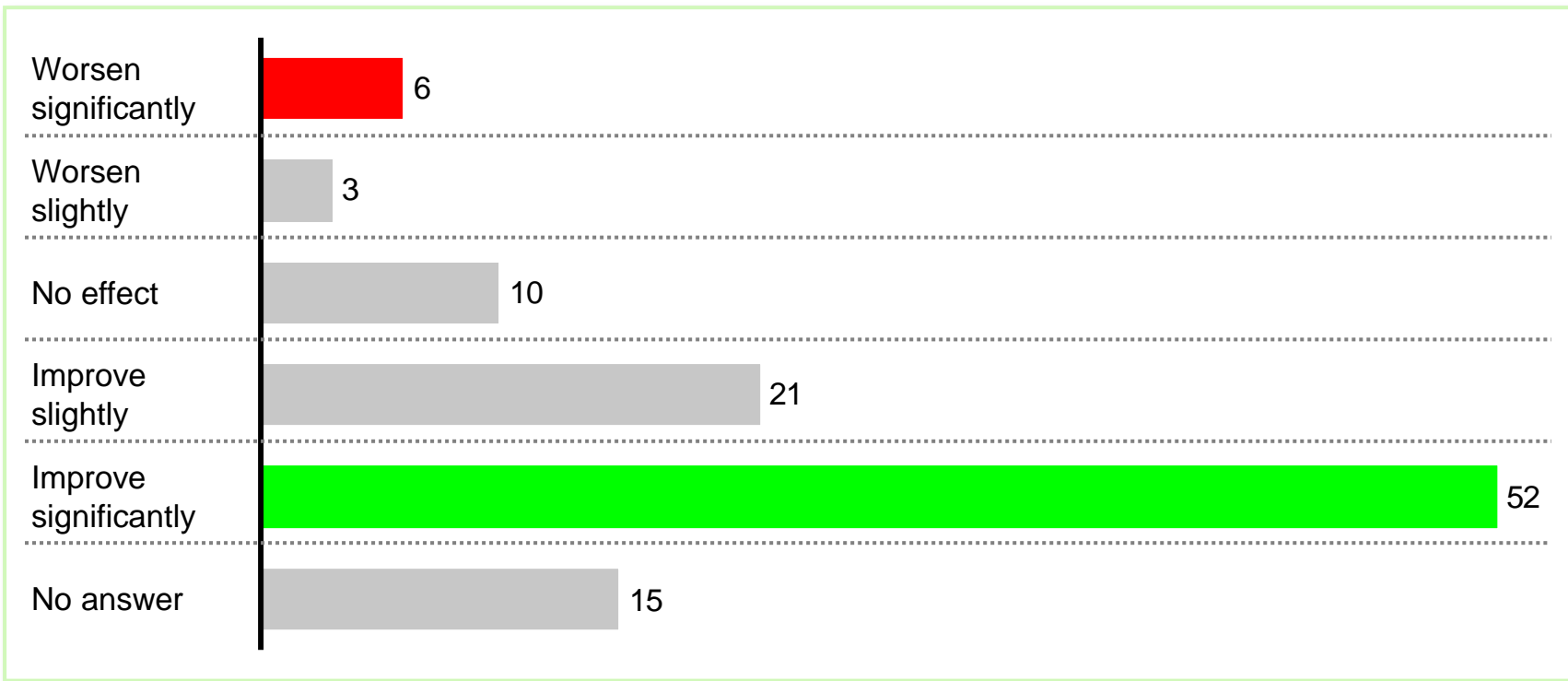
N = 46 (IG)



Question II.2.2. How would the following four options impact product development in the field of FC&H over the period 2013 - 2020?

# Continuation of the current FCH JU is seen as a significant improvement for product development in beneficiaries

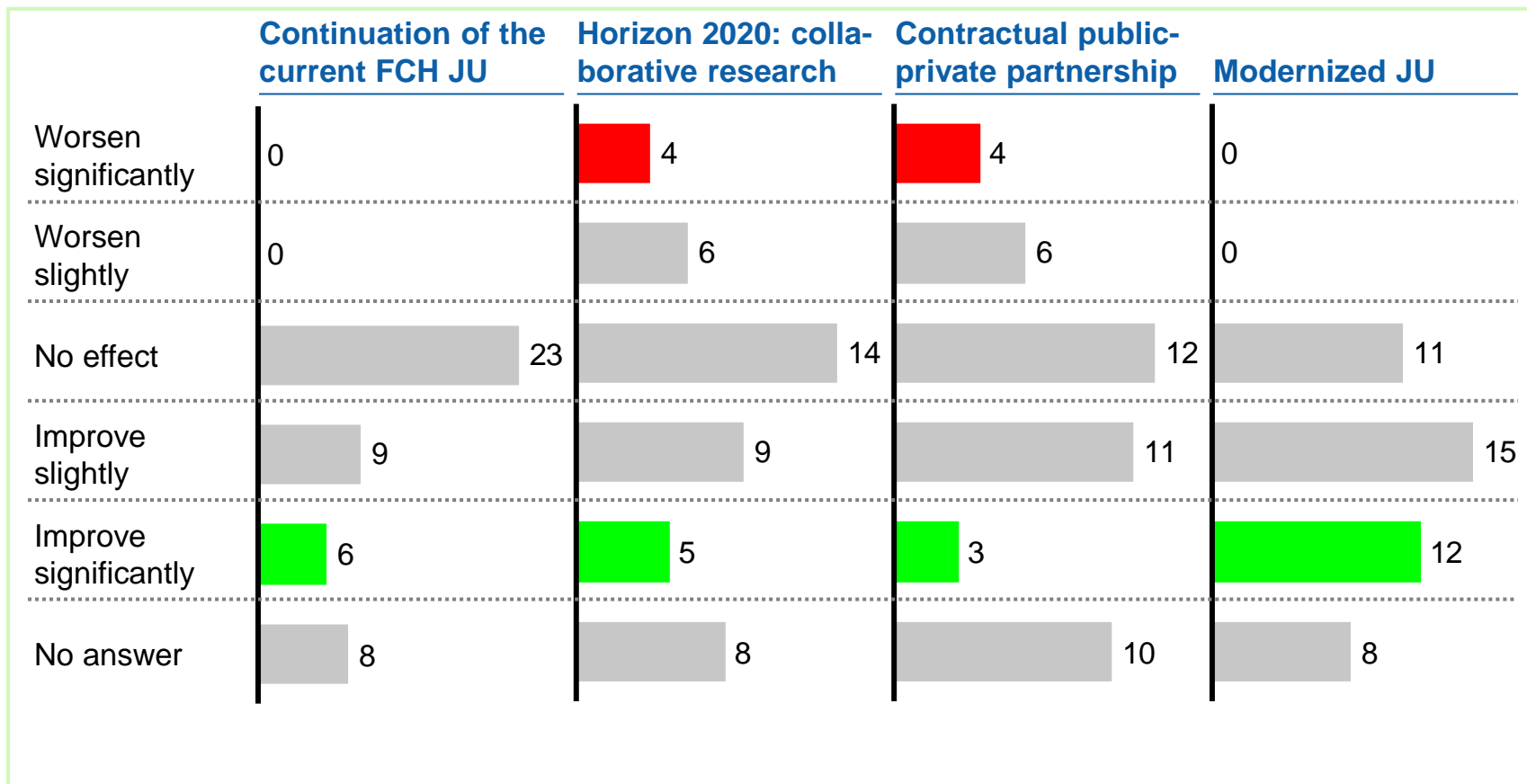
N = 107 (Beneficiaries)



Question II.2.2. How would a continuation of the FCH JU impact product development in the field of FC&H over the period 2013 - 2020?

# IG members assess impact of policy options for Horizon 2020 on coordination of research to be highest with a modernized JU

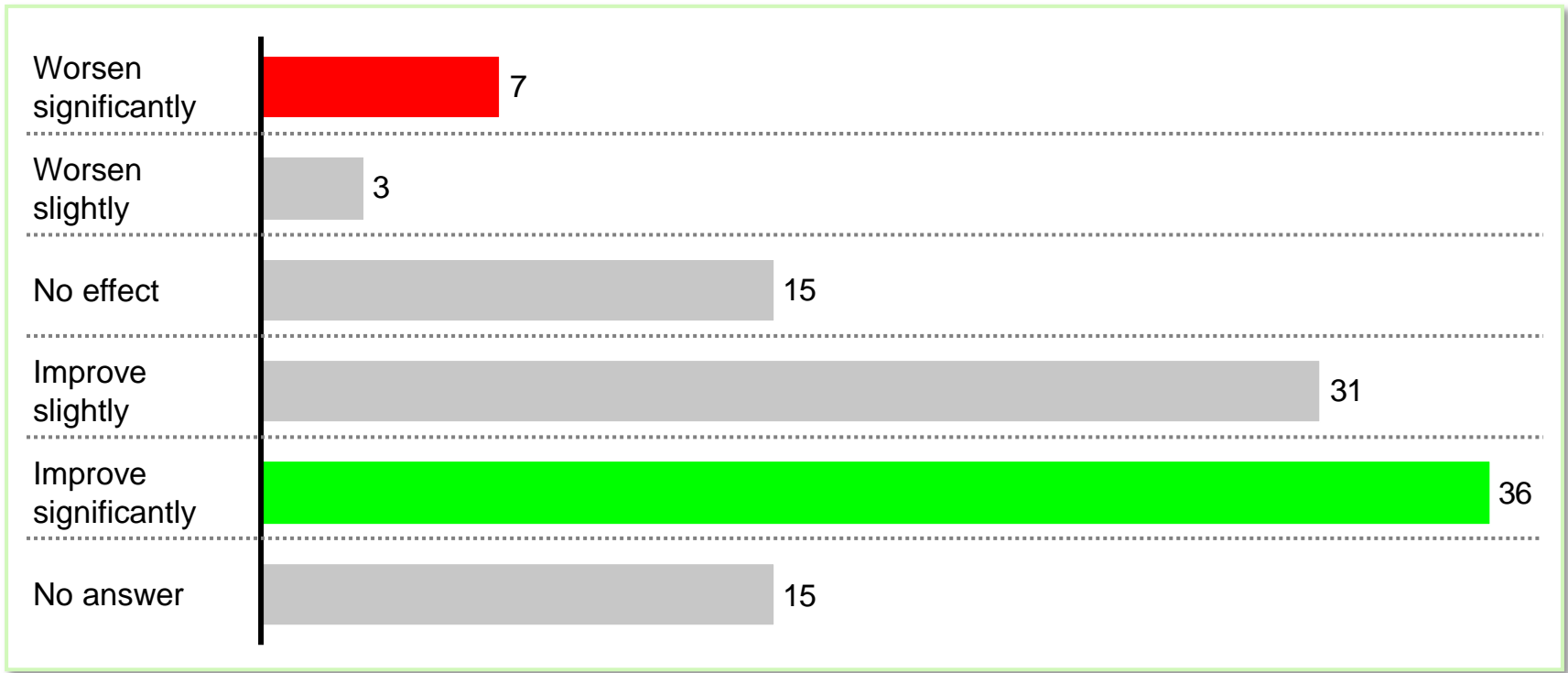
N = 46 (IG)



Question II.2.3. How would the four options impact the coordination of research between the FCH JU and MS programmes and thus on your participation in these programmes over the period 2013 - 2020?

# Continuation of current FCH JU improves coordination of research for beneficiaries

N = 107 (Beneficiaries)



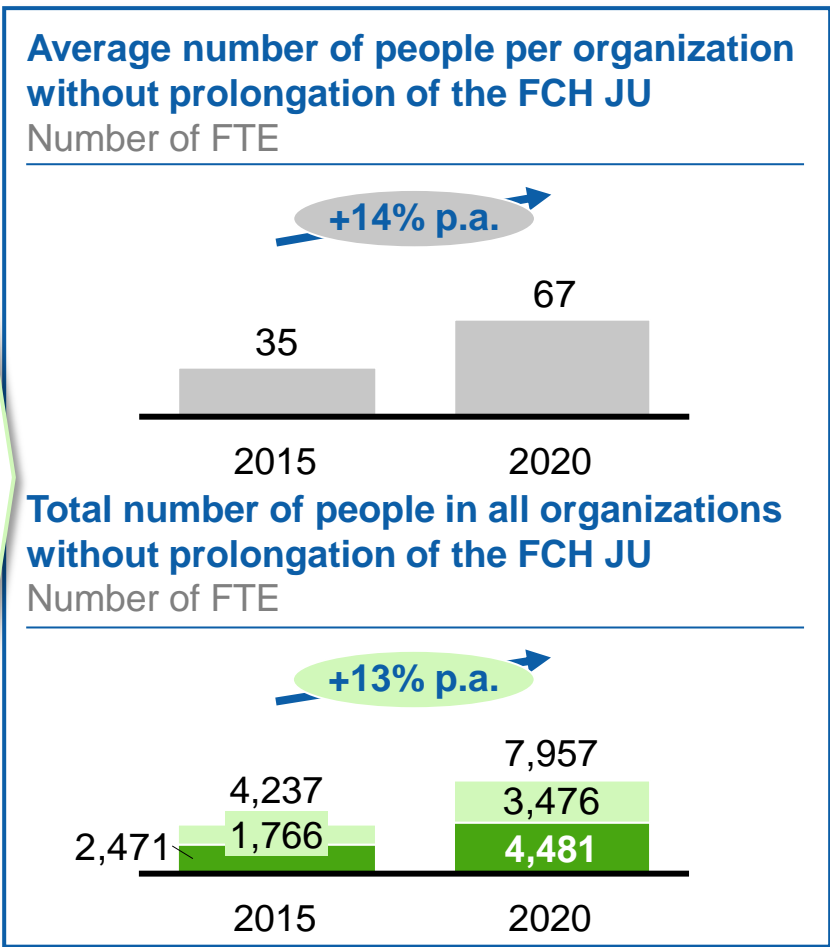
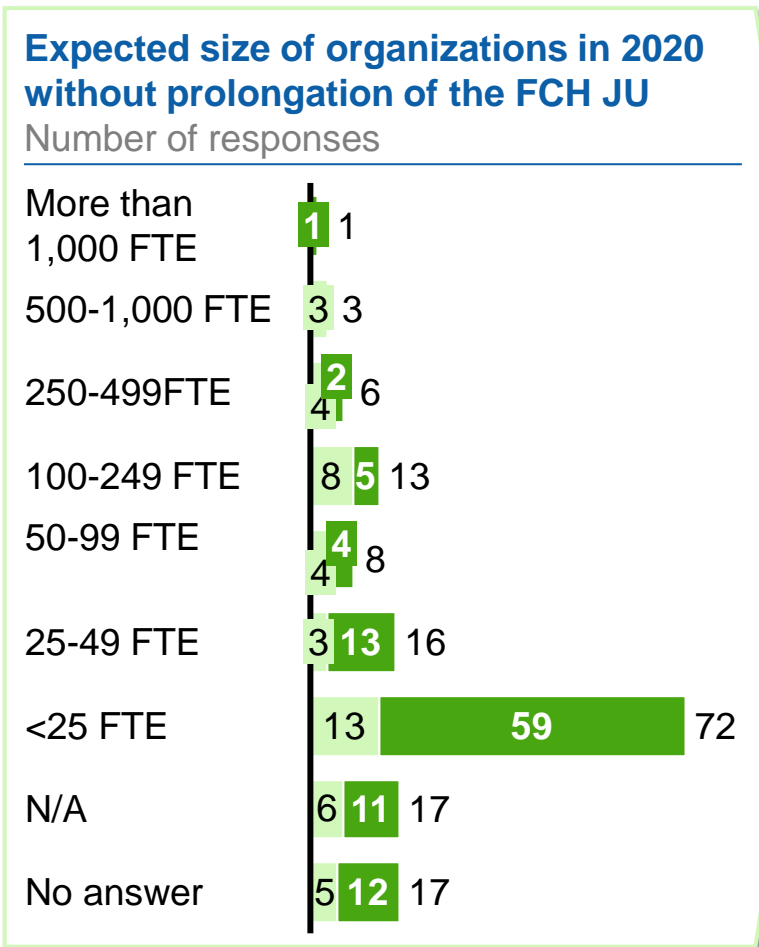
Question II.2.3. How would the four options impact the coordination of research between the FCH JU and MS programmes and thus on your participation in these programmes over the period 2013 - 2020?



# Respondents expect FC&H organizations to considerable rise in size over the next years, even in the absence of prolongation of the FCH JU

N = 46 (IG), 107 (Beneficiaries)

Industry Grouping (light green)    Beneficiaries (dark green)



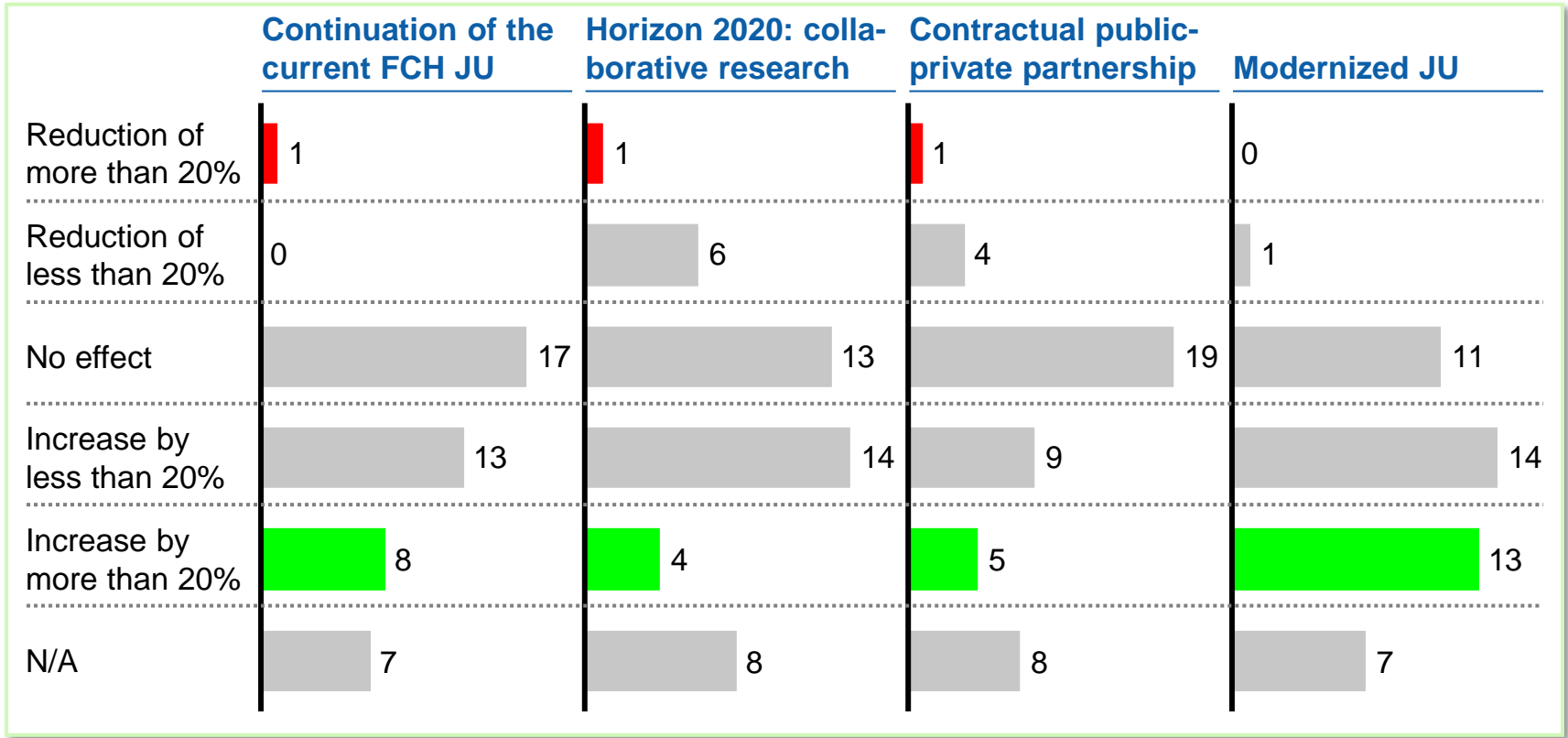
Question II.3.1. In your best estimation and considering NO prolongation of the FCH JU, how many people is your organisation likely to employ in the FC&H sector by 2015 and 2020 (number of people full time equivalent)

Note: For these questions, the participants were asked to assume NO prolongation of the FCH JU

SOURCE: FCH JU survey

# Most IG members expect that a modernized JU will have most effect on staff increase

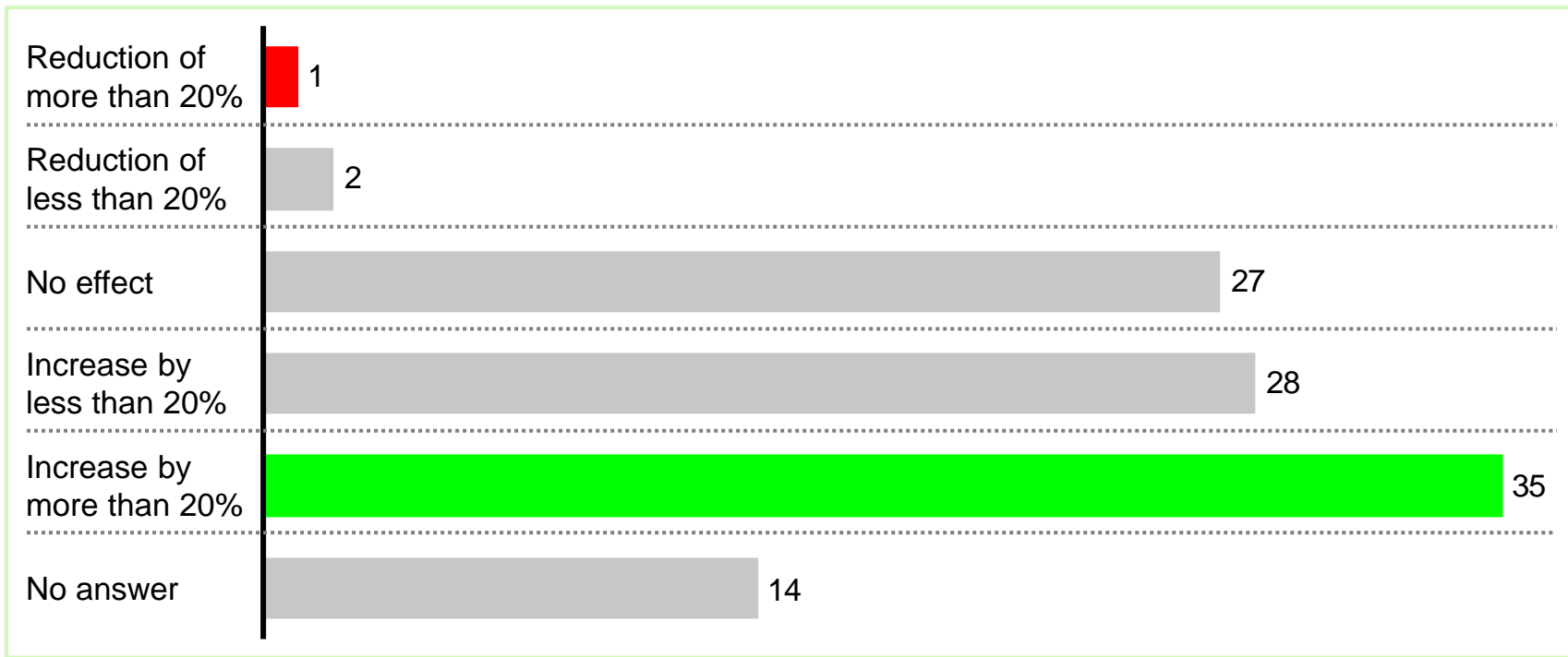
N = 46 (IG)



Question II.3.2. What would be the impact of the four options on your FC&H staff compared to number of FTEs in 2020 in question 3.1 above? E.g. No effect means same number of FTEs in 2020 as provided in question 3.1 above.

# Continuation of current FCH JU mostly has a positive effect on the amount of FC&H staff for beneficiaries

N = 107 (Beneficiaries)



Question II.3.2. What would be the impact of continuation of the FCH JU on your FC&H staff compared to number of FTEs in 2020 in question 3.1 above?  
E.g. No effect means same number of FTEs in 2020 as provided in question 3.1 above

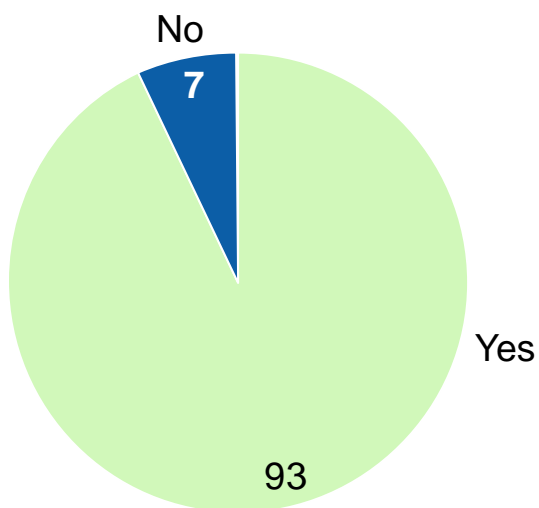
# The vast majority of respondents is in favor of continuation of FCH JU; expected public share of expenditures is less than 50% for most

Industry Grouping    Beneficiaries

## Are you in favor of continuation of the FCH JU?

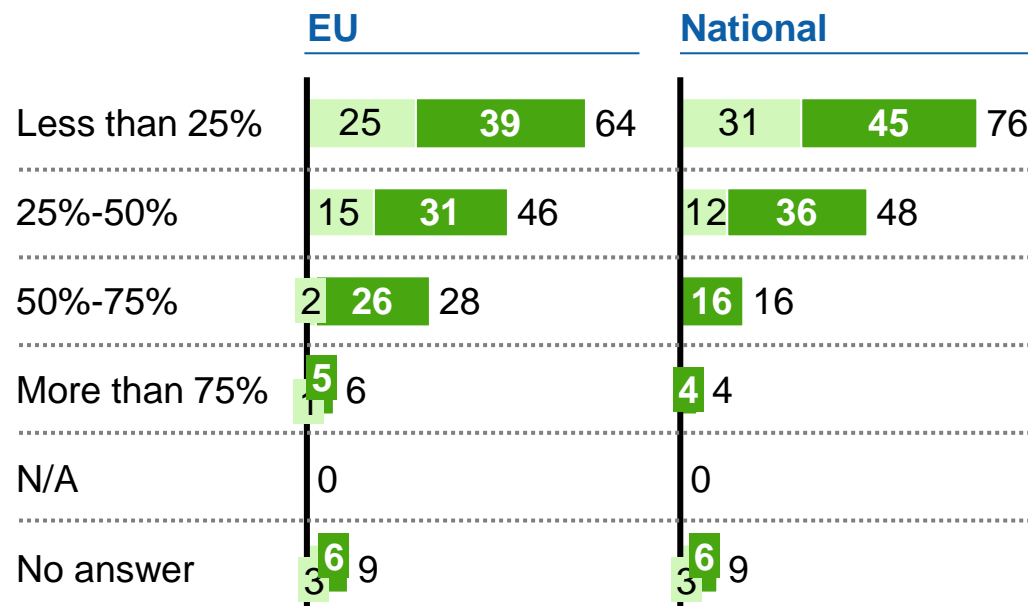
Percentage<sup>2</sup>

N = 44 (IG), 100 (Beneficiaries)



## Expected share of expenditures<sup>1</sup> financed by

Number of responses



Question II.4.1. What share of your TOTAL FC&H expenditures (or budget for research organisations) do you expect to be financed by EU programmes (FCH JU or European Commission) in 2013-2020?

Question II.4.2. What share of your TOTAL FC&H expenditures (or budget for research organisations) do you expect to be financed by national programmes in 2013-2020?

Question II.4.3. Considering all the answers above, would you be in favour of a continuation of the FCH JU or not?

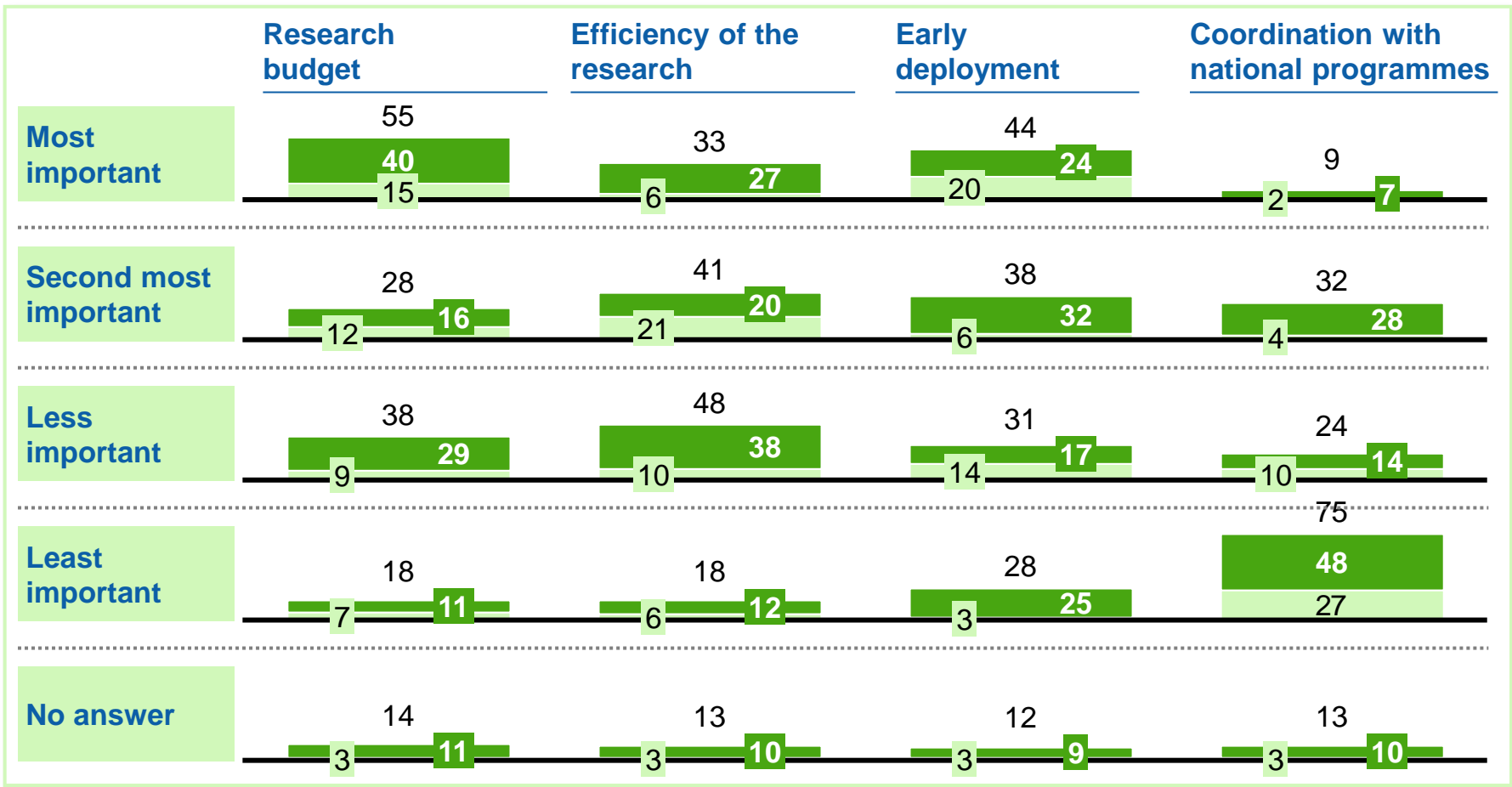
1 Includes R&D and market introduction/deployment

2 Includes both Beneficiaries and Industrial Grouping

# Continuation of FCH JU deemed especially important for early deployment and research budget

Number of responses, N = 46 (IG), 107 (Beneficiaries)

Beneficiaries Industrial Grouping

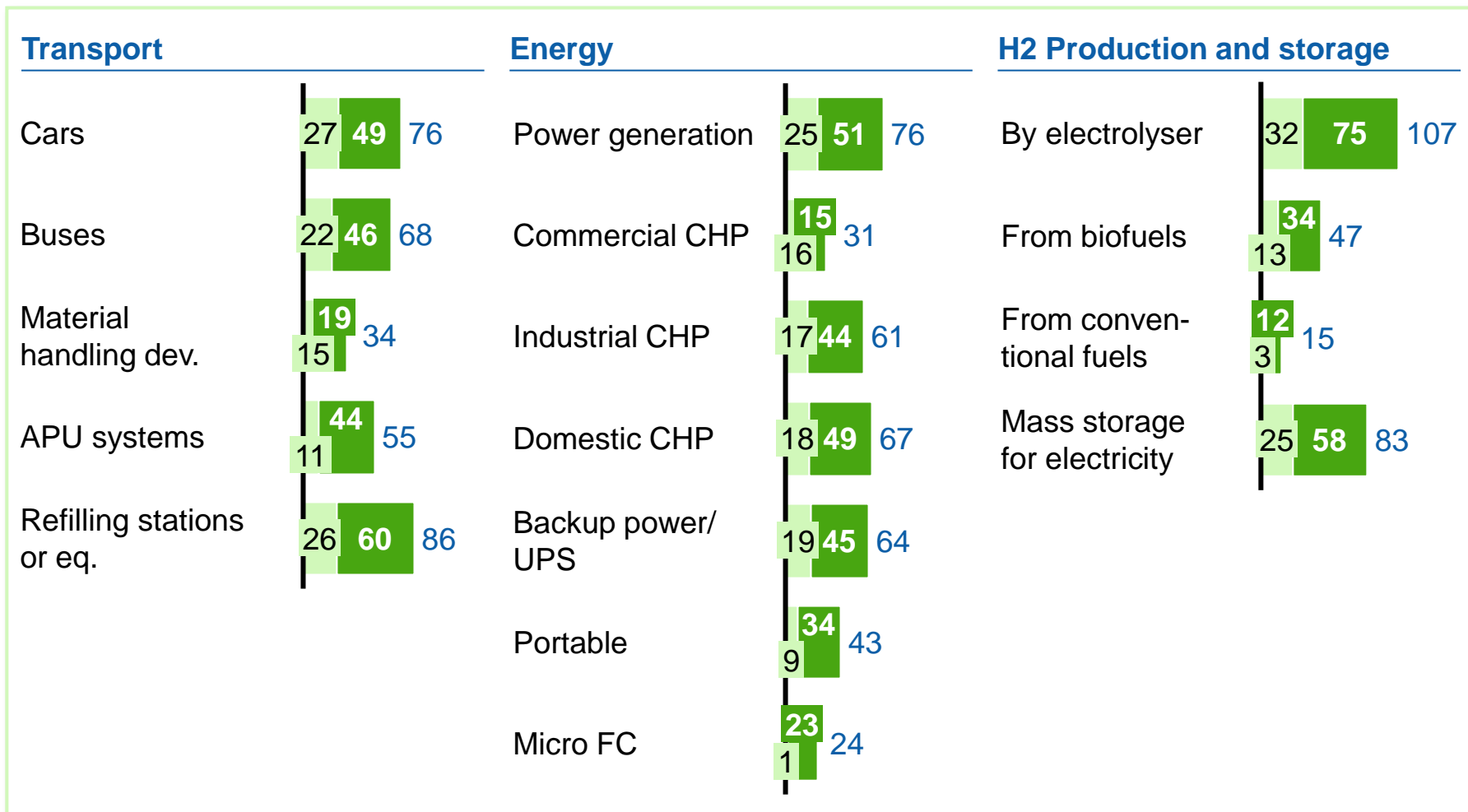


Question II.4.4. How would you rank the impacts discussed here as important discriminators between the continuation or termination of the FCH JU? In other terms, what feature is the most important for this choice? Rank most important to least important

# Suggested focus areas of respondents are electrolysers, mass storage, and refueling stations (1/2)

N = 46 (IG), 107(Beneficiaries)

Industry Grouping    Beneficiaries

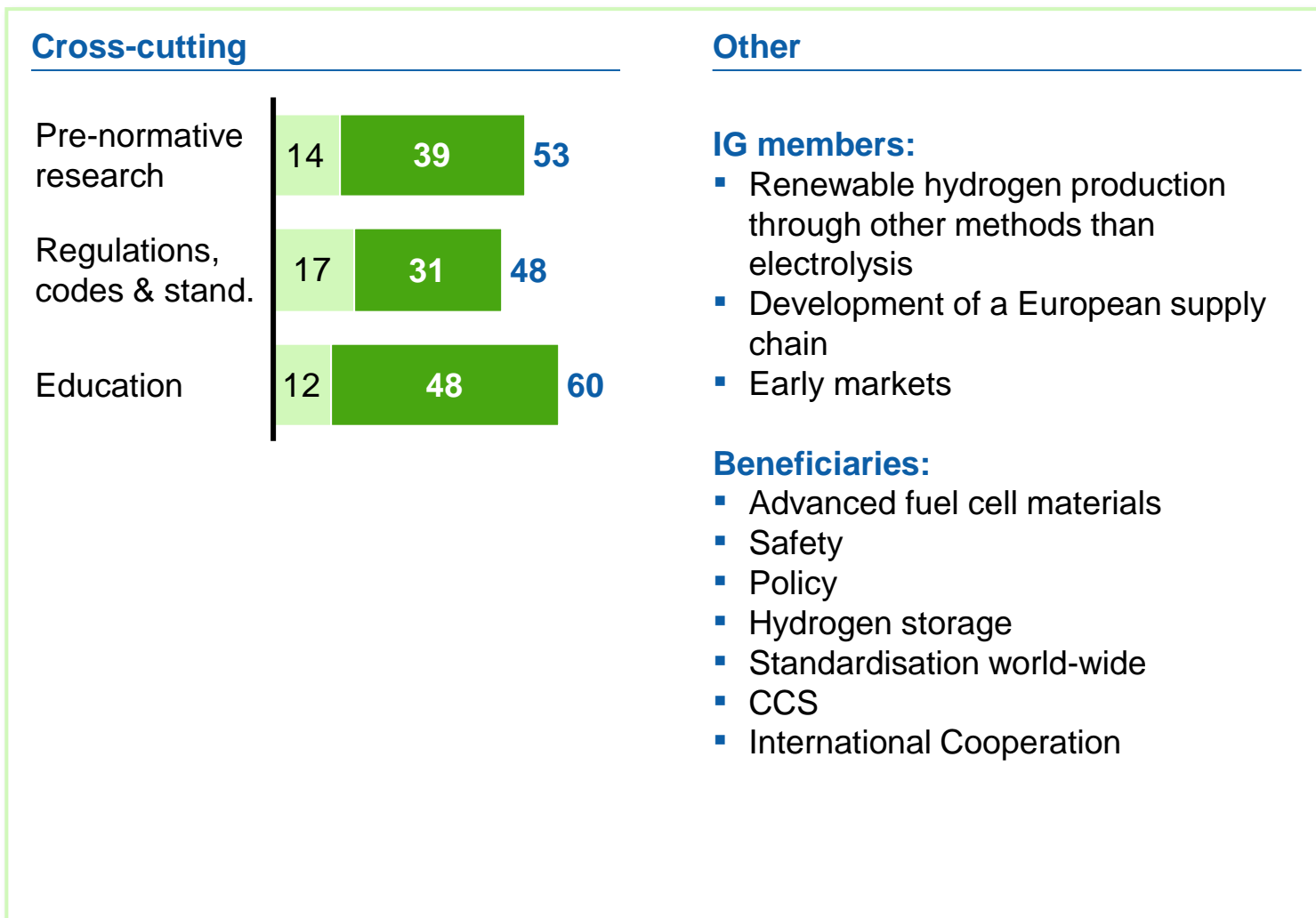


Question II.4.5. On what applications should the action at European level focus? (you can select several answers)

# Suggested focus areas of respondents are electrolyzers, mass storage, and refueling stations (2/2)

N = 46 (IG), 107(Beneficiaries)

Industry Grouping    Beneficiaries



Question II.4.5. On what applications should the action at European level focus? (you can select several answers)