caLIBRAte
nano risk governance

Multimethod wide stakeholder assessment of views and perspectives on nano-risk governance

Presented by Christina Benighaus, DIALOGIK

Contributors: Andrea Porcari (AIRI), Elisabetta Borsella (AIRI), Khara Grieger (North Carolina State University), Panagiotis Isigonis (UNIVE), Somik Chakravarty (R-Tech), Marie Louise Kirkegaard (Danish Technological University), Pete Kines (NRCWE) and Keld Alstrup Jensen (NRCWE)

Icons by freepick and www.flaticon.com

Project #686239, Funded by the Horizon 2020 Framework Programme of the European Union

Stakeholder Profiling in caLIBRAte

Novelty of work compared to existing literature and surveys on stakeholder views on risk governance

- International panel **(cosmopolitan study)**

- Using mixed methods **(qualitative and quantitative approach),** comparing views of all types of stakeholder categories **(mixed approach)**

- Considering nanomaterials and all their application areas **(not sector specific)**

Stakeholder Profiling in caLIBRAte (cont.)

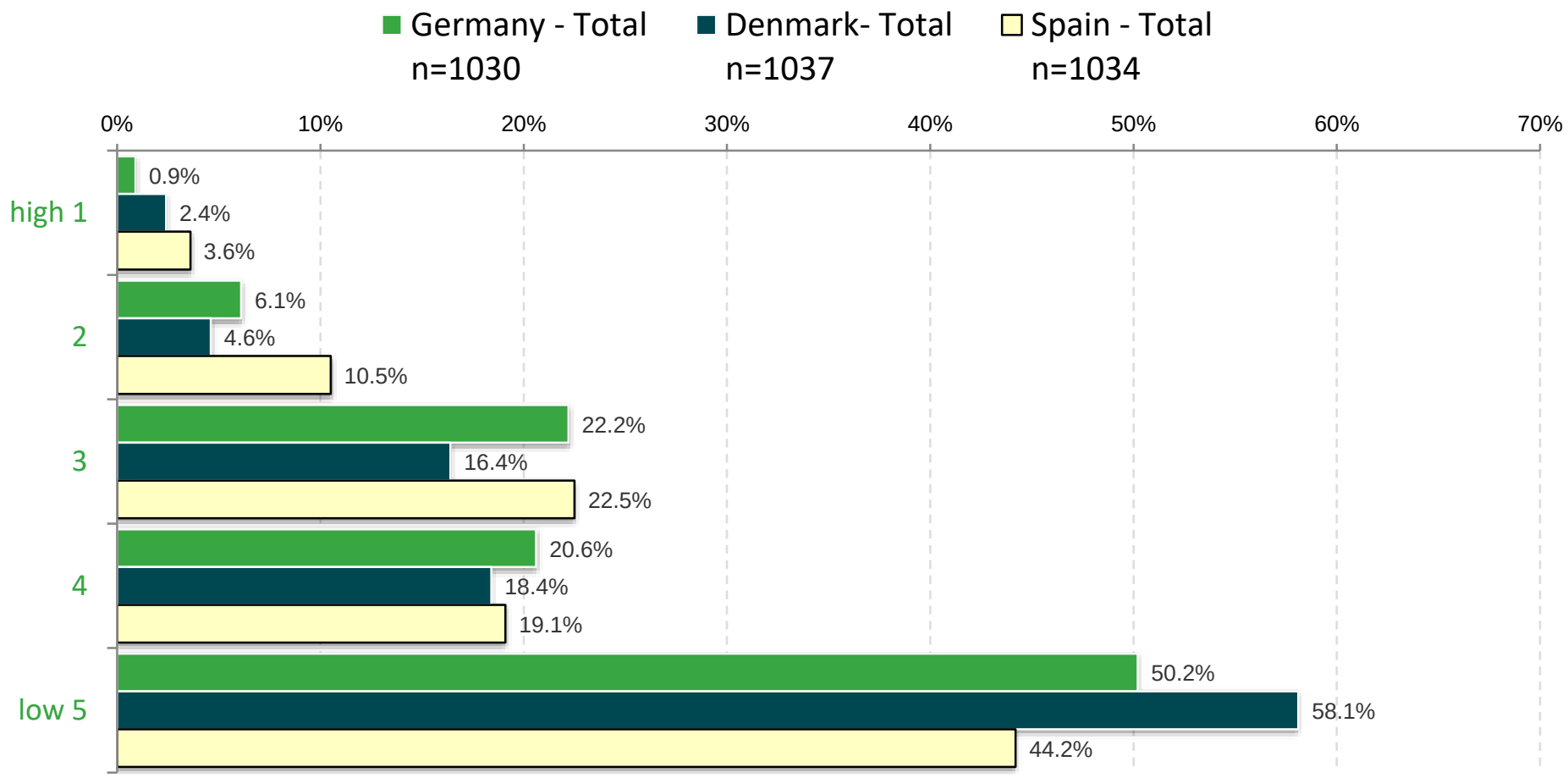
Novelty of work compared to existing literature on stakeholder views on risk governance

- Covering risk awareness, perception, assessment, management, transfer (insurance) and communication **(risk governance cycle)**

- Distilling needs, priorities and expectations for a Risk Governance framework for different stakeholder groups **(stakeholder profiling)**

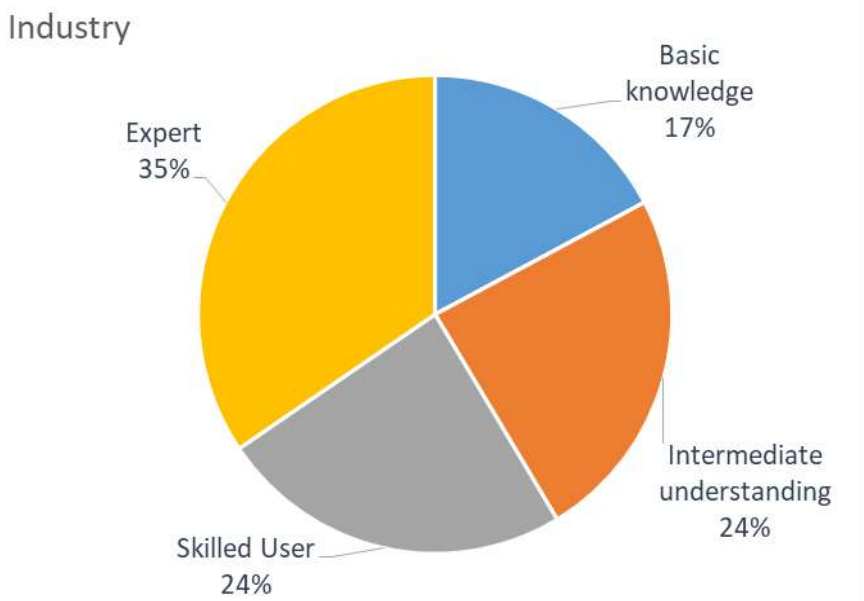
- Up to date **(new empirical study)**

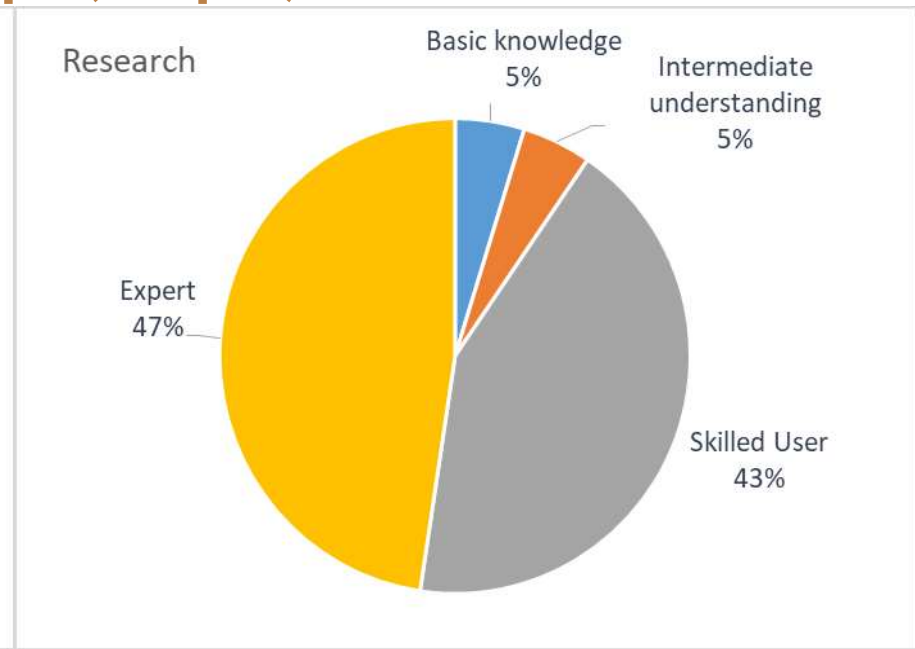
My knowledge of nanotechnology is … (online survey)

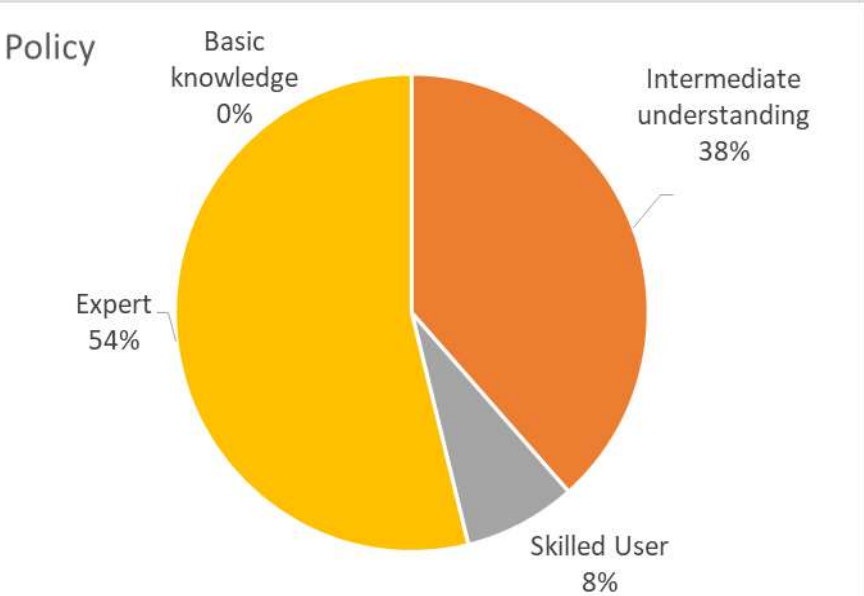


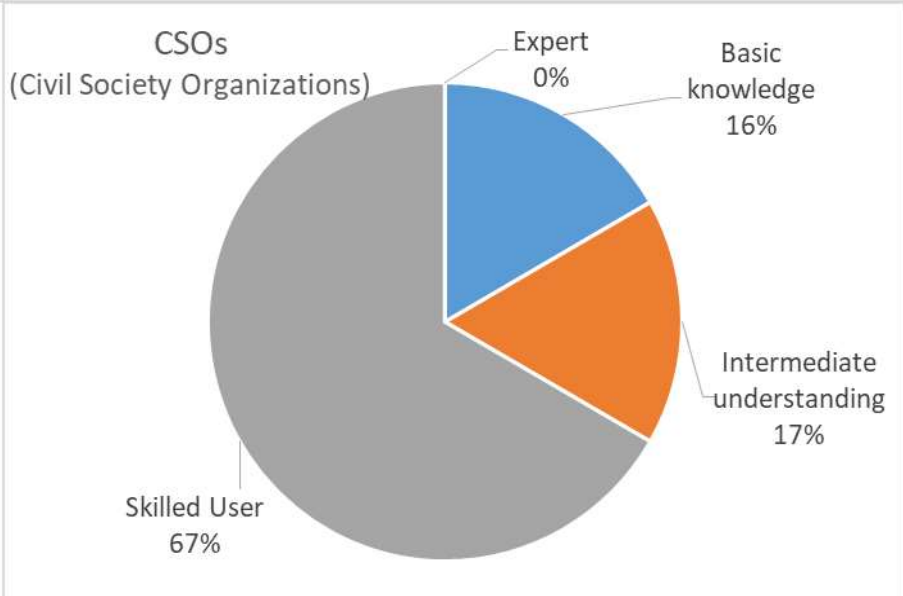
Level of knowledge of the different stakeholder groups (Delphi)

caLIBRAte nano risk governance





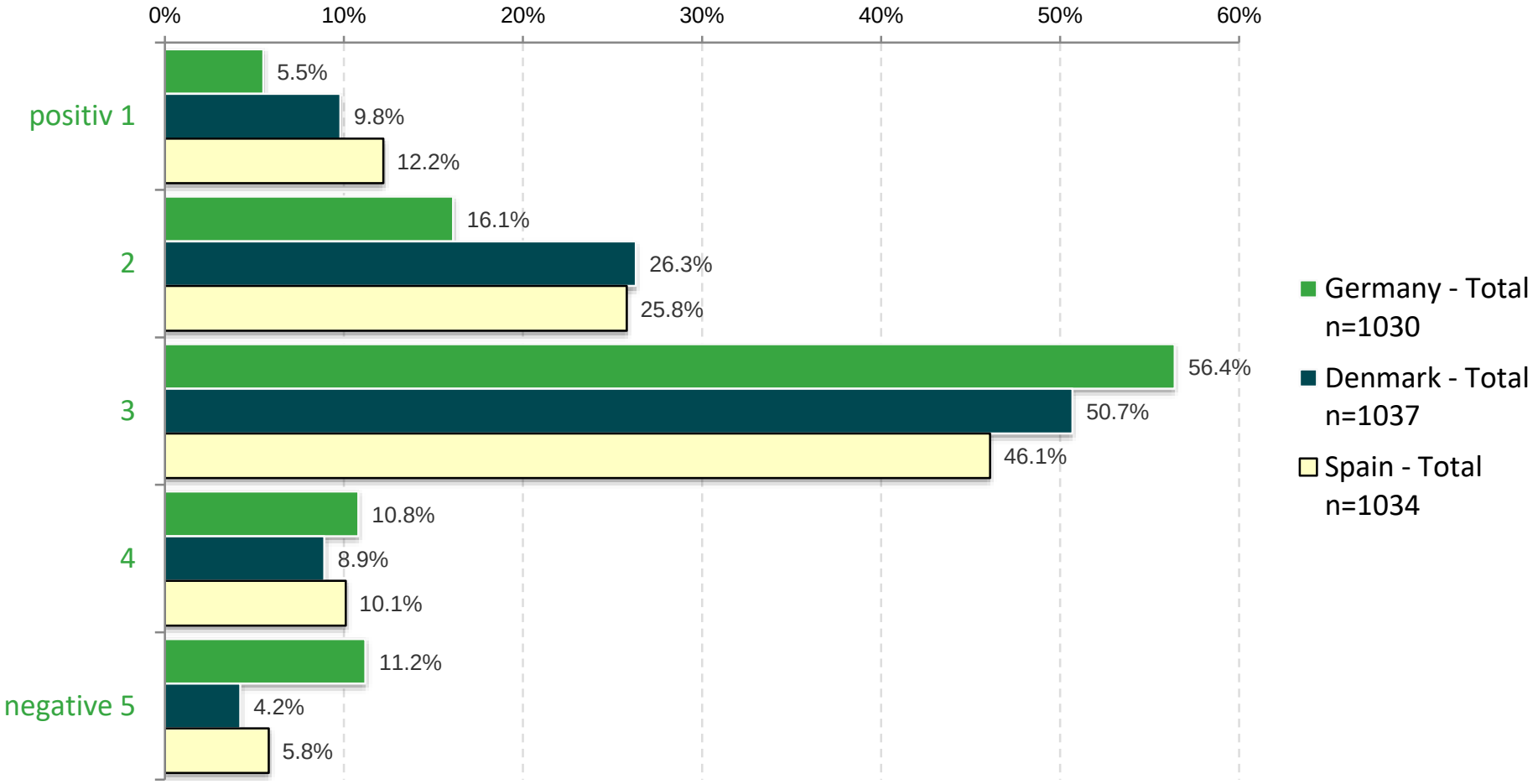




Knowledge of Nanotechnology/Nanomaterials

- Level of **public knowledge** of nanotechnology is still low
- **Industry, researchers, policy makers** and informed public rate their level of knowledge middle to high.

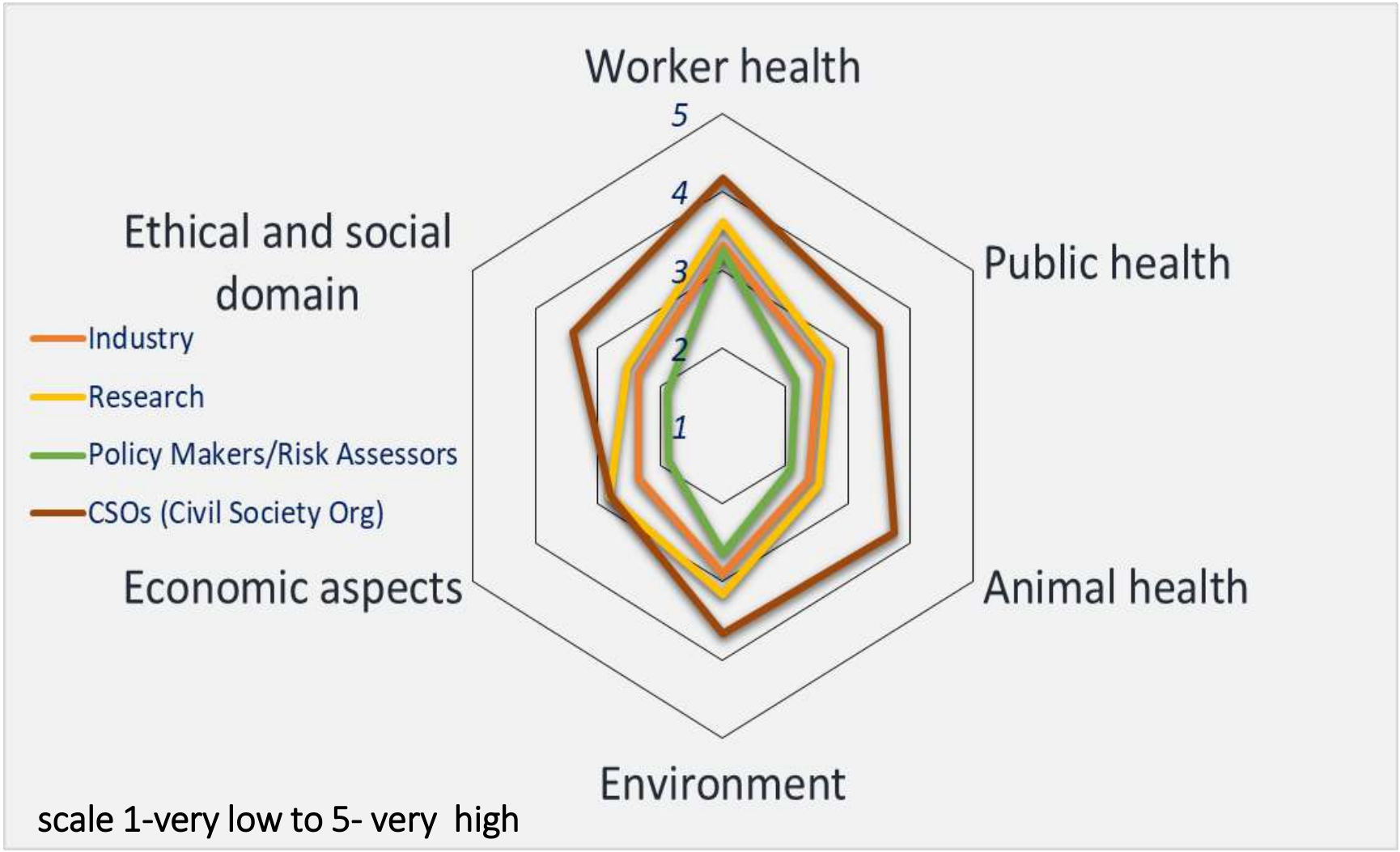
Nanotechnology has for me a ... connotation (online survey)



Public Connotation of Nanotechnology

- Nanotechnology has a **positive to neutral connotation** for public/society with positive effect on life
- Is a **solution for technical and/or social problems** and should support the development of the society
- But clear concern about the **safety of nanotechnology** for the society, environment, economy and individual and family health (public and workers' health)

Perception of risks deriving from production, use and disposal of NMs and nano-products (Delphi)



Level of knowledge on NMs and nano-risk perception (Delphi, Online survey)

	Industry	Researchers	Policy makers/ Regulators/ Insurers	CSO's (Civil Society Organizations) (Delphi)	Public
Level of knowledge on NMs	3,72	4,37	4,16	3,53	1,91
Level of perception of EHS risks	2,8	2,97	2,48	3,72	2,75
Level of perception of social/ethical risks	2,36	2,53	1,9	3,4	2,93

Color scale (from 1-very low to 5-very high)

EHS and ELSA

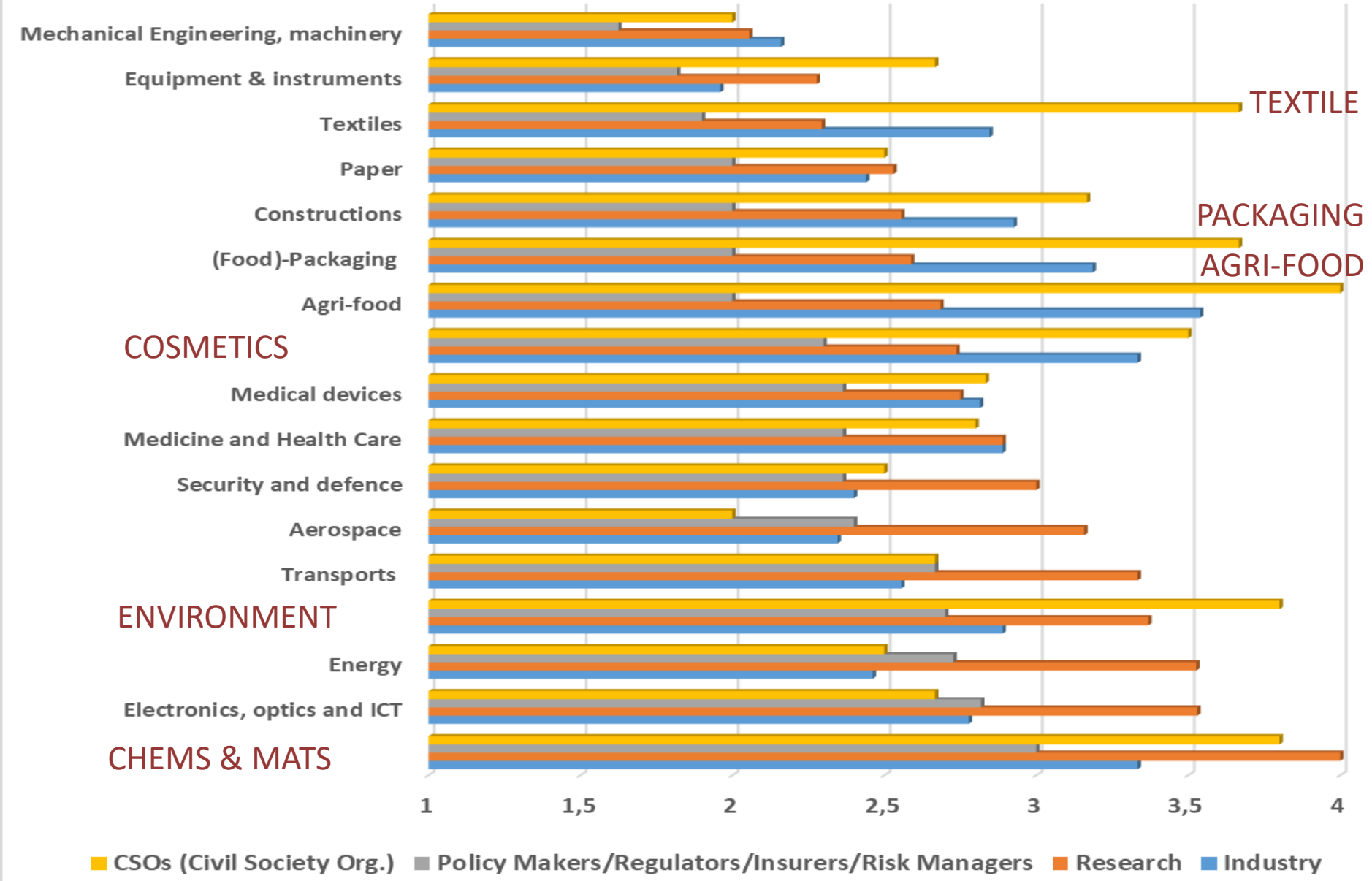
- Majority of stakeholders are well aware of **Environmental, Health and Safety issues (EHS)** and **Ethical, Legal, Social concerns/aspects (ELSA)** posed by nanomaterials in all the application domains

- CSO´s has general concerns about **EHS risk and ELSA** posed by NMs and nanotechnology development in all the application domains followed by public, researchers and industry

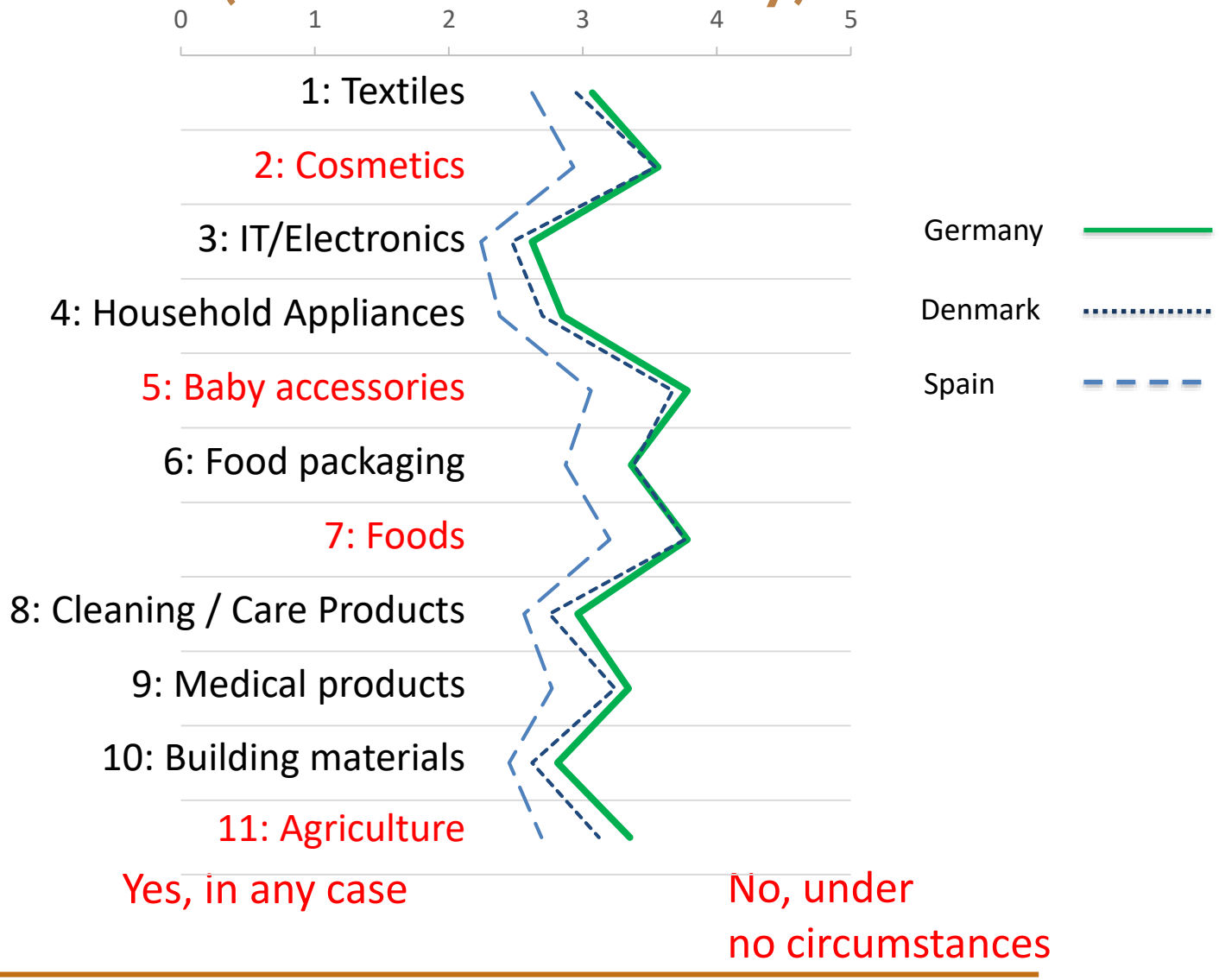
- **Worker health and the environment** face the highest risks in relation to NM production

Risk Perception Sectors (Delphi)

caLIBRAte nano risk governance



Purchase Intention – I would buy nano-related products (Public Online survey)



Perception of nano-risks in industrial sectors and its effect on the market (Delphi, Online survey)

	Industry	Researchers	Policy makers/ Regulators/ Insurers	CSOs (Civil Society Organizations) (Delphi)	Public (Survey)
Perception of potential nano-risks in industrial sectors	2,9	3,1	2,44	3,17	2,80
Effect of perceived uncertainty in the NM safety on their diffusion	3,41	3,33	2,8	3	2,76

Color scale (from 1-very low to 5-very high)

Purchase intention and uncertainty of potential risks

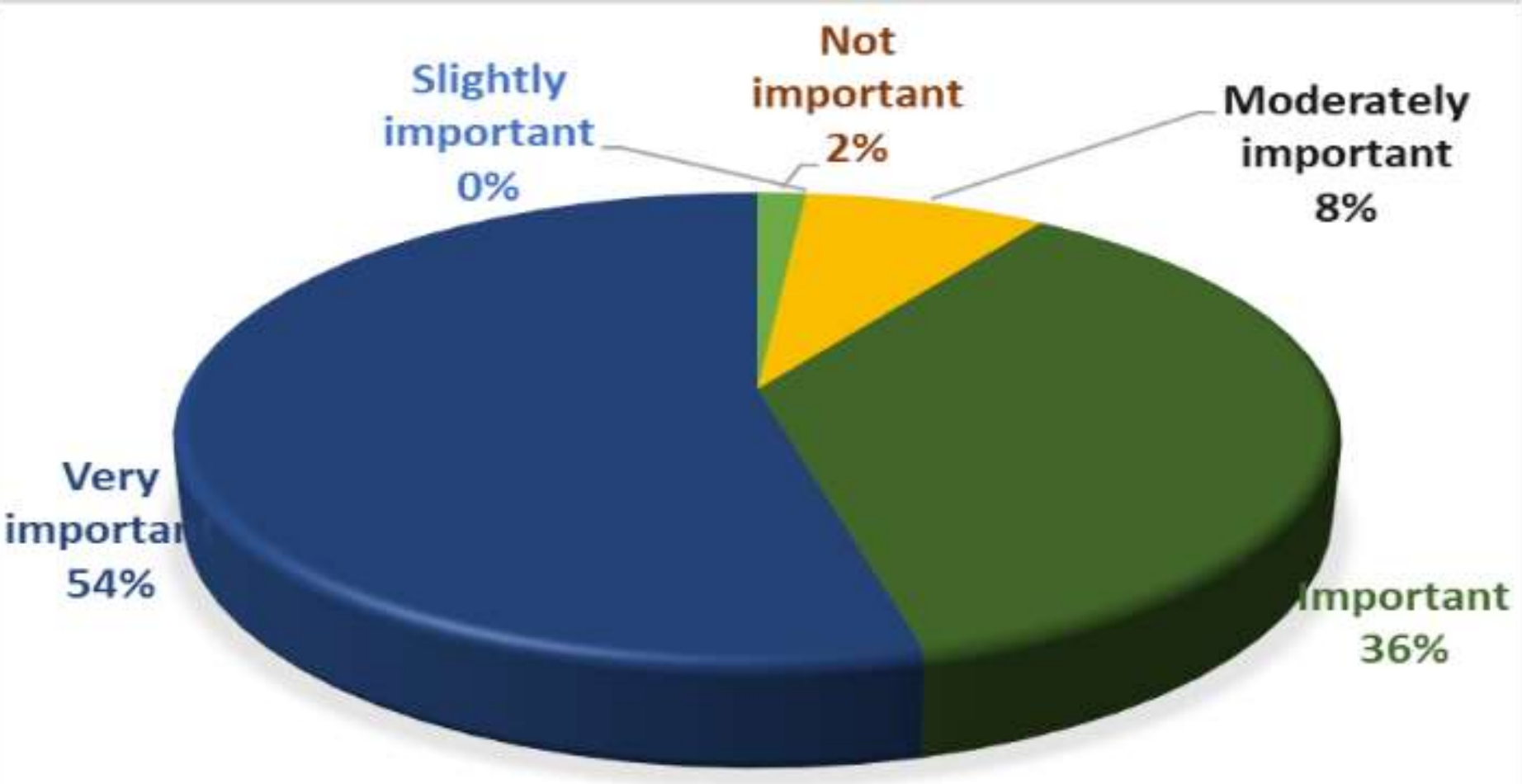
- Highest concern relates to the sectors of **textile, food (packaging), agri-food, environment, chemicals & materials and cosmetics**
- Risk perception is greater for products that could get in **direct contact** with the body (e.g. cosmetics, food, agriculture)




- Perceived **uncertainty on potential risks** of NM is a **limit to their penetration in the market –** need of unbiased and trustable information, based on scientific evidence.

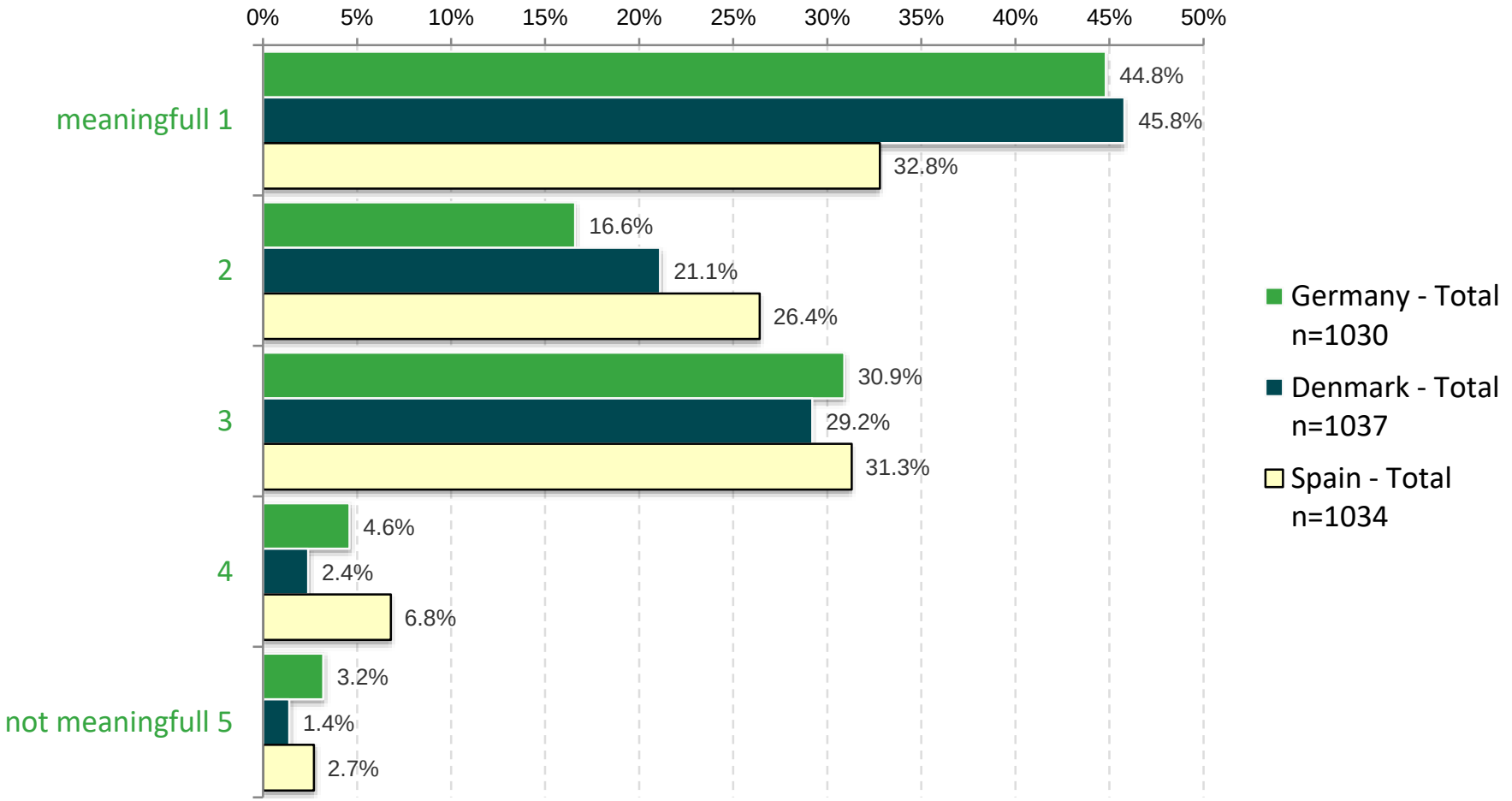
Risk assessment procedures for nano-related products and NMs (Delphi)

caLIBRAte nano risk governance



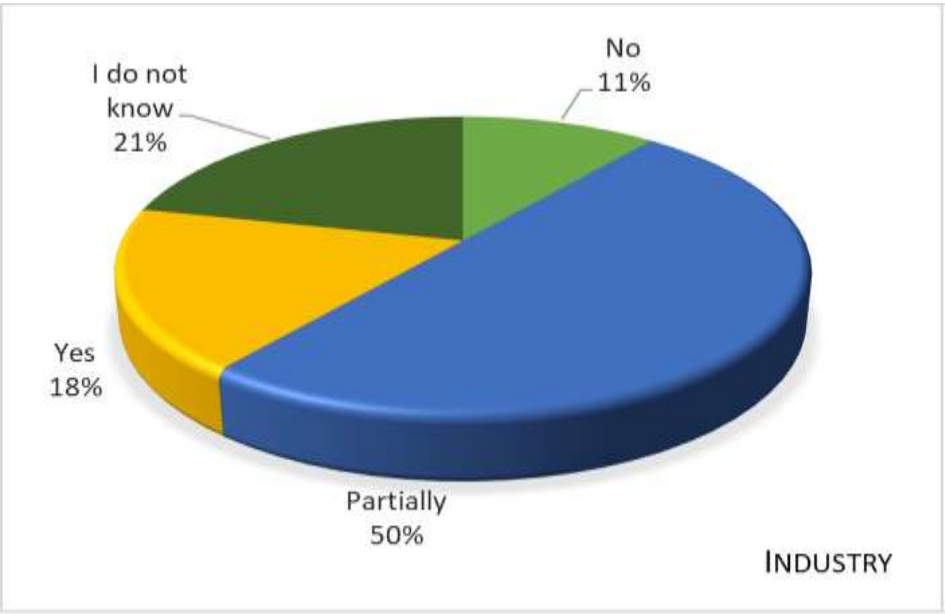
"Indicate the importance you attribute to risk assessment procedures as effective tools for diagnosis and management of risks deriving from production/use/disposal of NMs and nano products" (from the Delphi study).

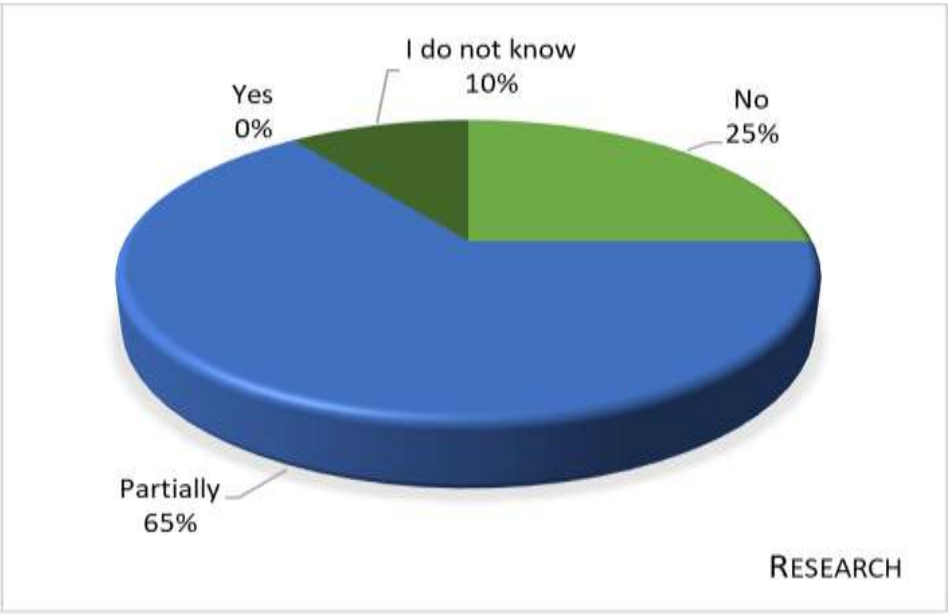
Risk - Long-term monitoring of the impact of nanomaterials on public health and the environment is … (Online survey)

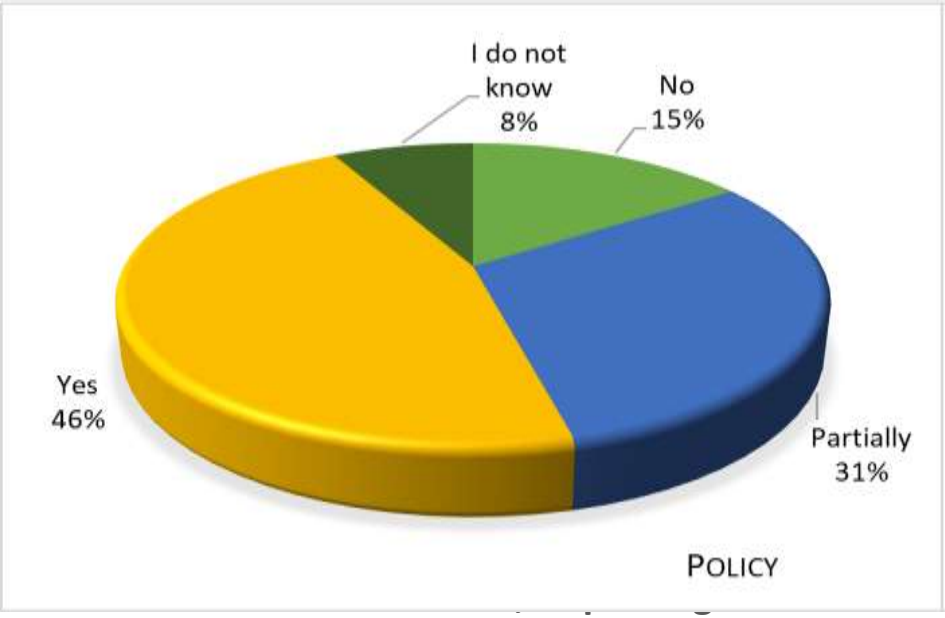


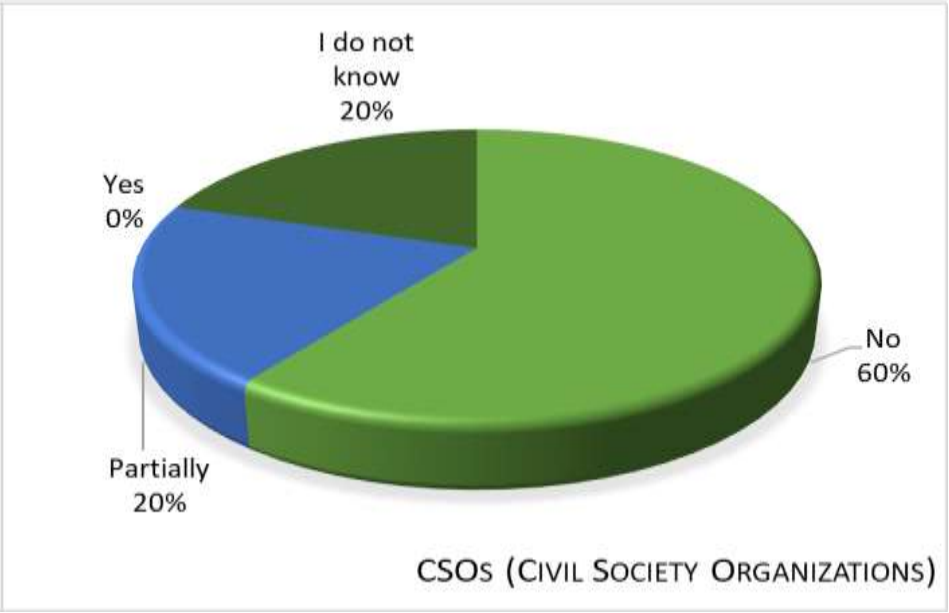
Adequacy of current guidance and regulation for effective risk governance (Delphi)

caLIBRAte nano risk governance

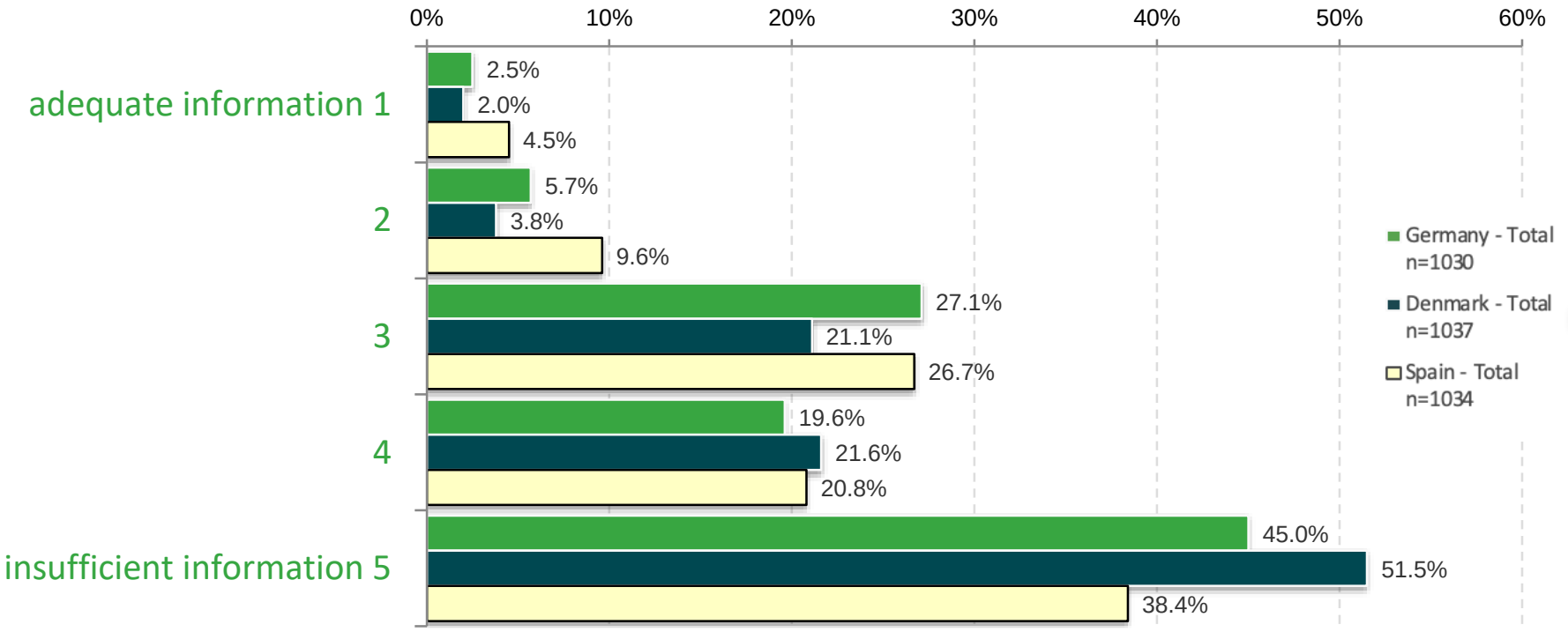








Consumer Information: "I have ... of the risks of nanotechnologies" (online survey)



Summary of the stakeholder profiling

- The idea of applying **risk assessment procedures in all stages of product development**, is gaining ground (also in industry)

- Majority of stakeholders (including the public) were aware of and agree on existing **gaps and barriers for risk governance of NMs**
- More robust and effective approaches to **risk governance** is needed
- Insufficiency and incoherence of the legislation all over Europe and a need for **specific guidelines for implementing current regulations**

Nanotechnologies - summary of findings

- seen as a **symbol of innovation** and progress,
- use could imply both **benefits and risks**
- highest risks perceived to **safety of workers, consumers and public health** and impact on **environment** in the use of NMs
- tendency towards a **convergence of opinions** between different stakeholders (industry, research organizations, policy-oriented organizations, general public)

- **lack of harmonized approaches** across regulatory domains
- **uncertainties** in the implementation of regulation
- further research is needed on **evidence-based approaches for risk analysis**

Key factors for risk governance

caLIBRAte
nano risk governance

Risk governance/analysis should take into account

- **sector and type of application**
- **risk domains** (e.g. workers, consumer health, end-of-life of product(s)),
- **regulatory domains**
- prior knowledge or background conditions in terms of **public opinions and media coverage**
- level of awareness or **knowledge of SHs**
- actual or perceived **risk-benefit ratio** of the specific product
- quality, reliability, and ease of **understanding of available information** such as e.g. EHS and NM characterization data, safety procedures, and product information

Mixed-method Approach

caLIBRAte nano risk governance

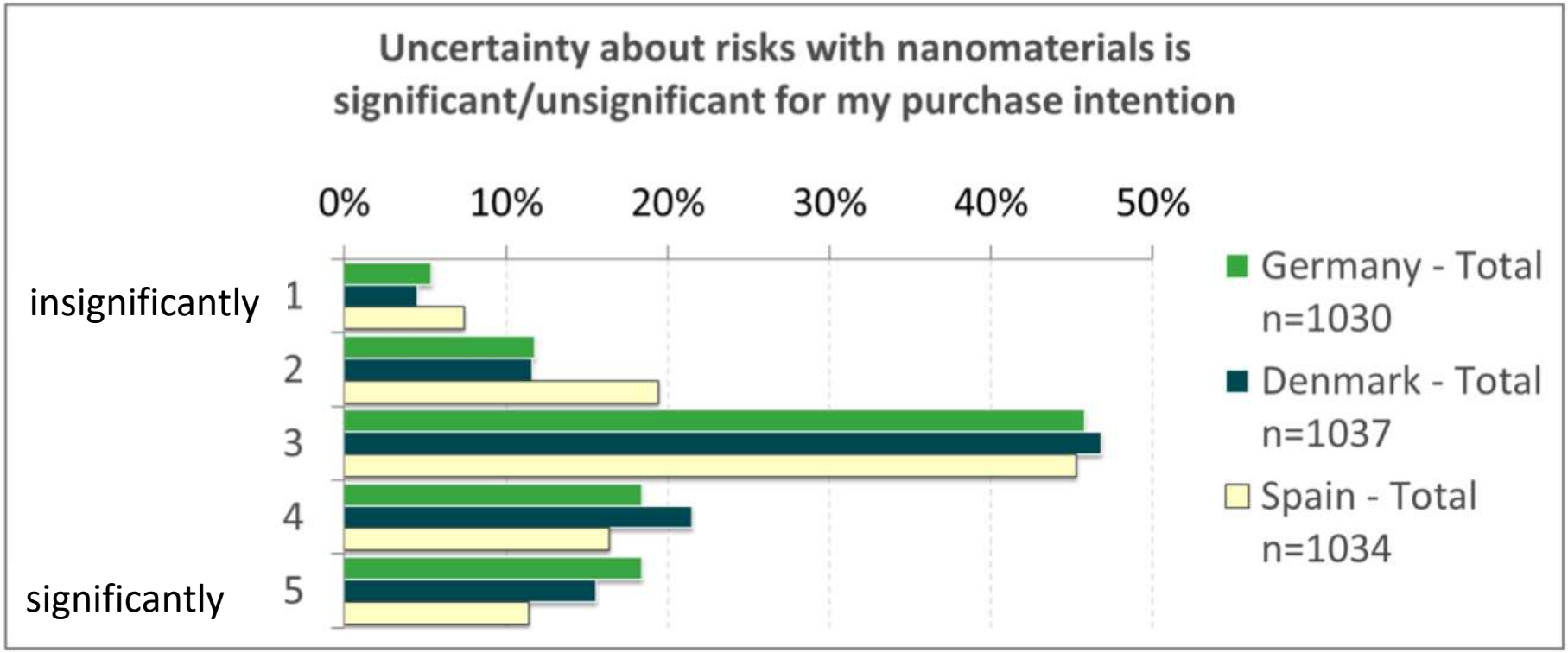
Activity	Method	Level of know-ledge on NM	Dates	Stakeholders involved	Country coverage	Stakeholder types
Two-Round Delphi-Survey	Semi-quantitative	high	2017	105	> 13 EU + U.S.	Industry, Public Research, Policy /Regulators/Risk Managers, Insurers, CSOs
Multi-SHs Workshop	qualitative	high	2017	25	12 EU	Industry, Public Research, Policy /Regulators/Risk Managers, Insurers, CSOs
Face-to-Face Interviews	qualitative	informed	2016 2017	10	DK	Industry, Public Research
Focus Groups	qualitative	low, informed	2018	57	DE, ES, DK	Public
On-line Survey	quantitative	low	2019	3100	DE, DK, ES	Public
User Testing sessions	qualitative	high	2018	>50	NL, CH, DE, ED + EU	Industry, Public Research, Policy /Regulators/Risk Managers

What we analysed…

Extracted information on what the relevant stakeholders want/need/think on

- *Awareness, acceptance and risk perception*
- *Capacities and best practices in Risk Management*
- *Needs, priorities and expectations for a Risk Governance framework*
- *Insurance coverage for nano-related risks*

"Uncertainty about risks with nanomaterials is ... for my purchase intention" (Online survey)



Perceived uncertainty on their potential risks is seen as a limit to their penetration in the market.

Consumer Information - Indication of the type of nanomaterials in a product (label) and list of all ingredients on the packaging (labeling), (Online survey)