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# DECARBONIZATION OF THE BUILDING STOCK AND ITS OPERATION: THE ROLE OF FACILITY MANAGERS


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# Introduction




Residential and non-residential buildings are responsible for around **40% of the global greenhouse gas emissions**. The building sector is crucial and must be considered when fighting climate change.



Decarbonization is paramount in building operations: Up to **75%** of the building sector's CO2 emissions are produced by **building operations**.



Different ways of achieving objectives: **Differing hurdles, management models, and regulations worldwide** mean that facility managers are affected differently in the global comparison.



Therefore, this study examines the impact of ESG on the facility management industry and the role of facility management in the **decarbonization** of the building stock.

1

Respondents' professional background

2

Decarbonization expectations towards Facility Managers

3

The current role of Facility Managers in terms of decarbonization

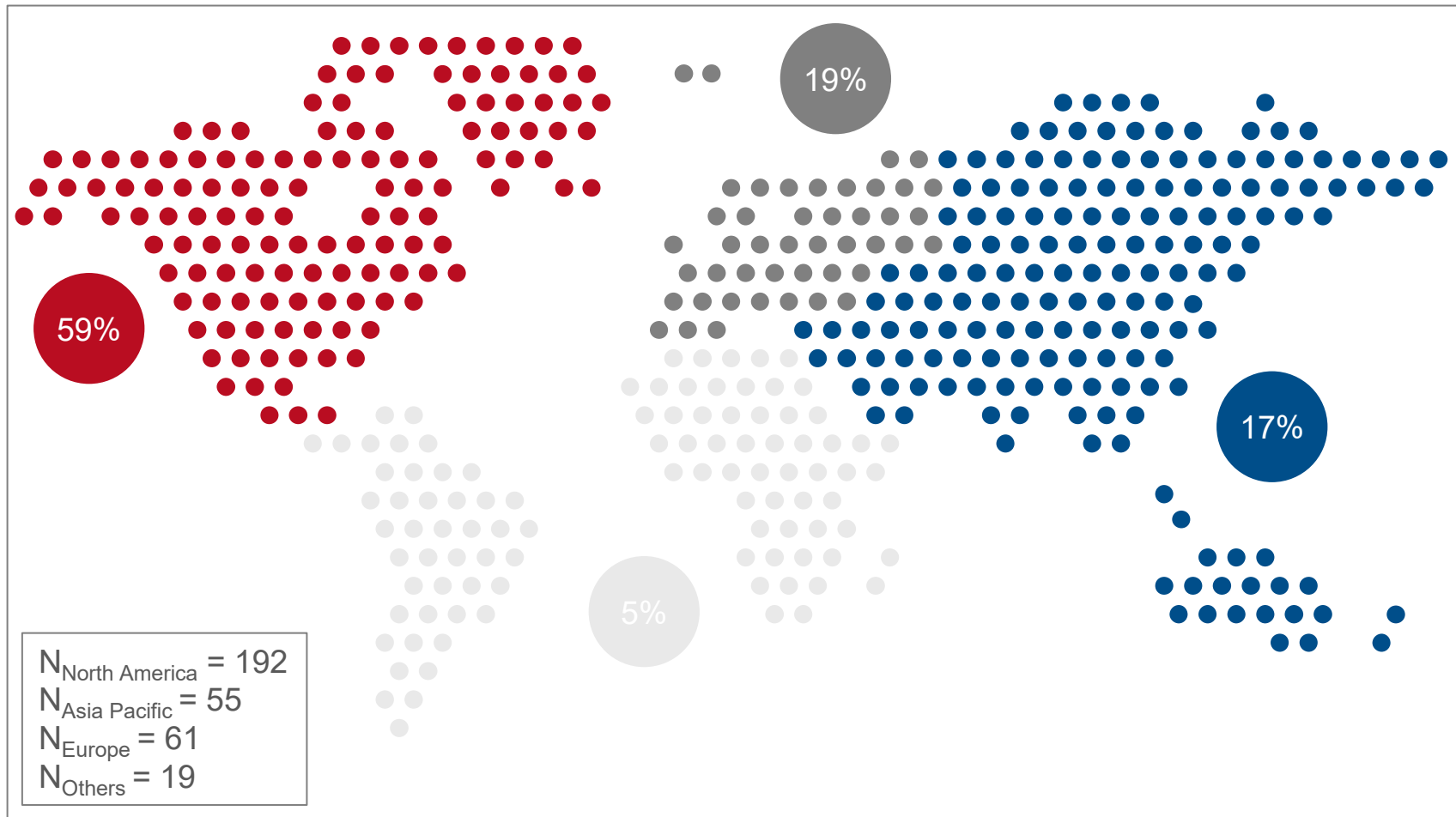
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Resources for Decarbonization

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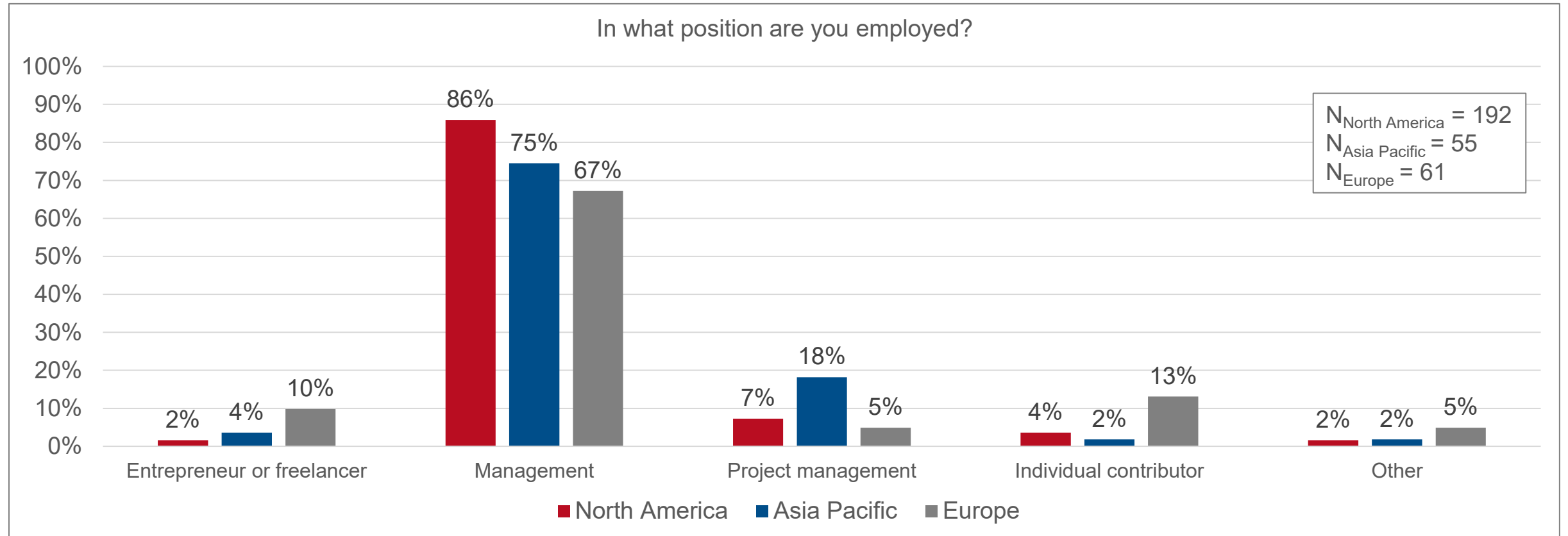
Future role of Facility Managers in terms of decarbonization

# USA, Asia and Europe in comparison

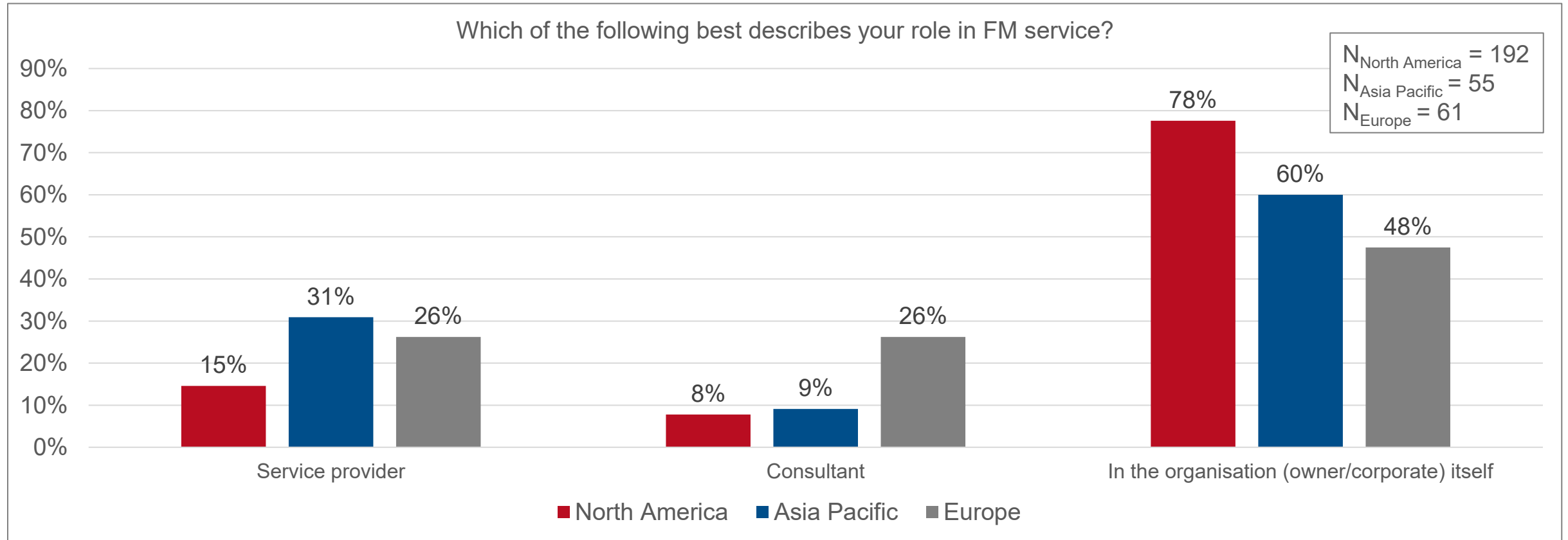


Due to the small sample size in South and Central America and Africa, the following evaluations focus on North America, Europe, and Asia-Pacific.

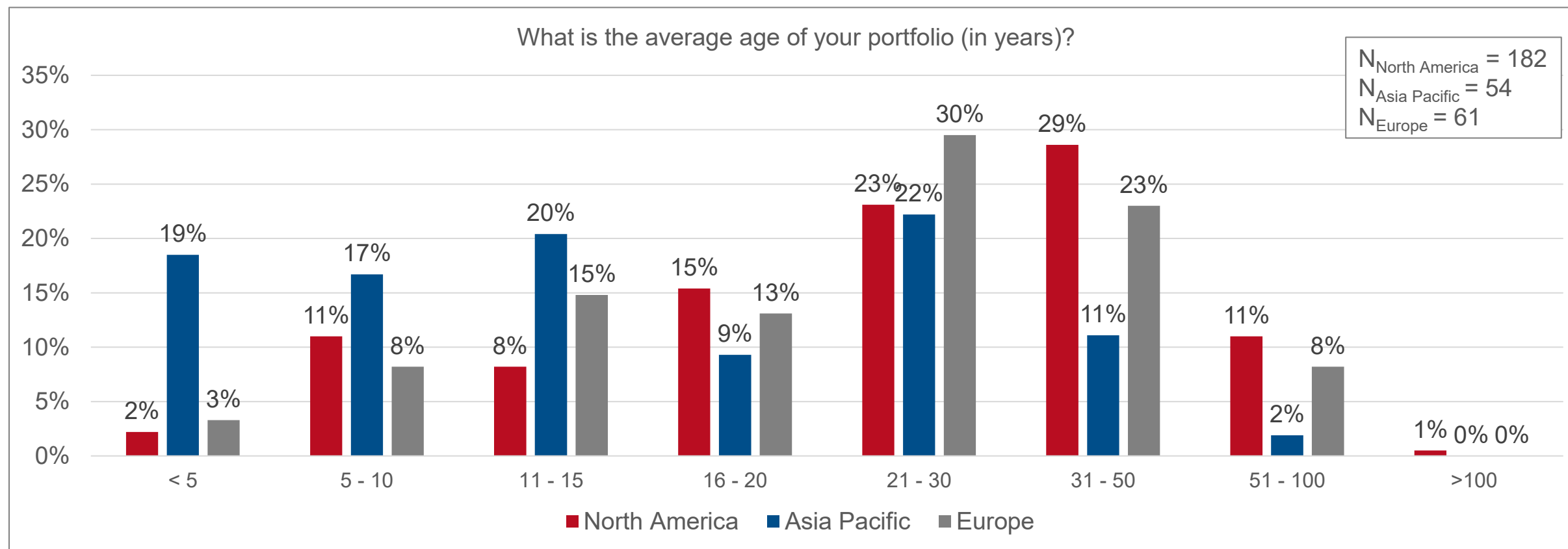
# Occupational status of the sample



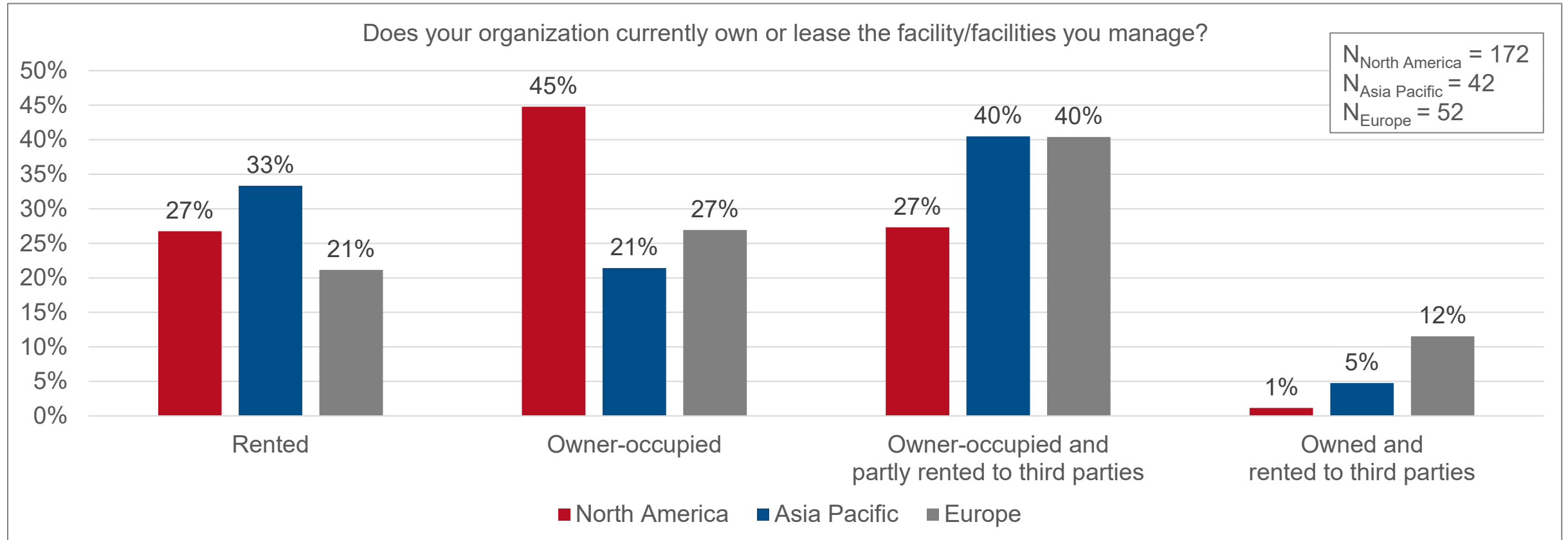
# Facility Management role of the sample



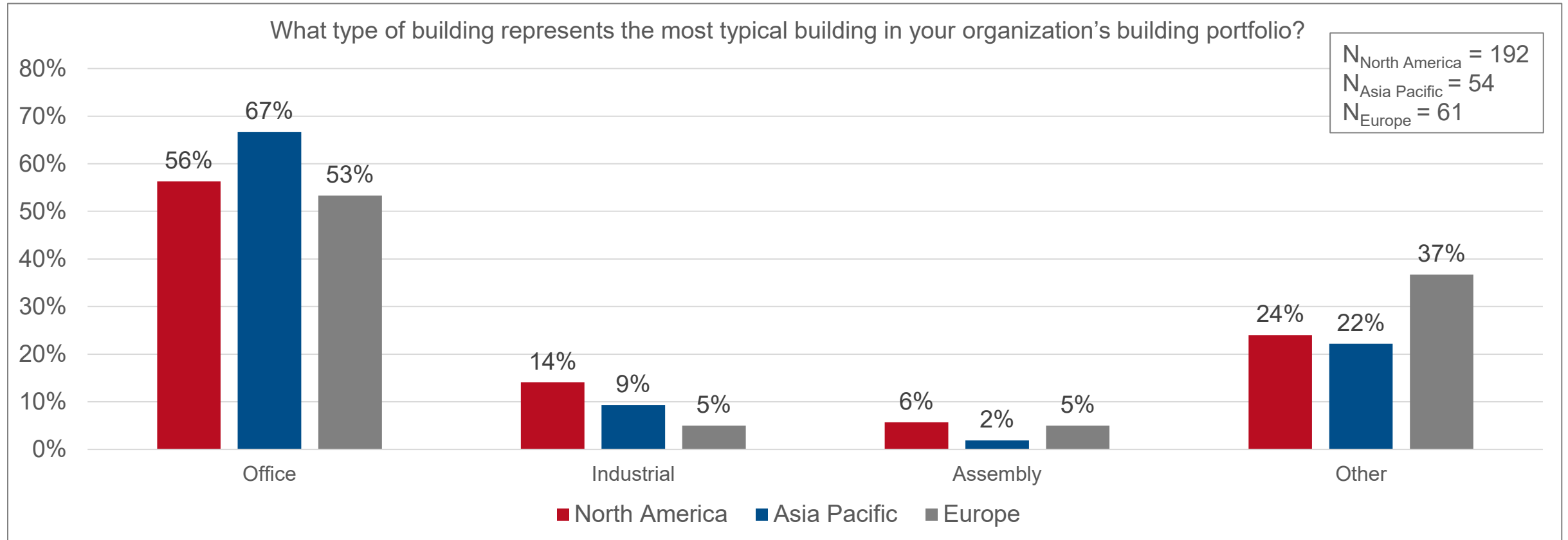
# Age of the managed real estate portfolio



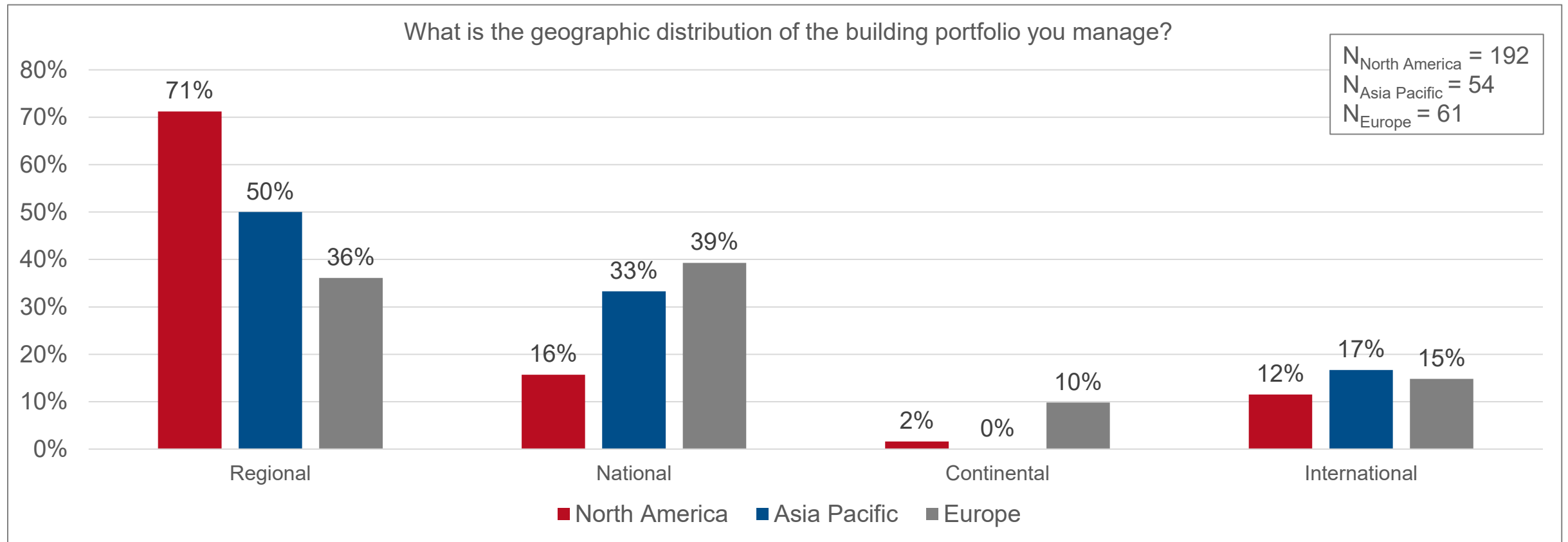
# Ownership of the managed real estate portfolio



# Asset class of the managed real estate portfolio



# Geographical distribution of the managed real estate portfolio



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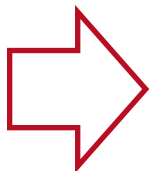
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Future role of Facility Managers in terms of decarbonization

# High global relevance of decarbonizing existing buildings and building operations



- 1) The need to decarbonize buildings and their operations is recognized globally. At least **57% of facility managers agree that they are encouraged by their stakeholders to take the decarbonization of building operations seriously.**
- 2) However, the intensity of the assessment varies globally: **Facility managers in Asia (66%) and Europe (69%) experience even greater pressure from their stakeholders than their North American counterparts (57%).**
- 3) At the same time, there are a variety of reasons for implementing decarbonization: **Legal (88%), self-motivation (up to 84%), and economic considerations (75%), as well as reporting obligations (75%)** consistently rated as significant, although their importance varies in an international comparison.
- 4) In Asia and Europe, the decarbonization of buildings and their operation has become a top management issue: **More than two-thirds of the facility managers from Asia and Europe state that the executive board is exerting pressure to decarbonize.**

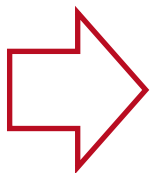


**Key message #1: Decarbonizing existing buildings and building operations is highly relevant worldwide. However, the intensity of the importance and the reasons for this relevance differ internationally. The market primarily drives facility management in North America, while legal obligations in Asia and Europe drive it.**

# Professional facility management as an answer to obstacles that cannot be overcome by organizations themselves



- 1) **Organizations have to overcome a wide range of challenges when decarbonizing their building operations:** Documenting and analyzing consumption, identifying reduction potential and developing appropriate strategies for action.
- 2) In doing so, they **lack a wide range of internal resources**, such as suitable personnel, systems and processes or a sufficient understanding of the requirements to be met to implement their goals. It appears that Asian organizations tend to face fewer problems (13 – 25% state that they lack various internal resources) than their North American (19 – 49%) and European (26 – 62%) counterparts.
- 3) **At the same time, organizations are pursuing specific goals:** They want the processes of decarbonization to be in professional hands, seek long-term business relationships to fulfill data-related decarbonization tasks or demand audit-proof processes. The demands of Asian organizations are particularly high.



**Key message #2: Organizations need help decarbonizing their building stock and operations. They lack the in-house expertise to implement the ambitious goals, which can only be achieved through increased cooperation with professional external partners.**

# Professional FM plays key role in the decarbonization of existing buildings and building operations

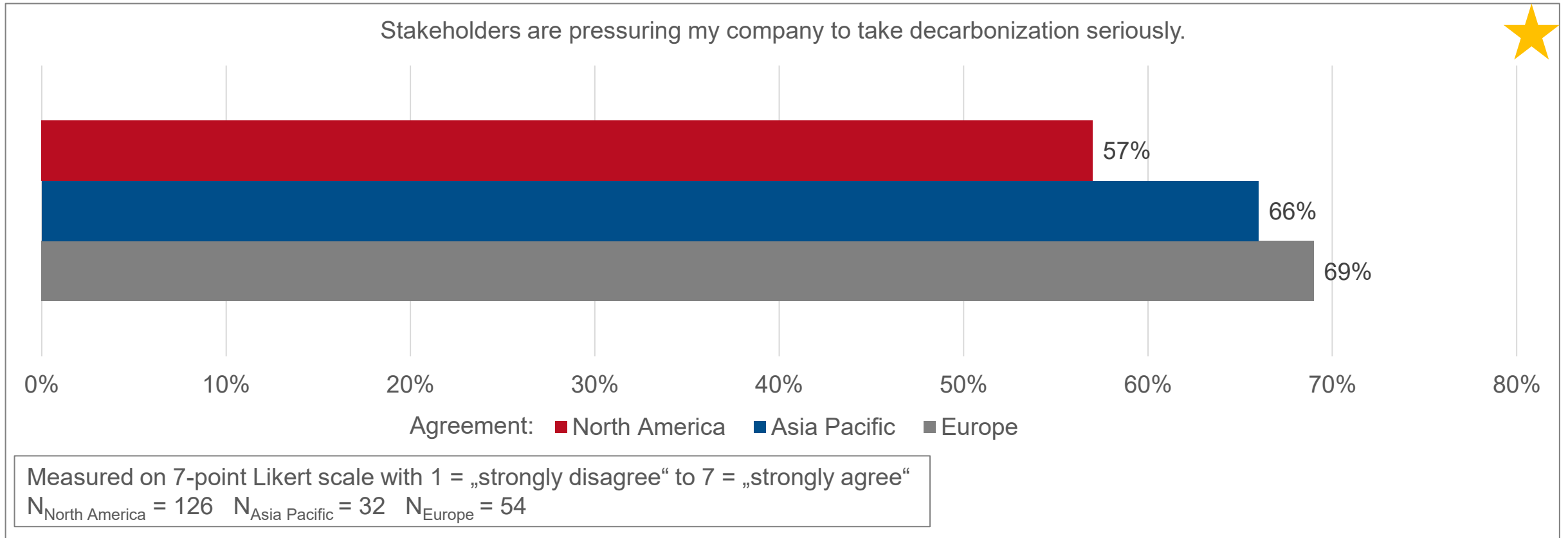


- 1) Despite regional differences, organizations and facility managers have recognized the **high relevance of decarbonizing building stock and operations** (key message #1).
- 2) At the same time, **organizations face the almost impossible task of managing decarbonization alone** due to a lack of internal resources and high demands. These goals can probably only be achieved through greater cooperation with professional facility managers (key message #2).
- 3) Facility managers and owners are already initiating measures to decarbonize the building stock and operation far more frequently than asset managers or users.



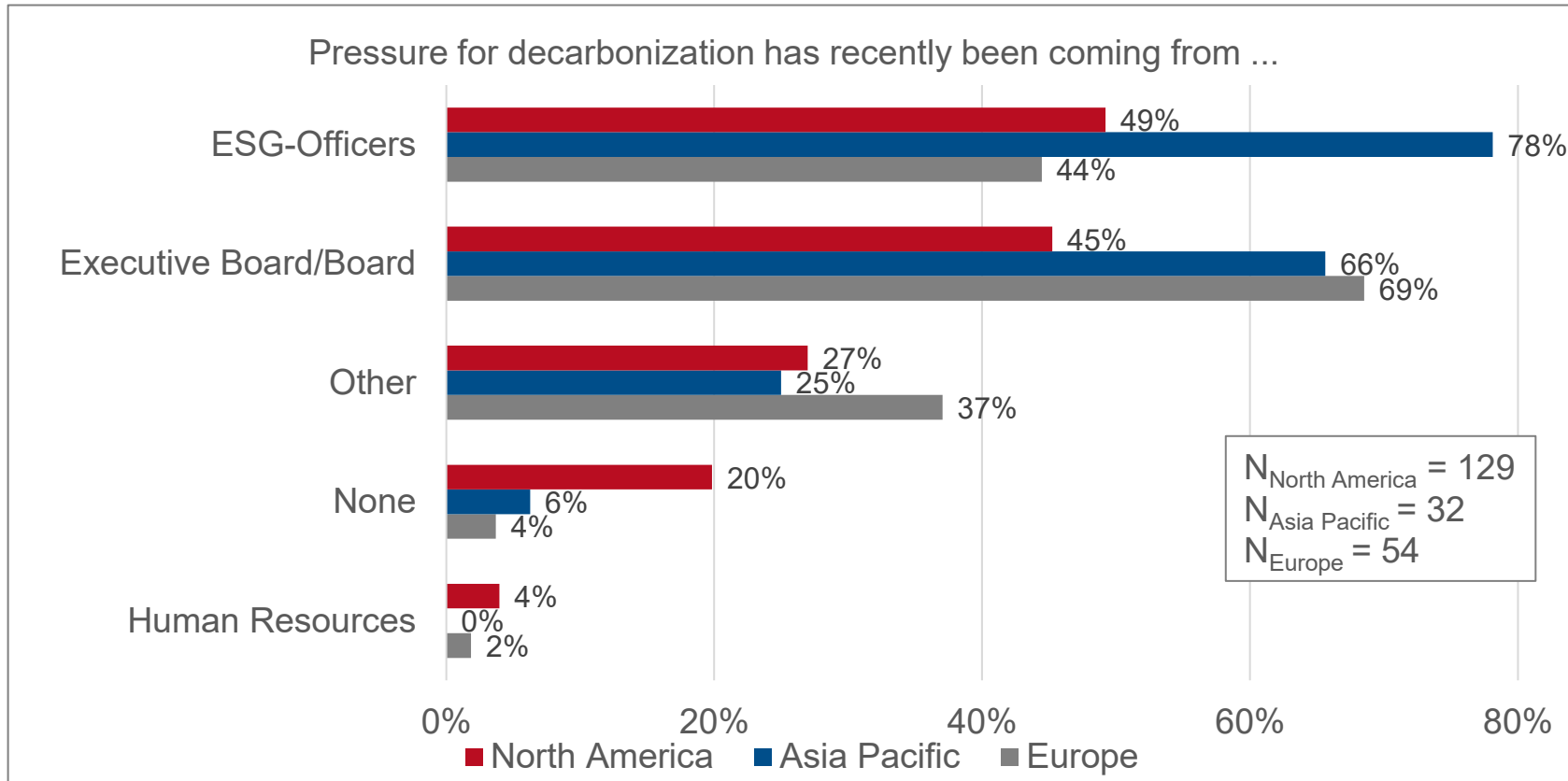
**Key message #3: Facility management has a vital role in decarbonizing the building stock and operation. Currently, respondents perceive that they are the drivers of this transformation because, without facility management, targets cannot be achieved.**

# North Americans are pressured less by stakeholders to decarbonize



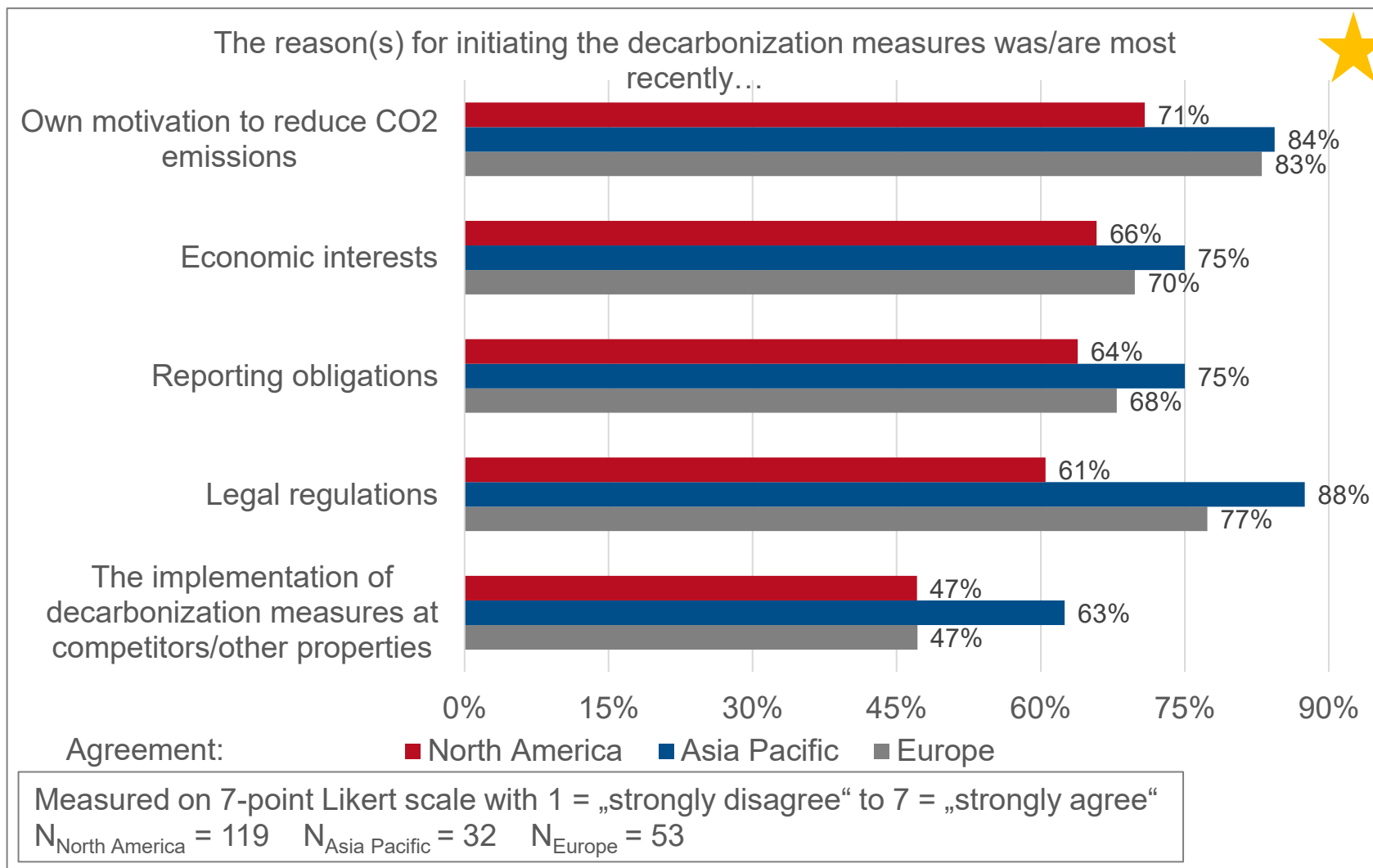
\*Questions of agreement were asked on 7-point Likert scales. The proportion of responses that expressed agreement (5 = tend to agree, 6 = agree, and 7 = strongly agree) are shown here and below as a percentage for better understanding.

# Decarbonization prioritized by top management in Asia and Europe



Decarbonization has reached the executive levels in Asia and Europe and is a top management issue.

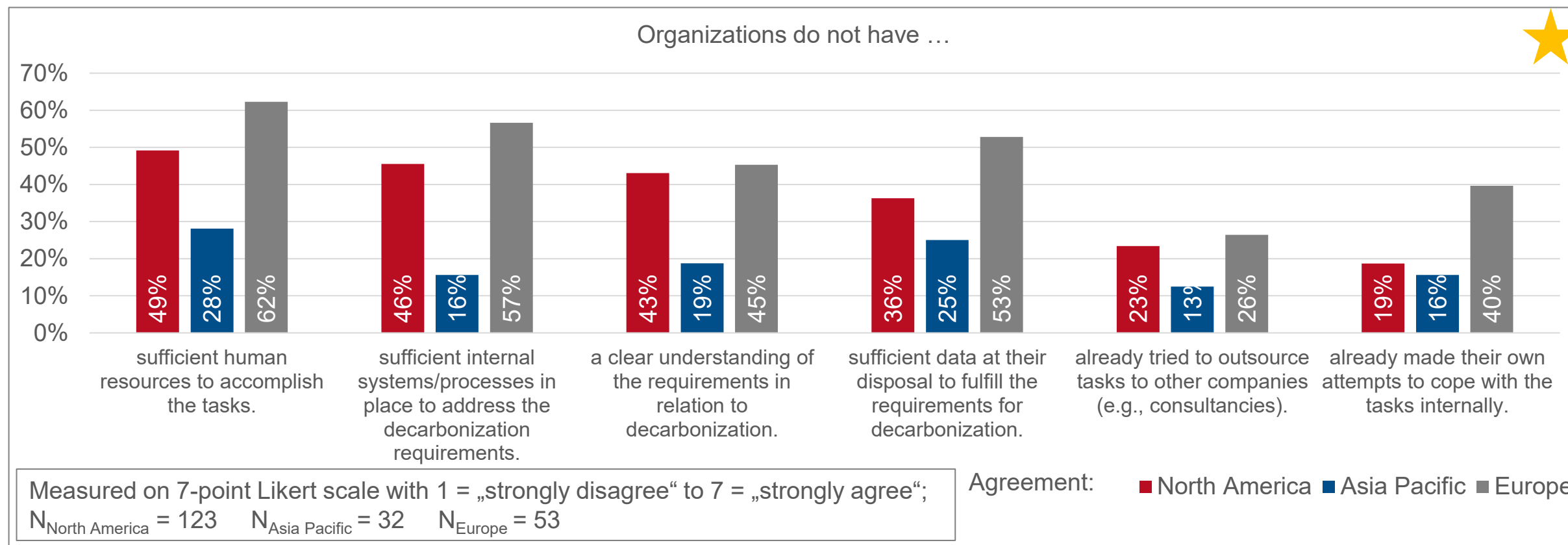
# Different assessment of the various reasons for decarbonization in the global context



The reasons for implementing decarbonization vary around the world. The self-motivation of facility managers and legal requirements play a particular role here. Does socially desirable response behavior shine through here?

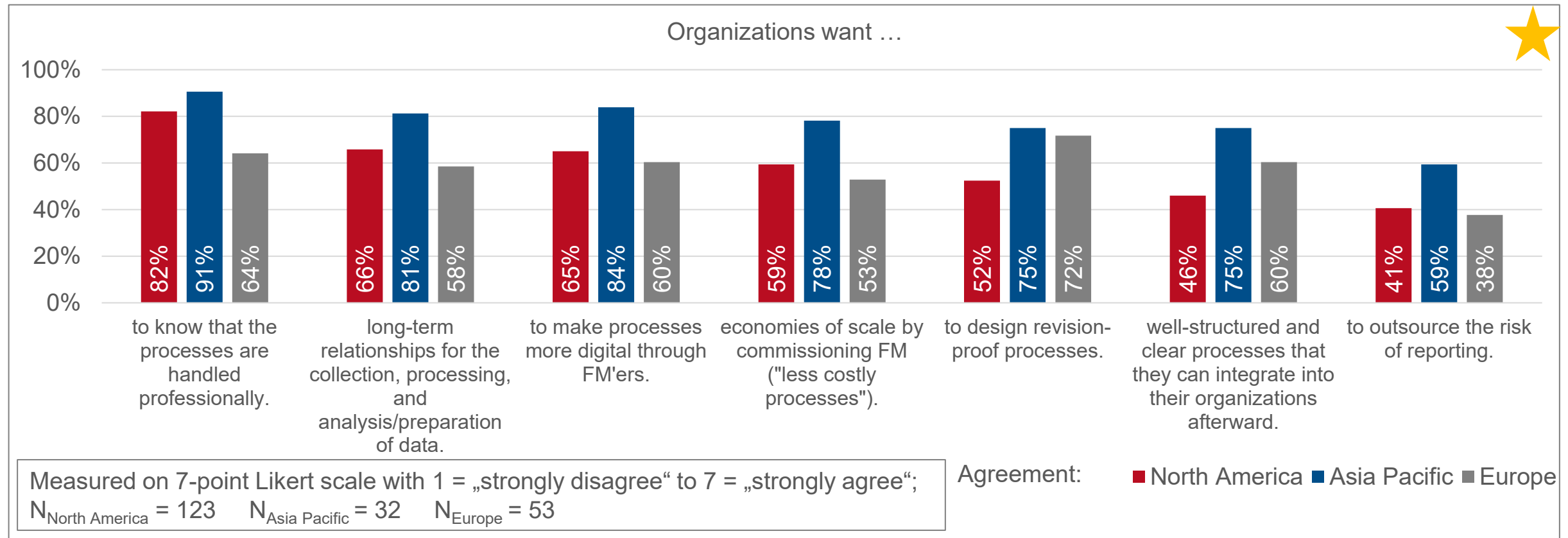
The market primarily drives North American facility managers; legal regulations push for decarbonization in Asia and Europe.

# Barriers to the implementation of ESG are perceived as high, especially in Europe

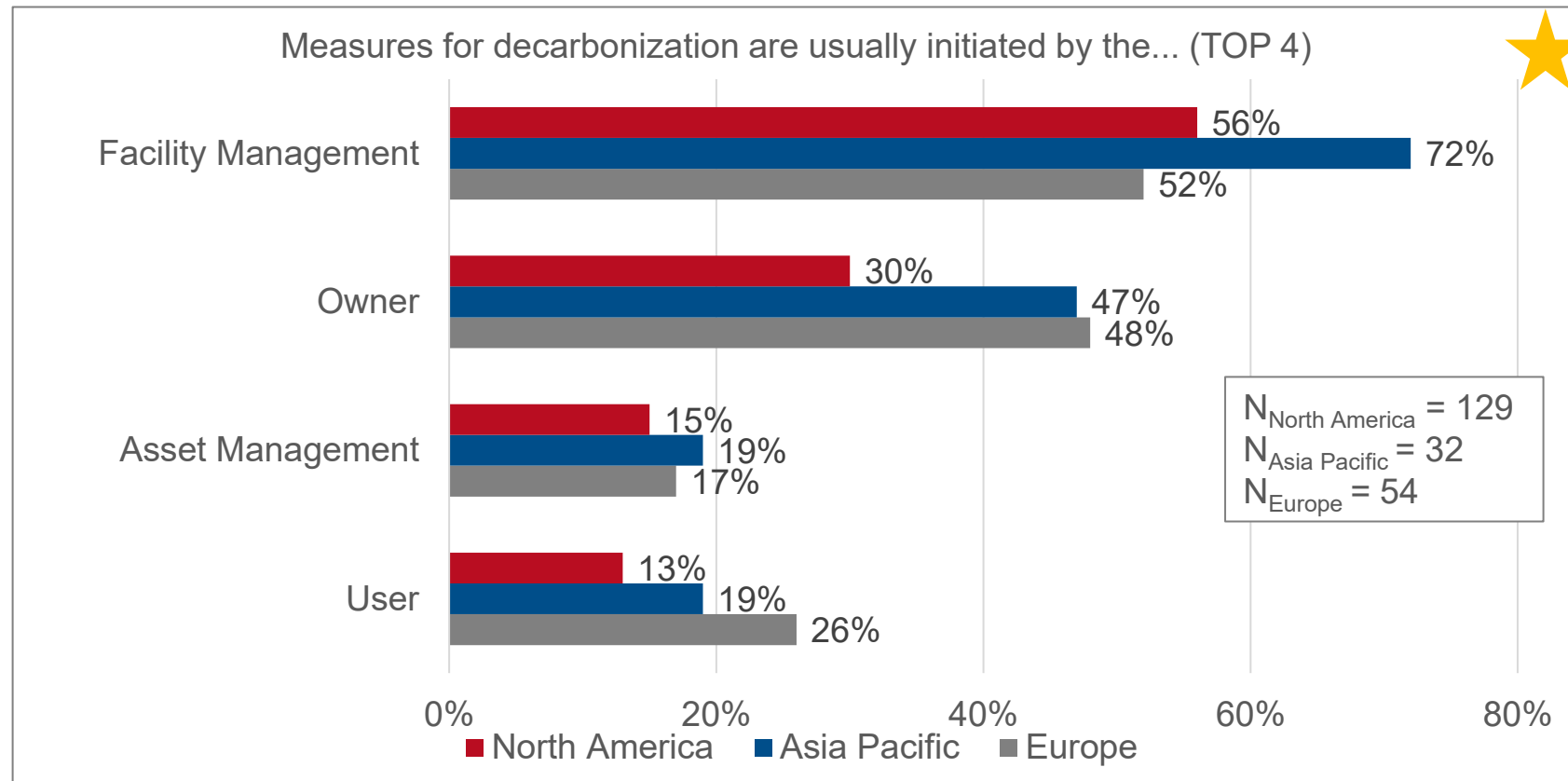




# High expectations of organizations regarding the achievement of decarbonization targets and the path to achieving them



# Facility Managers see themselves and owners as main drivers of decarbonization



Facility managers see themselves as essential players in the decarbonization process. They and the owners of the properties are initiating measures to decarbonize existing buildings and building operations.

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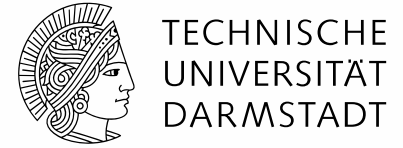
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Resources for Decarbonization

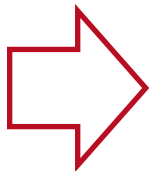
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Future role of Facility Managers in terms of decarbonization

# Facility management is the starting point for implementing decarbonization



- 1) Facility managers worldwide recognize the high relevance of various tasks for decarbonizing building stock and operations. On average, **resource-related tasks (sourcing renewable energy and switching to more energy-efficient devices) are rated as the most important** (72 – 92% of respondents consider the tasks essential for achieving the targets). IoT and data-related tasks (32 – 95%) followed in second place, ahead of building and process-related tasks (41 – 93%).
- 2) **The degree of fulfilment of the individual tasks often falls far behind the recognized relevance of the tasks:** the difference between the proportion of those who fulfill a specific task and the proportion of those who consider the task to be important is up to 61% (26% on average).



**Key message #4: Facility management is ready to tackle the decarbonization of building stock and operations and has recognized the determinants of decarbonization. However, facility managers seemingly lack the necessary resources to leverage this potential.**

# A long way to go: The degree of fulfilment of important tasks is often still too low



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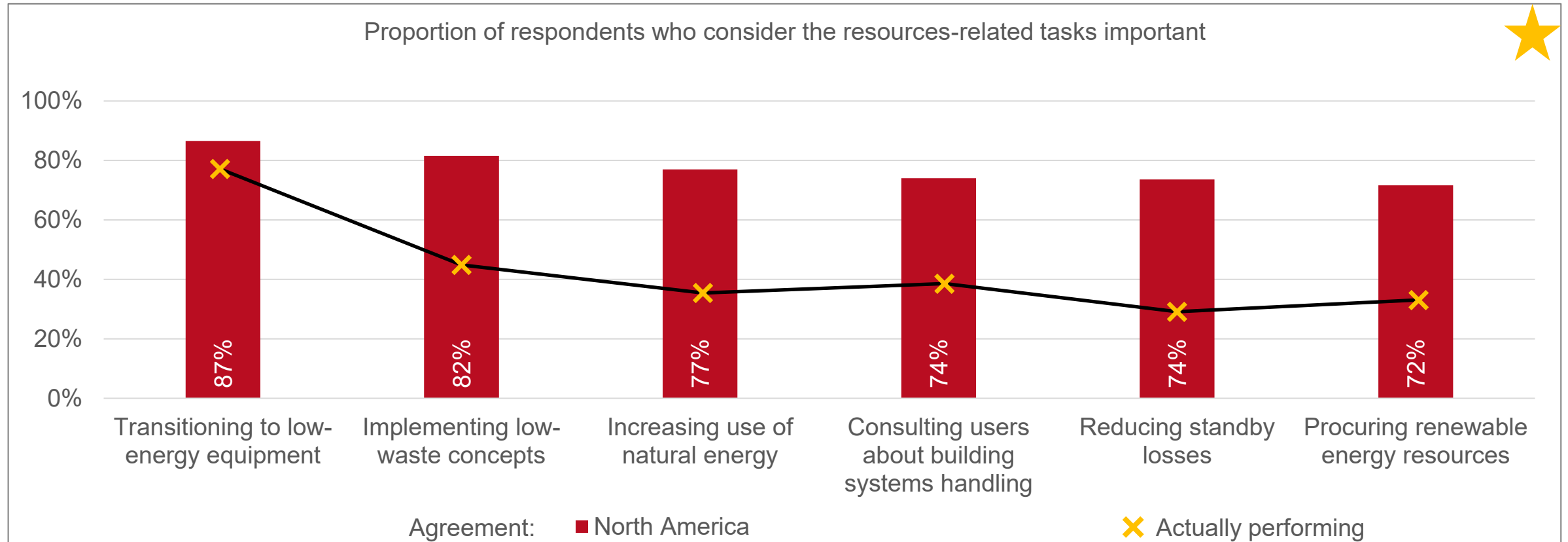
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Resources-related tasks are rated as most important overall, followed by IoT, data and monitoring, and building and process-related tasks. It is noticeable that IoT, data and monitoring-related tasks and building and process-related tasks are considered particularly important in Asia.

In Europe, the assessment of the importance of the decarbonization tasks and the self-perceived degree of fulfillment are closest together. The gap between importance and fulfillment in Asia tends to be smaller than in North America. Nevertheless, overall, there is still considerable potential to advance decarbonization in building operations.

Is decarbonization falling short in day-to-day operations? Are organizations underestimating the importance of the building sector for ecological transformation and thus setting the wrong priorities in the long term?

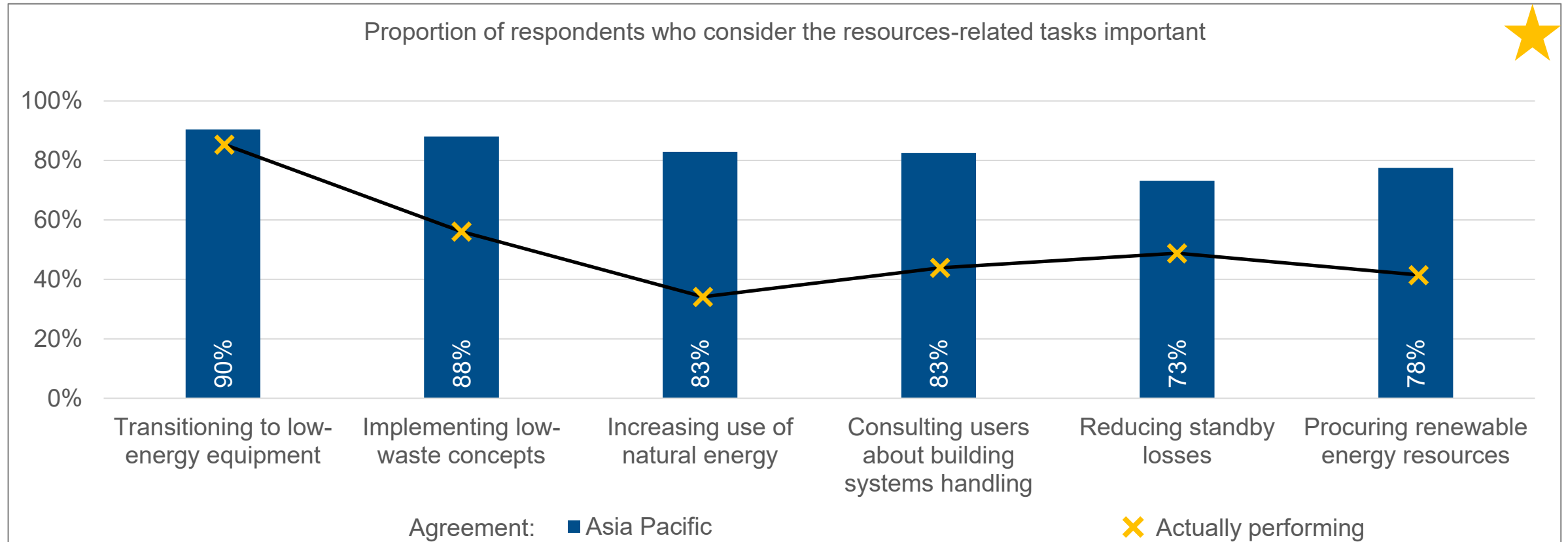
# High global potential for resource-related improvements concerning decarbonization



Measured on 7-point Likert scale with 1 = „strongly disagree“ to 7 = „strongly agree“

N<sub>North America</sub> = 123   N<sub>Asia Pacific</sub> = 40   N<sub>Europe</sub> = 53

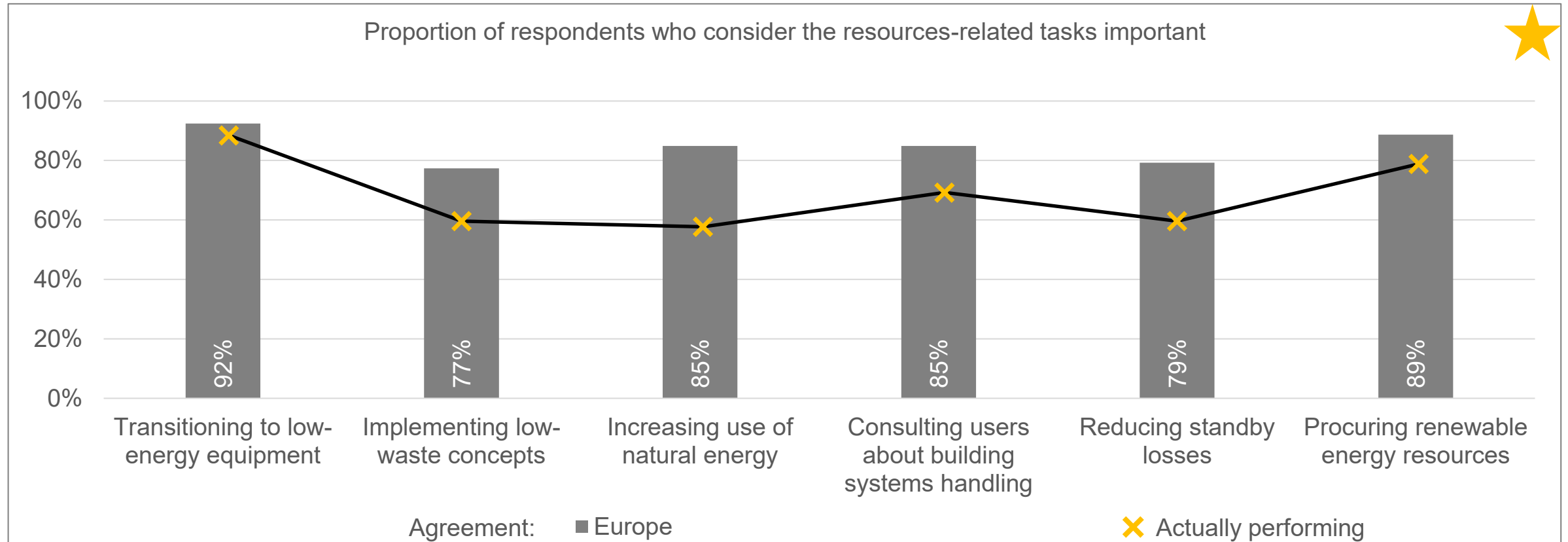
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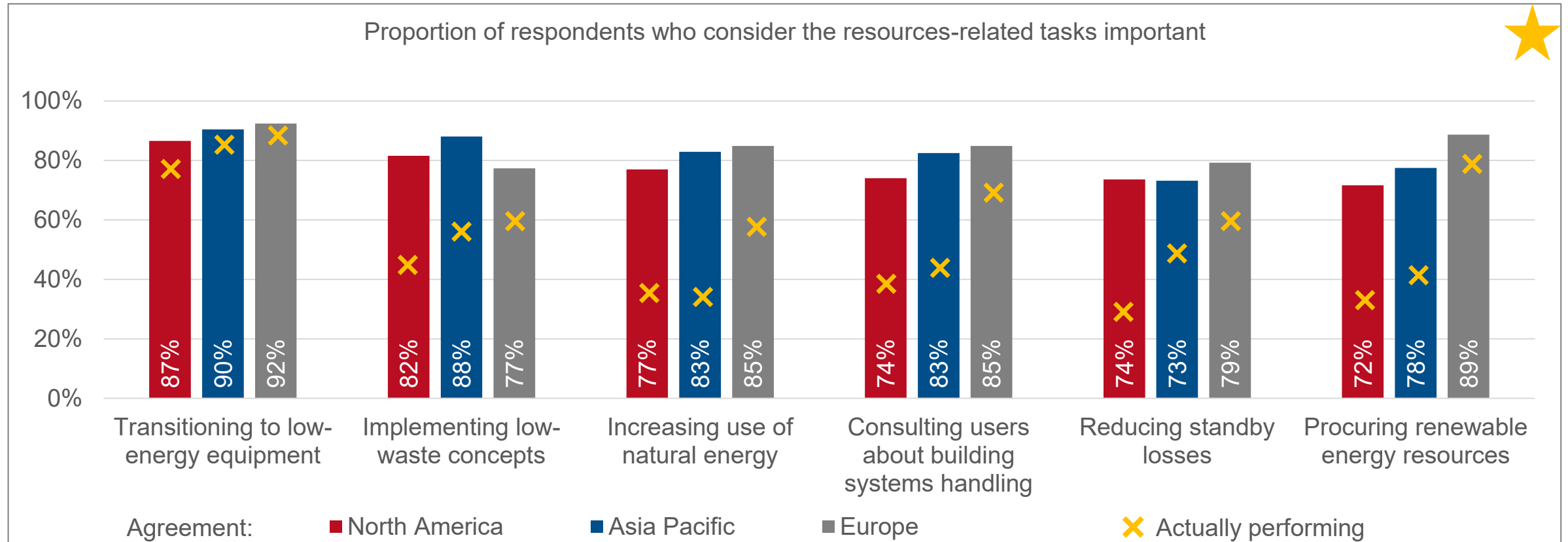
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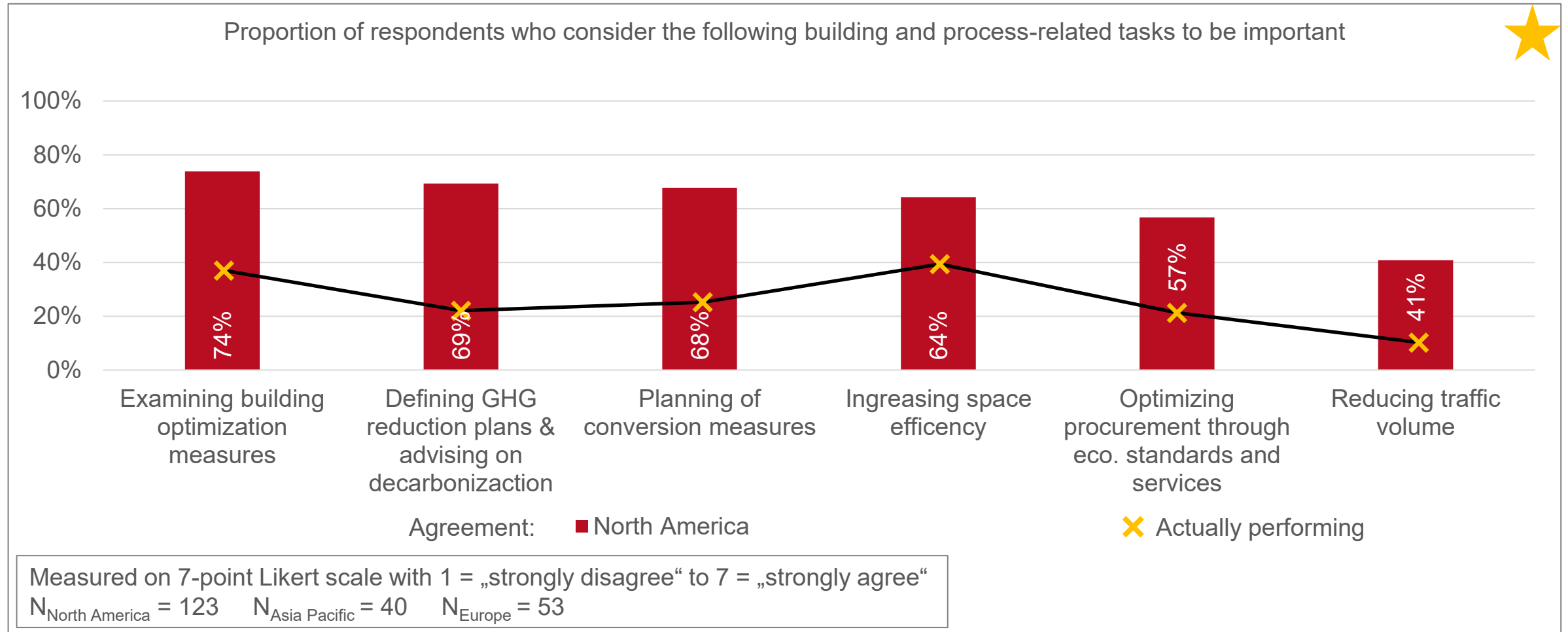
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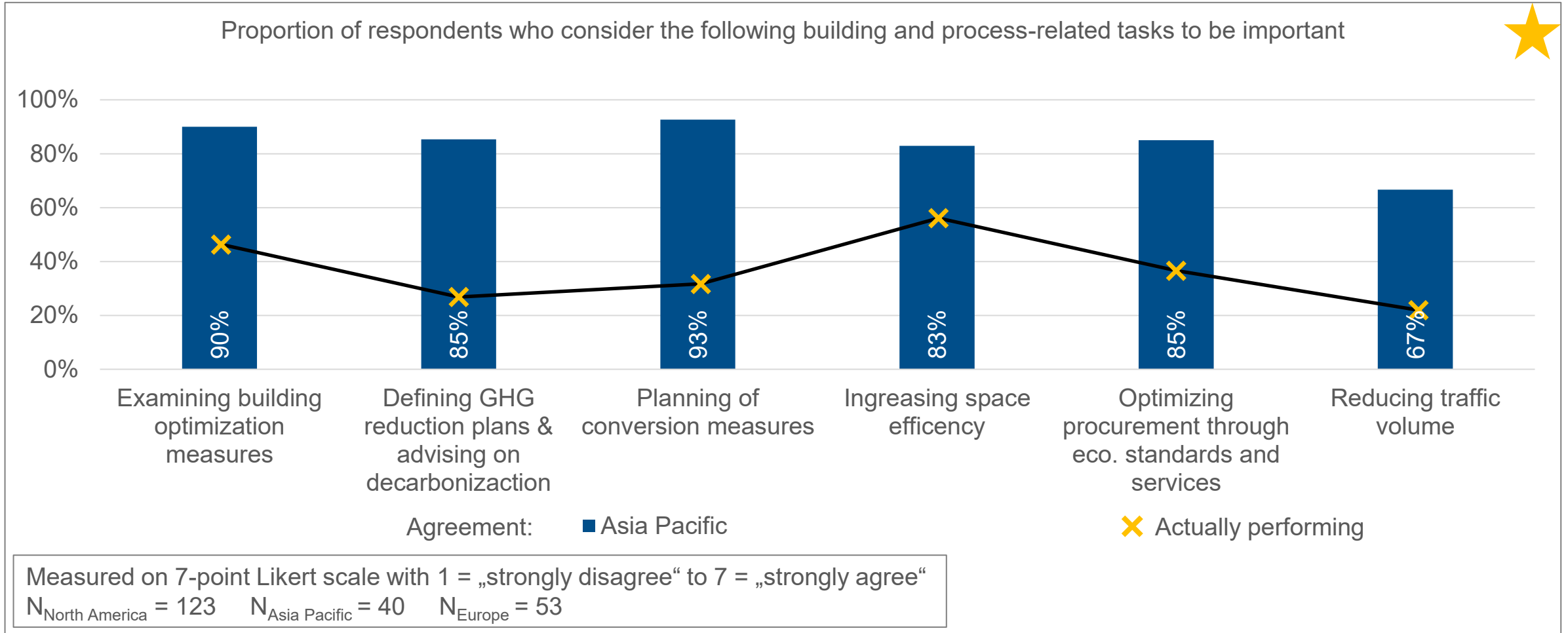
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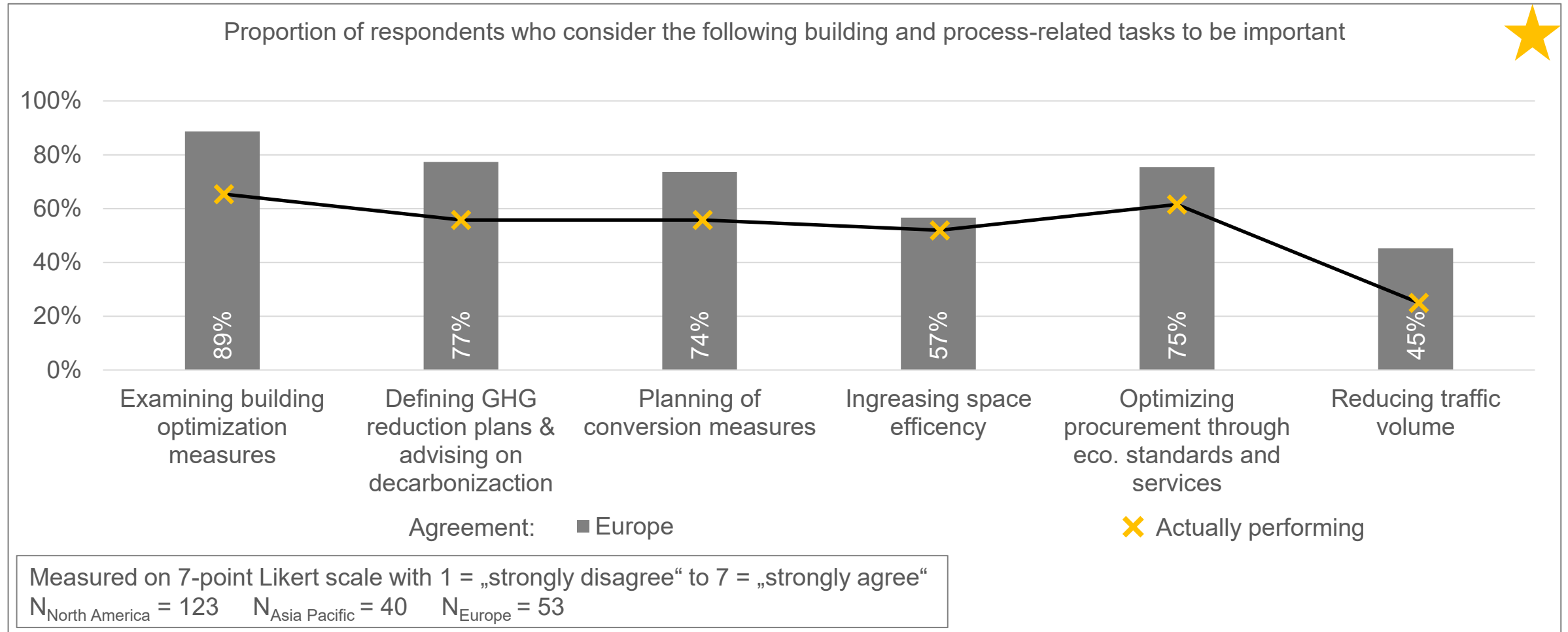
# High divergence between importance of building and process-related tasks and their implementation



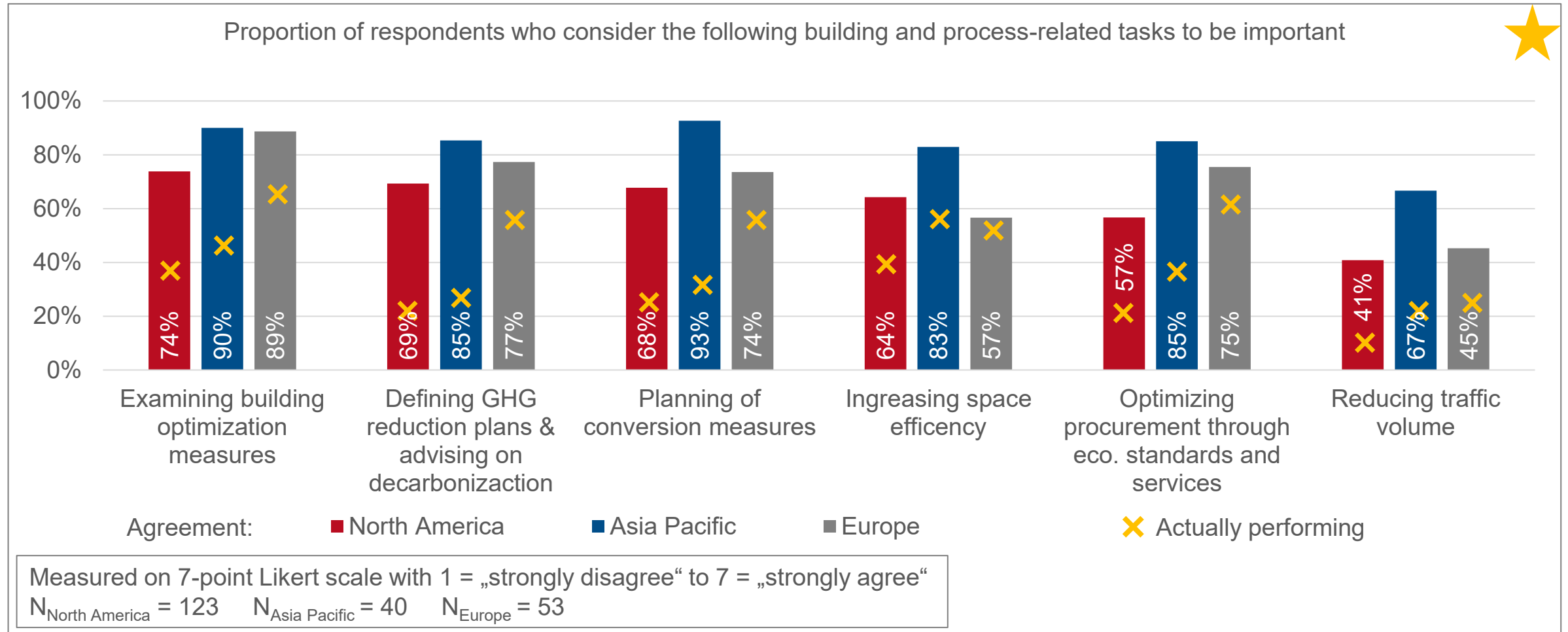
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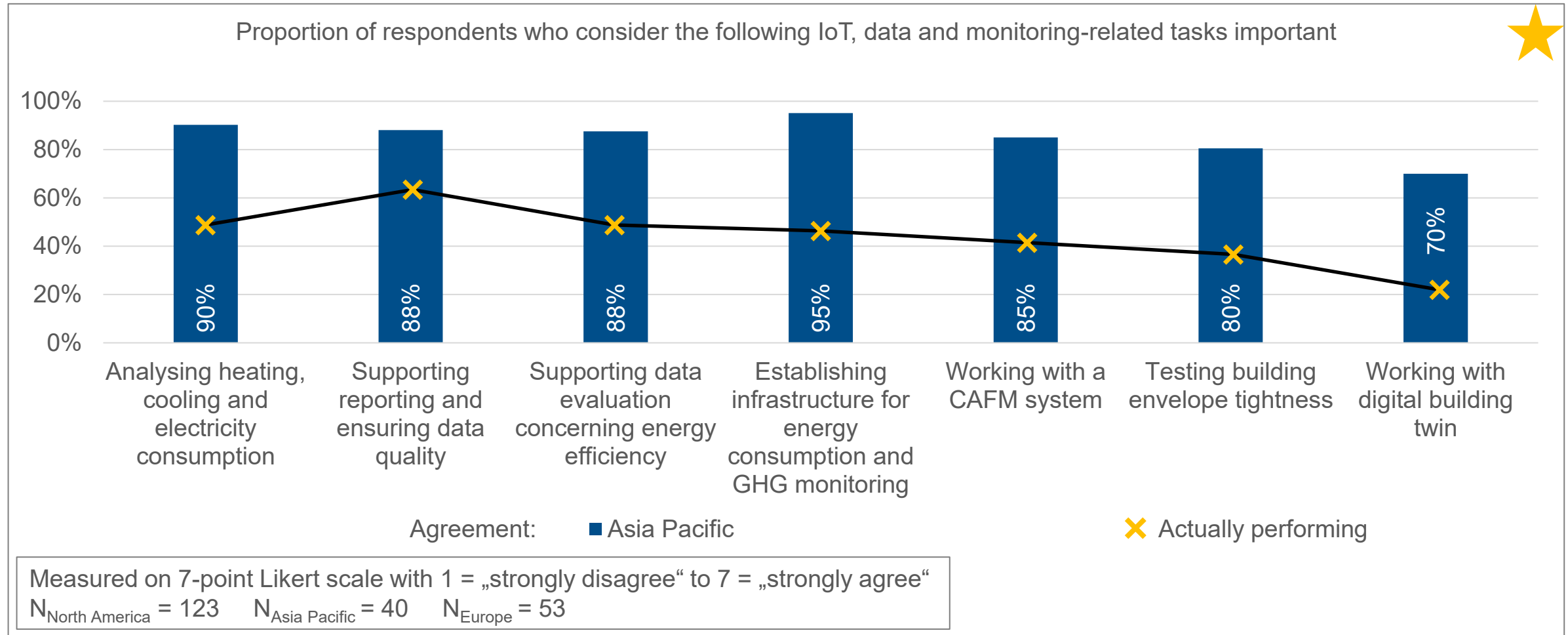
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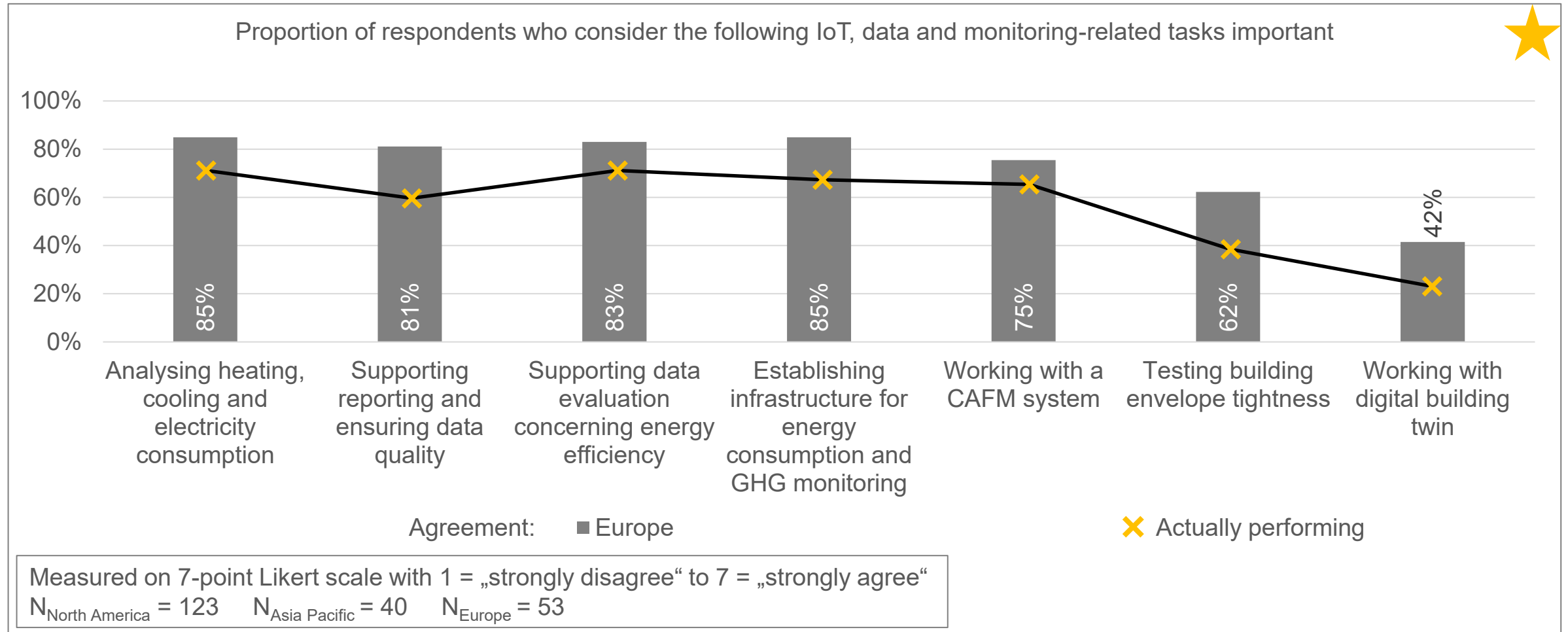
# Aside from resource-related tasks: High leverage seen in data-related tasks



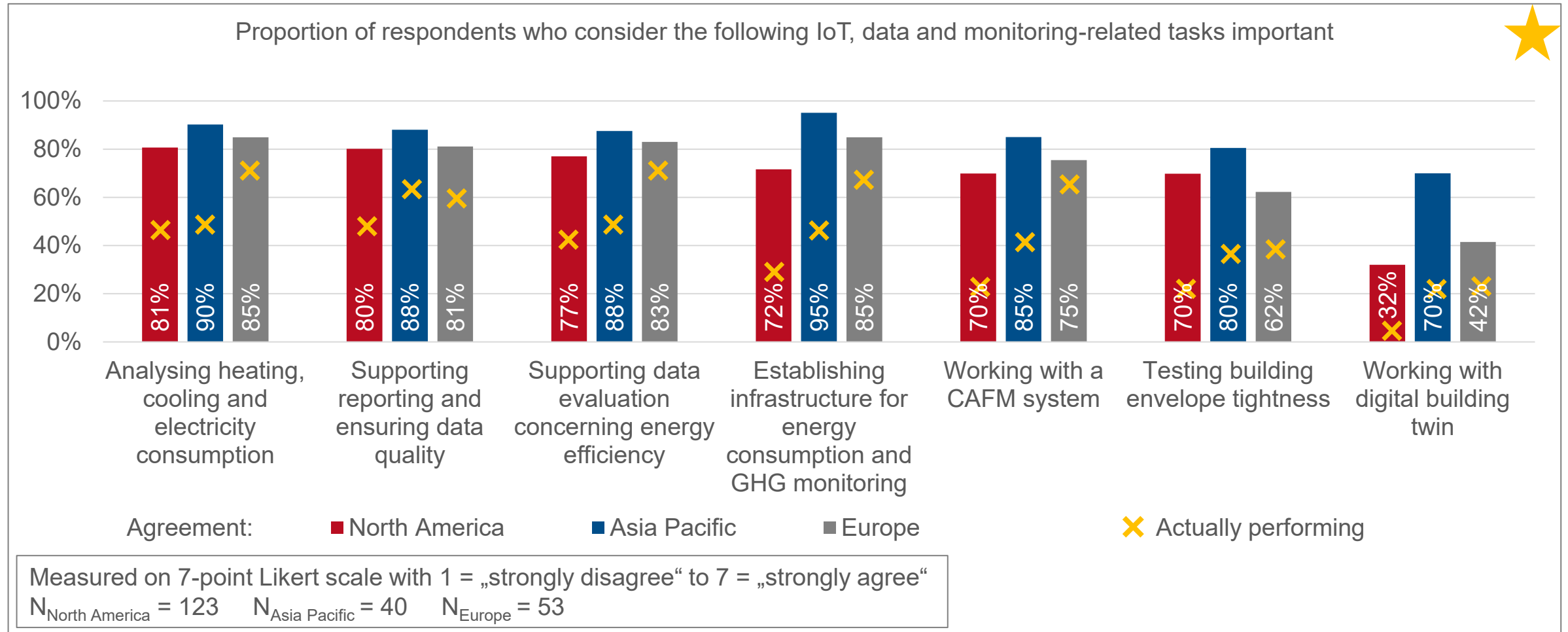
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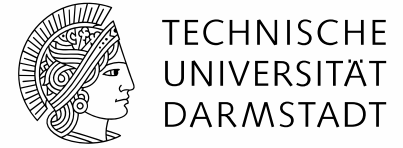
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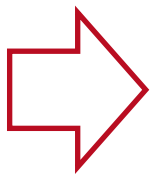
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Future role of Facility Managers in terms of decarbonization

# Is the provision of missing financial resources key to advancing decarbonization?



- 1) Facility managers see **financial, knowledge-based, human, and technical resources** as **necessary to decarbonize** building stock and operation. Financial (88 – 97% agreement) and knowledge-based (85 – 94%) resources play a significant role compared to human and technical resources.
- 2) **Concerning the financial resources available, only 25% (Europe) to 34% (Asia) of respondents state that sufficient funds are available.**
- 3) The **barriers to providing financial resources vary internationally. However, they are nevertheless external**: for example, the lack of interest from the capital markets in North America and Asia is slowing down decarbonization much more than in Europe. Other reasons for the lack of financial resources are lack of innovation funding, lack of awareness of the problem on the part of owners, and focus on large-scale projects.

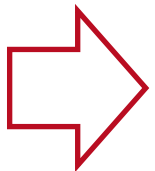


**Key message #5: Decarbonizing existing buildings and building operations is at risk of failing due to a lack of the necessary financial resources.**

# The real estate sector relies on the expertise of facility managers to achieve climate targets

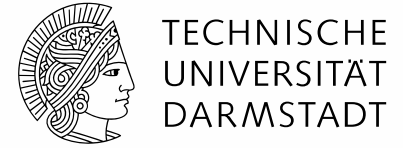


- 1) Facility managers already have extensive expertise in decarbonizing existing buildings and building operations. **According to their self-assessment, real estate owners and corporations, in particular, must rely on the technical knowledge** of facility management.
- 2) At the same time, the acquisition of required knowledge-based resources fails for a variety of reasons: **lack of time for further training (55 – 64% agreement), financial resources (28 – 59% agreement) or suitable further training offers are the most significant difficulties.**

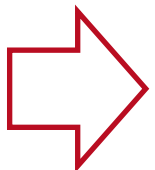


**Key message #6: Respondents believe they have expertise in implementing decarbonization in building stock and operations. Owners and corporations rely on their knowledge to decarbonize their properties – proof of the industry's dependence on facility management to achieve climate targets.**

# Shortage of skilled workers as a potential bottleneck for decarbonization



- 1) The facility management industry has recognized that decarbonizing building stock and operations will place **new demands on employees** (71% – 87% agreement across the regions).
- 2) **At the same time, only 30% of North American and 19% of European respondents state that they have access to suitable candidates for the tasks in the labor market.** Almost half of Asian facility managers can also not acquire the needed employees.
- 3) **The shortage of skilled workers is the most important reason for the inability to recruit suitable employees.** It is even more critical than any discrepancies between the offers made by employers and the requirements of candidates or the lack of training levels of applicants.

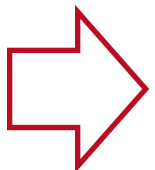


**Key message #7: The shortage of skilled workers is accompanied by a considerable risk that the decarbonization of existing buildings and building operations will fail due to a lack of facility managers to implement the identified strategies. For policymakers, this is a crucial problem that needs to be solved to achieve climate targets.**

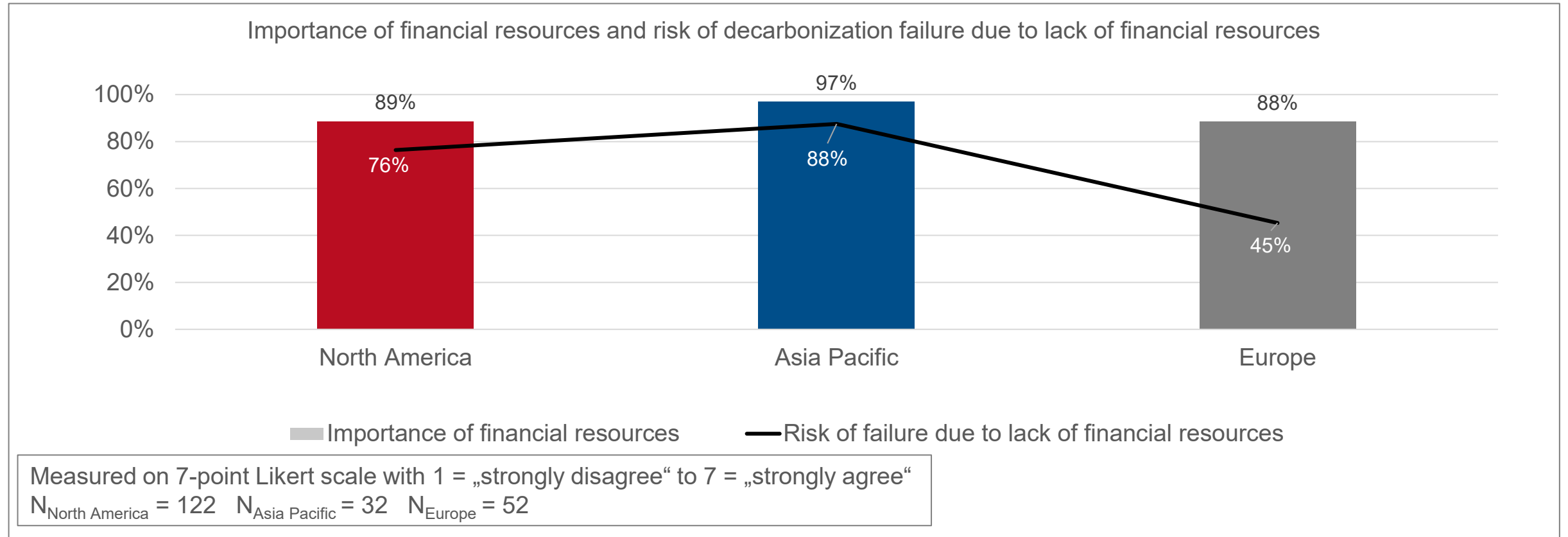
# Is the digitization of buildings and their operation a necessary prerequisite?



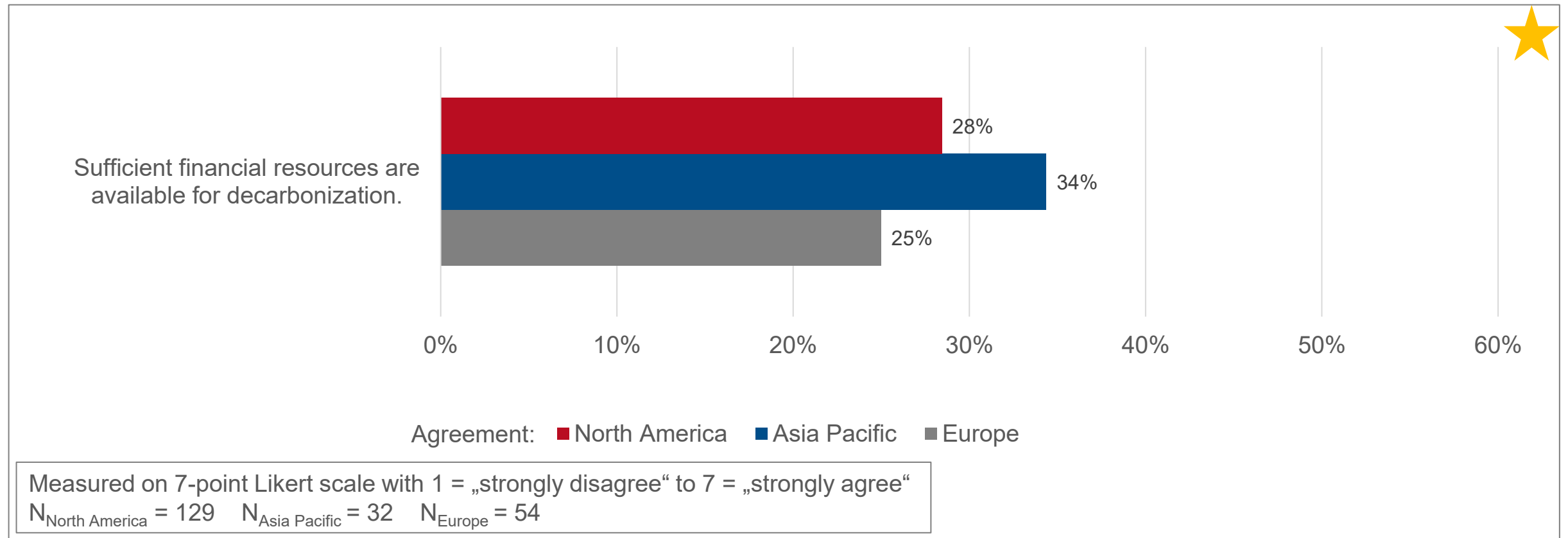
- 1) **Facility managers worldwide agree that smart building technology is a significant instrument supporting decarbonization efforts** (93 – 97% of respondents). This means that technical development in this area is more important than using more environmentally friendly building materials. However, digitalizing management processes is also believed to offer considerable potential for efficiency (63 – 84%).
- 2) **Significant potential:** the data exchange between building operators on the one hand and organizations and owners on the other is mainly carried out via data exports, if at all. Less than half of the facility managers surveyed exchange building data via guest access or direct interfaces to the information systems of the organizations/owners (North America: 41%/33%, Asia Pacific: 44%/38%, Europe: 34%/34%).
- 3) The provision of technical resources fails primarily due to a **lack of financial resources** (63 – 77%) and a **lack of innovative capacity** (52 – 63%).

 **Key message #8: Facility managers see significant opportunities in digitalizing buildings and management to achieve the set decarbonization goals. This digitalization must be given priority, possibly due to presumed efficiency advantages, also considering the lack of employees (key message #7).**

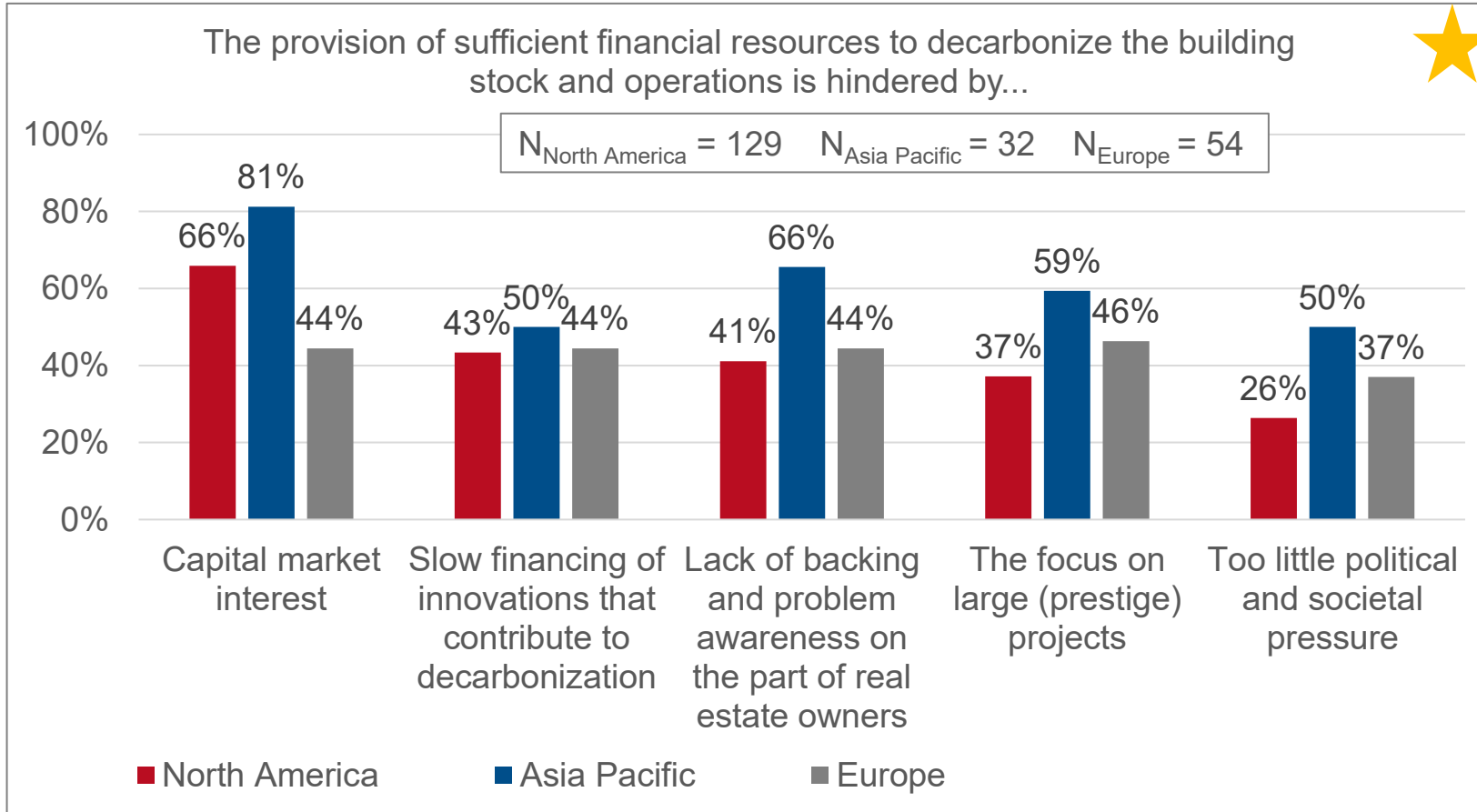
# Financial resources: Hurdle to decarbonization in Asia and North America



# Financial resources: Immense lack of financial resources is hindering decarbonization massively



# Financial resources: Capital markets must be incentivized to invest in decarbonization of buildings



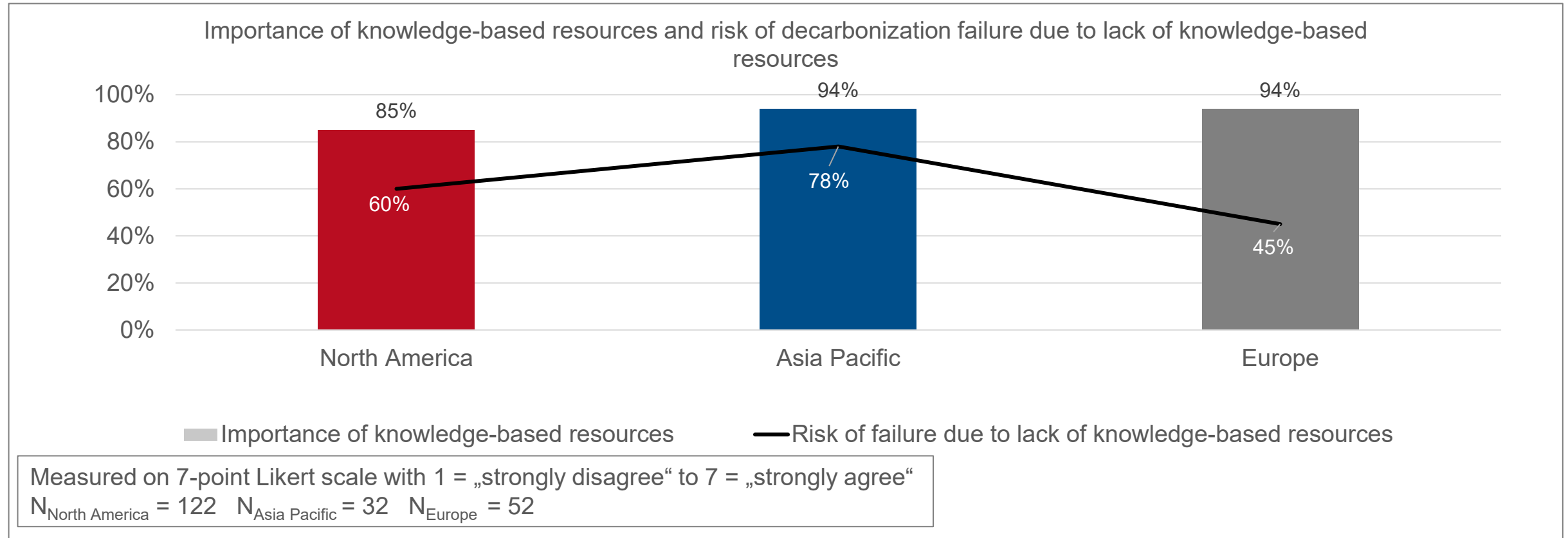
The lack of interest from capital markets is the biggest financial obstacle to decarbonization.

In Asia and Europe, there is also a lack of awareness of the problem on the part of the owners.

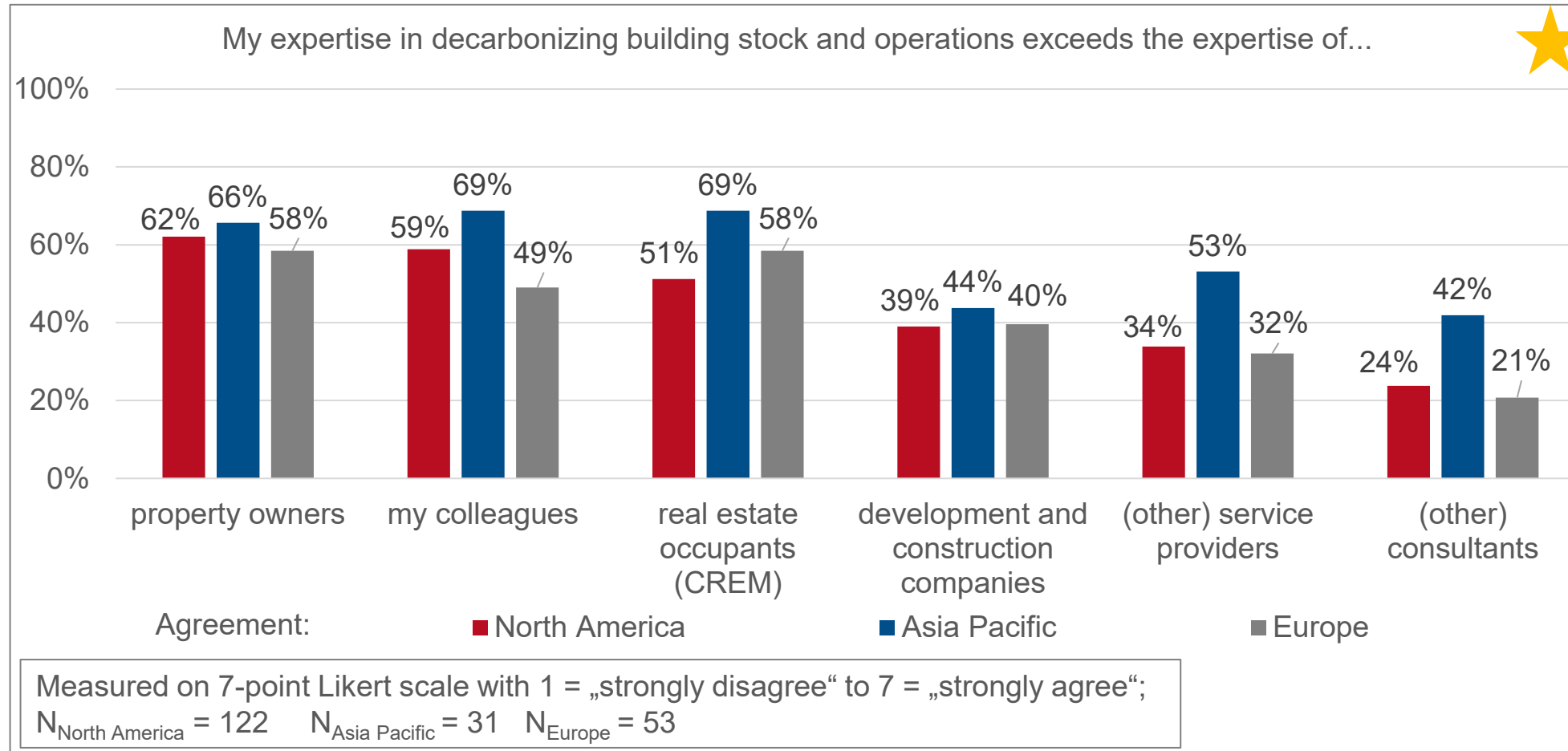
In general, Asia has the biggest problems in acquiring sufficient funds. In addition, Asian actors (owners, capital market, developers and politicians) work disproportionately against decarbonization.

Effective concept? In Europe, the sustainability taxonomy seems to direct money flows toward decarbonizing the building stock and operations.

# Knowledge-based resources: Internationally high relevance recognized, comparatively low hurdle



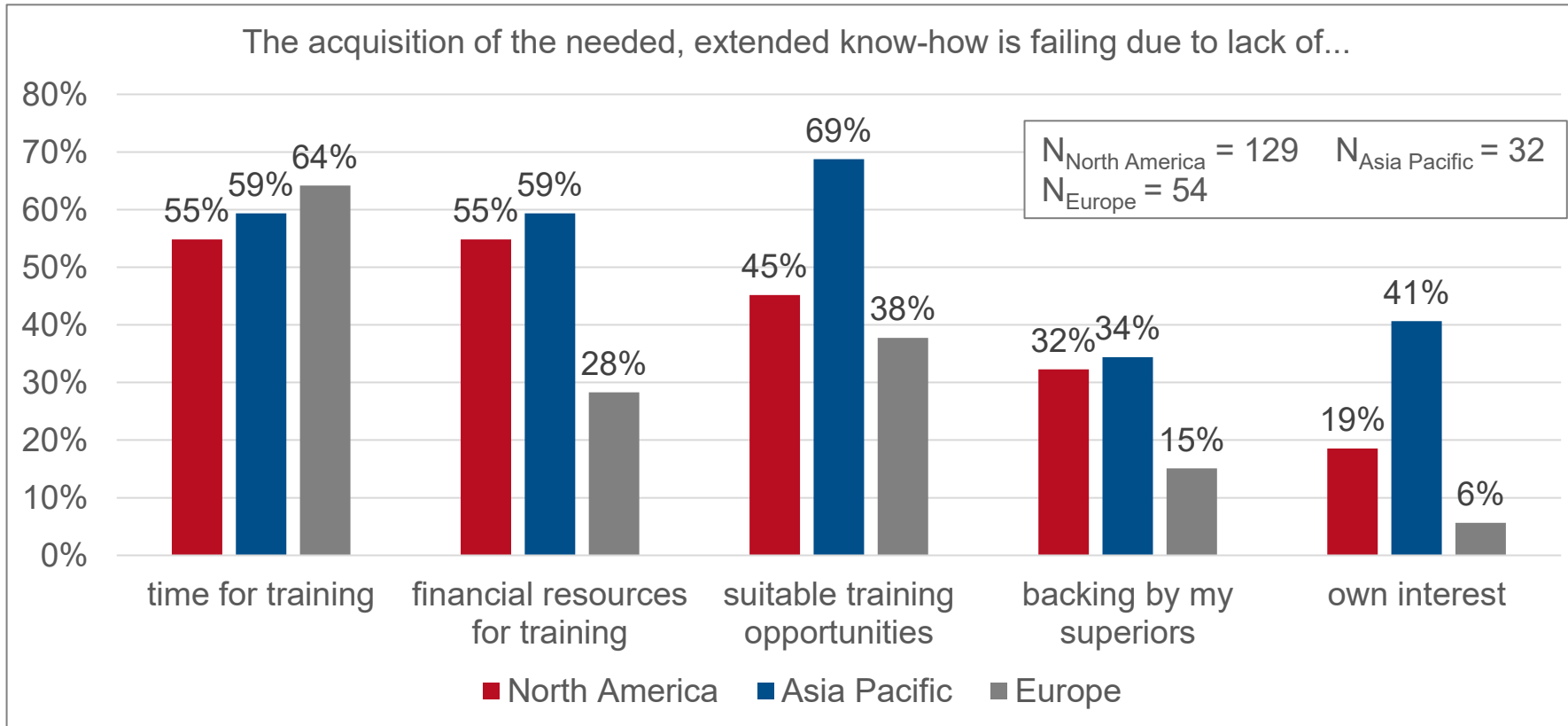
# Knowledge-based resources: Owners and corporates rely on facility managers



Facility managers are indispensable:  
 According to the self-assessment of the interviewees, they are needed to achieve decarbonization in the building sector.

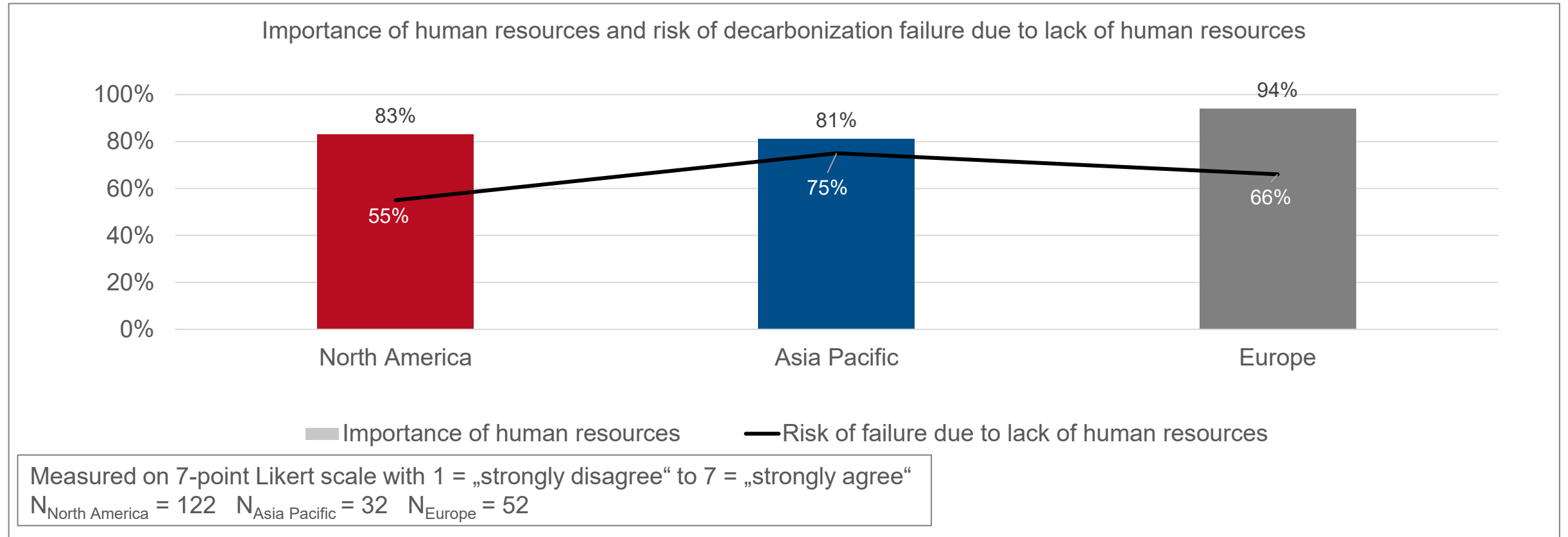
Especially in the US and Europe, facility managers are convinced of the expertise of other consultants. Asian facility managers see themselves well positioned with their expertise.

# Knowledge-based resources: Lack of funding, time and training opportunities

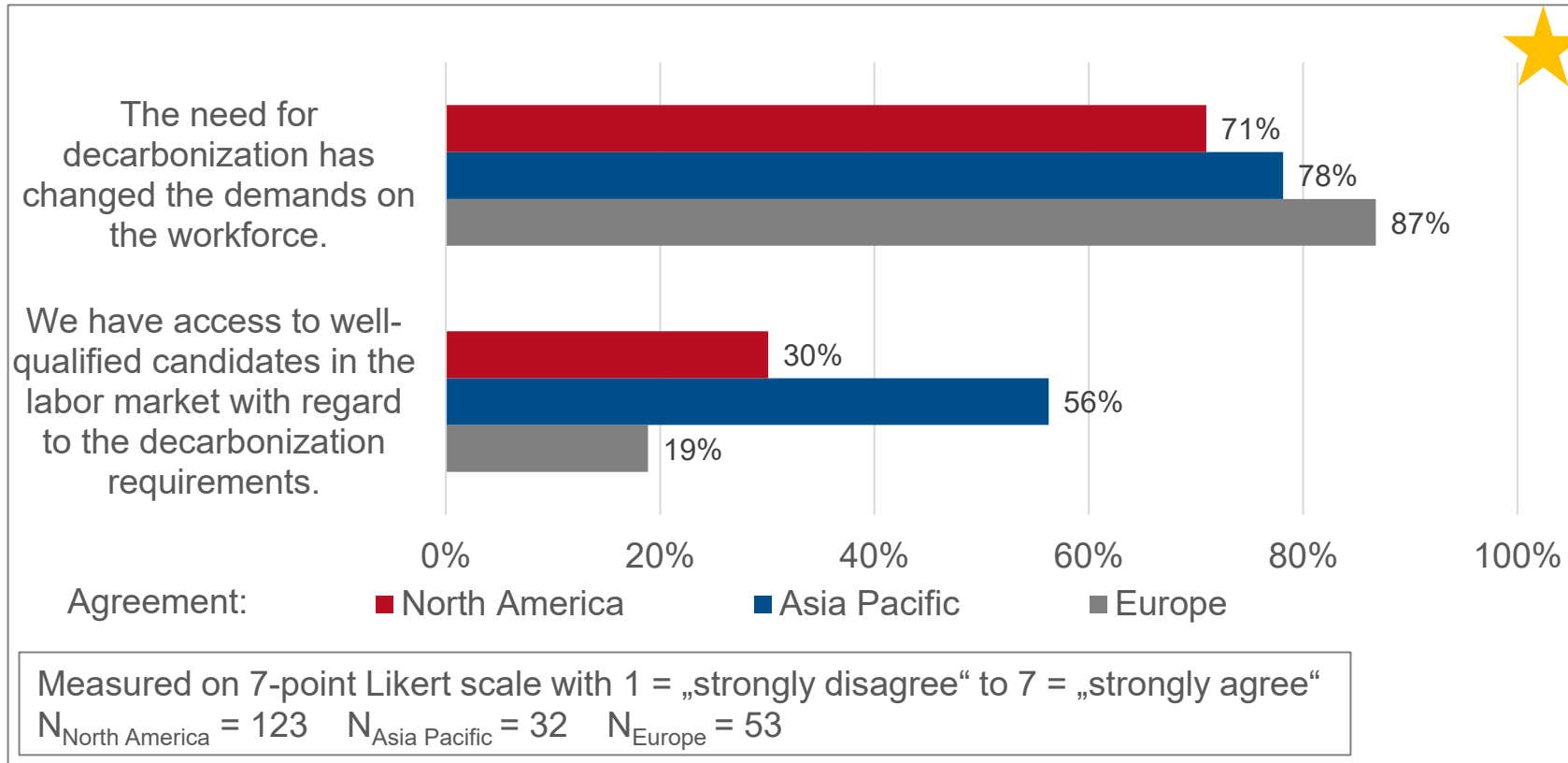


In the US, there is a lack of sufficient time and financial resources, whereas in Asia, there is a lack of training opportunities for acquiring the necessary knowledge. In Europe, both time and training opportunities are lacking.

# Human resources: a potential hurdle to decarbonization in Europe



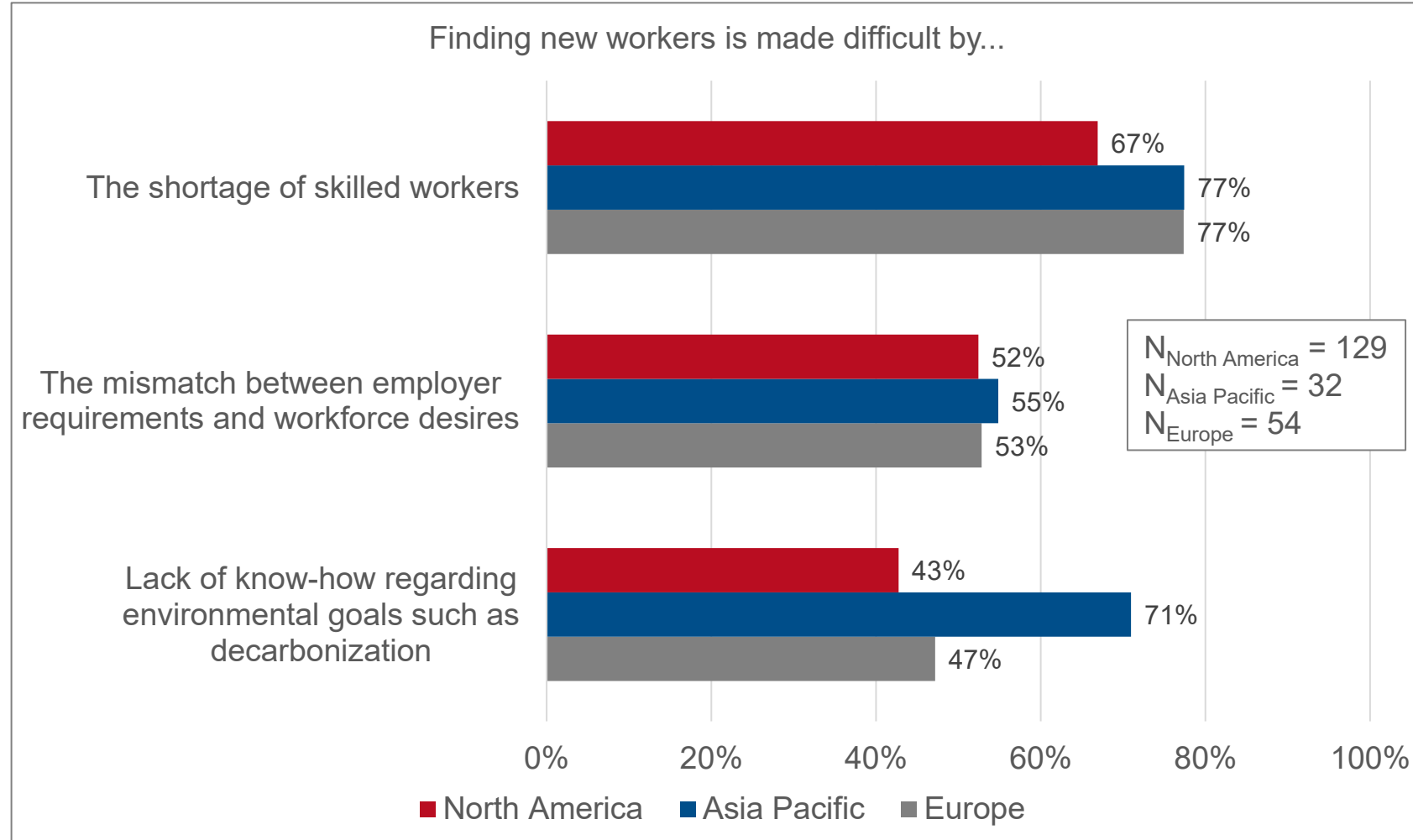
# Human resources: Necessary employees for decarbonization cannot be acquired



Decarbonization poses new challenges for facility managers. These are perceived as exceptionally high in Asia and Europe.

The talent acquisition cannot yet meet the new demand. This could become a bottleneck of decarbonization, especially in Europe.

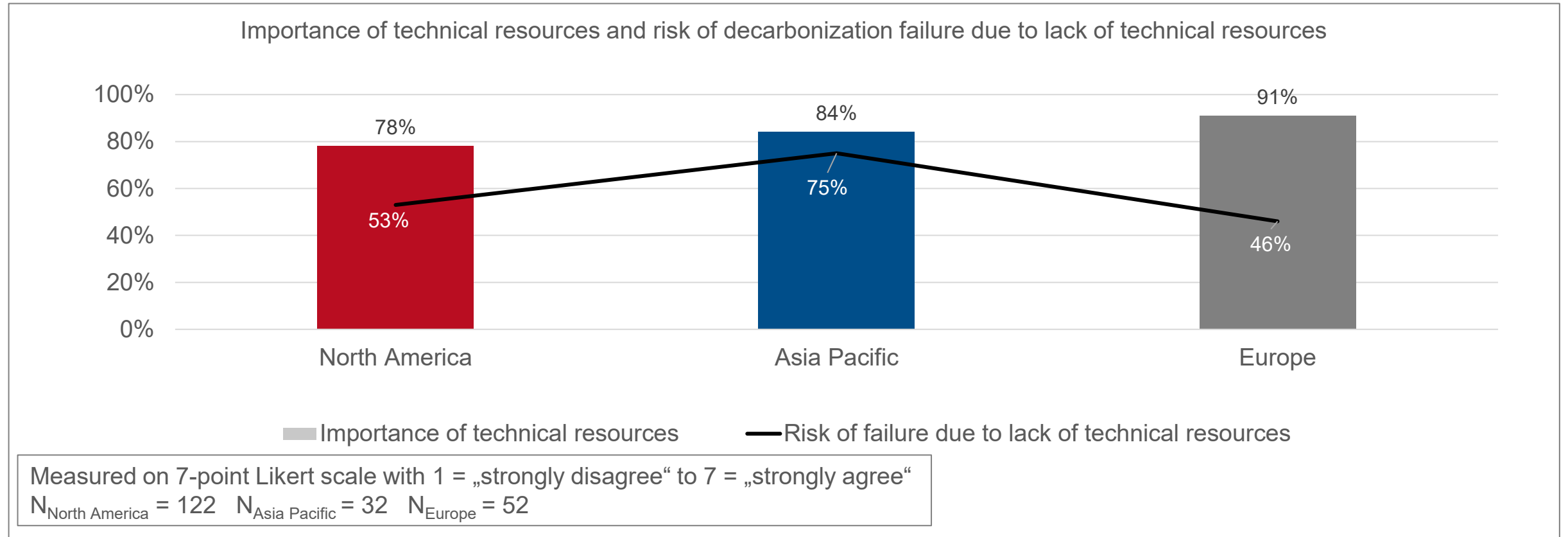
# Human resources: Shortage of skilled workers is the possible bottleneck for decarbonization



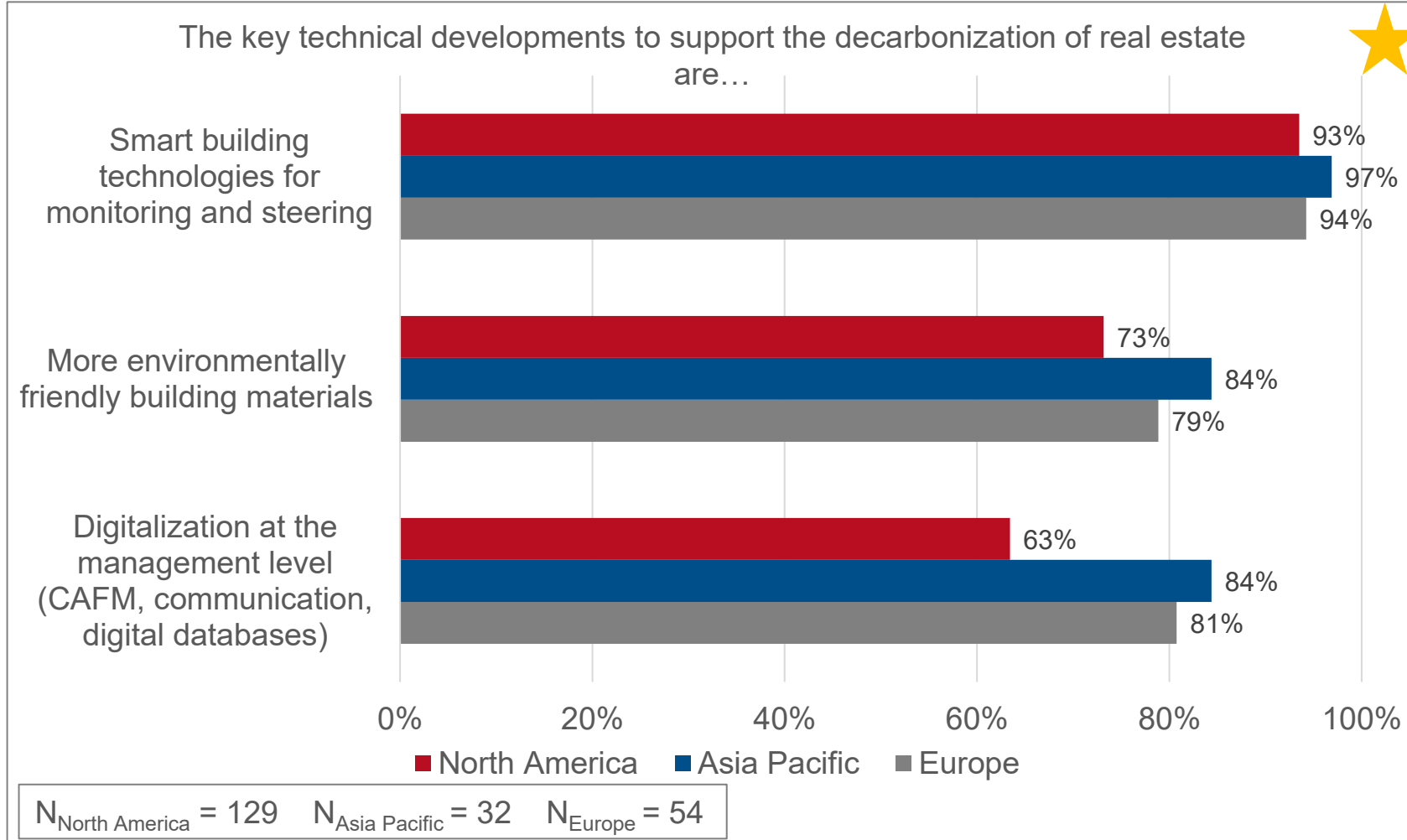
Globally, the shortage of skilled workers is a threat to decarbonization.

North Americans see themselves in a better position regarding the required environmental know-how, but Asia struggles with know-how regarding environmental goals.

# Technical resources: hurdle greatest in Asia in international comparison



# Technical resources: Making buildings smarter seen as key to global decarbonization

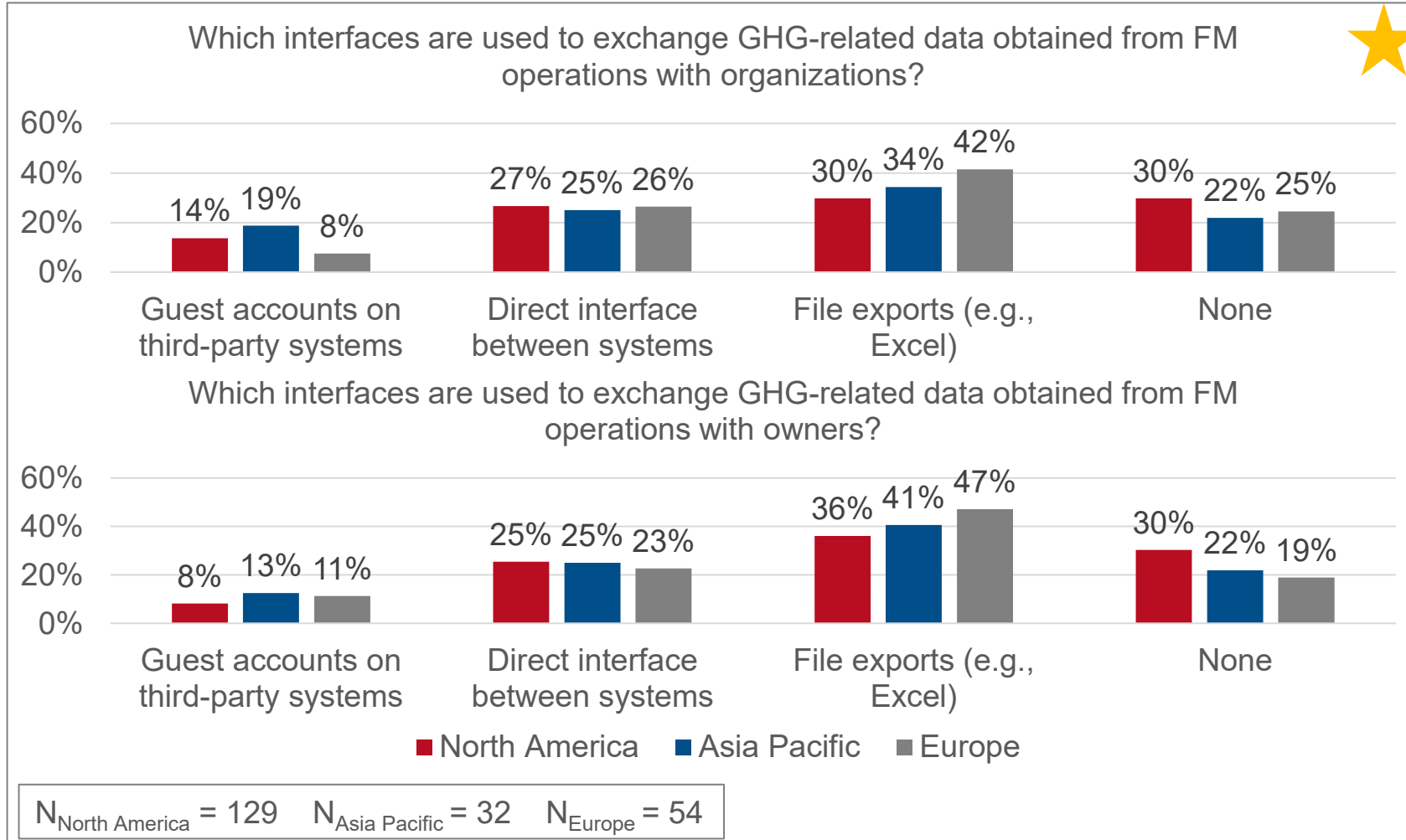


Almost all respondents see smart buildings as the key to decarbonizing the building stock and operation; it is even more critical than sustainable building materials.

In contrast, North America, Asia, and Europe see digitalization at the management level as much more critical and rank it second, with a discount, to the digitalization of the building.

A distinction must be made between the digitalization of the building on the one hand and the digitalization of the building management processes on the other.

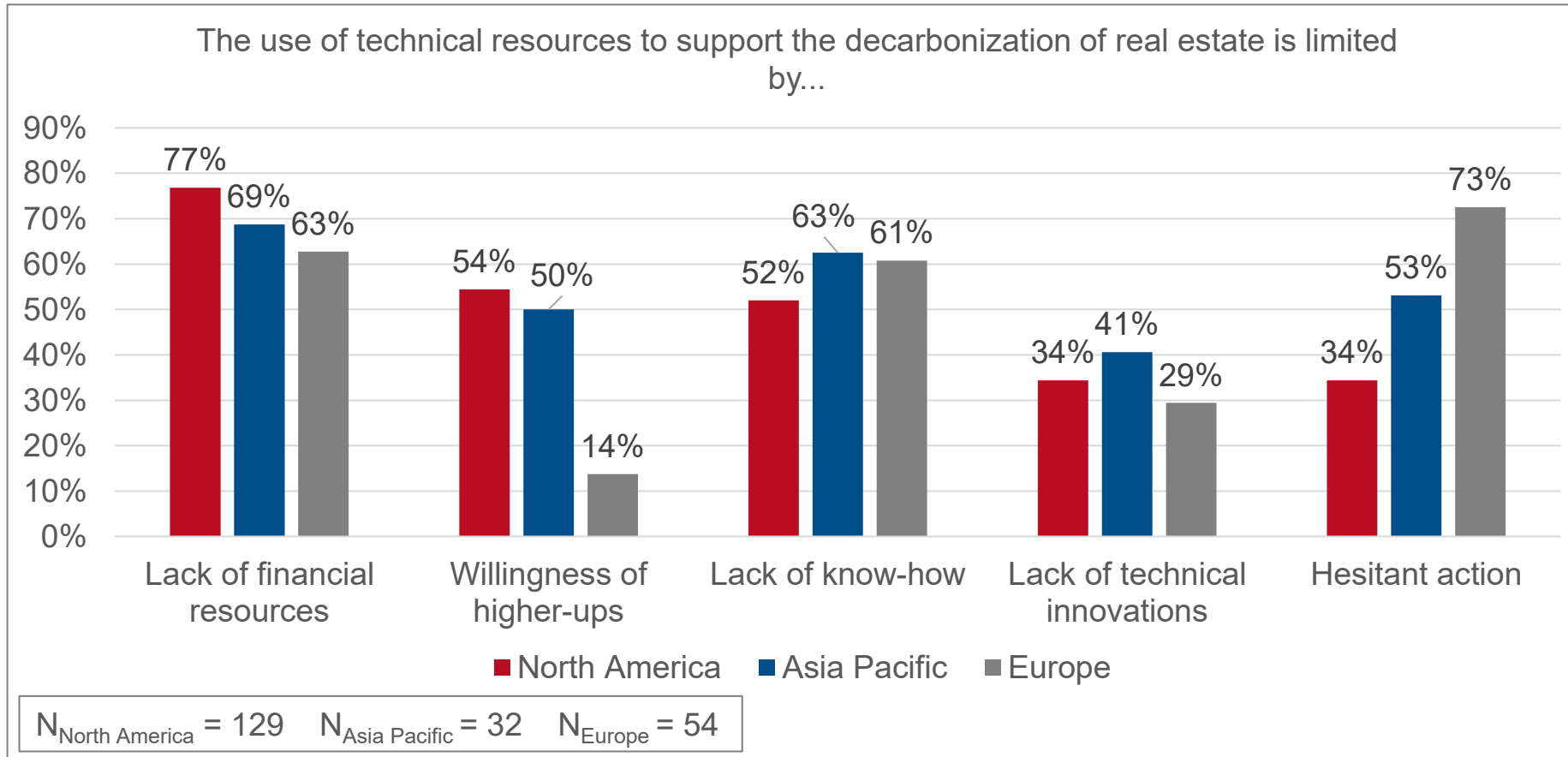
# Technical resources: Missed potential due to poor data handling



The transfer of building data often only takes place via file exchange. A probable cause is the lack of standardized interfaces for data exchange.

In Europe, data exchange still lags far behind the state of the art.

# Technical resources: Lack of funding is main obstacle



North Americans are not afraid to tackle the challenges of decarbonization; lack of knowledge and hesitant behavior hinder decarbonization in Asia and Europe.

A lack of technical innovations is not seen as an obstacle to the goal of decarbonization.

1

The respondents' professional background

2

Decarbonization expectations towards Facility Managers

3

The current role of Facility Managers in terms of decarbonization

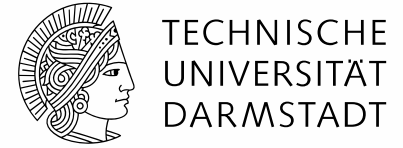
4

Resources for Decarbonization

5

Future role of Facility Managers in terms of decarbonization

# Changing job profile with a focus on consulting and data

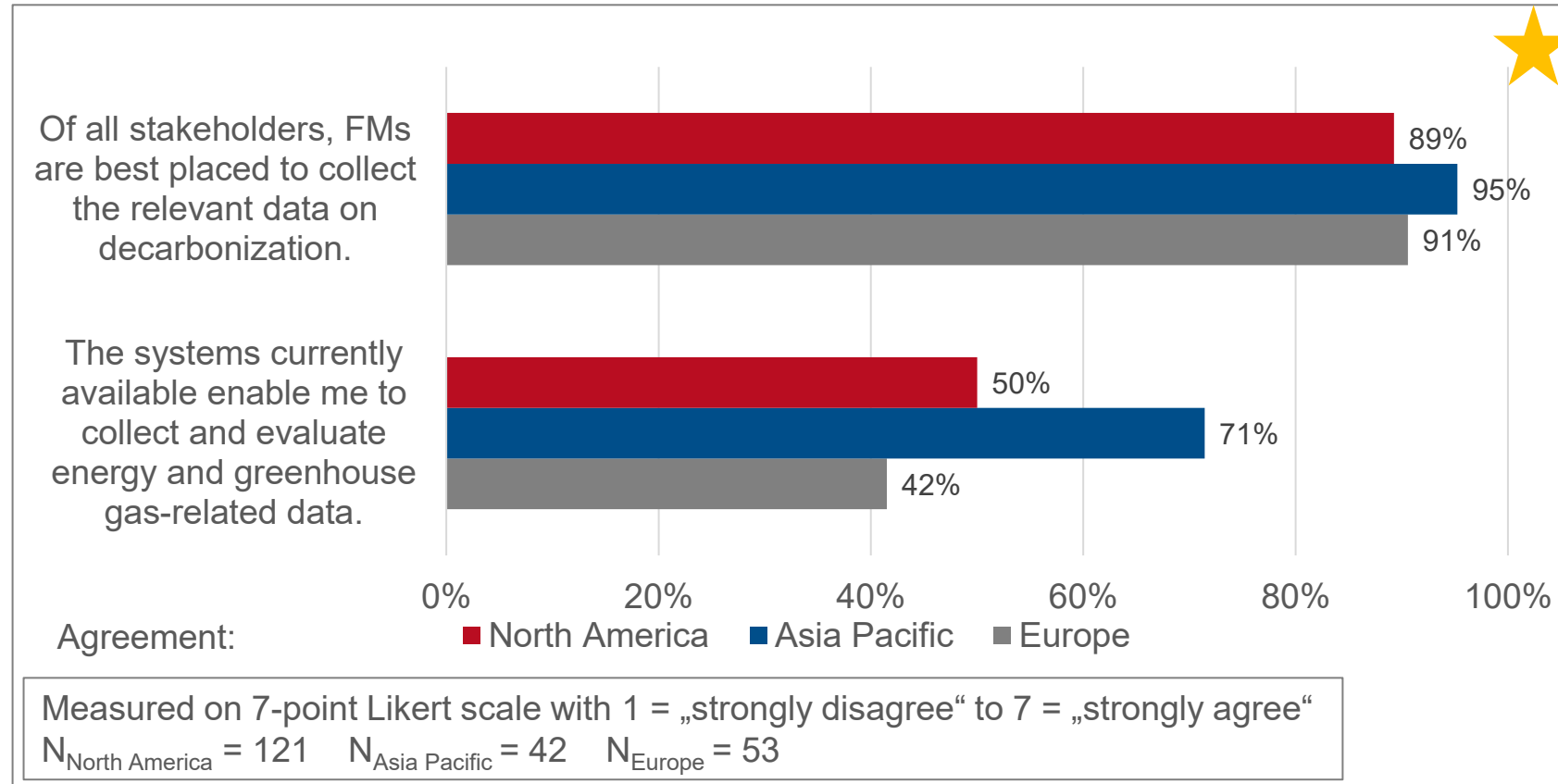


- 1) **Facility management is the source of the required building data** : 89% -- 95% of respondents state they have the best access to the relevant data. At the same time, European (only 42% have the necessary systems) and North American facility managers (50%), in particular, are confronted with the problem that the available systems are insufficient to leverage the abundance of data.
- 2) Respondents recognize both the **relevance of data for global climate protection efforts** (87 – 95% agreement) **and for their business model developments** (81 – 93%).
- 3) The consequence: **facility managers plan to play an increasingly advisory role in the future concerning decarbonization and technical implementation.**



**Key message #9: The facility management industry has the potential to expand the scope of operations. They benefit from their proximity to buildings and operations, which enables them to exploit existing dependencies and further increase clients' reliance on their data and technical expertise.**

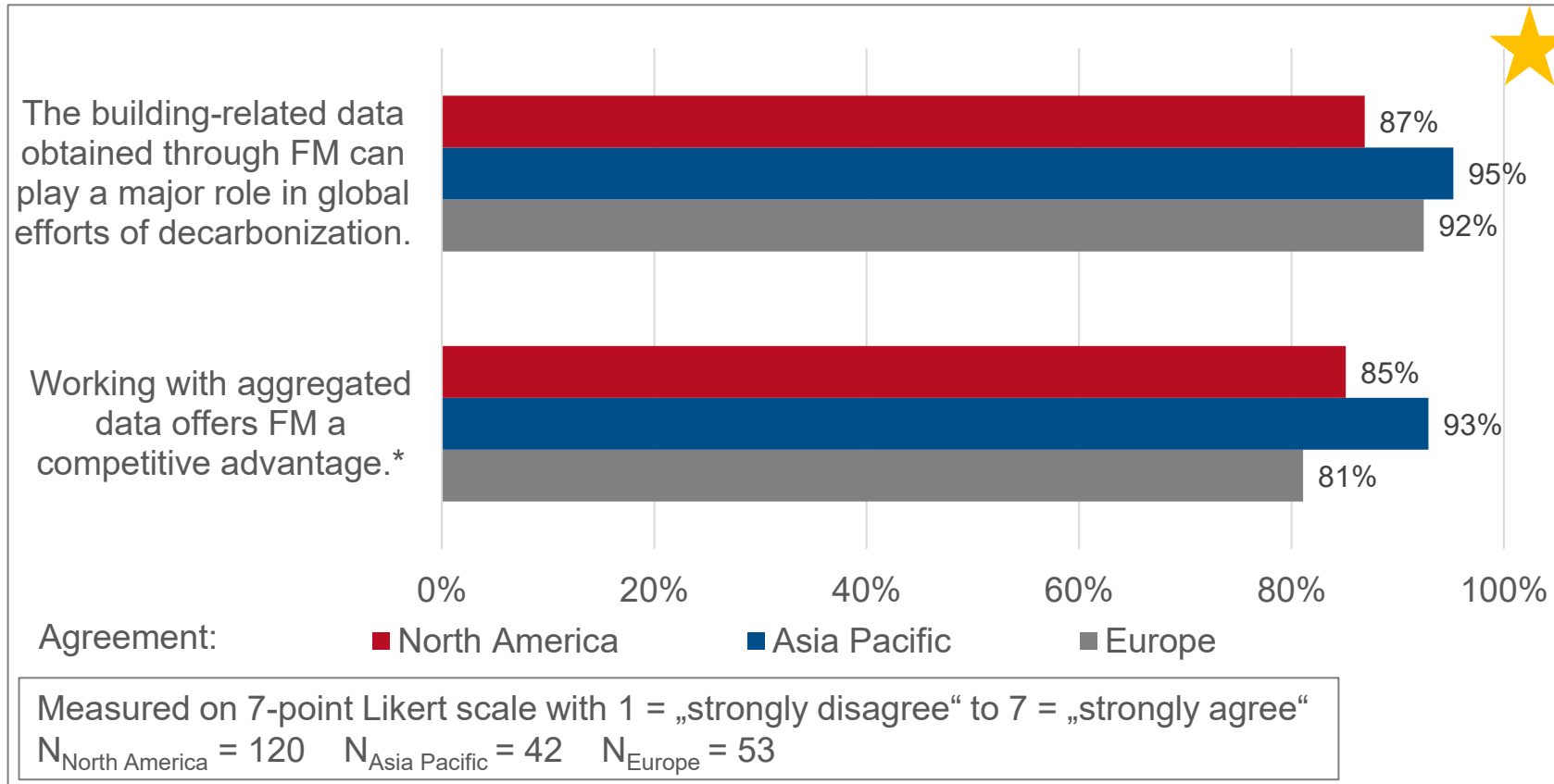
# Proximity to buildings makes Facility Management the ideal supplier of data



However, the lack of an IT infrastructure threatens to prevent the exploitation of this treasure trove of data.

Facility managers, especially in America and Europe, must be put in a position where they can technically implement the expectations towards them. Today, Asian facility managers are much more likely to have the systems they need at their fingertips.

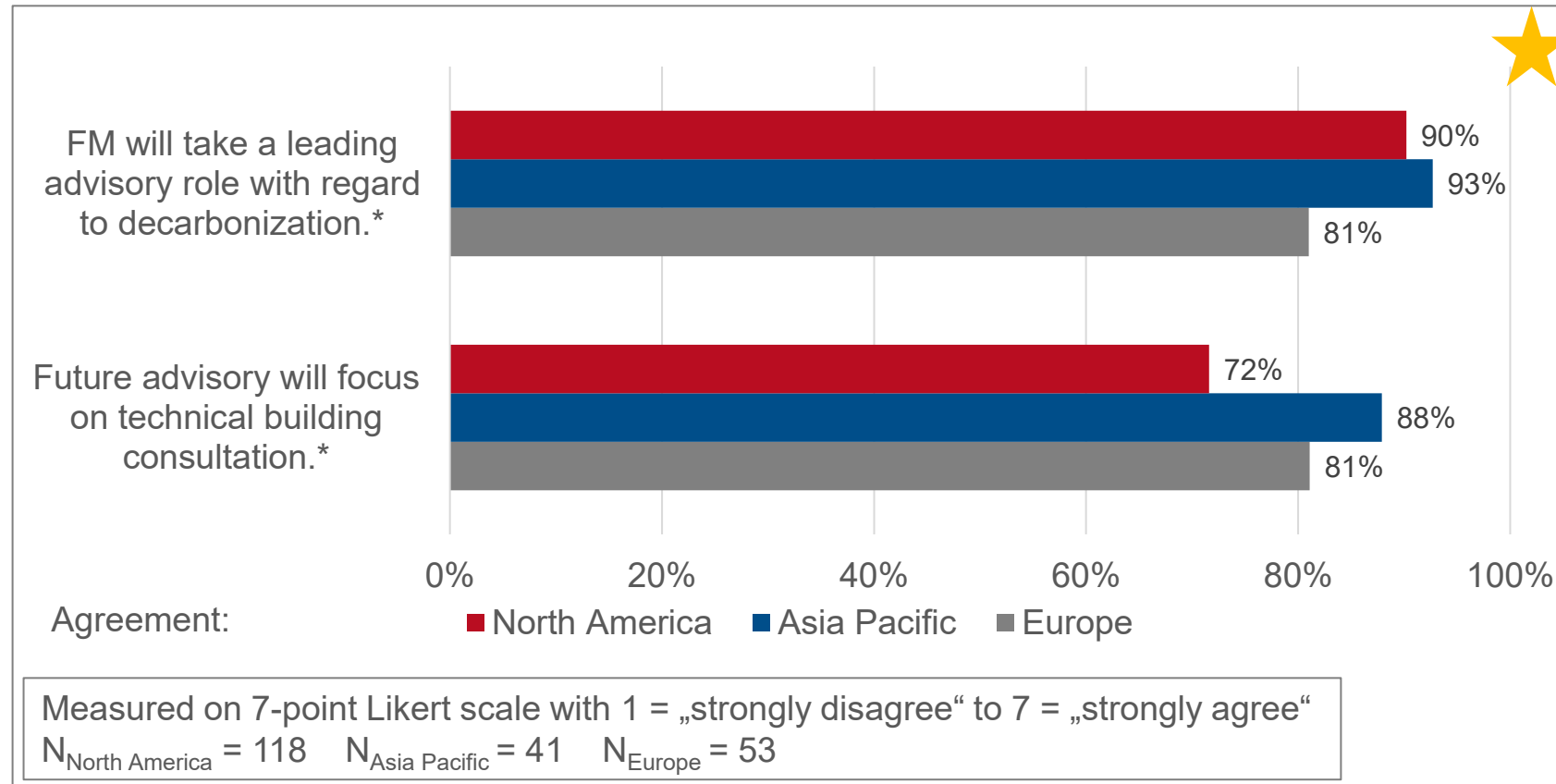
# Aggregated building data are essential for global decarbonization efforts – And Facility Managers can draw profit from this



Facility managers recognize the importance of the building data they are expected to obtain for green transformation efforts and anticipate opportunities to develop new business models.

\*measured by several items, for wording and reliability see appendix

# Facility Management is progressively transforming into an advisory role



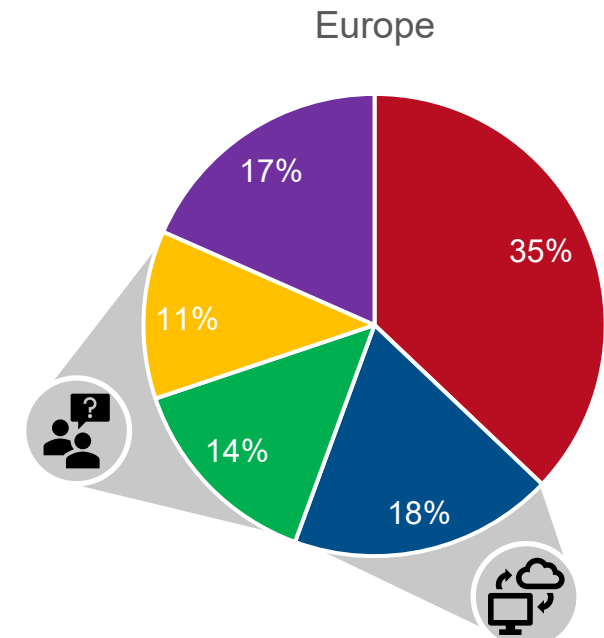
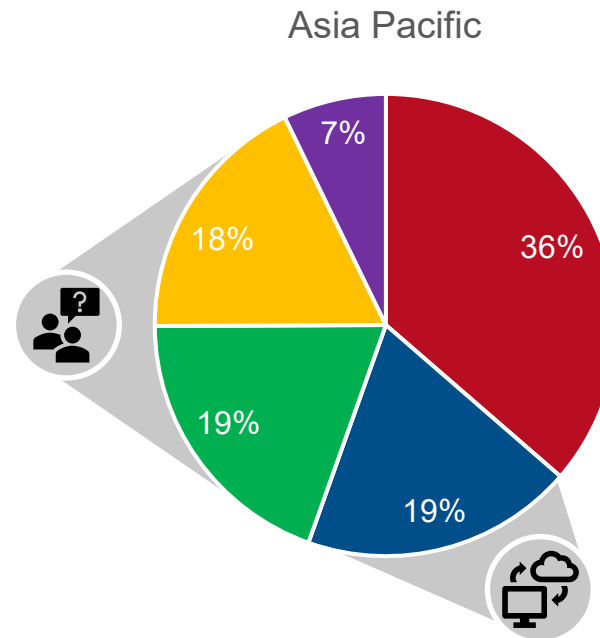
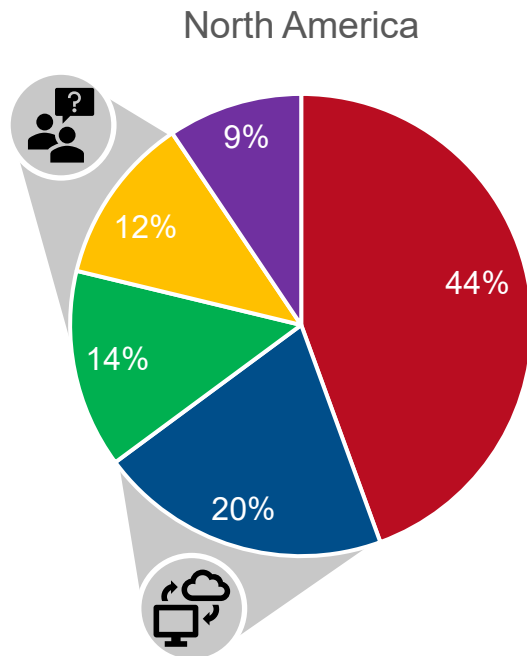
Can Facility Managers move away from building operations toward strategic consulting?

Facility managers also see advising on optimization in building operations as part of their role, mainly focusing on strategic advice concerning implementing decarbonization targets set by organizations. Compared to the other facility managers, North American respondents see themselves more as strategic than as operational advisors.

\*measured by several items, for wording and reliability see appendix

# The job description of a facility manager is becoming more diverse – on the way to becoming a full-service ESG-provider

Future distribution of FM Tasks:

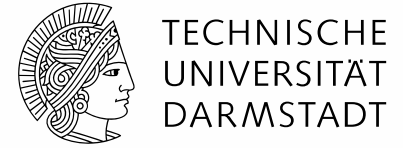


$N_{\text{North America}} = 130$   
 $N_{\text{Europe}} = 53$

$N_{\text{Asia Pacific}} = 43$

- Classic FM-Functions
- Data related Tasks
- Assistance of organizations in implementing parts of the strategic decarbonization goals
- Advisory role concerning decarbonization at the operational level
- Other

# Results at a glance:



- **Decarbonizing the building stock and operation is of great importance worldwide. Motives, degrees of fulfillment, and hurdles vary greatly internationally. Europe and Asia, in particular, are much further along than America**
- **Decarbonization targets cannot be achieved without FM. Owners are dependent on FM to achieve climate targets. Above all, they lack specialist knowledge**
- **ESG as a whole is most likely to fail, especially in Asia and the USA, due to a lack of financial resources**
- **The biggest hurdle for ESG in FM is the shortage of skilled workers, especially in Europe. The problem of presumably primarily political dimension in order to achieve climate targets**
- **ESG & FM: Strategic climate protection expertise, technical know-how and proximity to buildings are seen as a great opportunity for an expanded job profile in FM with new business opportunities**

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**Involved in the study concept:**

Jeffrey Saunders, CEO Nordic Foresight

**Conceptual support and sounding:**



# Items combined into constructs 1/2



Item	Construct	Reliability
In the future FMer will advise organizations on how to achieve real estate-related decarbonization goals.	FM will take a leading advisory role concerning decarbonization (decarbonization leadership)	Alpha: 0,921
In the future, the FMs will accompany the implementation of the decarbonization goals related to real estate.		
In the future, the FMs will take the lead in implementing the decarbonization goals related to real estate portfolios.		
The knowledge of aggregated data will offer FM a considerable competitive advantage in the future (e.g. compared to management consultancies).	Working with aggregated data offers FM a competitive advantage (data-driven competitive advantage)	Spearman-Brown: 0,738
The use of aggregated data opens up new sources of revenue for the FM.		

# Items combined into constructs 2/2



Item	Construct	Reliability
The consultation will largely concern energy sourcing.	Future advisory will focus on technical building consultation (operational building management consulting)	Alpha: 0,777
The consultation will mainly concern the status quo analysis and the development of recommendations for action in the field of technical building services (especially heat/cold generators).		
Most of the advice will be about optimizing interaction with users in the context of decarbonization (e.g. proper use of climate systems).		
Digitization will take up a considerable part of the future tasks of FM.	Digitalization and data-driven work will make up a large part of FM in the future (digital transformation in FM)	Alpha: 0,847
Digitalization and the processing and analysis of data will make up a considerable part of the future tasks.		
Topics such as machine learning for decarbonization (e.g. by means of usage evaluation, timing of maintenance cycles) will make up a significant part of FM processes in the future.		
In the future, topics such as BIM and digital twins will increasingly be addressed by FM and will become an important part of the spectrum of tasks.		