

A green and inclusive post-pandemic recovery of the Blue Economy and coastal communities

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A GREEN AND INCLUSIVE POST-PANDEMIC RECOVERY OF THE BLUE ECONOMY

A SURVEY OF MUNICIPALITIES
AND ADMINISTRATIVE ENTITIES
IN COSTA RICA,
GERMANY,
SCOTLAND, AND
MASSACHUSETTS (USA)



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March 31, 2025

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This report was prepared by a team of researchers at the University of Massachusetts Amherst, the University of Glasgow, the United Nations University - Institute for Environment and Human Security, and the University of Costa Rica.

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Partners



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EXECUTIVE SUMMARY

A team of researchers from the University of Massachusetts Amherst, the University of Glasgow, the United Nations University - Institute for Environment and Human Security (in Bonn, Germany) and the University of Costa Rica has been developing a trans-national comparative study across coastal areas in Costa Rica, Northern Germany, Scotland (UK), and Massachusetts (USA) to provide science-based guidance for post COVID recovery of coastal communities and shed light on green development and climate resilience strategies adopted at the local level. As part of this project, the research team conducted a survey of local authorities (e.g., municipalities in Massachusetts and Northern Germany, councils in Scotland, cantons in Costa Rica) and planning agencies in Costa Rica, Northern Germany, Scotland, and Massachusetts, from June 2023, to March, 2024. The key results are outlined below. The sample size (i.e., number of respondents) for Scotland and Northern Germany is small for some of the survey questions and estimates should be taken with caution; nevertheless, the results still provide some very insightful information.

1. COVID-19 impacts experienced by municipalities, local authorities (e.g., councils in Scotland, cantons in Costa Rica) and local economies

- All respondents indicated impacts of COVID-19 on municipal operations between the 1st quarter of 2020 and the 2nd Quarter of 2021. The majority of respondents in all countries reported moderate to severe impacts.
- In Costa Rica, Germany and Scotland the majority of respondents reported severe impacts also on the local economy between the 1st quarter of 2020 and the 2nd Quarter of 2021. The majority of Massachusetts respondents reported moderate impacts.

2. Post COVID-19 recovery

- The majority of respondents across all countries reported that their municipality had partially recovered from COVID-19 impacts. Less than 10% of respondents reported minimal to no recovery.
- A significant number of municipalities reported having recovered to pre-pandemic conditions in Scotland (45%) and in Massachusetts (USA) (37%).
- Socio-economic conditions higher than before the pandemic were reported by more than 40% of respondents in Costa Rica, by 14% in Northern Germany and 4% in Massachusetts (USA).

3. Green recovery and resilience strategies adopted

- The concept of green recovery strategies has been discussed more frequently in Scotland (90%) and in Massachusetts (46%), compared to Costa Rica and Germany. This might be due to linguistic differences.
- Respondents in all countries reported significant adoption of green recovery and resilience strategies.
- Respondents also indicated significant interest in investing in these strategies in the future.

4. Financing mechanisms employed to support green recovery and resilience strategies

- Municipalities in Massachusetts and Scotland stand out for their extensive investments and interest in green economic programs and resilience strategies.
- The most popular programs include the installation of electric-vehicles charging infrastructure; the installation of renewable energy capacity and energy efficiency programs; and nature-based solutions.

5. Barriers to green recovery

Municipalities and administrative units face a variety of barriers in planning and implementing sustainable and resilience strategies. We identified three types of barriers: resource constraints, lack of data, coordination and governance failures.

6. Implications for sustainable, equitable and inclusive development.

Unfortunately, local governments appear to have limited data access and limited information about the distributional and equity implications of green recovery and resilience strategies.



Photo credit: Wolfgang Weiser on Unsplash

A GREEN AND INCLUSIVE GREEN RECOVERY

A SURVEY OF MASSACHUSETTS MUNICIPALITIES

INTRODUCTION

A team of researchers from the University of Massachusetts Amherst (USA), the University of Glasgow (UK), the United Nations University - Institute for Environment and Human Security (in Bonn, Germany) and the University of Costa Rica has been developing a trans-national comparative study across coastal areas in Costa Rica, Northern Germany, Scotland (UK), and Massachusetts (USA) to provide science-based guidance for post COVID recovery of coastal communities.

The specific aim of this project is to study **the socio-economic impacts** brought by COVID-19 on coastal communities, the **immediate responses** adopted by coastal communities to address this crisis, and the medium-to-long term **resilience strategies** developed to support economic recovery, with a special focus on green economic development initiatives. Our **geographic focus** includes coastal regions that are mostly dependent on their Blue Economy.

As part of this project the research team conducted a survey of public local authorities and planning agencies in Costa Rica, Northern Germany, Massachusetts (USA), and Scotland (UK) from June 2023, to March 2024. This survey aimed at:

- Investigating the impacts of COVID-19 and subsequent response measures in selected coastal regions with focus on their Blue Economy as well as their natural environment
- Assessing opinions and preferences for recovery in relation to Blue Economy sectors
- Investigating current financing strategies as well as barriers towards a greener/more resilient and equitable future for the Blue Economy
- Characterizing key enabling factors across all regions that lead to response performance so as to inform the development of future strategies for a green and inclusive coastal recovery, benchmarked against the Sustainable Development Goals and the Paris Agreement.

This report summarizes the results of the survey, and it is organized as follows: section 2 outlines the methodology employed in the study, section 3 presents the results, and section 4 provides some conclusions. The results section includes the following subsections: (1) COVID-19 impacts experienced by local authorities, (2) recovery levels post COVID-19, (3) green recovery strategies adopted, (4) financing mechanisms employed to support green recovery, (5) barriers to green recovery, and (6) implications for sustainable, equitable and inclusive development.

We expect that our work will inform policy makers by identifying the resilience strategies that proved to be efficient in minimizing the COVID-19 crisis to further support them and transfer them to other regions to minimize future crises. We hope that the results of this survey will also be used to design local policies aimed at sustainable, just and inclusive economic growth.

Methodology

2.1 Focus groups and Interviews

Preliminary focus groups and qualitative interviews in the target areas informed the design of the survey:

- In Scotland initial qualitative interviews and focus groups were conducted with participants from local government in selected coastal regions and other relevant representatives of Blue Economy sectors.
- In Costa Rica, initial qualitative interviews and focus groups were conducted with public officials at both the national and local levels in coastal areas.
- In Northern Germany, the research team carried out 8 interviews with representatives of municipalities and Blue Economy sectors, including tourism, fishery and shipping.
- In Massachusetts (USA) the Massachusetts Municipal Association (MMA) facilitated the organization of 10 preliminary qualitative interviews with Massachusetts municipal officials. In addition, the research team carried out interviews with representatives of local planning agencies.

These interviews and the results of a previous survey-study on coastal resilience (Vicarelli et al. 2023¹) provided insights toward the final survey design.

¹ Vicarelli, Marta, Robert DeConto, Darci Connor Maresca, Yu Ya Htut Tin*, Madeline Leue*, Aryen Shrestha*, Mathew Barlow, Camille Barshers, Andy Danylchuk, Robert Darst, Jynessa Dutka-Gianelli, John Duff, Gavin Fay, Jill Fitzimmons, James Heiss, Kelly Hellman, Paul Kirshen, Katherine Kahl, Elizabeth Infield, Stratton Lloyd, Sheree Pagsuyoin, Meredith Rolfe, Eric Thomas, Iren Valova (2023) "Climate Resilience in Coastal Massachusetts: A Survey of Municipal Challenges, Plans, and Needs", MassBenchmarks. Volume 25, Issue 2 (Vicarelli lead author). <https://donahue.umass.edu/business-groups/economic-public-policy-research/massbenchmarks/massbenchmarks-journal-2023-v25i2> or https://issuu.com/donahueinstitute/docs/bm2023_v25i2_-_121423/24

2.2 Survey

Costa Rica

Costa Rica includes 84 cantons (i.e., municipalities). The survey was addressed to the 23 cantons in coastal areas. The complete list of municipalities is included in the Appendix (Appendix Table 1).

The survey was meticulously disseminated in the target cantons via emails directly addressed to public officials in mayor's offices, vice mayor's offices, and local environmental management offices. After an initial round of data collection, in an effort to acquire key information from all targeted municipalities, an abbreviated version of the survey was distributed to municipalities that had not responded. A third round of data collection efforts involved in-person meetings with officials to implement the survey in the municipalities that had yet to provide information, ensuring a comprehensive data collection process.

A total of 18 survey responses were received from 18 different municipalities out of the 23 targeted coastal municipalities (Figure 1). Of these 18 survey responses, 11 were obtained via online survey and 7 by interview. Table 1 presents socio-economic and demographic information of Costa Rica cantons vs the cantons in our sample.



Figure 1. Survey responses from Costa Rica - The survey was distributed to 23 coastal cantons, 18 answered the survey and they are highlighted in blue.

	Costa Rica (Total) (2)		Coastal Administrative Units targeted by the survey (2)		Coastal Administrative Units in the survey sample (2)	
Administrative units	Count	Percent of total	Count	Percent of total	Count	Percent of total
Cantons	81	96%	20	87%	16	89%
Municipal Councils of Special Districts	3	4%	3	13%	2	11%
Total	84		23		18	

	Costa Rica (Total) (3)		Coastal Administrative Units targeted by the survey (3)		Coastal Administrative Units in the survey sample (3)	
	Population	Percent of total population	Population	Percent of total population	Population	Percent of total population
Total population	5,044,197		902,850	20.99%	689,767	16.03%

	Costa Rica (Total) (4)		Coastal Administrative Units targeted by the survey (5)		Coastal Administrative Units in the survey sample (5)	
	(2024)	currency	(2021)	currency	(2021)	currency
GDP	8,24 millions	Colones	4,74 millions	Colones	4,53 millions	Colones

(1) World Bank Data, 2025

(2) Data from 2022, https://www.exteriores.gob.es/Documents/FichasPais/COSTARICA_FICHA%20PAIS.pdf

(3) INEC, (Julio, 2016). Manual de Clasificación Geográfica con Fines Estadísticos de Costa Rica. Área de Coordinación Sistema Estadística Nacional.

(4) Banco Central de Costa Rica. (2024). Producto Interno Bruto e Ingreso per cápita. <https://gee.bccr.fi.cr/indicadoreseconomicos/Cuadros/frmVerCatCuadro.aspx?idioma=1&CodCuadro=%205789>

(5) INEC-Costa Rica. Estimación de Población y Vivienda 2022.https://admin.inec.cr/sites/default/files/2023-11/reResultadosEstimacionPoblacionVivienda2022_3.xlsx

Table 1. Costa Rica: socio-economic and demographic characteristics of municipalities that answered the survey. Socio-economic and demographic information of Costa Rica cantons vs the cantons in our sample. Note: cantons are administrative units that are equivalent to municipalities.

Northern Germany

The survey was disseminated online to 91 *municipalities* and *districts* along the coast of Lower Saxony and Schleswig-Holstein. Districts are the largest administrative entities within a federal state. They encompass multiple smaller municipalities, which are the smallest administrative entities. Municipalities have their own administrations; however, given their smaller size, they can not fulfill all tasks of the local community. Therefore, they are part of districts that take on these tasks. *Administrative associations* are administrative entities between municipalities and districts that only exist in Schleswig-Holstein. Their task is to support municipalities in the practical execution of tasks and to make them more economical and efficient by pooling resources.

The first round of survey dissemination yielded 9 usable responses. To increase the sample size, we re-distributed an abridged version of the survey to 140 municipalities (including the 91 already contacted), districts and administrative associations and invited the targeted respondents to participate in short interviews. This resulted in 11 additional responses. Overall, the final sample size included 20 responses from 5 districts, 1 administrative association, and 14 municipalities and cities. In one case, a small-scale, administrative association responded on behalf of various smaller municipalities (Figure 2). The complete list of administrative entities included in this study is available in the Appendix (Appendix Table 2). Table 2, below, presents socio-economic and demographic information of Northern Germany administrative entities, compared with the administrative entities in our sample.

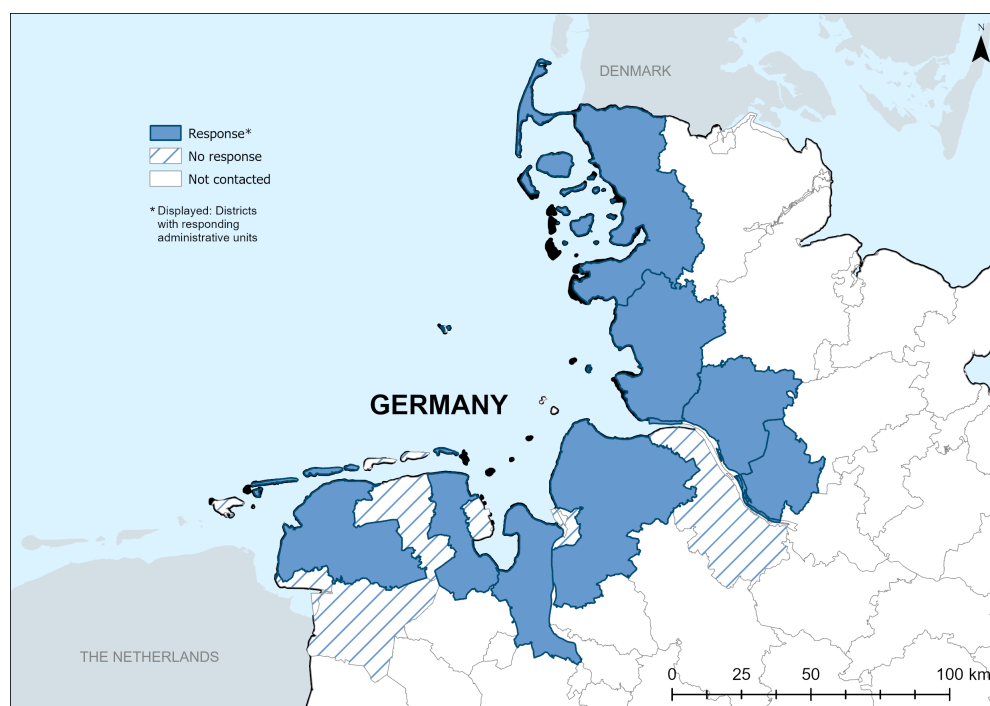


Figure 2. Survey responses from Northern Germany - The administrative entities highlighted in blue are the districts that provided one or more answers.

	Federal State: Lower Saxony			Federal State: Schleswig-Holstein (SH)		
	Federal State Total	Sample in this Survey		Federal State Total	Sample in this Survey	
Administrative entities	Count	Count	Percentage of Total	Count	Count	Percentage of Total
Number of coastal municipalities and cities	36	6	17%	76	10	13%
Number of coastal admin. associations	NA	NA	NA	15	1	7%
Number of coastal districts	9	3	33%	4	0	50%
Total	45	9	20%	95	11	12%
	Federal State: Lower Saxony			Federal State: Schleswig-Holstein (SH)		
	Administrative entities that received the survey	Administrative entities that answered the survey	Percent of Total	Administrative entities that received the survey	Administrative entities that answered the survey	Percent of Total
Total	36	9		95	11	
Rural administrative entities (*)	34	9	25%	95	11	12%
Not rural administrative entities (*)	2	0	0%	0	0	0%
Average per capita income (**)	22,213	22,916		25,735	25,000	
Average population size (***)	125,107	145,805		189,711	189,736	

(*) Bundeszentrale für Politische Bildung und Bundesamt für Bauwesen und Raumordnung, 2019

(**) Niedersächsisches Ministerium für Soziales, Arbeit, Gesundheit und Gleichstellung, 2023 and Regionalatlas Deutschland, 2024

(***) Statistisches Bundesamt, 2022

Table 2. Northern Germany: socio-economic and demographic characteristics of administrative entities that answered the survey (sample). Socio-economic and demographic information of German districts, municipalities and cities, and administrative association in our sample.

Massachusetts (USA)

We partnered with the Massachusetts Municipal Association (MMA) to disseminate the survey online to the municipal leaders of all 351 Massachusetts municipalities. We received 94 responses from 82 municipalities (Figure 4). In a few cases, the survey was answered by multiple administrators from the same municipality. We included only one answer in our analysis. The reason for this is that respondents from the same municipality usually completed different portions of the survey connected to their area of expertise and work. The complete list of administrative entities included in this study is available in the Appendix (Appendix Table 3).

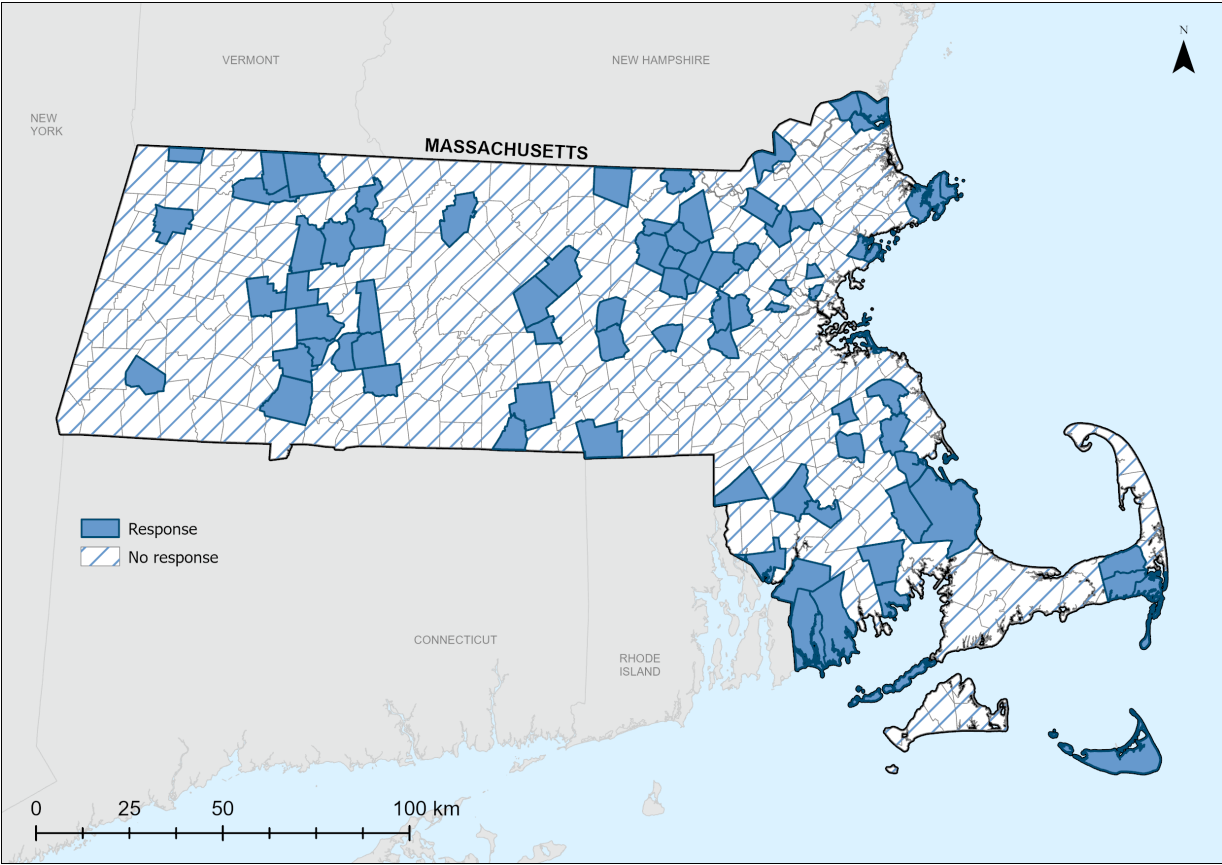


Figure 4. Survey responses from Massachusetts (USA) - The municipalities that answered the survey are highlighted in blue. The survey sample includes 82 municipalities, out of all the 351 Massachusetts municipalities.

Table 4, below, presents socio-economic and demographic characteristics of municipalities in the survey sample, compared with all Massachusetts municipalities. We observe a few minor differences:

- The proportion of cities (as opposed to towns) in our sample (15%) is a bit higher than the percentage of cities in Massachusetts (11%). This might be due to the fact that cities are more likely to have more resources and staff to answer the survey

- The proportion of coastal municipalities is a bit higher in the sample (36%) compared to the total percentage in Massachusetts (22%)
- The average income in our sample is slightly lower than the average income in Massachusetts
- Despite these minor differences, we think the results of the survey still provide insightful information about post-COVID-19 green recovery strategies and programs.

Table 1. Characteristics of municipalities				
	Massachusetts		Sample in this study	
	Count	Percent of Total	Count	Percent of Total
Total number of municipalities	351	-	111	-
Number of cities	39	11%	21	19%
Number of towns	312	89%	91	81%
Coastal municipality (*)	78	22%	40	36%
Inland municipality	273	78%	71	64%
Not rural (**)	191	54%	75	67%
Rural level 1	104	30%	24	21%
Rural level 2	56	16%	13	12%
Average municipal per capita income (***)	\$43,071		\$49,531	
Average municipal population size (****)	19,637		21,549	

Sources:

(*) Coastal municipalities are identified based on the categorization by the Massachusetts Office of Coastal Zone Management: [Link](#)

(**) The definition of rurality is provided by the Massachusetts government. [Link](#)

(***) Per capita income in 2020 dollars - US Census [Link](#)

(****) 2019 US Census [Link](#)

Table 4. Characteristics of Massachusetts municipalities that answered the survey (i.e., sample). Socio-economic and demographic information of the 111 Massachusetts municipalities in our sample compared with the total.

Scotland (UK)

Scotland includes 32 Scottish local authority areas, in total. The survey was targeted at the 19 local authorities with coastal areas. To maximize the response rate our survey dissemination strategy included multiple components: (i) the Scottish Local Authority Economic Development group (SLAED) partnered with the research team and shared the survey link with their members; (ii) the survey was sent directly to

relevant public officials identified by the research team in a number of local authorities; (iii) the survey was also shared directly with local officials in Highlands and Islands Enterprise and South of Scotland Enterprise (i.e., government agencies with a remit for supporting economic and social development in their respective regions).

After the first round of survey returns, in an effort to increase the sample size, an abridged version of the survey was re-circulated and new contacts identified in areas that had not yet provided any responses. In total 27 responses to the survey were received where participants had completed at least one question. These were from respondents in 13 different local authority areas (as multiple responses were received from several areas) out of the 19 targeted (Figure 4). The complete list of administrative entities included in this study is available in the Appendix (Appendix Table 4). Table 4 presents socio-economic and demographic information of Scotland local authorities compared with the local authorities in our sample.

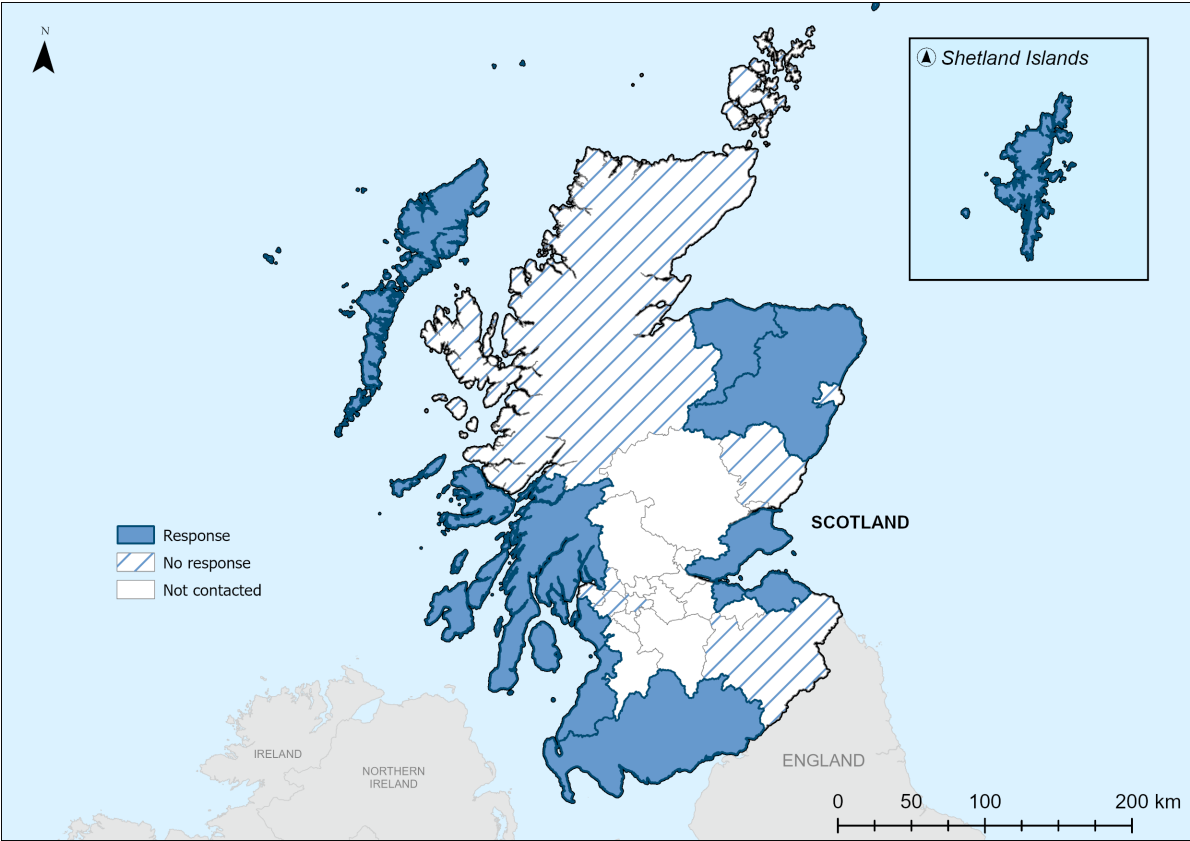


Figure 4. Survey responses from Scotland (UK) - The local authority areas from which survey responses were received are highlighted in blue.

	Scotland	Sample
Local Authority Areas	32	13
Population	5,436,600	2,026,800
Land area (km2)	77,901	32,103
Population density (per km2)	70	67
GDP per head (£)	34,298	36,471
Children in relative poverty (%)	21.5	20.1

Table 4. Scotland (UK): socio-economic and demographic characteristics of administrative entities (i.e., local authorities) that answered the survey (i.e., sample).

3. RESULTS

This section gauges the different types of impacts already observed in local authorities and their degree of severity.

3.1 COVID-19 IMPACTS

All respondents reported impacts of COVID-19 on municipal operations. The majority of respondents in all countries experienced moderate to severe impacts of COVID-19 on municipal operations between the 1st quarter of 2020 and the 2nd Quarter of 2021. A very small percentage of respondents experienced minor to no impacts. In Costa Rica, Germany and Scotland the majority of respondents reported severe impacts on the local economy between the 1st quarter of 2020 and the 2nd Quarter of 2021. The majority of Massachusetts respondents reported moderate impacts. Less than 7% of respondents experienced minor to no impacts.

Costa Rica

In Costa Rica, 100% of respondents reported impacts generated by the COVID-19 pandemic on the operations of their administrative units (i.e., cantons/municipalities) between the first quarter of 2020 to the second quarter of 2021 (Figure 5):

- 56% of municipalities stated that the effect of COVID-19 on municipal operations was moderate
- 39% of municipalities stated that the effect of COVID-19 on municipal operations was severe.

All respondents indicated that the economy in their canton had been impacted by the COVID-19 pandemic (Figure 6). More than 90% of respondents reported moderate to severe effects:

- 33% of municipalities stated that the effect of COVID-19 on their local economies was moderate
- 61% of municipalities stated that the effect of COVID-19 on their local economies was severe.



Quepos, Puntarenas, Costa Rica - Photo by Juan Pablo Mascanfroni on Unsplash

Costa Rica: How would you describe the impacts of COVID-19 on municipal or planning agency operations between the 1st quarter of 2020 (when the COVID-19 appeared in Costa Rica) and the 2nd quarter of 2021?

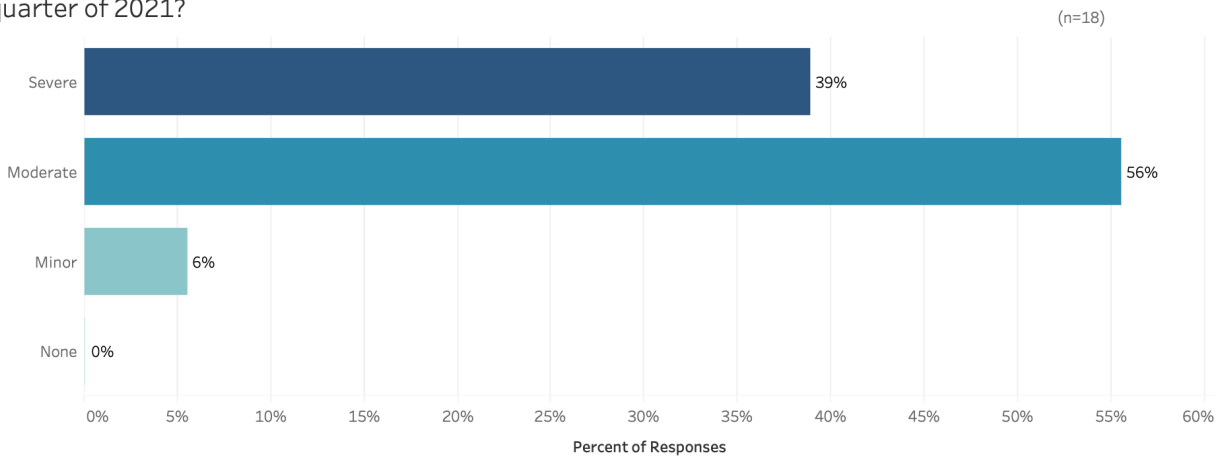


Figure 5. Costa Rica: COVID-19 impacts on municipal operations

Costa Rica: How would you describe the impacts of COVID-19 on the local economy within your municipality or planning agency region between the 1st quarter of 2020 (when COVID-19 appeared in Costa Rica) and the 2nd quarter of 2021?

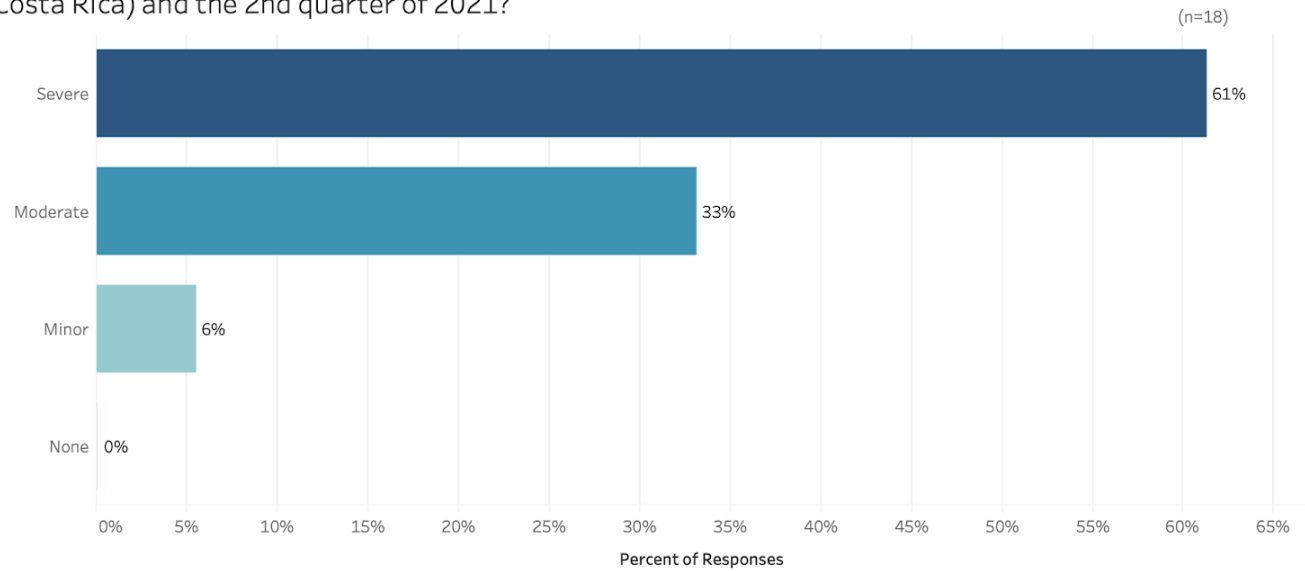


Figure 6. Costa Rica: COVID-19 impacts on local economies



Los Suenos Herradura, Marina, Costa Rica - Photo by Chalo Garcia on Unsplash

Canton officials (e.g., municipal officials) provided extensive qualitative answers and insights about their experience²:

The impact on the operation of municipalities and public institutions was severe. In some municipalities measures adopted included a reduction in hours of face-to-face operation; in others, face-to-face operations were completely stopped. However, via remote work, the continuity of services was always guaranteed. [Coastal Municipal Official from Costa Rica]

[...] the strongest adverse impacts occurred between 2022 and 2023 when the consequences of the slowdown of the local economy were felt. [Coastal Municipal Official from Costa Rica]

The municipality's operations increased, and we had to redirect actions to address the COVID-19 pandemic in the first months of the impact. [Coastal Municipal Official from Costa Rica]

At the budgetary level, several decisions were made, such as mobilizing resources for other priority activities, which resulted in postponements of activities, suspensions of contracts, and, as a consequence, postponements of local projects. [Coastal Municipal Official from Costa Rica]

The impact is perceived as severe at the environmental level, especially regarding solid waste management and project postponements due to budgetary or financing factors. [Coastal Municipal Official from Costa Rica]

Staff dismissals or salary terminations were not implemented since they are not permitted in public service positions. The private sector adopted this measure. [Coastal Municipal Official from Costa Rica]

Regarding the impacts on the local economy, the closure of businesses or commerce was one of the main effects, as well as the closure of borders, especially in those cantons where tourism is one of the main economic activities. The regulations implemented harmed commerce and people's mobility. Data from the Institute of Statistics and Census (INEC) showed that 90.3% of companies in Costa Rica were affected, and the main consequences were associated with reduced sales or income and increased operating expenses (INEC, 2022). [Coastal Municipal Official from Costa Rica]

² All quotes from Costa Rica respondents are translated from Spanish.

Northern Germany

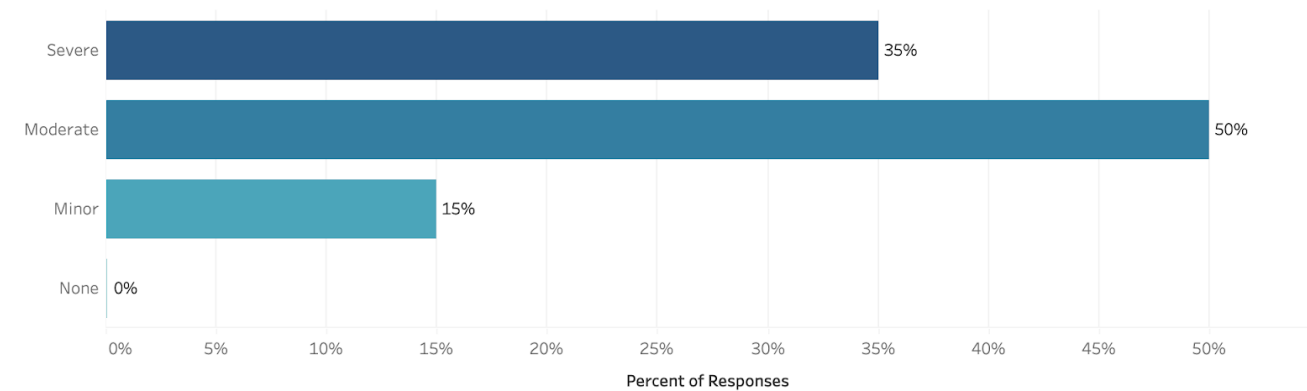
In Germany, 100% of respondents reported impacts generated by the COVID-19 pandemic on the operations of their administrative units between the first quarter of 2020 to the second quarter of 2021 (Figure 7):

- 50% of municipalities stated that the effect of COVID-19 on municipal operations was moderate
- 35% of municipalities stated that the effect of COVID-19 on municipal operations was severe.

All respondents indicated that the economy in their administrative unit had been impacted by COVID-19 (Figure 8). 95% of respondents reported moderate to severe effects.

- 35% of municipalities stated that the effect of COVID-19 on their local economies was moderate
- 60% of municipalities stated that the effect of COVID-19 on their local economies was severe.

Germany: How would you describe the impacts of COVID-19 on **municipal operations** between the 1st quarter of 2020 (when the COVID-19 appeared in Germany) and the 2nd quarter of 2021? (n=20)*



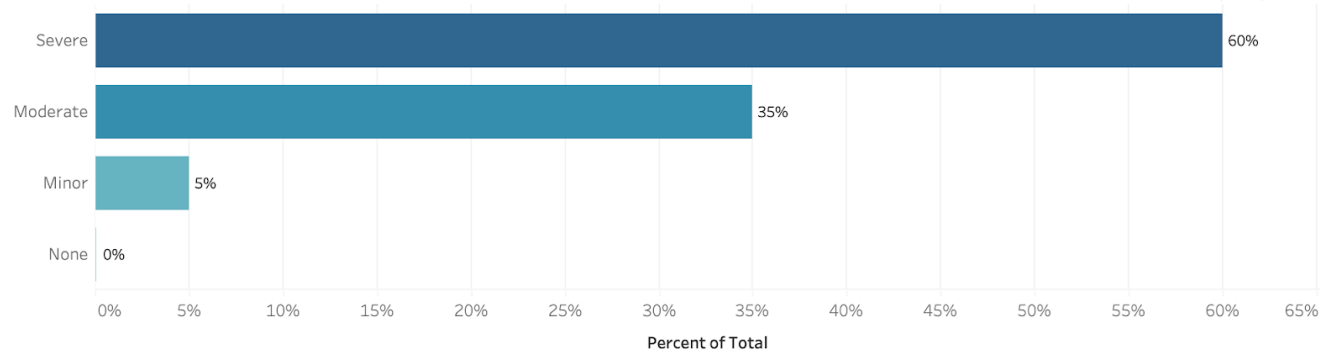
* Number of municipalities that did not answer this question: 0

Figure 7 . Northern Germany: COVID-19 impacts on municipal operations



Hamburg - Photo by Aditya Ghosh on Unsplash

Germany: How would you describe the impacts of COVID-19 on the **local economy** within your municipality between the 1st quarter of 2020 (when COVID-19 appeared in Germany) and the 2nd quarter of 2021? (n=20) *

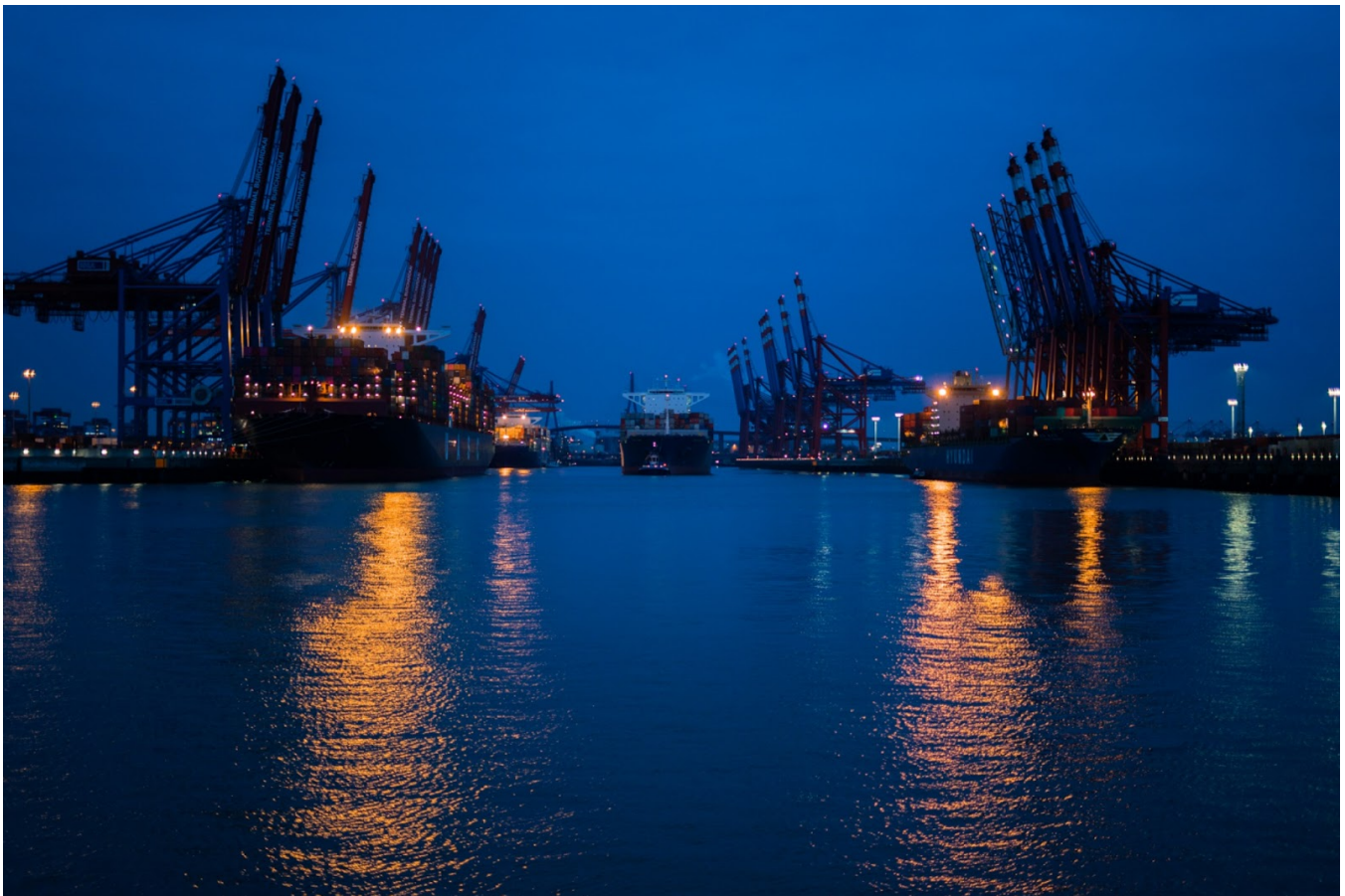


* Number of municipalities that did not answer this question: 0

Figure 8. Northern Germany: COVID-19 impacts on local economies

The survey data from Germany allows us to examine the impacts of COVID-19 on different sectors of the Blue Economy:

- The Hospitality and Food Services industry was by far the most affected by COVID-19 with 71% of municipalities reporting severe impacts
- Both Tourism and Wholesale and Retail Trade followed with 33% of municipalities reporting severe impacts and more than 50% of respondents reporting significant impacts
- 80% of respondents indicated significant impacts in Healthcare and Port Services
- Education and Real Estate and Rental Services also stand out for the severity of impacts reported.



Hamburg Docks - Photo by Jonas on Unsplash

Massachusetts (USA)

In Massachusetts, 100% of respondents reported impacts on their municipal operations from Covid-19 between the first quarter of 2020 to the second quarter of 2021 (Figure 9). 94% of municipalities reported moderate to severe impacts:

- 51% of municipalities stated that the effect of COVID-19 on municipal operations was moderate
- 43% of municipalities stated that the effect of COVID-19 on municipal operations was severe.

All respondents indicated that the economy in their municipality had been impacted by COVID-19 (Figure 10). 93% of respondents reported moderate to severe effects.

- 56% of municipalities stated that the effect of Covid-19 on their local economies was moderate
- 37% of municipalities stated that the effect of Covid-19 on their local economies was severe.

The survey data from Massachusetts allows us to examine the impacts of COVID-19 on different sectors of the Blue Economy.

- The education sector was reported to be the most affected by COVID-19 with 66% of municipalities indicating severe impacts
- Severe impacts were frequently reported also for healthcare (53%) and tourism, hospitality and food services (49%)
- Other sectors that stand out with severe impacts being reported by more than 20% of municipal respondents include: wholesale and retail trade (28%), construction (25%), real estate and rental leasing, and wholesale and retail trade (22%) and ship building (20%)
- In coastal municipalities severe impacts were on average more frequently reported than in inland municipalities. The sectors that appear most affected include educational services (64%); healthcare (59%); tourism, hospitality, and food services (57%); wholesale and retail trade (38%), real estate and rental leasing (33%) and construction (33%).

We examined how severely 3 different categories of small local businesses had been affected by Covid-19: hospitality, retail, and service.

- Municipalities reported that each of the three categories were affected at least in some way, there were no municipalities that reported no impacts for small businesses
- Hospitality businesses showed the most severe impacts (69%)
- Retail and service businesses had a larger portion of moderate impacts, 38% and 43% respectively.

USA: How would you describe the impacts of COVID-19 on municipal or planning agency operations between the 1st quarter of 2020 (when the COVID-19 appeared in New England) and the 2nd quarter of 2021?

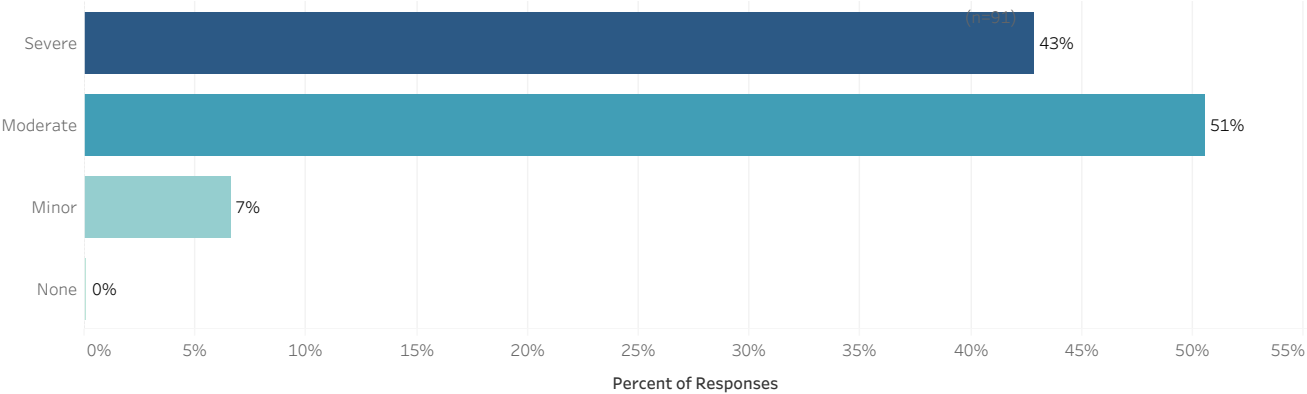


Figure 9. Massachusetts (USA): COVID-19 impact on municipal operations

USA: How would you describe the impacts of COVID-19 on the local economy within your municipality or planning region between the 1st quarter of 2020 (when COVID-19 appeared in New England) and the 2nd quarter of 2021?

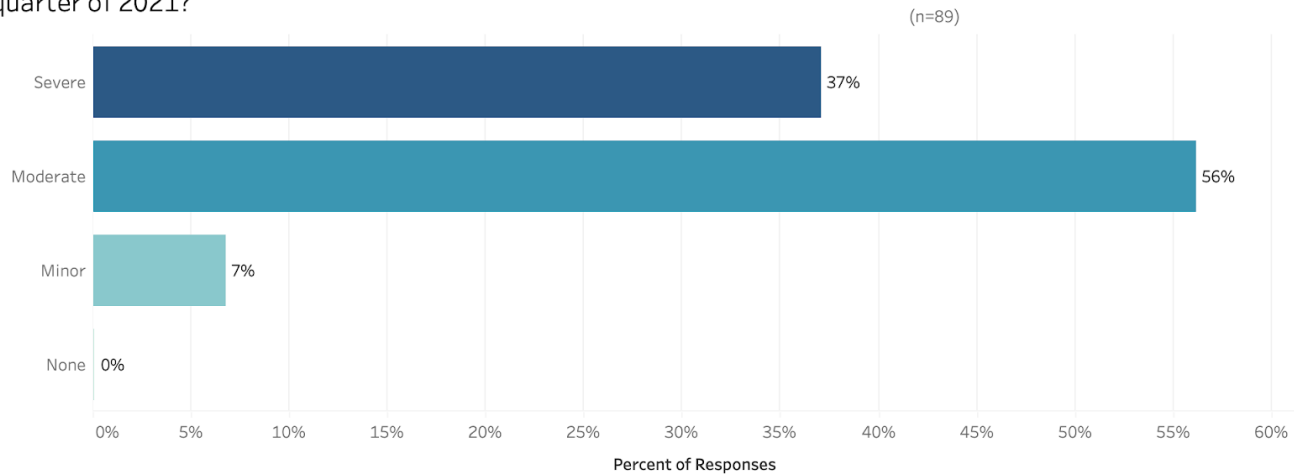


Figure 10. Massachusetts (USA): COVID-19 impact on local economies



View of Boston from Cambridge - Photo by Artem Sapegin on Unsplash

Scotland (UK)

In Scotland, 100% of respondents reported moderate to severe impacts on their municipal operations from Covid-19 between the first quarter of 2020 to the second quarter of 2021 (Figure 11):

- 26% of municipalities stated that the effect of COVID-19 on municipal operations was moderate
- 74% of municipalities stated that the effect of COVID-19 on municipal operations was severe.

All respondents indicated that the economy in their municipality had been impacted by COVID-19 (Figure 12):

- No respondents reported that COVID-19 had minor or no impacts their local economy.
- 42% of municipalities stated that the effect of Covid-19 on their local economies was moderate
- 58% of municipalities stated that the effect of Covid-19 on their local economies was severe.

Scotland: How would you describe the impacts of COVID-19 on your organisation’s operations between the 1st quarter of 2020 and the 2nd quarter of 2021?

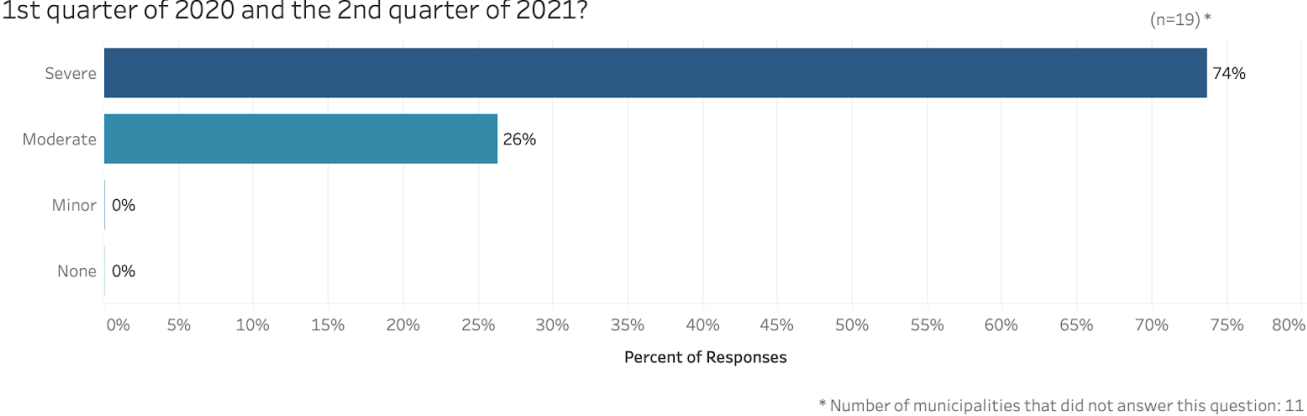


Figure 11. Scotland (UK): COVID-19 impact on municipal operations

Scotland: How would you describe the impacts of COVID-19 on your area’s local economy between the 1st quarter of 2020 and the 2nd quarter of 2021?

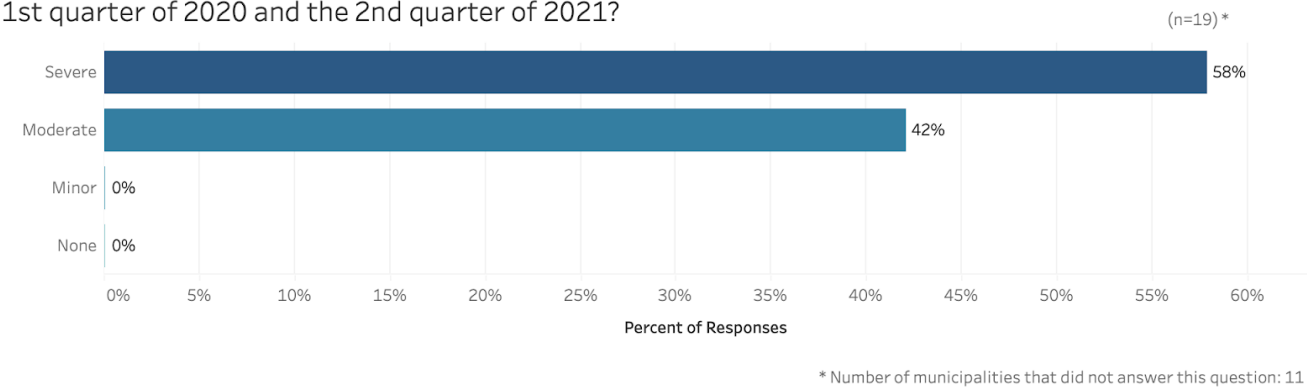


Figure 12. Scotland (UK): COVID-19 impact on local economy

Respondents indicated impacts of different severity on different economic sectors.

- The most severely affected sector appears to be the tourism sector, with more than 42% of respondents reporting very strong impacts
- The other sectors that reported having experienced strong impacts from COVID-19 include marine transportation (14%), recreational fisheries (10%), and energy/utilities (9%)

- Somewhat strong impacts were reported for commercial fisheries (22%), ship building (14%), shipping (13%), extraction and mining (11%), and port services (10%).

We examined how severely 3 different categories of small local businesses have been affected by Covid-19: hospitality, retail, and service.

- Municipalities reported that each of the three categories were affected at least in some way; there were no municipalities that reported no impacts for small businesses
- Hospitality businesses showed the most severe impacts (86%) followed by Service Businesses (57%)
- 88% of respondents reported moderate impacts for Retail Businesses.

We asked respondents if they would like to share more thoughts about the impacts and responses to COVID-19 in their organizations. Responses include positive outcomes:

As with most Local Authorities, response was informed by Government guidelines and enabled by professional, flexible and innovative work of staff. [Municipal Official from Scotland]

There was a positive impact: we introduced new ways of working and reduced paper as most processes are now online. [Municipal Official from Scotland]

Respondents also indicated mixed or negative outcomes:

Home working has become the norm. This has so many benefits, but social connectedness and therefore trust between departments has been eroded. Services are more blinkered than ever and more proactive work is needed to stimulate cross departmental work. [Municipal Official from Scotland]

Adoption of new responsibilities; co-ordinating Covid funding; engagement with clients out with normal engagement; increased workload; greater partner working and collaboration. [Municipal Official from Scotland]

When asked how strong the negative impacts of COVID-19 on local industries had been. Respondents emphasized the compounded effect of COVID in connection with Brexit:

We cannot look at this in isolation. Brexit has had a much bigger impact on all of the above [local industries] with the lack of skilled people [being] a huge issue. Rapidly rising house prices make it difficult for UK people to move to our area, particularly younger people. [Municipal Official from Scotland]

All sectors would have recovered to pre-Covid levels if it weren't for other challenges: Brexit, floods... [Municipal Official from Scotland]

3.2 COVID-19 RECOVERY

The majority of respondents across all countries reported that their municipality had partially recovered from COVID-19 impacts.

In Scotland and in the USA a significant number of municipalities reported having recovered to pre-pandemic conditions, respectively 45% and 37%.

Socio-economic conditions higher than before the pandemic were reported in Costa Rica by more than 40% of respondents, followed by 14% in Germany and 4% in the USA sample.

Less than 10% of respondents reported minimal to no recovery.

Costa Rica

The recovery outlook for Costa Rica appears very positive (Figure 13). Only 12% of municipalities (i.e. cantons) reported minimal to no recovery to pre-pandemic socio-economic conditions. The remaining 88% of municipalities have already at least partially recovered. Of these municipalities:

- 11% reported having fully recovered to pre-pandemic socio-economic conditions, leaving the rest of municipalities in partial recovery
- 44% reported having exceed pre-pandemic socio-economic conditions.

Costa Rica: Overall how would you describe the post-COVID-19 socio-economic recovery status of your municipality or planning region at the moment?

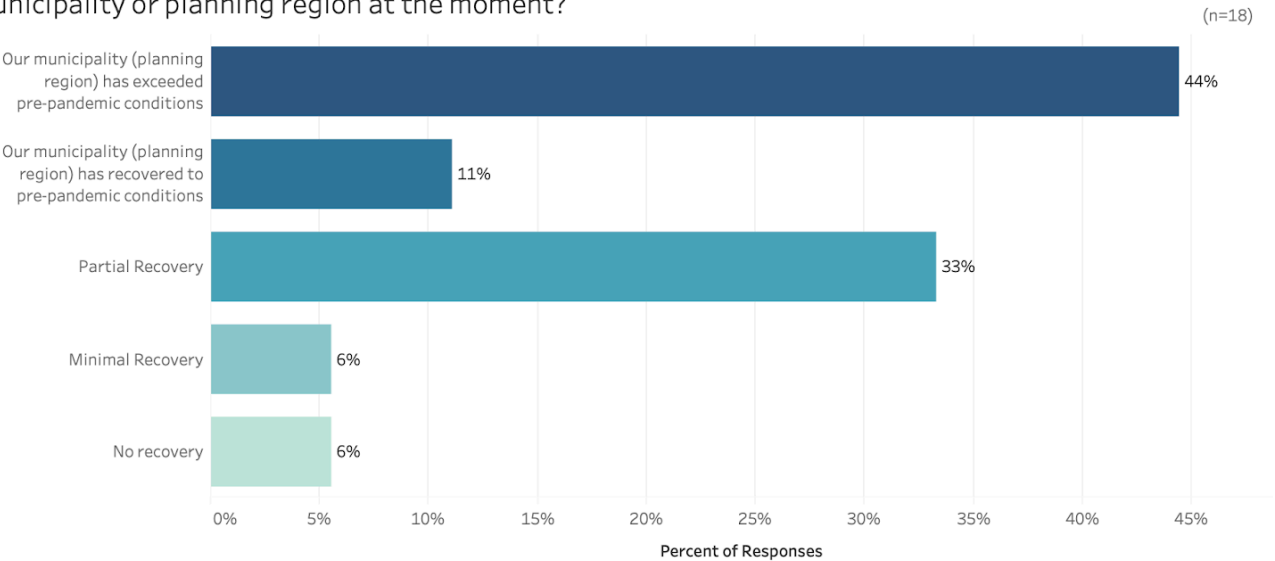


Figure 13. Costa Rica: COVID-19 socio-economic recovery statuses

Four years after the start of the pandemic, there has been a return to pre-pandemic conditions. However, economic recovery has been slow. [Coastal Municipal Official from Costa Rica]

Because of their rural characteristics, coastal cantons experienced challenging recovery conditions, with economic impacts on the well-being of the local populations. This aspect is reflected in the current development indicators: some of these cantons have now the lowest development indicators in the country. [Coastal Municipal Official from Costa Rica]



Costa Rica coast - Photo by Atanas Malamov on Unsplash

Northern Germany

In Germany all municipalities in the sample reported experiencing at least partial recovery. Of these municipalities (Figure 14):

- 14% reported having fully recovered to pre-pandemic socio-economic conditions, leaving the rest of municipalities in partial recovery
- 14% reported having exceed pre-pandemic socio-economic conditions

The majority of small businesses appear to be on the recovery path. More than 80% of respondents indicated that small businesses in the hospitality, retail and service sectors have partially recovered. Complete recovery has been reported by 38% of respondents for hospitality and retail businesses and by 29% of respondents for service businesses (Figure 14a).

The sample size, however, is very small and these figures should be considered with caution.

Germany: Overall how would you describe the post-COVID-19 socio-economic recovery status of your municipality at the moment?

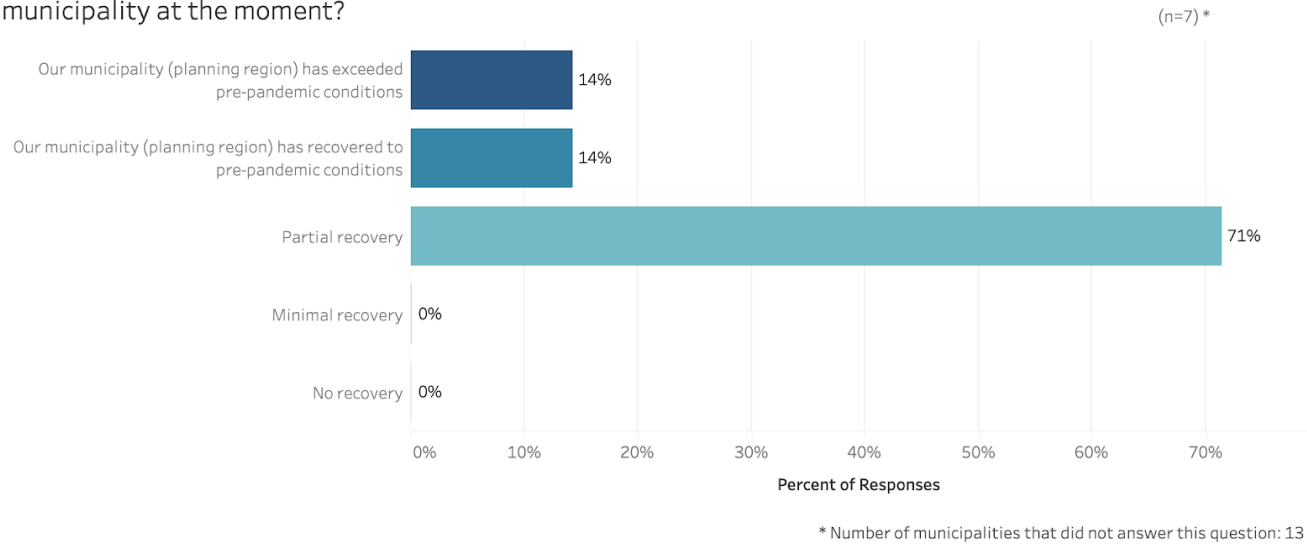


Figure 14. Northern Germany: COVID-19 socio-economic recovery status



Hamburg - Photo by Claudio Testa on Unsplash

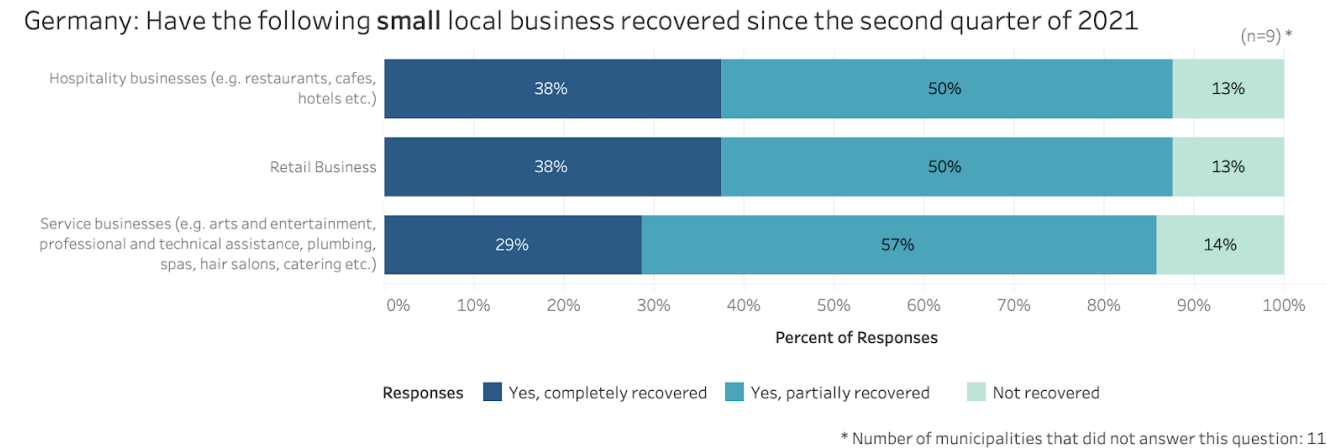


Figure 14a. Northern Germany: COVID-19 recovery among small local businesses

Massachusetts (USA)

In Massachusetts (USA) 99% of municipalities in the sample reported experiencing at least partial recovery (Figure 15). Of these municipalities:

- The majority of municipalities have only partially recovered (57%)
- 4% reported having fully recovered to pre-pandemic socio-economic conditions, leaving the rest of municipalities in partial recovery
- 37% reported having exceeded pre-pandemic socio-economic conditions

USA: Overall how would you describe the post-COVID-19 socio-economic recovery status of your municipality or planning region at the moment? (n=67)

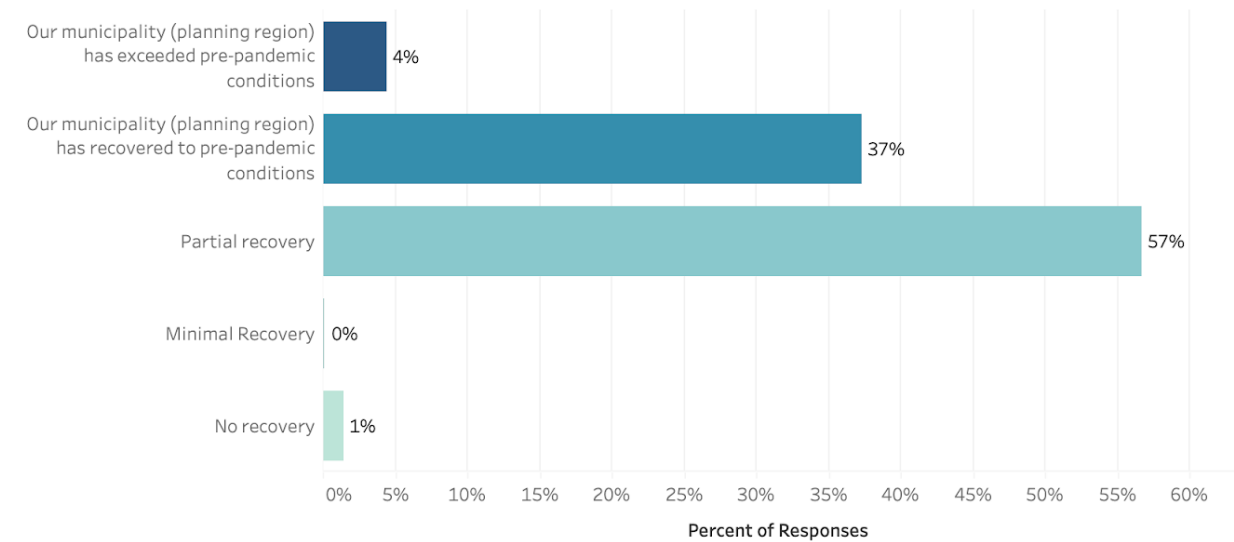


Fig 15. Massachusetts (USA): COVID-19 socio-economic recovery status

Respondents reported several reasons for partial or no recovery in Massachusetts, some of the main factors mentioned in their answers are limited “staffing capacity” and increased supply costs:

The pandemic brought on a worker shortage that continues to this day, impacting the ability of both government and businesses to return to full capacity. [Massachusetts Municipal Official]

Lack of staffing and available workforce (is) making it difficult to run at full capacity. The staff from gig jobs have found other industries. [Massachusetts Municipal Official]

COVID was a major catalyst towards speeding the drain on the available workforce which was coming in any event with ongoing Boomer generation retirements. Combined with other disruptive forces on the heels of COVID (e.g., Ukraine war, natural disaster/climate change, political stalemates and lack of cooperation) the road towards restoring economic resilience remains a serious challenge. [Massachusetts Municipal Official]

Our restaurants have partially recovered; however our hotel and restaurant establishment has not returned to pre-covid usage. This is not solely due to the pandemic, but an exacerbation of other issues. [Massachusetts Municipal Official]

People are creatures of habit. Many of those habits changed, and have not fully recovered. Post covid workforce is smaller and more expensive resulting in many unfilled jobs. [Massachusetts Municipal Official]

Challenges include hiring and retention of staff, higher cost of supplies, inconsistent availability of supplies. Walking traffic has not come back to pre-pandemic levels. Businesses have to raise prices due to supplies. Increased costs for labor is an important challenge for the local economy. [Massachusetts Municipal Official]

[Challenges include finding] qualified food service positions. -- Inflation, "Bridge tax" (i.e., higher costs due to location), impediments to available workforce [Massachusetts Municipal Official]

Staffing is a big issue hampering recovery [Massachusetts Municipal Official]

Shifts in the industries have likely impacted these areas forever - they may never recover, at least not to their pre-pandemic selves. Further, the tightened labor market continues to impact these, and most, industries with no change in site, especially given our tightened immigration policies, aging workforce and changing trends in desired working conditions by employees. [Massachusetts Municipal Official]

I imagine barriers to recovery are: high prices for consumer and wholesale goods that have risen without salaries keeping pace; supply chains being so severely disrupted for so long; and ongoing labor shortages. [Massachusetts Municipal Official]

[Barriers include] changes in human behavior, where people shop, how they want to eat, whether or not they're afraid to travel, etc. Also, funding and support. [Massachusetts Municipal Official]

Some patterns have permanently changed. Some industries have abandoned having an office forever now that people are used to working from home or on Zoom. For example, the second-floor offices of many of our downtown properties used to be full of therapists, lawyers (and other direct-service providers). Still, those folks have yet to come back since the pandemic started. So many trips downtown aren't happening, and many folks are not going down to the street for lunch, etc. [Massachusetts Municipal Official]

There has been a problem with hiring. People do not want to go back to work. Trash services were impacted due to driver shortages. Restaurants also have had issues trying to get enough help. [Massachusetts Municipal Official]

Staffing issues & people's spending habits [Massachusetts Municipal Official]

Businesses in the small town couldn't sustain the shutdown and COVID precautions. Many have not reopened and now there are empty storefronts. [Massachusetts Municipal Official]

Loss of work force appears to be the primary detriment to Covid recovery. [Massachusetts Municipal Official]

Finances and lack of trained workers are the issues, mostly. [Massachusetts Municipal Official]

Increased costs of supplies and labor, without always being able to increase revenues. [Massachusetts Municipal Official]

Difficulties finding qualified workers and supplies. [Massachusetts Municipal Official]

We asked municipalities to indicate the degree of recovery experienced by different economic sectors in their area. Partial to full recovery dominates most sectors:

- The percentage of respondents that reported full recovery is the highest for aquaculture (50%), energy and utilities (45%), construction (43%) and commercial fisheries (42%)
- Education, tourism, hospitality and food services were among the most impacted economic sectors. Full recovery was reported by 24% of respondents for tourism, hospitality and food services compared to 14% for educational services
- Real estate and educational services are the sectors with the highest percentage of responses indicating “not recovered”, 16% in both cases.

In coastal areas impacts were stronger and recovery appears more difficult for certain sectors:

- 22% of coastal respondents indicated “not recovered” for the real estate sector
- No coastal municipal official reported “fully recovered” for educational services.

The majority of small businesses appear to be on the recovery path. More than 80% of respondents indicated that small businesses in the hospitality, retail and service sectors have partially recovered. For service-sector businesses the percentage is the highest (98%). Complete recovery has been reported by more than 30% of respondents for hospitality and retail businesses and by 25% of respondents for service businesses.



Boston from the Fan Pier - Photo by Sean Sweeney on Unsplash

Scotland (UK)

In Scotland about 55% of municipalities in the sample reported experiencing some degree of recovery. Of these municipalities (Figure 16):

- 9% of municipalities indicated minimal recovery
- 45% reported having only partially recovered

Full recovery to pre-pandemic socio-economic conditions was reported by 45% of municipalities.

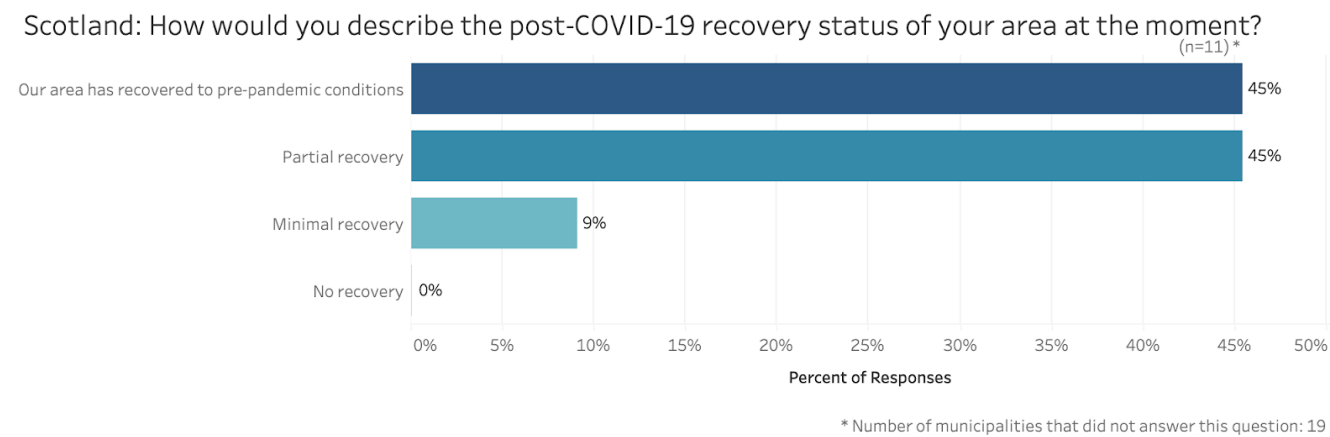


Figure 16. Scotland (UK): COVID-19 recovery status

We asked municipalities to indicate the degree of recovery experienced by different economic sectors in their area. The sample size is quite small, and answers should be considered with caution but they provide some interesting insights. Partial to full recovery dominates most sectors.

- Respondents indicated full recovery for aquaculture and marine transportation (100%).
- The percentage of respondents that reported full recovery is 60% or above for port services (70%), commercial fisheries (67%), shipping (63%), energy and utilities (60%).
- For the remaining sectors the percentage is 50% or above.

Most small businesses have partially or fully recovered from the economic shocks of COVID-19.

- 33% of respondents indicated that small businesses had fully recovered since the second quarter of 2021.

- Only 14% of respondents reported that hospitality businesses had fully recovered and 71% reported that these small businesses had partially recovered. The remaining 14% were reported to not have recovered.
- Complete recovery was reported for only 20% of service business and 33% of retail businesses. The remaining businesses from these categories were described as partially recovered.

Respondents indicated possible reasons for the partial or no recovery of different industries:

[...] it's not just a Covid issue. It has to do with access to markets, availability of labour, and inflation that is partially due to the borrowing for Covid and pent up demand. This is starting to settle but other events such as climate change and the war in Ukraine are keeping up pressure on these sectors [Municipal Official from Scotland]

Tourism away from coast [is suffering] [Municipal Official from Scotland]

There is less money around and tourists are only now starting to return from abroad. Many businesses cannot reopen as they have no staff; others [cannot reopen] because their product is no longer wanted or affordable [Municipal Official from Scotland]

Hospitality business has been further impacted by a lack of waiting and chef staff. Employees that were furloughed have been less likely to enter back into shift work. Consumer spending has also decreased as a result of successive policies. [Municipal Official from Scotland]

Our tourism industry is still seasonal and the 'damage' happened at their critical revenue generating time which allows businesses to build their reserves during the quieter months. So any reserves ran dry and there have been longer-term struggles with recruitment, compounded by loss of regular staff. [Municipal Official from Scotland]

3.3 GREEN RECOVERY STRATEGIES

Some countries appear more familiar with the concept of “green recovery” than others. More than 90% of respondents in Scotland reported that their municipality discussed green recovery. The percentage of respondents is lower in the USA (47%). More than 60% of respondents in Costa Rica and Germany reported not having discussed green recovery. This might be due to linguistic differences.

Costa Rica

In Costa Rica, only 16% of municipalities reported having discussed concepts of green recovery (Figure 17). However, 10% indicated that there had been exchanges with other institutions to obtain information about the concept of green recovery and that compliance with the United Nations Sustainable Development Goals (SDG) has been discussed. Moreover, 5% of municipalities indicated willingness to learn more about green recovery.

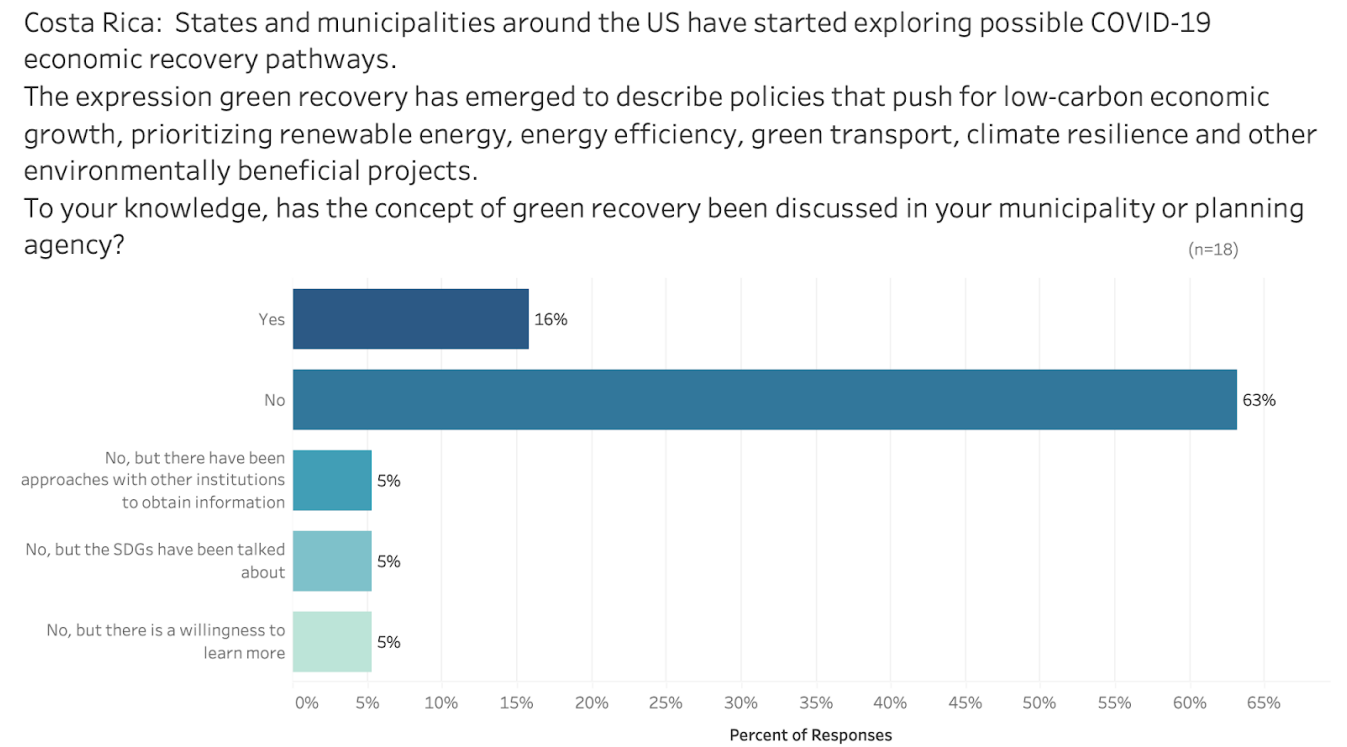


Figure 17. Costa Rica: percentage of local municipalities that discussed “green recovery strategies”

Despite the apparent lack of familiarity with the concept of green-recovery, Costa Rica municipalities appear active in implementing sustainable strategies to support economic recovery and growth (Figure 18):

- 82% of municipalities have reported “working with nature” such as reforestation, restoration of floodplains and wetlands etc.
- 41% of municipalities is prioritizing “environmental concerns in their policymaking and administration”
- 35% of municipalities indicated that they have invested resources toward the development of green jobs, as well as in research and development and sustainable innovation.

Costa Rica: Has your municipality or planning agency started implementing any of the following recovery and growth strategies since the pandemic? (n =17)

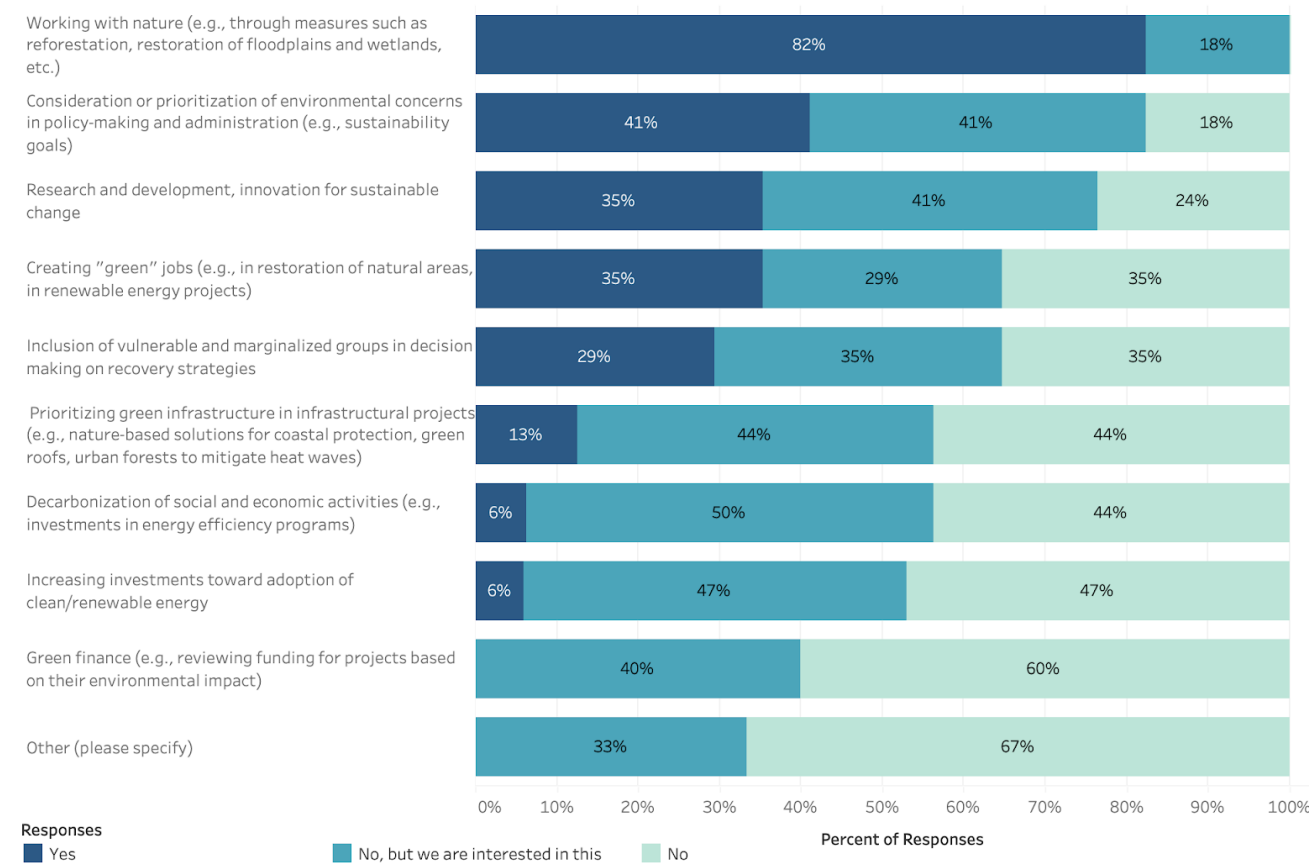


Figure 18. Costa Rica: implementation of green recovery and growth strategies

When asked to indicate the most important sustainable growth and recovery strategies, Costa Rica Municipalities expressed strong interest in all strategies (Figure 19).

- “Working with nature”, and “considering or prioritizing environmental concerns in their policy making and administration” were described by all respondents as important to very important strategies

- More than 80% of respondents indicated that “working with nature” is very important to their municipality
- About 88% of respondents indicated that the inclusion of vulnerable and marginalized groups is important to very important
- About 70% of respondents indicated that green finance and creating green jobs and investments toward adoption of clean/renewable energy are either important or very important strategies. Notably, interest focuses on strategies that municipalities still need to implement

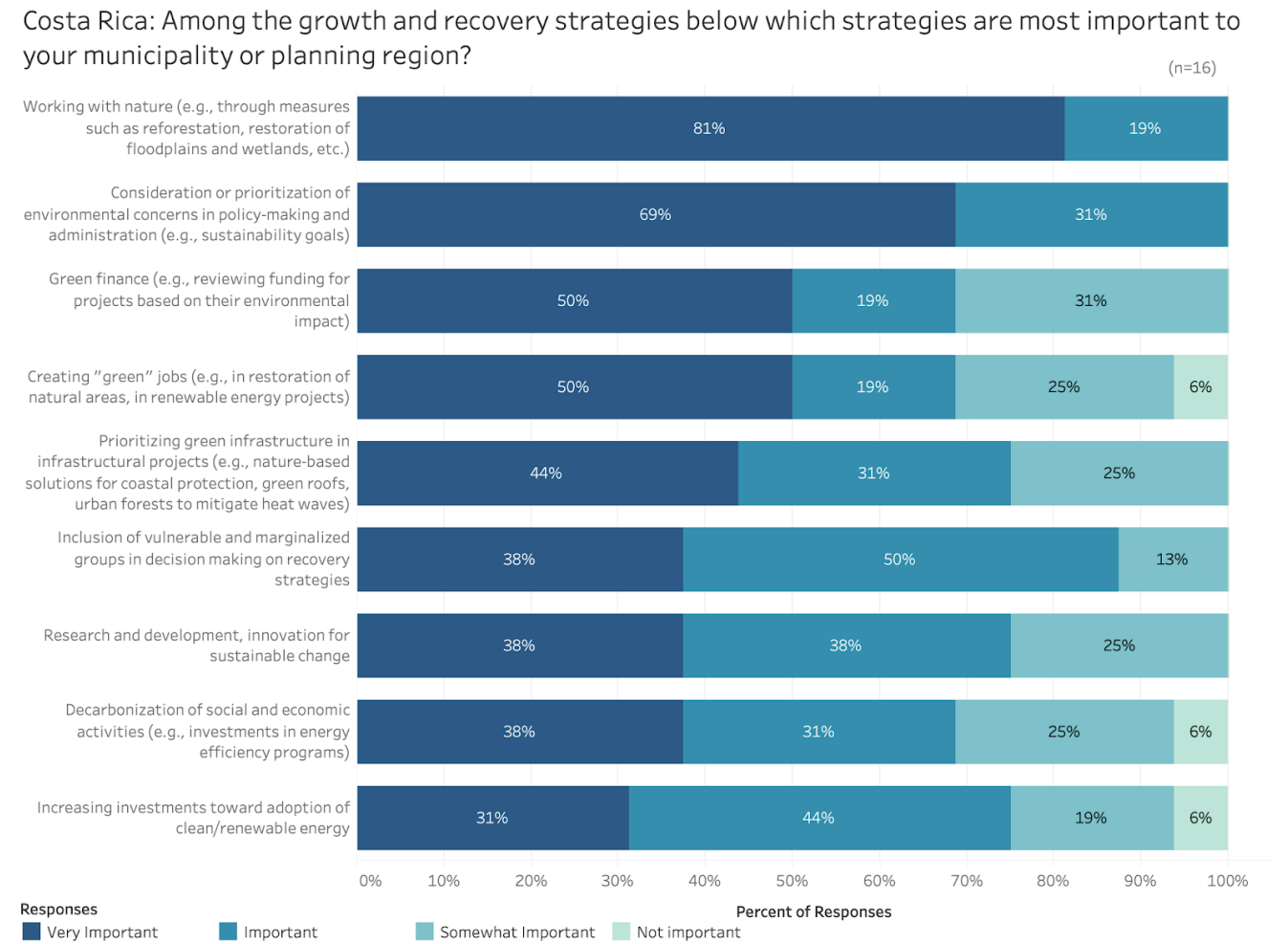


Figure 19. Costa Rica: green growth and recovery strategies ranked by importance to municipalities

Qualitative interviews show that those in charge of municipal environmental management recognize the concept of green recovery, but others have only heard about it. The concept of green recovery is associated with addressing the United Nations Sustainable Development Goals (SDG) in Costa Rica through the Technical Secretariat of the SDGs (Mideplan), the Institute for Municipal Development and Advice

(IFAM), and the Network of Cantons Promoting the Sustainable Development Goals (Cantones ProDS), with the support of the United Nations in Costa Rica (UN-Costa Rica).

There is a willingness to discuss and incorporate the concept of green recovery in the management dynamics of our canton. [Municipal Official from Costa Rica]

The recovery strategies that are being developed in coastal municipalities are directly associated with: development of local environmental management plans; management of the Ecological Blue Flag Program; community health on beaches; generation of green jobs through environmental projects. such as reforestation, to mitigate the effects of climate change or the valorization of solid waste; participation in marine energy projects (some cantons are participants in a project of the Costa Rican Electricity Institute (ICE)); involvement in negotiations for the production of wind energy with cooperatives; and development of actions for the protection of wetlands. [Municipal Official from Costa Rica]

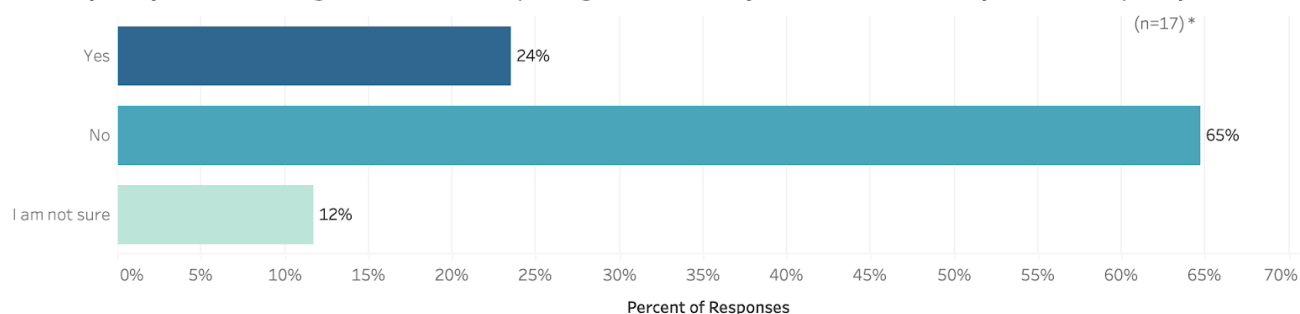


Birds Beach, Puntarenas Foto de Javier Huerta Pérez en Unsplash

Northern Germany

In Germany only 24% of the 17 respondents indicated that their municipality had discussed the concept of green recovery (Figure 20). More than 60% of respondents indicated that the concept had not been discussed and 12% reported not being sure. In Germany, like in Costa Rica, there might be linguistic and translation factors limiting the extent of public awareness about ‘green recovery’.

Germany: To your knowledge, has the concept of **green recovery** been discussed in your municipality?



* Number of municipalities that did not answer this question: 3

Figure 20. Northern Germany: percentage of local municipalities that discussed “green recovery strategies”

Despite the lack of popularity of the term green recovery, German municipalities appear active in implementing sustainable strategies to support economic recovery and growth (Figure 21):

- More than 70% of municipalities, indicated having already implemented the following strategies: (i) decarbonization of social and economic activities, such as investments in energy efficiency programs; (ii) consideration or prioritization of environmental concerns in policy making and administration (e.g., sustainability goals); and lastly, (iii) increasing investments toward the adoption of clean/renewable energy
- Other important strategies already deployed include:
 - ▶ prioritizing infrastructure in infrastructure projects (e.g., Nature-based Solutions for coastal protection, green roofs, urban forest to mitigate heat waves) (63%)
 - ▶ creation of new “green” jobs (53%) overall 30% or more of municipalities have already started implementing at least a strategy
- It is interesting to observe that even when municipalities are not actively deploying strategies they are often interested. For instance, 29% of municipalities are actively engaged in Green Finance but 35% are interested in exploring this practice.

Germany: Has your municipality started implementing any of the following recovery and growth strategies since the pandemic?

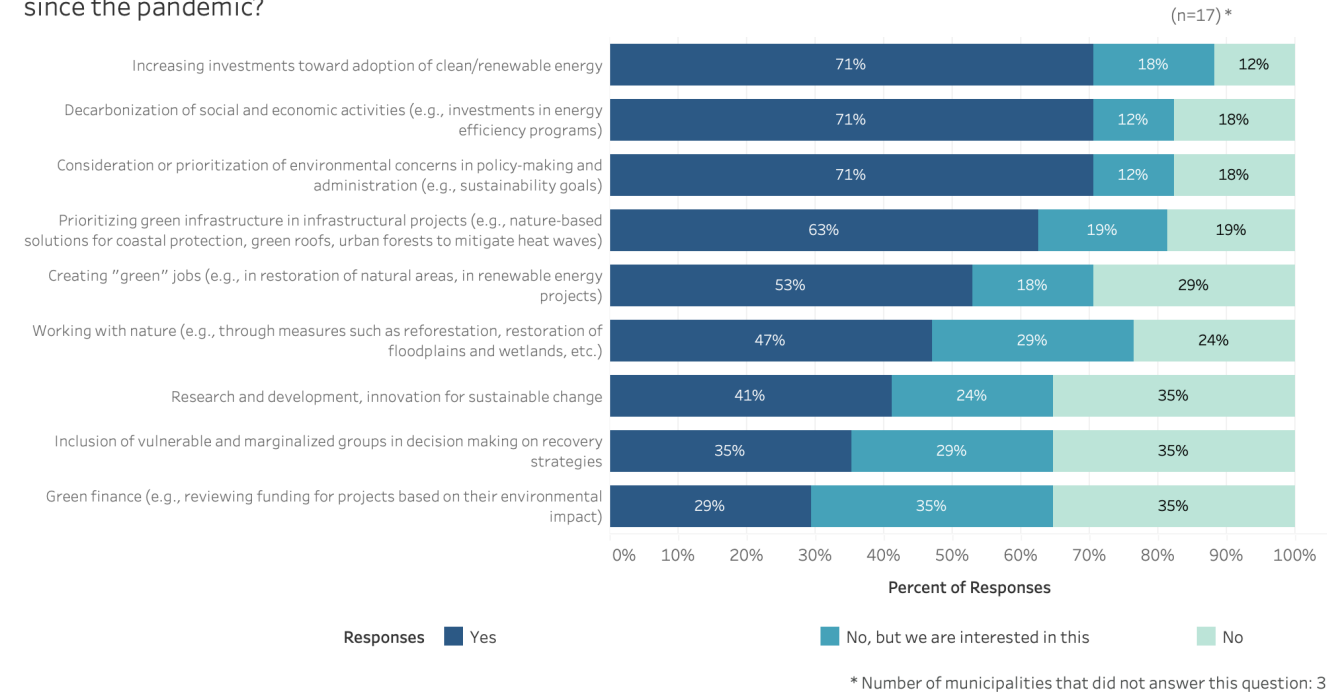


Figure 21. Northern Germany: implementation of green recovery and growth strategies

When asked which strategies are the most important to their municipality more than 70% of respondents indicated most of the strategies as important (Figure 22). In particular, 100% of respondents described as important to very important the following strategies:

- “decarbonization of social economic activities”
- “increasing investments toward the adoption of clean/renewable energy”
- “consideration or prioritization of environmental concerns in policy making and administration”.

Other strategies described as important to very important by a large number of respondents include prioritizing infrastructure in infrastructure projects (80%); creating green jobs (76%); working with nature (75%); and inclusion of vulnerable marginalized groups in decision-making or recovery strategies (75%).

We asked local officials if they had ideas about the most important factors enabling a successful green recovery in their municipality (or planning region). Their answers:

Funding programs (special city and country programs), which were used for cycle paths etc, are very helpful. [Another enabling factor] is the uncomplicated processing on the state side. [Municipal Official from Germany]

[An enabling factor was the] creation of a position for a climate and sustainability officer was helpful [Municipal Official from Germany]

Open-minded local politicians very open to environmental issues (examples of green electricity were unanimously decided) [Municipal Official from Germany]

Nature-based solutions, soft coastal protection, is a relatively new idea; [it] is generally supported and has received a positive response, but it simply still needs time in societal discourse [Municipal Official from Germany]

Good cooperation between politics, administration and civil society [Municipal Official from Germany]

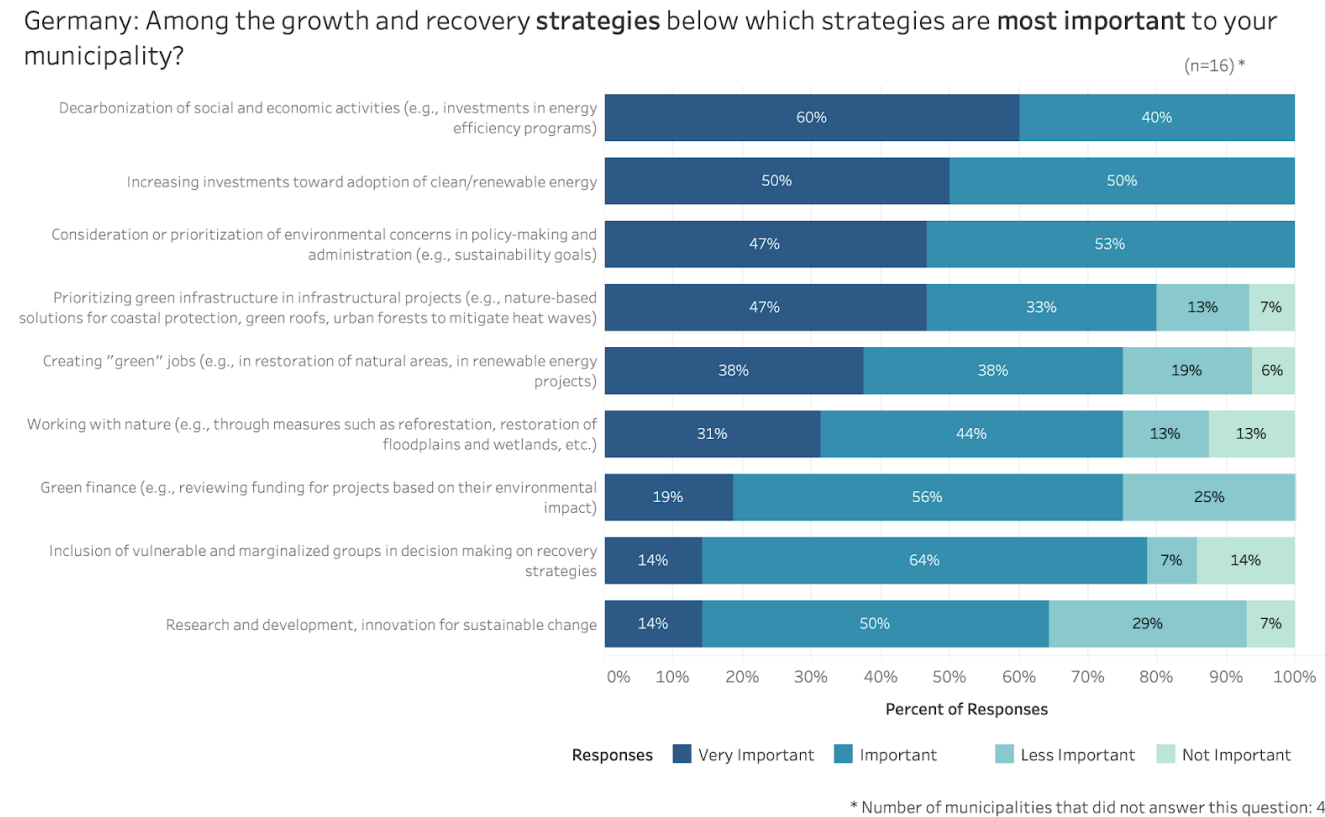


Figure 22. Northern Germany: green growth and recovery strategies ranked by importance to municipalities

MASSACHUSETTS (USA)

In Massachusetts more than 45% of respondents indicated that their municipality had discussed the concept of green recovery. About 30% of respondents indicated that the concept had not been discussed and 20% reported non being sure (Figure 23).

USA: To your knowledge, has the concept of green recovery been discussed in your municipality or planning agency?

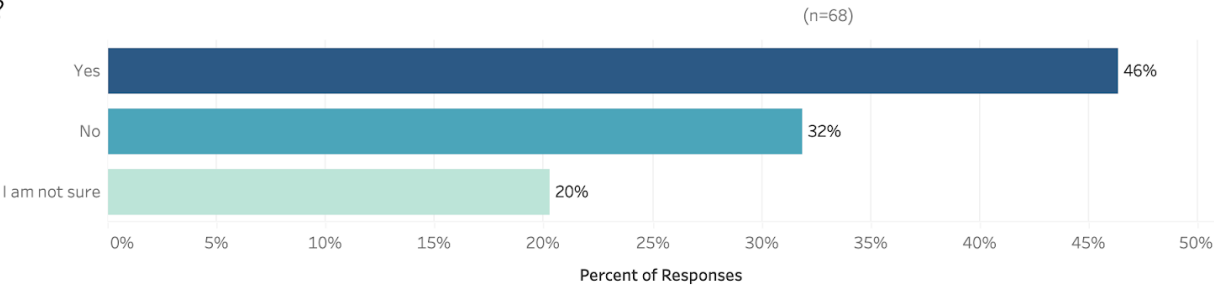


Figure 23. Massachusetts (USA): percentage of local municipalities that discussed “green recovery strategies”

Municipalities were asked whether they had already started implementing any recovery strategies since the pandemic (Figure 24). More than 50% of respondents indicated having implemented the following recovery strategies **before** the beginning of the pandemic:

- Consideration and prioritization of environmental concerns in policy making and administration (57%)
- Increasing investments toward adoption of clean/renewable energy (55%)
- Decarbonization of social and economic activities (52%)
- Working with nature through habitat restoration measures such as reforestation, restoration of floodplains and wetlands (52%).

Among the strategies most frequently adopted **since the beginning of the pandemic** respondents reported:

- Inclusion of vulnerable marginalized groups in decision-making on recovery strategies (25%)
- Prioritization of green infrastructure in infrastructural projects (23%) (e.g. nature-based solutions for coastal protection, green roofs, and urban forest to mitigate heat waves)
- Increasing investments towards the adoption of clean renewable energy (21%).

Strategies that have not been adopted, but for which there is strong interest include:

- Research and development and innovation for sustainable change (31%)
- Prioritizing green infrastructure in infrastructural project (29%)

- Green finance such as reviewing funding for project based on their environmental impact (26%)
- Creation of green jobs (25%) (e.g., restoration of natural areas and renewable energy projects).

USA: Has your municipality or planning agency started implementing any of the following recovery and growth strategies since the pandemic? (Please select all that apply) (n=63)

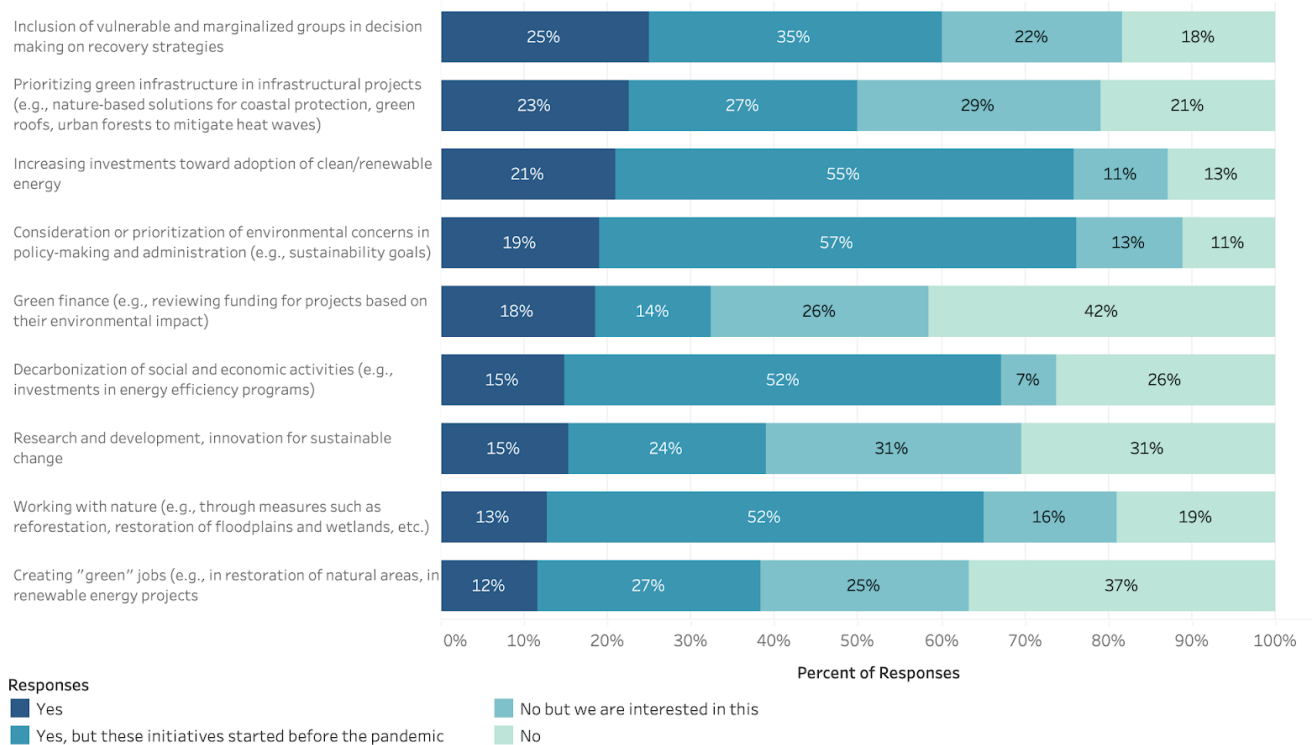


Figure 24. Massachusetts (USA): implementation of green recovery and growth strategies.

We asked municipalities which growth and recovery strategies were the most important to them and we found that more than 50% of municipalities described as "important to very important" all the strategies listed (Figure 25). This suggests widespread interest in sustainable economic growth among Massachusetts municipalities.

- The strategies most frequently reported include:
 - ▶ Increasing investments toward the adoption of clean/renewable energy
 - ▶ Consideration and prioritization of environmental concerns in policy-making and administration (e.g., sustainability goals)
 - ▶ Working with nature through habitat restoration measures such as reforestation, or restoration of floodplains and wetlands.

- The strategies more frequently described as very important are:
 - ▶ Increasing investments toward adoption of clean, renewable energy (34%)
 - ▶ Prioritization of green infrastructure in infrastructural projects (34%) (e.g., nature-based solutions for coastal protection, green roofs, and urban forest to mitigate heat waves)
 - ▶ Consideration or prioritization of environmental concerns in policy-making and administration (28%) (e.g., sustainability).

USA: Among the growth and recovery strategies below which strategies are most important to your municipality or planning region? (Please select all that apply) (n=61)

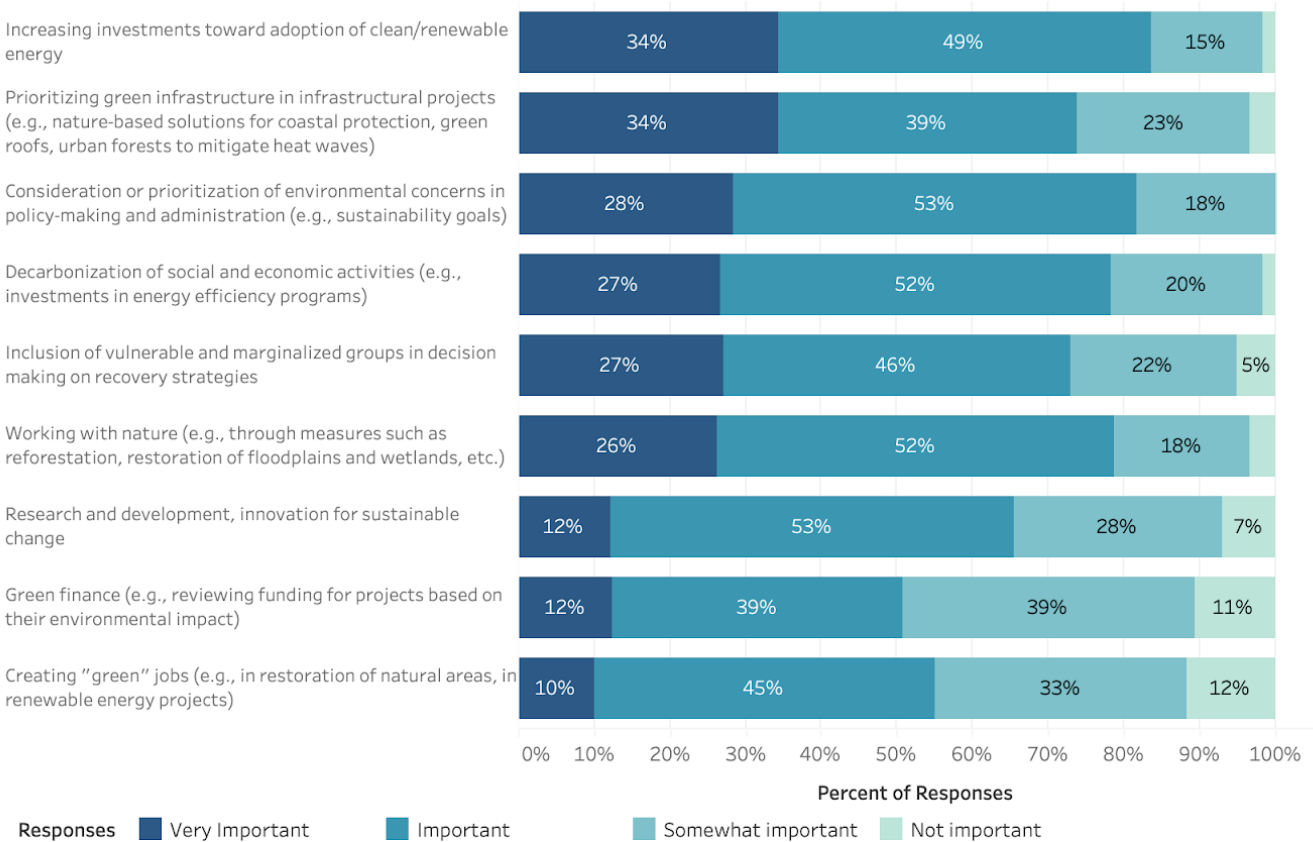


Figure 25. Massachusetts (USA): green growth and recovery strategies ranked by importance to municipalities

We asked what policies or programs would be most helpful to local municipalities in planning for a successful economic recovery. Municipal officials highlighted the need of funding and regional coordination:

Funding, funding, funding. And a top-down mandate with resources to implement, rather than the "carrot" approach. [Massachusetts Municipal Official]

Continued technical and financial support. As a small town we struggle to find the staffing capacity to pursue the work that is needed. A regional approach makes a lot of sense for us. [Massachusetts Municipal Official]

Local municipal officials also highlighted the importance of sustainable policies and programs:

Establish sustainable (not in an energy/environmental sense) financial policies and have stakeholders commit to them. [Massachusetts Municipal Official]

Cost-benefit analysis of green projects to help prioritize grants; technical support to find those grants, get them shovel ready, ongoing project management support, help applying for grants with other municipalities [Massachusetts Municipal Official]

Reworking the Wetland Protection Act to allow better protections and adaptations to current and future sea levels. This will allow for flood zones and erosion zones to have a broader range of mechanisms. Currently too restrictive. [Massachusetts Municipal Official]

Make it easy to become a municipal energy utility to sell direct to residents green energy we create - e.g. ground source heat pump geothermal. [Massachusetts Municipal Official]

Create programs to support removal or redevelopment of historic mills on riverways that make them vulnerable to climate driven weather events (and opens that land to new development). [Massachusetts Municipal Official]

Investments in human capital, education and workforce development were also highlighted to support future long-term economic development:

Continue additional K-12 funding programs (ESSER) to allow more time for schools to help students catch up in a post-covid era. Students and faculty haven't recovered and we shouldn't pull the rug out from them as they struggle to get back on their feet. [Massachusetts Municipal Official]

Managing inflation effectively, building more workforce, housing that is broadly affordable to middle and lower wage earners, building elderly housing that allows over-housed elderly residents an affordable

alternative to staying in their homes, freeing those homes for other families. [Massachusetts Municipal Official]

Scotland (UK)

In Scotland, the concept of green recovery has been discussed in 92% of surveyed local authorities (i.e, municipalities). Only 8% of local authorities have not discussed the topic (Figure 26).

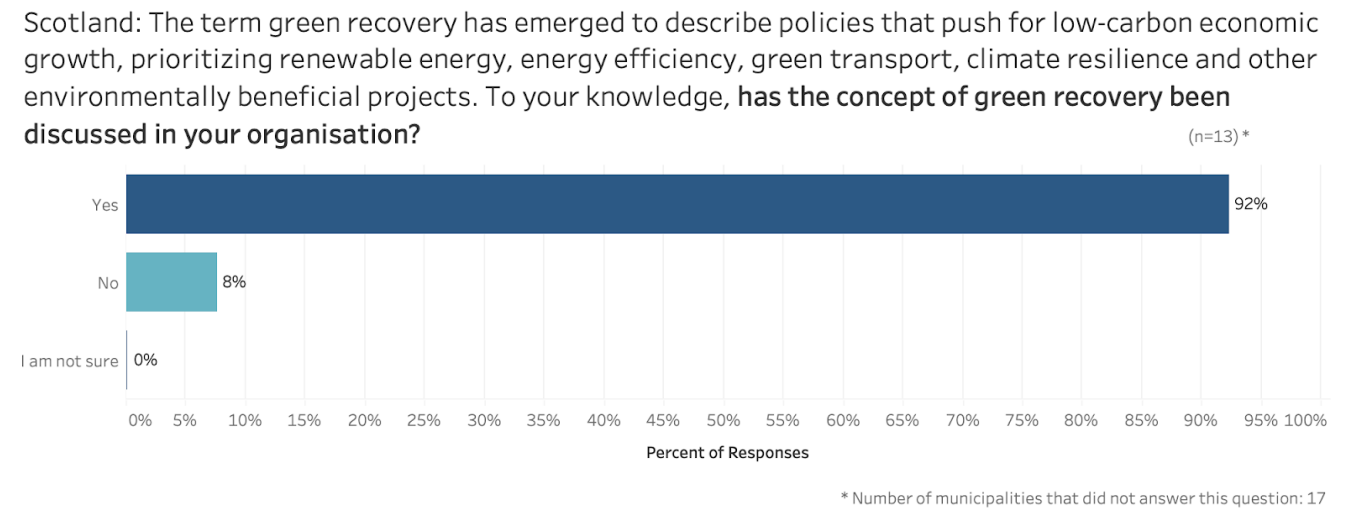


Figure 26. Scotland (UK): percentage of local municipalities that discussed “green recovery strategies”

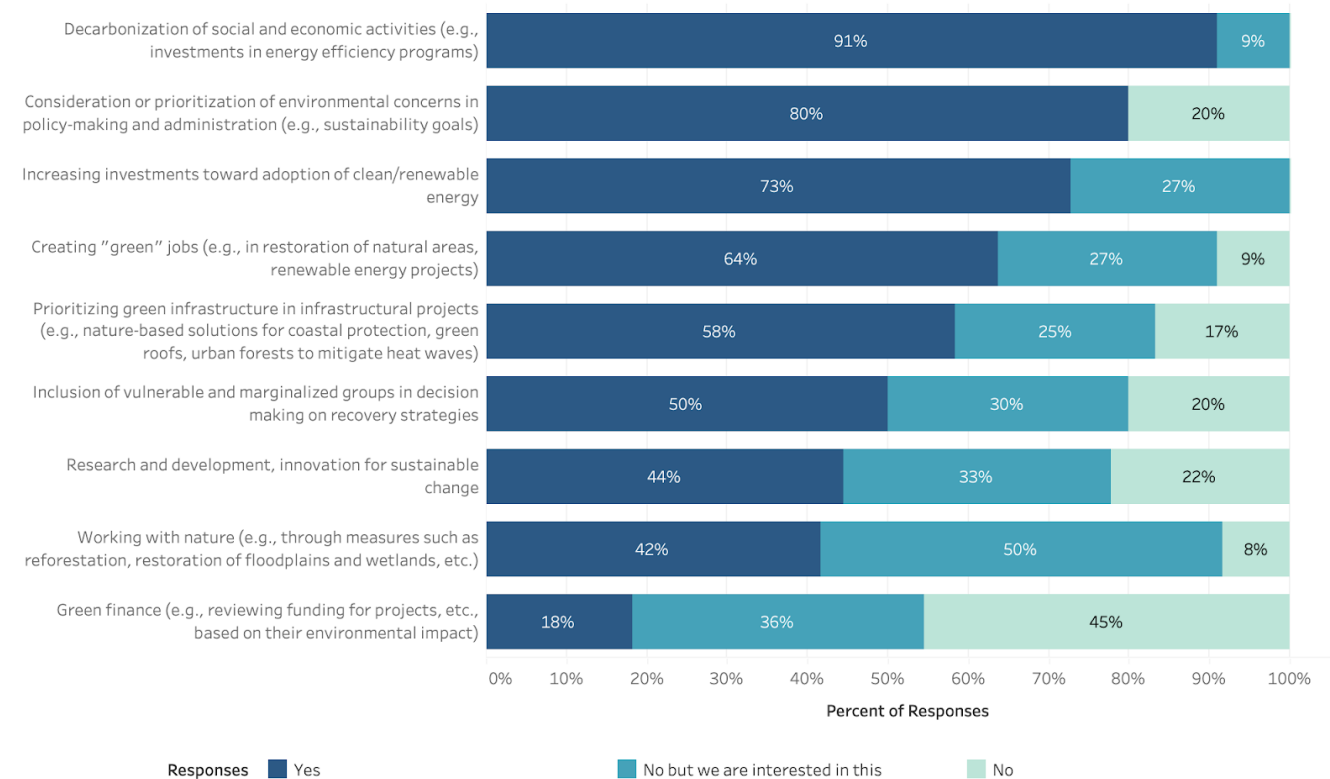
In Scotland, a large percentage of local authorities has already started implementing recovery and growth strategies (Figure 27).

- More than 70% of local authorities have already adopted the following strategies:
 - Decarbonization of social and economic activities (91%)
 - Consideration or prioritization of environmental concerns in policy-making and administration (e.g. sustainability goals) 80%
 - Increasing investments towards the adoption of clean, renewable energy 73%
- The strategy least frequently implemented is green finance (e.g., reviewing funding for projects based on their environmental impacts), however more than 35% of respondents indicated being very interested in that type of strategy

- Another strategy that attracted strong interest by 50% of respondents is working with nature through nature-based solutions and habitat restoration measures (e.g., reforestation, restoration of floodplains, and wetlands).

Scotland: Has your organisation started implementing any of the following recovery and growth strategies?

(n=12) *



* Number of municipalities that did not answer this question: 18

Figure 27. Scotland (UK): implementation of green recovery and growth strategies.

When asked which recovery strategies are the most important for their local authority, respondents indicated that most of the strategies listed are important to very important (Figure 28).

- The strategies most frequently reported as very important include consideration or prioritization of environmental concerns in policy-making and administration (80%)
- Inclusion of vulnerable and marginalized groups in decision-making and recovery strategies (80%)
- Decarbonization and economic activities such as investment in energy efficiency programs (70%)
- Increasing investments toward the adoption of clean, renewable energy and creating green jobs (60%).

The Scotland survey included a few open-ended questions. We present them below together with the answers we collected.

Q. Has your organization started implementing any of the following green recovery and growth strategies?

- *A Community Climate Action Hub is being established in our area to support communities take forward climate projects. We are a partner in the hub development. [Municipal Official from Scotland]*

Q. How have levels of poverty and deprivation in your area changed since the pandemic?

- *I's a very mixed picture some people have been severely affected others less so but deprivation levels remain consistent at pre pandemic levels albeit more people are struggling to retain their living standards due to inflation and the cost of living crisis. [Municipal Official from Scotland]*
- *Significant impact of cost of living and energy crisis with Brexit and Ukraine war influencing [Municipal Official from Scotland]*
- *Severe travel issues (ferry and flights) have had a much, much bigger impact on our local economy than Covid-19. [Municipal Official from Scotland]*

Q. Please indicate which of the following barriers related to coordination and governance complicate, slow, or prevent the implementation of green recovery and resilience strategies in your area

- *Too many disparate actions and groups working independently from one another, on similar but differing activities, in the same communities - no joined up approaches [Municipal Official from Scotland]*
- *Heavily centralized energy decision making is one of the key barrier to local net zero energy planning. [Municipal Official from Scotland]*
- *Businesses in our area are still struggling post Brexit and Covid so they don't have the resources or time to think about how they can reduce their impact on the climate [Municipal Official from Scotland]*

Q. What are the most important factors enabling a successful green recovery?

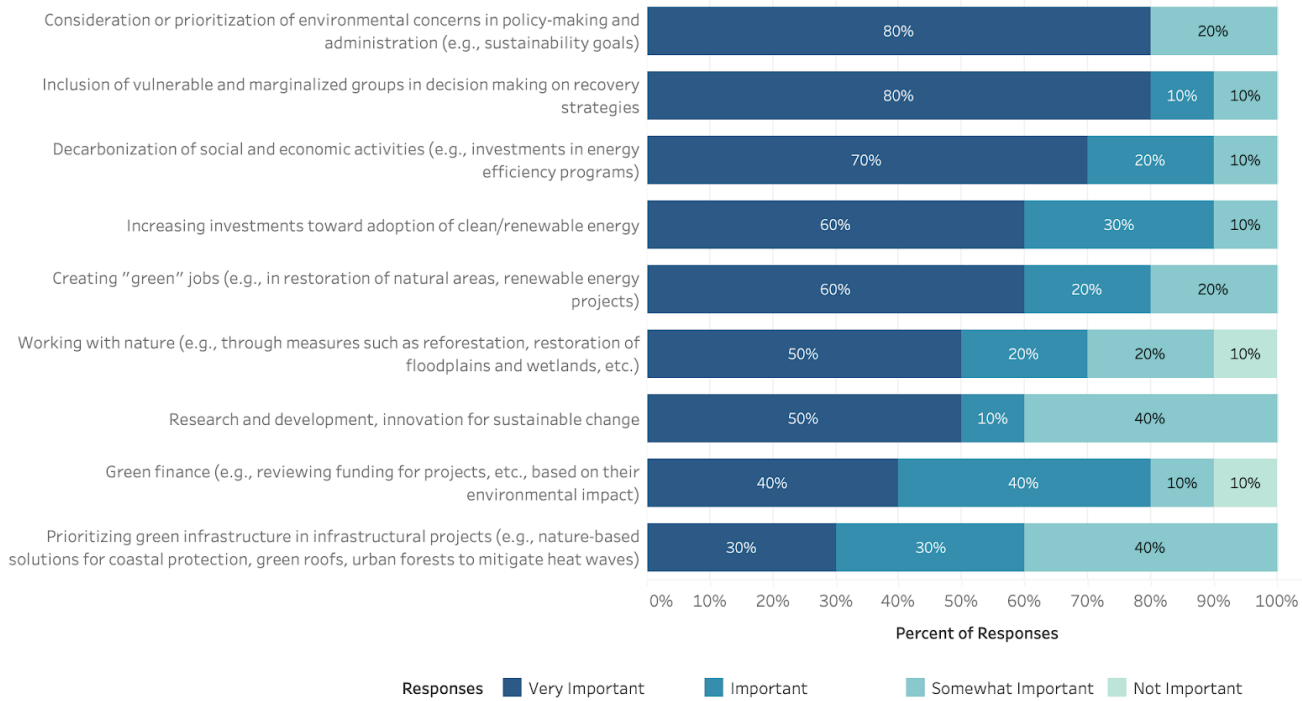
- *Developing systems across the private / community and third sector to discuss positive change and leadership from business. Developing the councils net zero plan with community Wealth building principles. [Municipal Official from Scotland]*
- *Willingness; messaging; vision; buy-in; output [Municipal Official from Scotland]*
- *Local decision making. [Municipal Official from Scotland]*
- *Innovation. [Municipal Official from Scotland]*
- *Community ownership. [Municipal Official from Scotland]*
- *Educating our young people and young adults that they can bring about change. [Municipal Official from Scotland]*



Photo by Mick Haupt on Unsplash

Scotland: What green recovery strategies do you think are most important for your region’s sustainable development?

(n=10) *



* Number of municipalities that did not answer this question: 20

Figure 28. Scotland (UK): level of importance of green recovery strategies for sustainable development.



Photo by KB on Unsplash

3.4 INVESTMENTS IN GREEN GROWTH

Municipalities in Massachusetts and Scotland stand out for their extensive investments and interest in green economic programs and resilience strategies. The most popular programs include the installation of electric-vehicles charging infrastructure; the installation of renewable energy capacity and energy efficiency programs; and nature-based solutions. Northern Germany local authorities indicated strong interest in renewable energy transition strategies and in the installation of electric-vehicles charging infrastructure.

Municipal data was not available for Costa Rica but the local team collected information by performing a desk review, presented in this section.

Costa Rica

Municipalities were unable to provide data on investments in green recovery. The Costa Rica team performed a desk review and collected the information below on green economic investments and green finance.

The green recovery in Costa Rica represents a key approach to address the economic and environmental challenges it has implemented over the years and exacerbated by the COVID-19 pandemic. Green recovery and its strategies seek economic reactivation, sustainability, and resilience to climate change. Some of the main characteristics of this recovery and the financial mechanisms used in Costa Rica are the following:

- ▶ **Investment and GDP:** The green recovery represents approximately 6.2% of Costa Rica's GDP, with total investments estimated at USD 3,829 million. Of this figure, 17% is allocated to green measures, including sustainable agricultural practices, promotion of clean energy, and ecosystem conservation (UN³, n.d.).
- ▶ **Lines of action:** some of the actions that have been implemented are the substitution of polluting agricultural practices, incentives for the use of electric energy and electric mobility, conservation and restoration of ecosystems, improvement in the quality of public spending, and reduction of tax evasion (Campos-Rudin, 2021⁴).
- ▶ **Long-term objectives:** The national strategy for green recovery in Costa Rica is aligned with investments in decarbonization where from the National Decarbonization Plan, which seeks to transform the

³ Organización de Naciones Unidas, Programa para el Medio Ambiente. (n.d.). Recuperación verde y cambio climático. <https://dev.cambioclimatico.go.cr/wp-content/uploads/2021/12/2.-Atencio%CC%81n-y-recuperacio%CC%81n-ante-la-COVID-19.pdf>

⁴ Campos-Rudin, Manuel. (2021). Vinculación de la economía social y el crecimiento verde en Costa Rica bajo un estudio de casos múltiples. *Revista Nacional de Administración*, 12(2), e3813. <https://dx.doi.org/10.22458/rna.v12i2.3813>

economy towards a more sustainable model and less dependent on fossil fuels (UNDP-Costa Rica, 2022⁵).

Costa Rica has implemented various financial mechanisms to facilitate this green recovery, including:

- **International loans:** Funds have been obtained from the Inter-American Development Bank [IDB], the World Bank and the International Monetary Fund [IMF], which have provided concessional loans for green projects (UN, n.d. and Campos- Rudin, 2021).
- **Payment for environmental services program:** This program has historically been fundamental and a successful model at an international level, in the protection and restoration of forests, incentivizing owners to conserve their lands in exchange for financial compensation (Campos- Rudin , 2021).
- **Green Climate Fund [GCF]:** This fund finances projects that seek to mitigate climate change and promote resilience in vulnerable communities. In Costa Rica, initiatives are being implemented under this framework to strengthen food security and improve institutional capacities (IICA, 2021⁶).
- **Regional initiatives:** In collaboration with the Central American Bank for Economic Integration [BCIE, for its acronym in Spanish] and KfW, programs have been launched to increase resilience to climate change throughout Central America, such as the Green Recovery Program in Central America, which had EUR 250 million to support economic activities that promote mitigation and adaptation to climate change, focusing on vulnerable communities. Investments include renewable energy infrastructure, electric mobility, and resilient public infrastructure projects (BCIE, 2022⁷).
- **Biodiversity Finance Initiative (BIOFIN):** This was launched by the United Nations Development Programme (UNDP), which seeks to mobilize resources for the conservation and sustainable use of biodiversity. Through financial solutions, it includes six innovative solutions that promote investment in biodiversity, focusing on private sector participation and the integration of vulnerable groups such as women and indigenous people (BIOFIN⁸, n.d.).

⁵ Programa de las Naciones Unidas para el Desarrollo, Costa Rica [PNUD-Costa Rica] y Corporación RAND. (2022). Una recuperación verde del COVID-19 en Costa Rica. https://cambioclimatico.minae.go.cr/wp-content/uploads/2022/05/PNUD-Una_recuperacion_verde_del_COVID-19_en_Costa-Rica-Espanol.pdf

⁶ Instituto Interamericano de Cooperación para la Agricultura [IICA]. (2021, September 10). Proyecto financiado por el Fondo Verde y ejecutado por el IICA impulsará la recuperación verde en América Latina y el Caribe. <https://iica.int/es/press/noticias/proyecto-financiado-por-el-fondo-verde-y-ejecutado-por-el-iica-impulsara/>

⁷ Banco Centroamericano de Integración Económica [BCIE]. (2022, November 10). BCIE y KfW lanzan programa de recuperación verde en Centroamérica para aumentar la resiliencia de comunidades vulnerables. <https://www.bcie.org/novedades/noticias/articulo/bcie-y-kfw-lanzan-programa-de-recuperacion-verde-en-centroamerica-para-aumentar-la-resiliencia-de-comunidades-vulnerables>

⁸ Iniciativa Finanzas para la Biodiversidad [BIOFIN]. (n.d.). Acerca de. Programa de las Naciones Unidas para el Desarrollo. <https://biofin.cr/acerca-de/>

- **Project Preparation Fund (FPP):** announced in December 2023, this fund aims to catalyze up to USD 1.2 billion in private sector investments. Areas of intervention include support for regulatory reforms, identification of sustainable projects, and appropriate financial structuring (GFL, 2023⁹; IMF, 2023¹⁰).
- **Green Bonds:** The World Bank is supporting Costa Rica in issuing green bonds, which will finance emissions reduction and environmental conservation projects. These seek to attract national and international investments towards sustainable initiatives (MINAE, 2023¹¹; UNDP, 2023¹²).
- **National Taxonomy of Sustainable Finance:** this is being developed and consists of a taxonomy to classify financial products as green, thus facilitating their design and promotion in the market (UNDP, 2023¹³; SUGEVAL¹⁴, n.d.).

In addition, resilience strategies in Costa Rica have focused on actions such as:

- **Adaptation to climate change** - This includes improving infrastructure to withstand extreme weather events and promoting sustainable agricultural practices that increase the resilience of the agricultural sector.
- **Strengthening institutional capacities** - Collaboration between different ministries and international organizations has been key to implementing effective policies that integrate the country's economic and environmental objectives.
- **Community or citizen participation** - This involves local communities in decision-making on environmental projects and ensures that solutions are appropriate to their specific needs and contexts.

⁹ Green Finance Latin America [GFL]. (2023, November 14). Costa Rica anuncia la creación de un fondo para facilitar la atracción de inversiones climáticas. <https://greenfinancelac.org/es/recursos/novedades/costa-rica-anuncia-la-creacion-de-un-fondo-para-facilitar-la-atraccion-de-inversiones-climaticas/>

¹⁰ International Monetary Fund. (2023, December 2). Costa Rica, together with multilateral partners, announces the creation of a sustainable project preparation facility to crowd climate investments. <https://www.imf.org/es/News/Articles/2023/12/01/pr23418-costa-rica-multilat-launch-sustainable-project-prep-facility-crowd-climate-investments>

¹¹ Ministerio de Ambiente y Energía [MINAE]. (2023, December 4). Costa Rica y socios climáticos anuncian la creación de un Fondo de Preparación de Proyectos en la COP28. <https://www.minae.go.cr/noticias/2023/DECI%20116%20COP28%20Costa%20Rica%20-%20Socios%20mecanismos%20climaticos.aspx>

¹² Programa de las Naciones Unidas para el Medio Ambiente [PNUD]. (2023, April 21). Costa Rica lanza proyecto para reforzar su marco de finanzas sostenibles. <https://www.unep.org/es/noticias-y-reportajes/comunicado-de-prensa/costa-rica-lanza-proyecto-para-reforzar-su-marco-de>

¹³ Programa de las Naciones Unidas para el Medio Ambiente [PNUD]. (2023, April 21). Costa Rica lanza proyecto para reforzar su marco de finanzas sostenibles. <https://www.unep.org/es/noticias-y-reportajes/comunicado-de-prensa/costa-rica-lanza-proyecto-para-reforzar-su-marco-de>

¹⁴ Superintendencia General de Valores [SUGEVAL]. (n.d.). Taxonomía de finanzas sostenibles de Costa Rica: Preguntas y respuestas frecuentes (FAQs). <https://www.sugeval.fi.cr/Informacion-inversionistas/Documentosvarios/FAQTaxonom%C3%ADa%20de%20Finanzas%20Sostenibles%20de%20Costa%20Rica%20final.pdf>

The green recovery in Costa Rica represents a comprehensive effort to address current economic and environmental challenges. Through a combination of strategic investments, public policies focused on sustainability and innovative financial mechanisms, and the integration of public and private financing, together with strong community participation, it is essential to achieve sustainable development goals and mitigate the effects of climate change in the country. These initiatives not only benefit the environment, but also promote inclusive and sustainable economic growth.



Photo by Zdeněk Macháček on Unsplash

Northern Germany

We asked respondents if their municipality had already invested in a selection of sustainable/green programs (Figure 29). Even though the sample size is small, and therefore estimates should be taken with caution, the figures still provide some insightful information.

Respondents reported interest in investing in a vast array of sustainable strategies and programs. They indicated already having invested funds in these strategies:

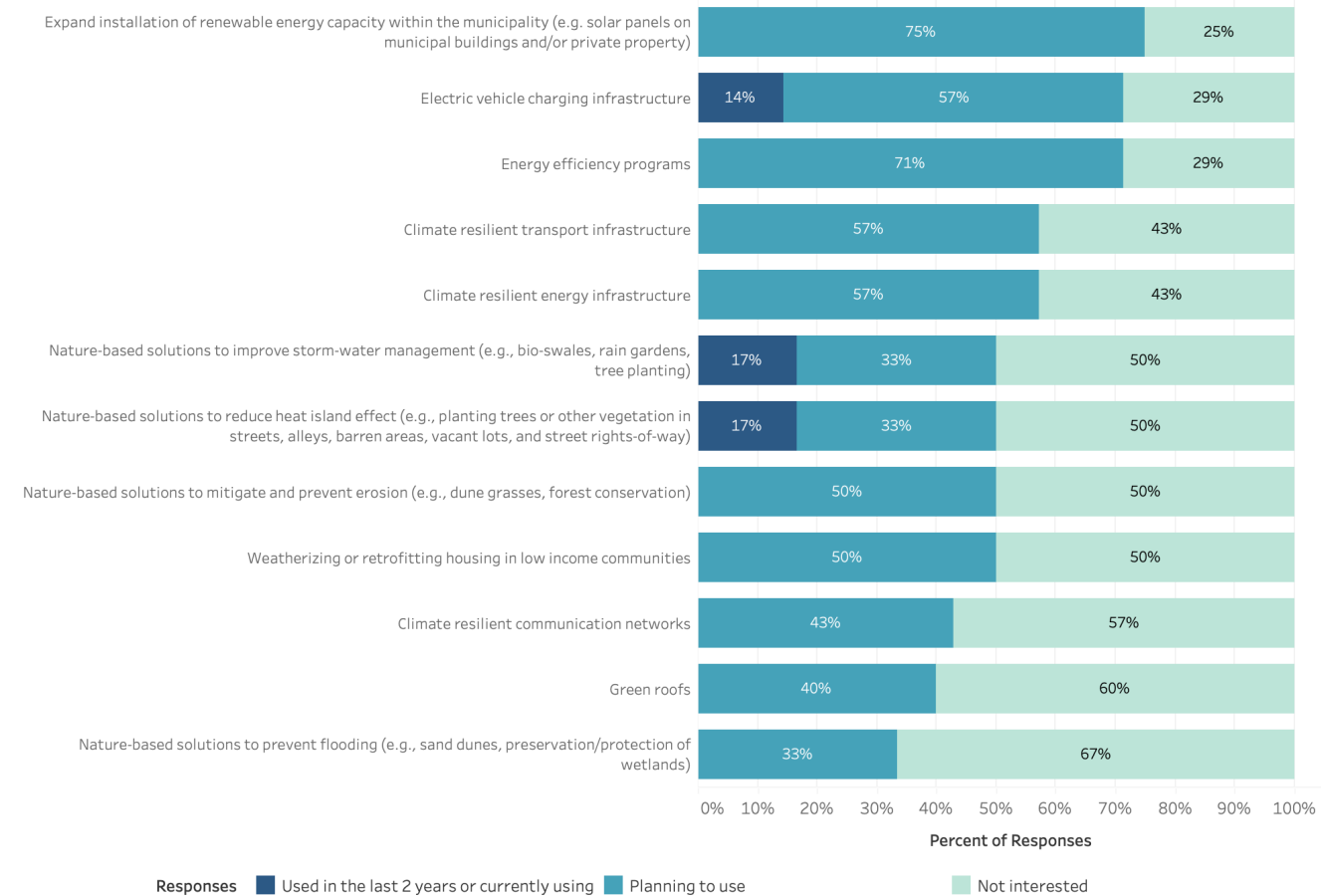
- Electric vehicles charging infrastructure
- Nature-based solutions to improve stormwater management (e.g., bioswales, rain-gardens, and tree-planting)
- Nature-based solutions to reduce heat island effect (e.g., planting trees or other vegetation in streets, alleys, barren areas, vacant lots and streets rights-of-way)
- More than 70% of municipalities are planning to expand installation of renewable energy capacity and energy efficiency programs.



Hamburg, Northern Germany - Photo by Niklas Ohlrogge (niamoh.de) on Unsplash

Germany: Has your municipality or planning region used or is planning to use public funds to finance the following programs and strategies? (Please check all that apply)

(n=8) *



* Number of municipalities that did not answer this question: 12

Figure 29. Germany: use of public funds to finance sustainable/green programs



Marblehead, Massachusetts- Photo by todd kent on Unsplash

Massachusetts (USA)

In Massachusetts, numerous municipalities reported having already used funds in multiple sustainable programs and strategies (Figure 30):

- Popular programs include:
 - ▶ Energy efficiency programs (80%)
 - ▶ Electric vehicle, charging infrastructure (69%)
 - ▶ Expansion or installation of renewable energy capacity within the municipality (62%).
- More than 50% of respondents indicated having already invested in the following programs:
 - ▶ Nature-based solutions to improve stormwater management (e.g., bioswales, rain-gardens)
 - ▶ Nature-based solutions to prevent flooding such as sand dunes, preservation and protection of wetland).

- More than 50% of respondents indicated planning to invest in:
 - Climate resilient transport infrastructure (52%)
 - Climate resilient communication networks (51%).
- Other strategies that municipalities are planning to invest in include:
 - Climate resilient energy infrastructure (49%)
 - Nature-based solutions to mitigate and prevent erosion (46%)
 - Green roofs (48%) and weatherizing or retrofitting housing in low-income communities (43%).

Overall, this state-level assessment of interests and existing investments shows strong municipal interest in nature-based solutions.

USA: Has your municipality or planning region used or is planning to use public funds to finance the following programs and strategies? (Please select all that apply)

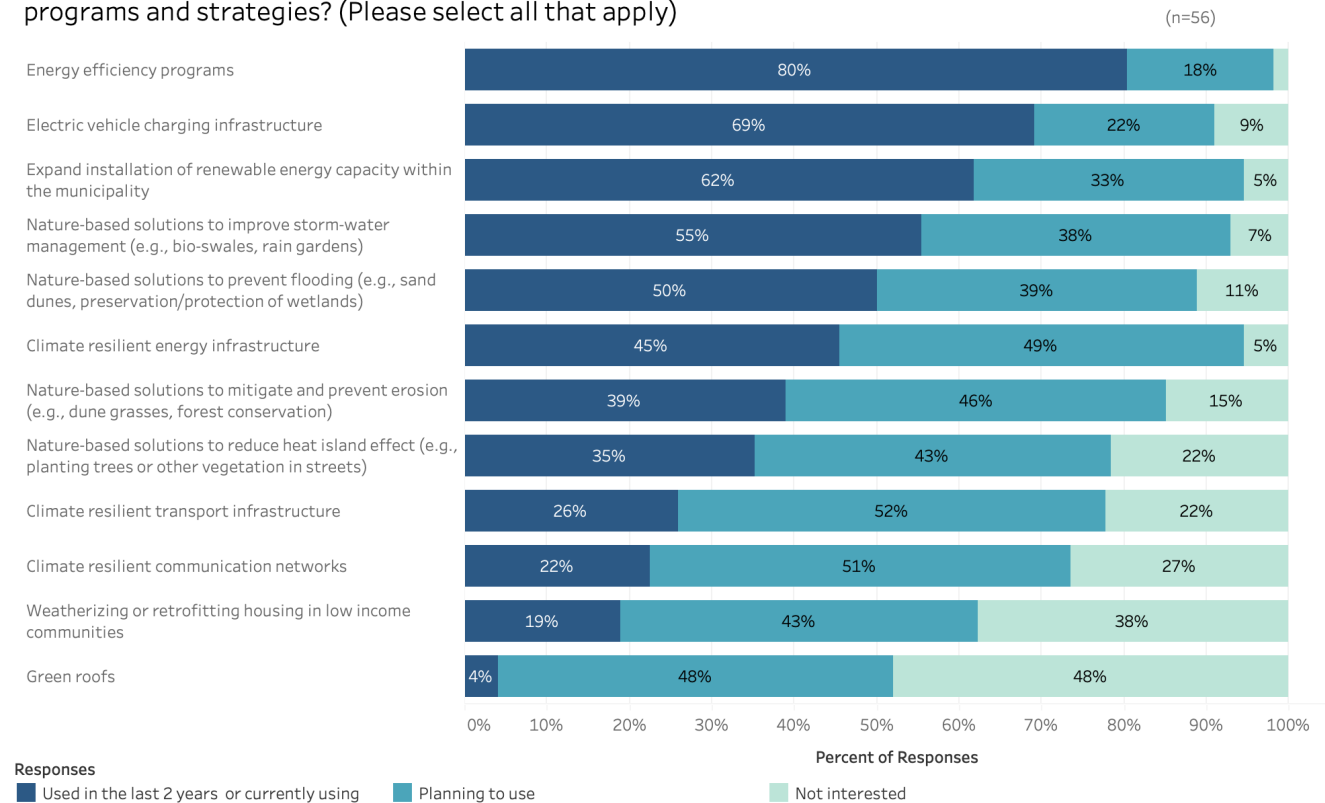


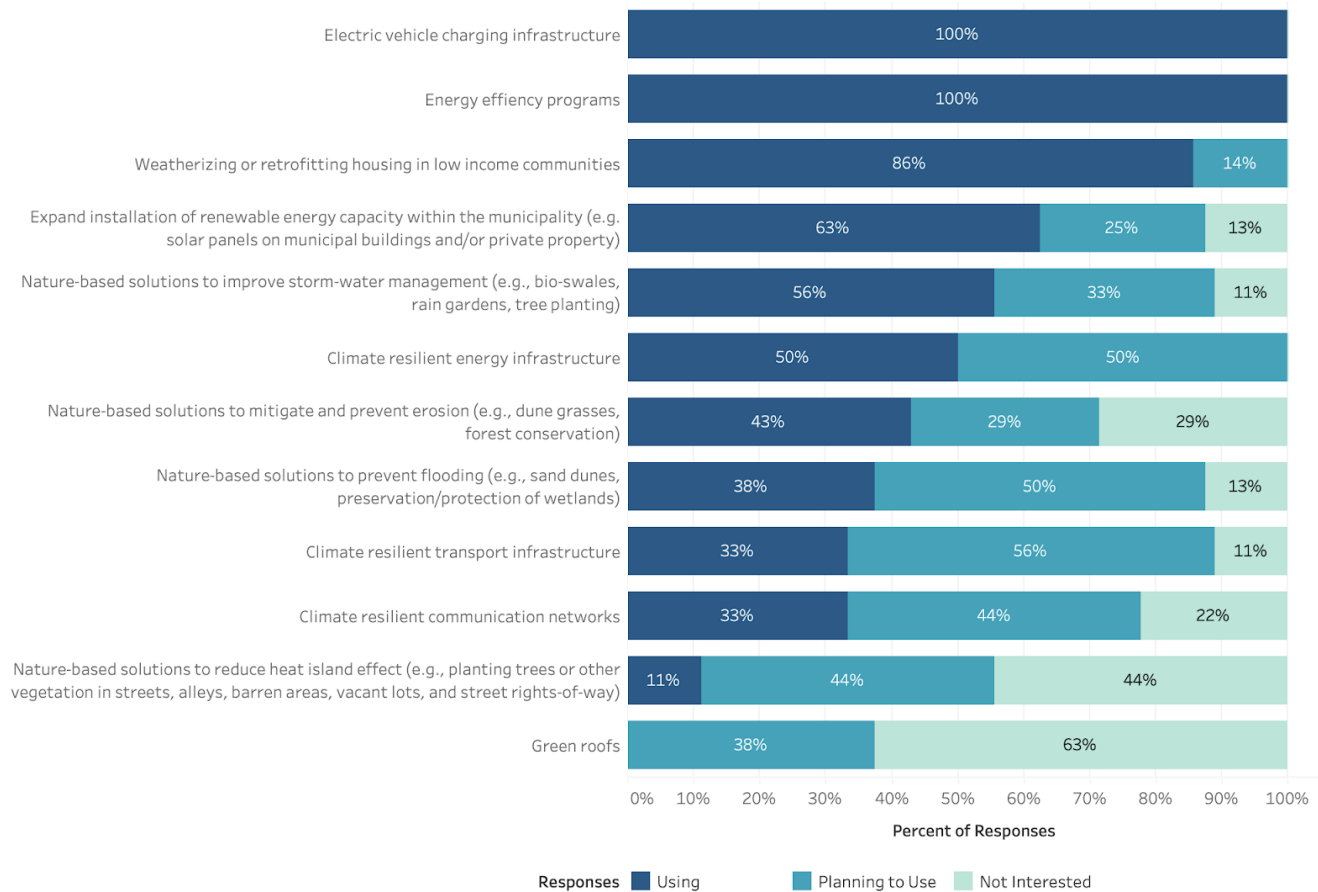
Figure 30. Massachusetts (USA): use of public funds to finance sustainable/green programs

SCOTLAND (UK)

We asked municipalities in which strategies they have already invested, and in which strategies they plan to invest (Figure 31).

- All respondents indicated that their municipality has already invested in:
 - ▶ Electric vehicle charging infrastructure
 - ▶ Energy efficiency programs.
- Popular programs and strategies include also weatherizing and retrofitting housing in low-income communities (86%)
- 50% of municipalities reported having already invested in climate resilience energy infrastructure and 50% of respondents indicated planning to invest in this strategy in the future.
- Strong interest in future investment plans has been expressed for the following strategies:
 - ▶ Climate resilience transport infrastructure (56%)
 - ▶ Nature-based solutions to prevent flooding (50%)
 - ▶ Climate resilient communication networks (44%)
 - ▶ Nature-based solutions to reduce heat-island effect (44%).

Scotland: Has your organisation invested in (or is planning to invest in) any of the following sustainable programs and strategies? (n=10) *



* Number of municipalities that did not answer this question: 20

Figure 30. Scotland (UK): investments in sustainable programs and strategies

3.5 BARRIERS TO GREEN RECOVERY AND GREEN GROWTH

We investigated a variety of barriers in planning and implementing sustainable and resilience strategies, including: (i) barriers related to municipal resources; (ii) data and information limitations; and (iii) coordination and governance constraints.

COSTA RICA

Costa Rica local officials (i.e., canton officials) provided additional answers and feedback, and highlighted three types of key barriers to green recovery: lack of funds; limited staffing capacity; and lack of technical expertise.

[The main barrier is] lack of personnel, since in some municipalities, the issue of environmental management is a one-person unit or department. And in more favorable cases, there are no more than two people to attend to all the needs of the canton and the application of the regulations of the canton in environmental matters. [Costa Rica Canton Official]

Municipalities and other public institutions with a presence in the territory lack experience in issues associated with climate change. Sometimes, the only ones that provide support in these issues are public universities or the National System of Conservation Areas (SINAC for its acronym in Spanish). [Costa Rica Canton Official]

The lack of skills for drafting projects or subsidies and identifying external sources of financing prevents the development of new projects. [Costa Rica Canton Official]

Acquiring funding for the development of environmental projects is not a priority in the ordinary budget level of municipalities. The absence of financing for the development of environmental projects remains a non-priority element in the ordinary budget level of municipalities. [Costa Rica Canton Official]

Strategic political priorities are often complex, so in some cases, environmental management is also not a priority issue. [Costa Rica Canton Official]

The particular characteristics of each canton and the social and economic dynamics vary greatly between cantons. [Costa Rica Canton Official]

NORTHERN GERMANY

Municipalities and administrative units face a variety of barriers in planning and implementing sustainable and resilience strategies. Even though the sample size is small, and therefore estimates should be taken with caution, the figures still provide some insightful information.

The first type of barrier is related to **lack of resources** (Figure 32):

- 60% of respondents reported lack of staffing capacity in local authorities to dedicate to sustainable growth strategies sustainable, green recovery, and resilient strategies
- Barriers frequently indicated also include lack of official support in implementing resilience enhancing strategies (50%), and no centralized way to identify funding sources (40%).

Barriers related to **inadequate data and information** have also emerged as constraints (Figure 33):

- 43% of respondents indicated that insufficient metrics and tools to monitor progress and lack of technical expertise in engineering and underground projects are important barriers.
- Other barriers mentioned include insufficient public education of local residents around green recovery initiatives 29% and insufficient high resolution local data (29%).

Data needs and difficulty accessing different types of data limit or delay the implementation of green and resilience strategies (Figure 34). Respondents expressed the need for public health information (67%) and local CO2 emission data (33%).

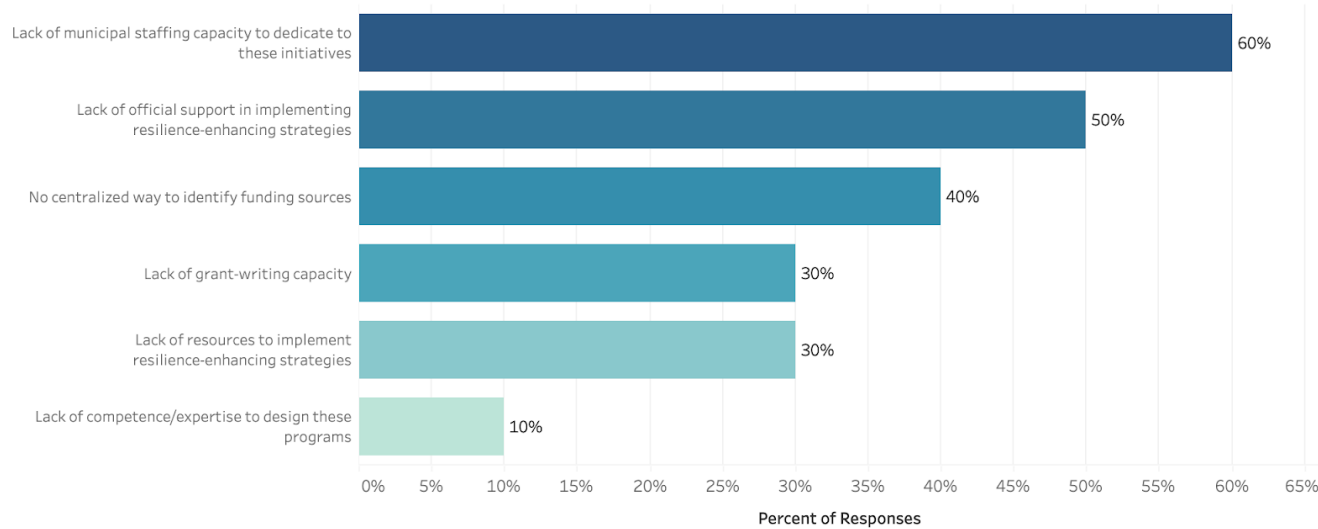
Lastly, **coordination and governance constraints** may also represent barriers in planning and implementing sustainable and resilience strategies (Figure 35):

- The most frequently reported coordination and governance constraint is the difficulty in identifying and prioritizing specific action steps within their local authorities (50%)
- About 40% of respondents listed also the following coordination and governance barriers: difficulty changing regulations and bylaws, difficulty advocating to elected or other governing officials at the state level, and need for more regional corporation.

No respondents indicated experiencing challenges related to insufficient resources to mobilize broad community support. Complex relationships with important industries in the local authorities did not appear to represent a barrier to the implementation of green recovery and resilience strategies either.

Germany: Please indicate which of the following **barriers** regarding **municipal resources** complicate, slow, or prevent the implementation of green recovery and resilience strategies in your municipality (please check all that apply).

(n=10) *

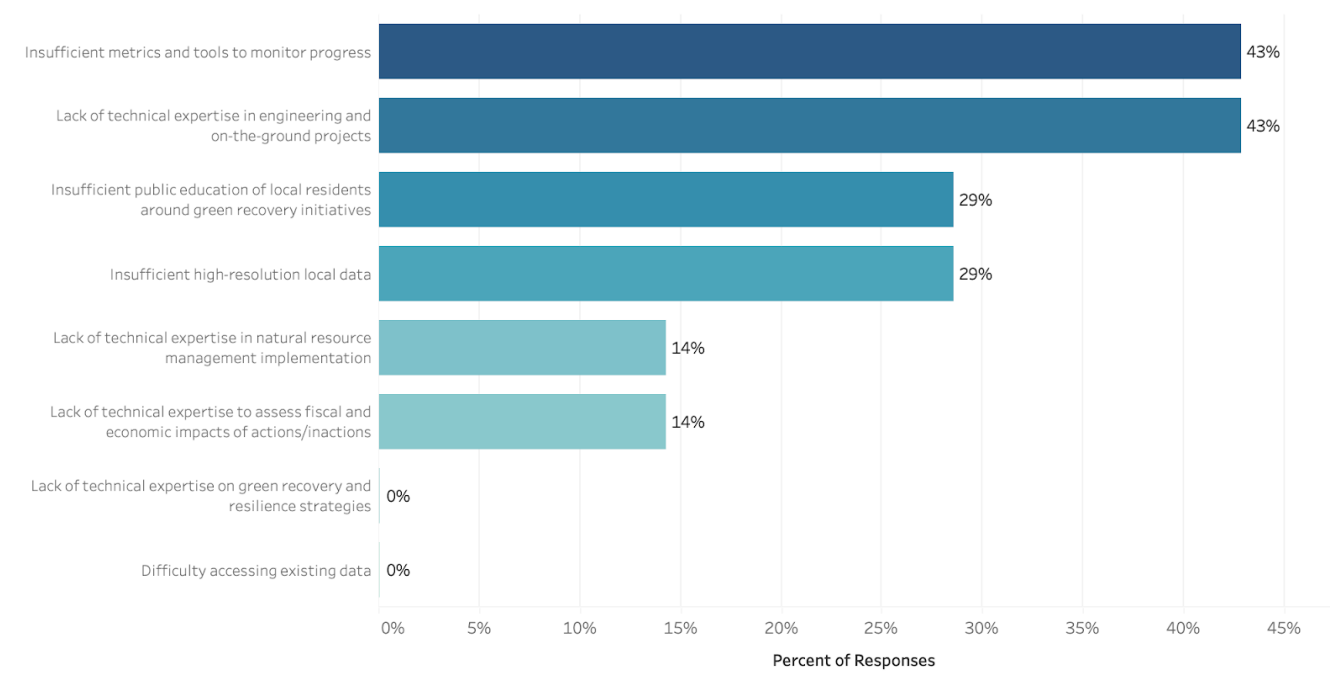


* Number of municipalities that did not answer this question: 10

Figure 32. Northern Germany: resource barriers preventing the implementation of green recovery and resilience strategies in the local authorities

“Permitting and project review take years to get through the multiple permitting agencies. Grants are competitive.”
- German Coastal town

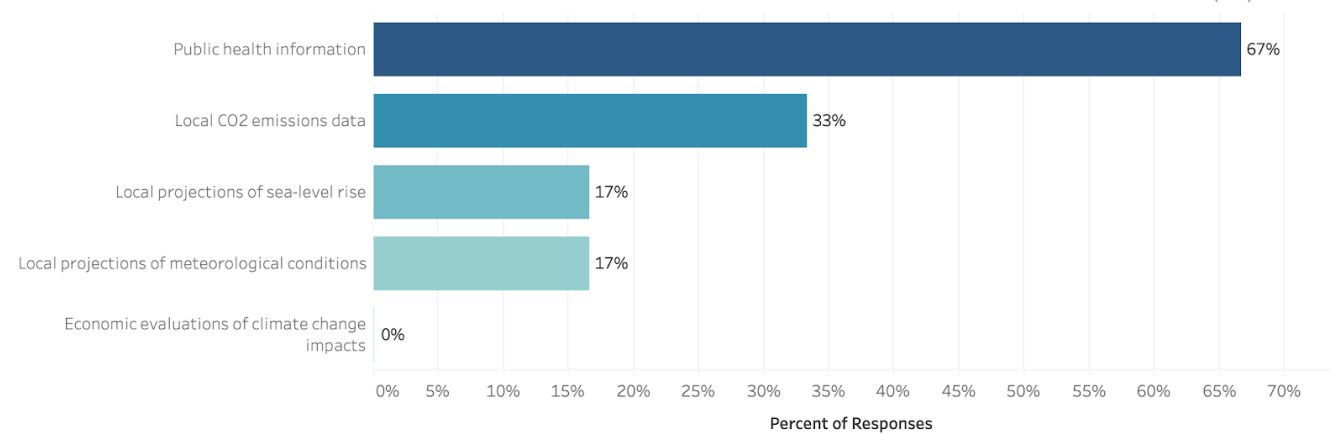
Germany: Please indicate which of the following **barriers** regarding **data and information** complicate, slow, or prevent the implementation of green recovery and related resilience strategies (for instance, climate change resilience strategies) in your municipality (please check all that apply). (n=7) *



* Number of municipalities that did not answer this question: 13

Figure 33. Northern Germany: data and information barriers preventing the implementation of green recovery and resilience strategies in the local authorities

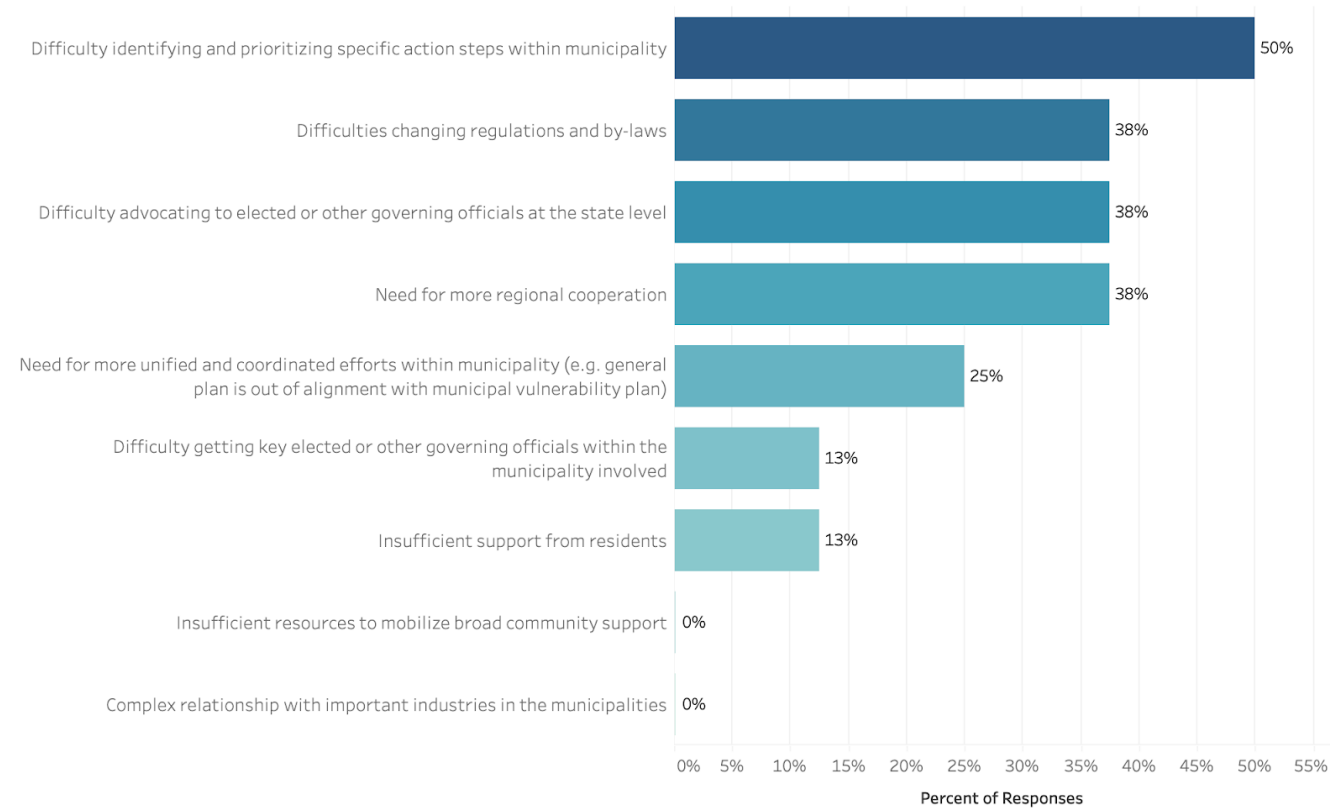
Germany: What specific types of **data**, useful for resilience planning, does your municipality need that is not currently easily accessible (please, check all that apply)? (n=6) *



* Number of municipalities that did not answer this question: 14

Figure 34. Northern Germany: data needs experienced by local authorities

Germany: Please indicate which of the following **barriers** regarding **coordination and governance** complicate, slow, or prevent the implementation of green recovery and related resilience strategies (for instance, climate change resilience strategies) in your municipality (please check all that apply). (n=8) *



* Number of municipalities that did not answer this question: 12

Figure 35. Northern Germany: Coordination and governance barriers preventing the implementation of green recovery and resilience strategies in the local authorities

In answer to the question: what are the biggest barriers to green recovery and resilience planning in your municipality (or planning region), including barriers that we might not have considered in the questions above? Respondents indicated the following additional constraints:

Coastal protection is not given high priority by either the population or the LKN (State Agency for Coastal Protection, National Park and Marine Conservation Schleswig-Holstein) [Municipal Official from Germany]

Small scale: very small communities (around 100 inhabitants), target group discussions difficult given the size, also [it is difficult to] implement project ideas for 100 inhabitants, too little representativeness [Municipal Official from Germany]

No central determination of funding sources - funding instruments are missing, or if they exist, bureaucracy gets in the way, processes/applications are too complex - to the point that it might not have been worth it financially and in terms of time [Municipal Official from Germany]

Lack of own financial resources and lack of know-how to establish renewable energy systems, e.g. ground-mounted solar and wind systems, within the landscape shaped by protected areas [Municipal Official from Germany]

Current interest rate situation [Municipal Official from Germany]

The duration of the funding programs, especially when it comes to personnel expenses. Many funding programs only run for two/three years. In other words, when projects have just been initiated and implemented, the programs expire and in most cases the municipalities can no longer pay the personnel costs. [Municipal Official from Germany]

Massachusetts (USA)

Massachusetts municipalities reported significant barriers related to lack of municipal resources that complicate slow or prevent the implementation of recovery and resilience strategies (Figure 36).

- The two most frequently reported barriers include:
 - ▶ Lack of municipal staffing capacity to dedicate to these initiatives (91%)
 - ▶ Lack of grant writing capacity (67%).
- Other barriers frequently indicated include: lack of competence or expertise to design these programs (61%); no centralized way to identify funding sources (51%); and lack of regulatory authority and resources to support enforcement of resilience strategies (44%).
- Barriers related to data and information have also emerged as strong constraints (Figure 37):
 - ▶ Lack of technical expertise to assess physical and economic impact of actions and actions (68%)
 - ▶ Insufficient public education of local residence around green recovery initiatives (64%)
 - ▶ Lack of technical expertise on green recovery and resilient strategies (57%)
 - ▶ Other barriers mentioned by more than 50% of respondents include lack of technical expertise in natural resource management implementation (54%) and insufficient metrics and tools to monitor progress (53%).

Data needs and difficulty accessing different types of data limit or delay the implementation of green and resilience strategies (Figure 38). Respondents expressed the need for economic evaluations of climate

change impacts (86%); local CO2 emissions data (58%); public health information (51%); and local projections of meteorological conditions (50%).

Lastly, several coordination and governance constraints were identified as barriers in planning and implementing sustainability and green recovery strategies (Figure 39), including:

- Insufficient resources to mobilize broad community support (65%)
- Difficulties, changing regulations and bylaws (44%)
- Insufficient support from residents (43%)
- Need for more unified and coordinated efforts within the municipality (e.g., general plan that is in alignment with municipal vulnerability plan) (41%).

USA: Please indicate which of the following **barriers related to municipal resources** complicate, slow, or prevent the implementation of green recovery and resilience strategies in your municipality or planning region (Please check all that apply) (n=82)

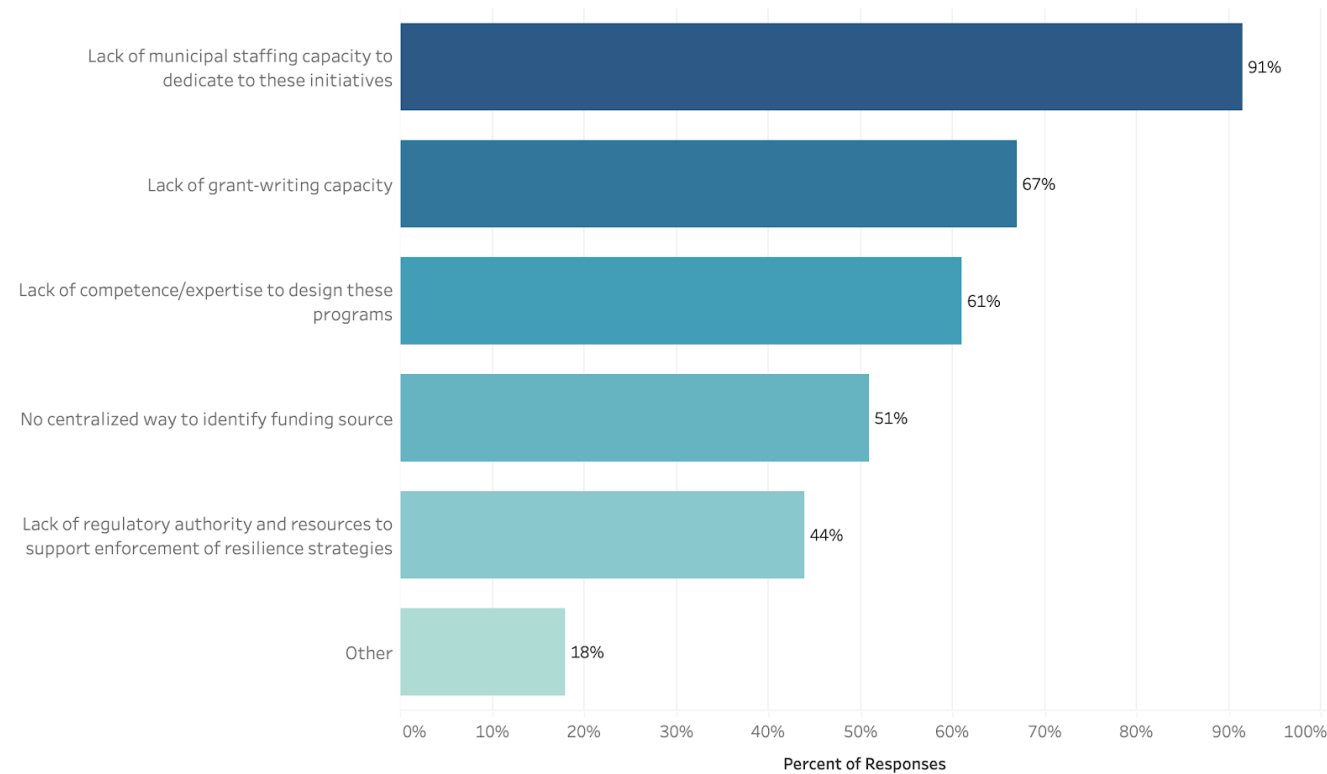


Figure 36. Massachusetts (USA): municipal resource barriers preventing the implementation of green recovery and resilience strategies

USA: Please indicate which of the following **barriers related to data and information** complicate, slow, or prevent the implementation of green recovery and related resilience strategies (for instance, climate change resilience strategies) in your municipality or planning region (Please check all that apply):

(n=74)

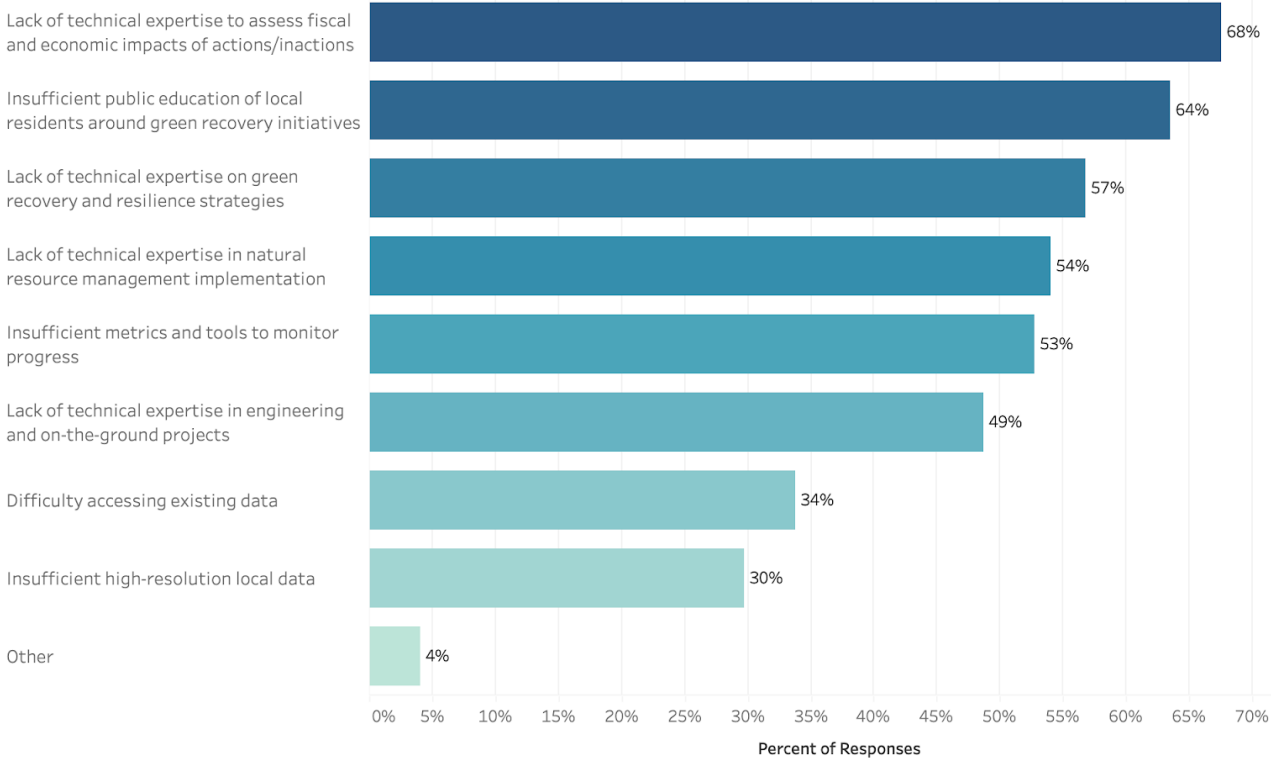


Figure 37. Massachusetts (USA): data and information barriers preventing the implementation of green recovery and resilience strategies

USA: What specific types of data useful for resilience planning does your municipality or planning region need that is not currently easily accessible? (Please check all that apply):

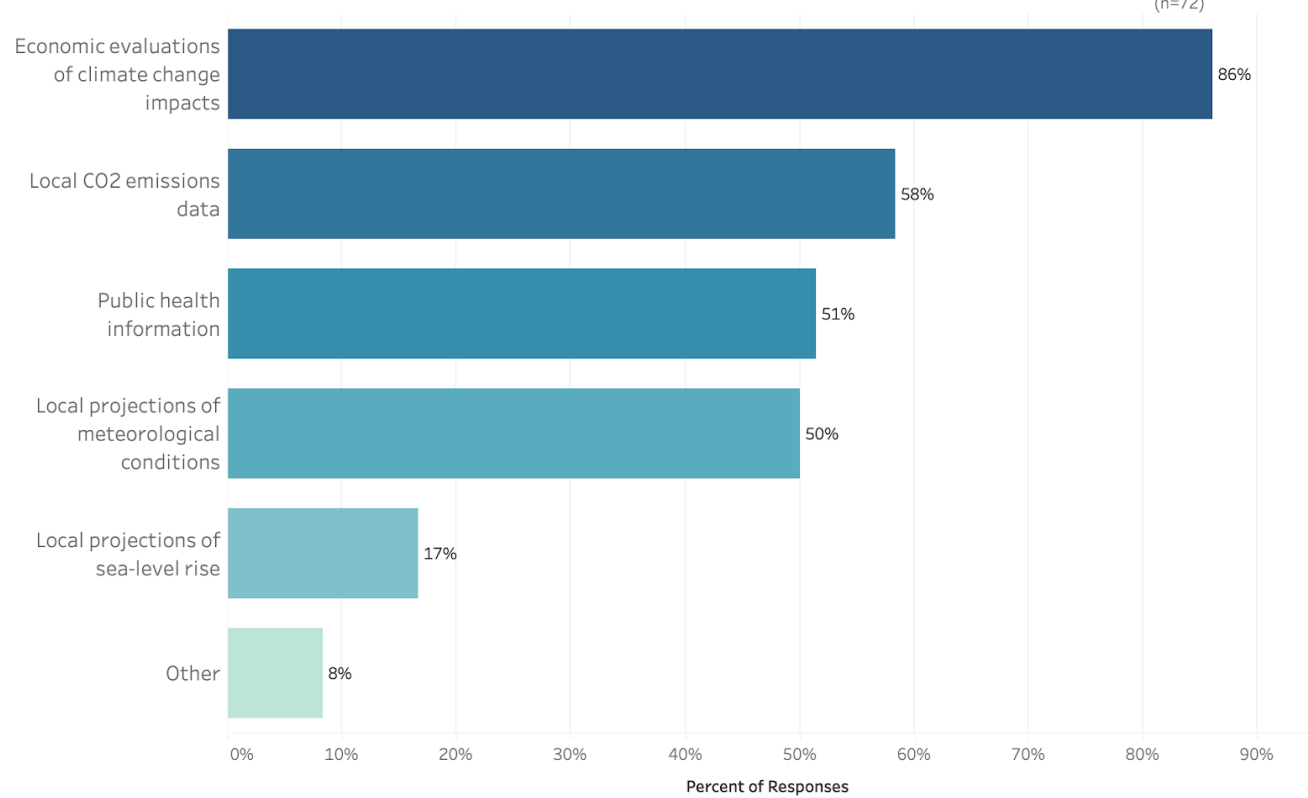


Figure 38. Massachusetts (USA): data needs and data constraints experienced by local municipalities

USA: Please indicate which of the following **barriers related to coordination and governance** complicate, slow, or prevent the implementation of green recovery and related resilience strategies (for instance, climate change resilience strategies) in your municipality or planning region (Please check all that apply):

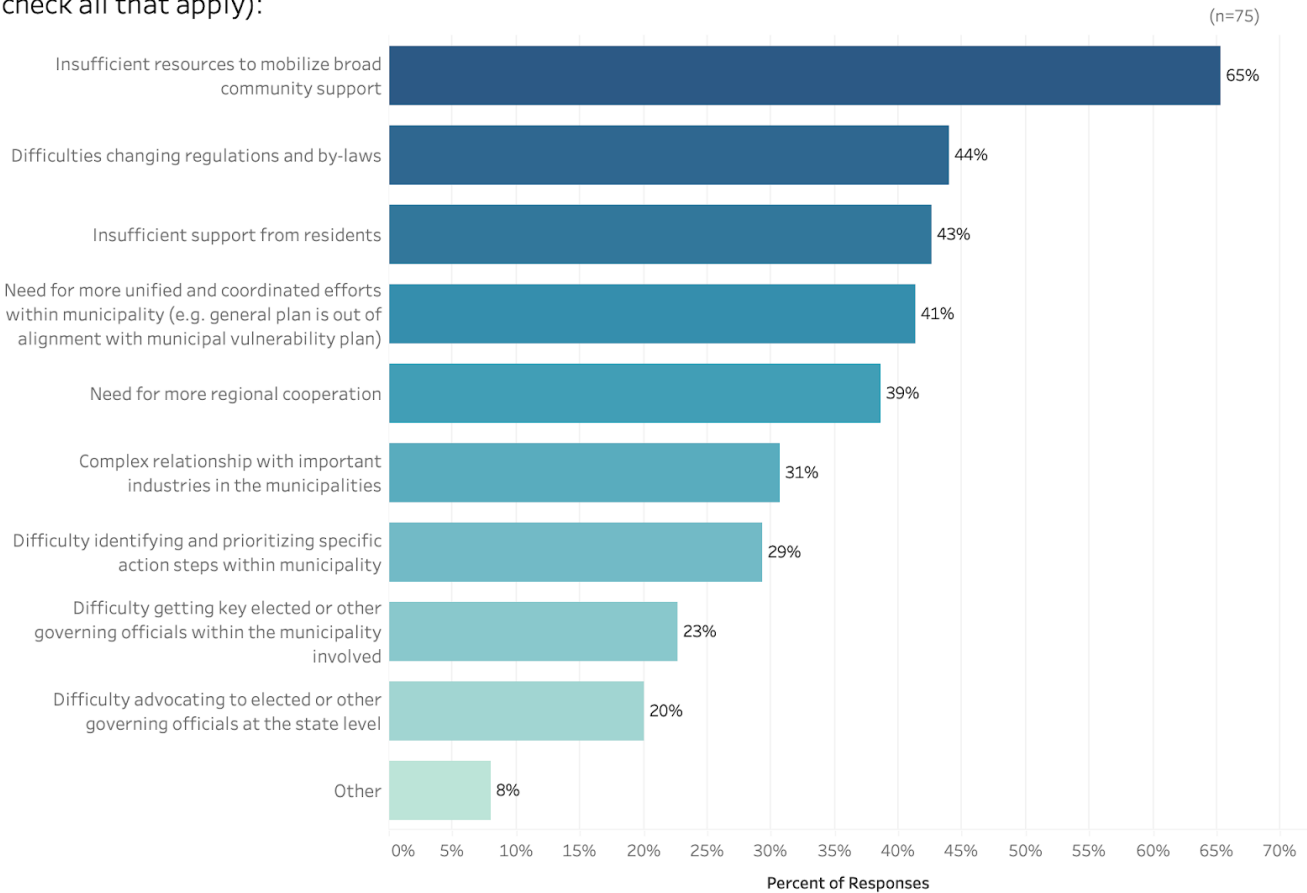


Figure 39. Massachusetts (USA): coordination and governance barriers preventing the implementation of green recovery and resilience strategies

We asked respondents an open ended question in relation to climate change.

Q: “If you wish, you are welcome to share more thoughts about the impacts of climate change and resilience strategies in your municipality or planning region. What policies or programs would be most helpful to your municipality or planning region in pursuing a green recovery path? (optional)”

We would like to ban fossil fuels in new construction. We moved forward to do that and need to pass MBTA Zoning reforms for the State to allow us to move forward. [Massachusetts Municipal Official]

Improvement in assessing and coping with storm water flows from solar fields. Old assumptions / calculations don't pan out in actual experience. [Massachusetts Municipal Official]

Several respondents stressed existing funding needs:

Our municipalities cannot withstand fossil fuel vacillating cost - we must decarbonize ASAP but supply & green premiums are barriers; past solar pilots are insufficient . [Massachusetts Municipal Official]

More federal dollars for green projects. Help pay for this stuff please!! [Massachusetts Municipal Official]

Additional resources, especially increased staffing, in order to implement our Climate Action Resilience Plan. [Massachusetts Municipal Official]

The bottom line is, you cannot plan for coming events, let alone implement them with no money. . [Massachusetts Municipal Official]



Plum Island, Massachusetts - Photo by at on Unsplash

SCOTLAND (UK)

Scotland municipalities reported significant barriers related to lack of municipal resources that complicate slow or prevent the implementation of recovery and resilience strategies (Figure 40):

- All respondents reported lack of financial resources
- Other frequently reported barriers include:
 - Lack of staffing capacity to dedicate to climate related issues (73%)
 - Lack of regulatory authority and resources to support enforcement of resilience strategies (45%)
 - No centralized way to identify funding sources (37%)
- Only 27% of municipalities reported lack of competence and expertise to address complex, climate change issues and lack of grant writing capacity

Barriers related to data and information have also emerged as constraints (Figure 41):

- Lack of technical expertise to assess fiscal and economic impacts of actions and inactions (75%)
- Insufficient public education of local residents around climate change and its impacts (75%).
- Lack of technical expertise in natural resources management implementation (60%).

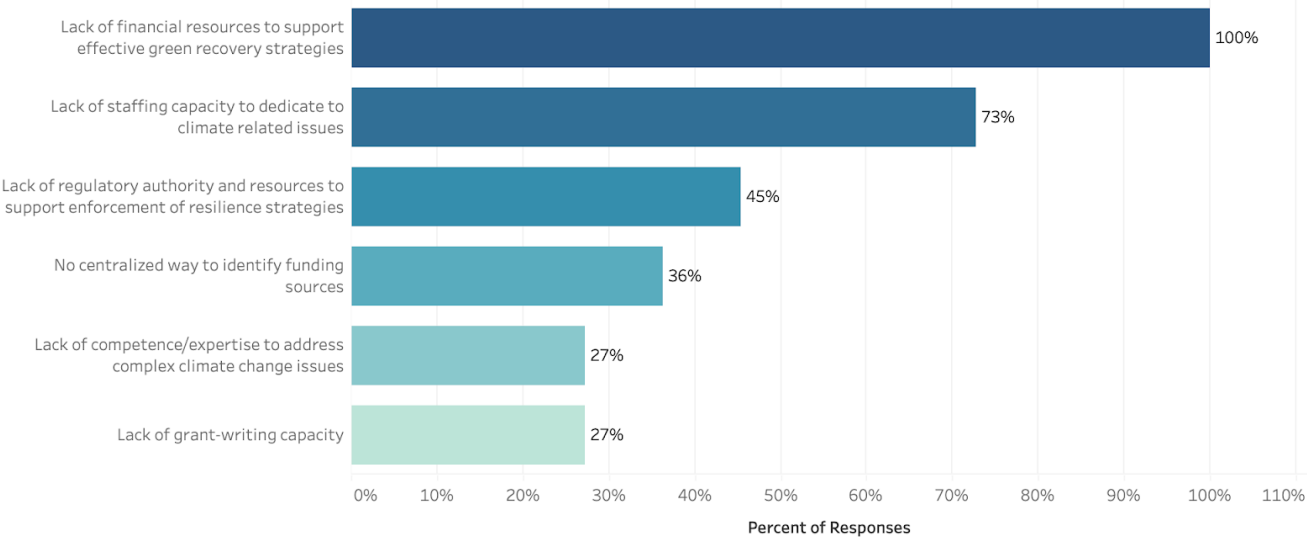
Data needs and difficulty accessing different types of data limit or delay the implementation of green and resilience strategies (Figure 42). All respondents expressed the need for economic evaluations of climate change impacts (100%); and 43% indicated the need for local CO₂ emissions data (58%).

Lastly, several coordination and governance constraints emerged as barriers in planning and implementing sustainable and resilience strategies (Figure 43), including:

- Need for more unified and coordinated efforts within the municipality (e.g., general plan that is in alignment with municipal vulnerability plan) (75%)
- Insufficient resources to mobilize broad community support (63%)
- Difficulties getting key elected officials involved (50%).

Scotland: Please indicate which of the following **barriers** related to **municipal resources** complicate, slow, or prevent the implementation of green recovery and resilience strategies in your area (please check all that apply).

(n=11) *



* Number of municipalities that did not answer this question: 19

Figure 40. Scotland (UK): resource barriers preventing the implementation of green recovery and resilience strategies by local authorities



Photo by Crawford Jolly on Unsplash

Scotland: Please indicate which of the following **barriers** related to **data and information** complicate, slow, or prevent the implementation of green recovery and resilience strategies in your area (please check all that apply).

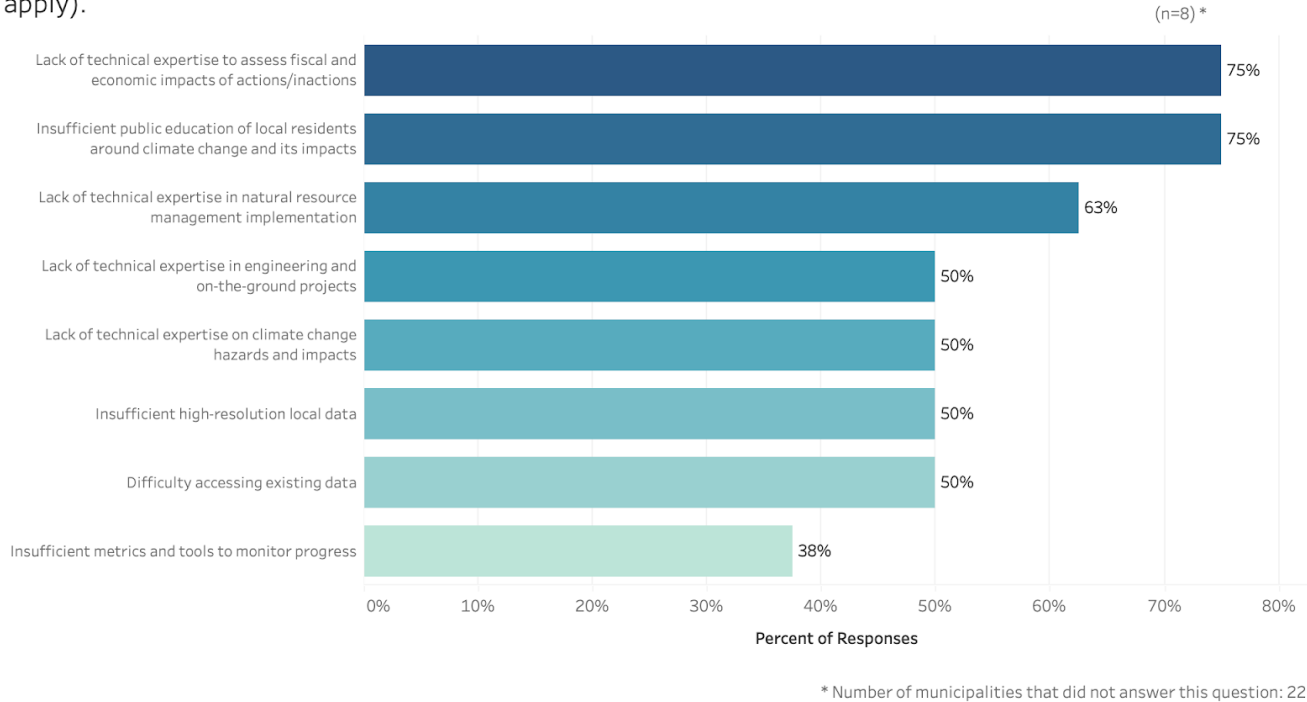


Figure 41. Scotland (UK): data and information barriers preventing the implementation of green recovery and resilience strategies by local authorities

Scotland: What specific types of **data** for your area does your organisation need that is not currently easily accessible (please check all that apply)?

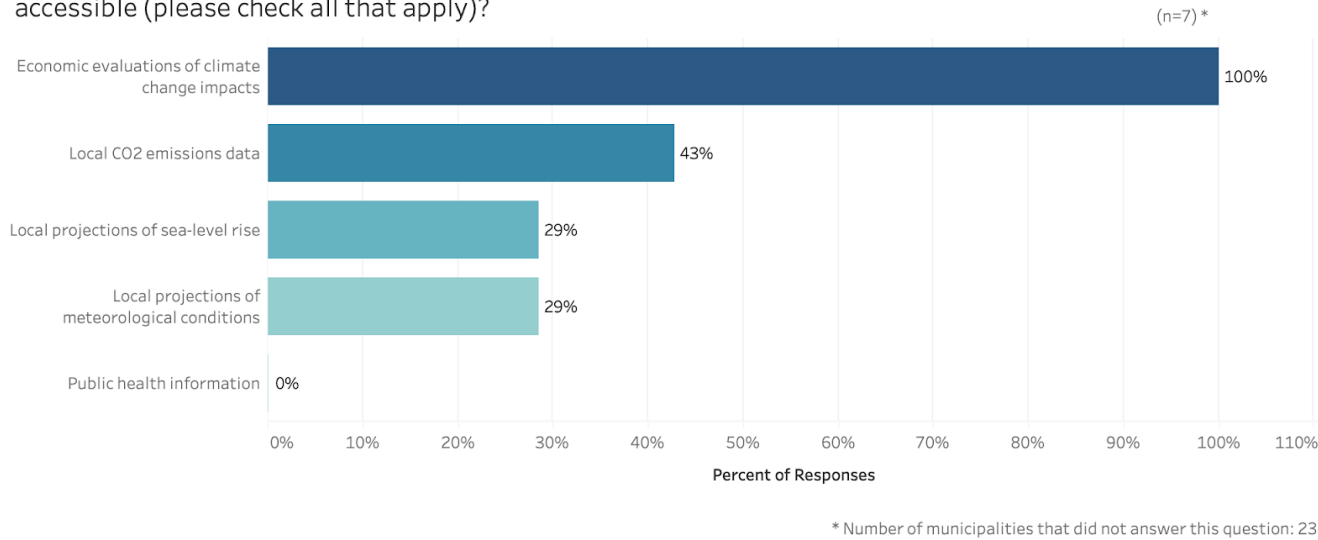


Figure 42. Scotland (UK): data needs and data constraints experienced by local authorities

Scotland: Please indicate which of the following **barriers** related to **coordination and governance** complicate, slow, or prevent the implementation of green recovery and resilience strategies in your area (please check all that apply).

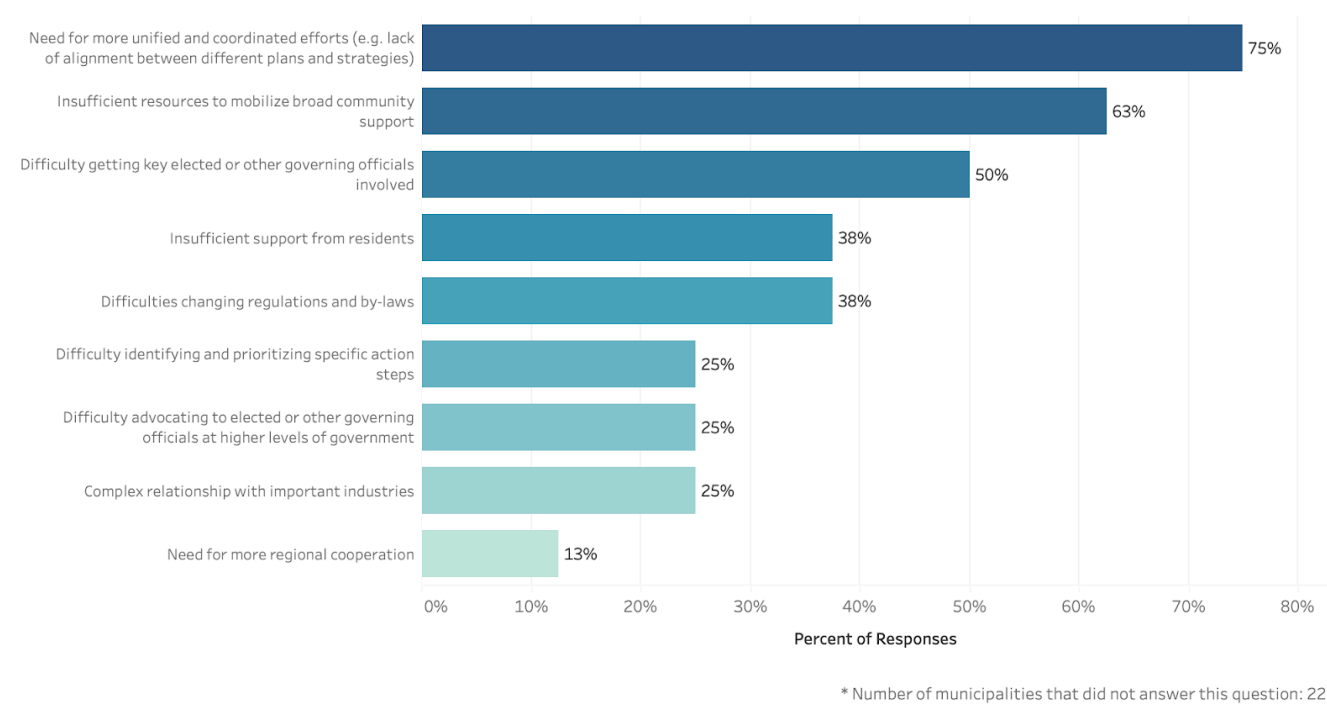


Figure 43. Scotland (UK): coordination and governance barriers preventing the implementation of green recovery and resilience strategies by local authorities

Open responses for this section — Q. What are the biggest barriers to green recovery in your area, including barriers that we might not have considered in the questions above?

Lack of resources - The more deprived areas seem less interested in climate change. Peterhead is at the confluence of national energy infrastructure yet has the regions highest concentrations of fuel poverty. Hierarchy of needs means these communities are more interested in food and basic services. They are also less likely to trust government and are therefore cynical re climate change. The Just Transition debate / fund has not moved enough in this direction. [Municipal Official from Scotland]

Funding, research backed data and evidence [are the primary needs] [Municipal official from Scotland]

Maintenance - if we get to green our cities and coastal areas there is no money to maintain it. [Municipal Official from Scotland]

Lack of technical expertise - Lack of technical skills undermines local government/ communities in partnership projects. [If the local authority has resources] they will reach out to private sector or consultant. [Municipal Official from Scotland]

Cultural barriers - Local authorities/ officers don't feel confident about making ambitious decisions on net zero / green economy. This is due to combination of media narrative and policy and market conditions etc. [Municipal official from Scotland]



Isle of Skye, Scotland - Photo by Reuben Teo on Unsplash

3.6 EQUITY AND INCLUSION

Equity and inclusion are important factors in green recovery resilience planning. However, our surveys and focus groups suggest that there is limited information and limited data to take equity and inclusion into consideration during planning and design. In Massachusetts, we asked respondents if their municipality was monitoring the impacts of risks (such as climate risk but also pandemic risk) on different social, economic, and demographic groups. Less than 60% of respondents indicated having access to the following data: housing security statistics, health statistics, food security metrics, unemployment statistics parentheses. And less than 17% of municipalities had access to this data separated by race and ethnicity.

4. CONCLUSIONS

Respondents in this survey reported significant impacts of COVID-19 to their municipalities and administrative unites, and to local economies. However, respondents also reported significant interest in green economic growth and resilience strategies with investments already under way.

The most popular programs include the installation of electric-vehicles charging infrastructure, the installation of renewable energy capacity and energy efficiency programs, and the implementation of nature-based solutions.

Municipalities and administrative units in all countries reported facing a variety of barriers in planning and implementing sustainable and resilience strategies. We identified three types of barriers: resource constraints, lack of data, coordination and governance failures.

APPENDICES

A1. LIST OF MUNICIPALITIES IN THE COSTA RICA SURVEY SAMPLE

Province	Number	Name
Limón	1	Limón
	2	Pococí
	3	Siquirres
	4	Talamanca
	5	Matina
	6	Guácimo
Puntarenas	7	Puntarenas
	8	Lepanto
	9	Cóbano
	10	Paquera
	11	Esparza
	12	Garabito
	13	Parrita
	14	Aguirre
	15	Osa
	16	Golfito
Guanacaste	17	Liberia
	18	La Cruz
	19	Carrillo
	20	Santa Cruz
	21	Nicoya
	22	Hojancha
	23	Nandayure

A2. LIST OF MUNICIPALITIES IN THE GERMAN SURVEY SAMPLE

District	Number	Municipality
Lower-Saxony		
Wesermarsch	1	Gemeinde Butjadingen
Cuxhaven	2	Kreis Cuxhaven
Cuxhaven	3	Stadt Geestland
Cuxhaven	4	Stadt Cuxhaven
Cuxhaven	5	Dorum/Wurster Nordseekueste
Cuxhaven	6	Kreis Cuxhaven
Friesland	7	Kreis Friesland
Aurich	8	Gemeinde Krummhörn
Aurich	9	Gemeinde Baltrum
Schleswig-Holstein		
Nordfriesland	10	Gemeinde Kampen
Nordfriesland	11	Gemeinde Hallig Hooge
Nordfriesland	12	Gemeinde Ockholm
Nordfriesland	13	Gemeinde Tating
Nordfriesland	14	Gemeinde Nordstrand
Nordfriesland	15	Gemeinde Dagebüll
Nordfriesland	19	Amt Foehr-Amrum
Dithmarschen	17	Gemeinde Büsum
Dithmarschen	18	Stadt Brunsbüttel
Steinburg	19	Stadt Glückstadt
Pinneberg	20	Gemeinde Hetlingen

A3. LIST OF MUNICIPALITIES IN THE MASSACHUSETTS SURVEY SAMPLE

Massachusetts Municipalities that answered the survey	
1	ABINGTON
2	ACTON
3	AMESBURY
4	AMHERST
5	ARLINGTON
6	ATHOL
7	ATTLEBORO
8	AYER
9	BEDFORD
10	BOXBOROUGH
11	BOYLSTON
12	BREWSTER
13	CARVER
14	CHARLEMONT
15	CHARLTON
16	CHATHAM
17	CHESHIRE
18	CHESTERFIELD
19	CLARKSBURG
20	COLRAIN
21	CONCORD
22	CONWAY
23	DARTMOUTH
24	DEERFIELD
25	DOUGLAS
26	DUNSTABLE
27	EAST BRIDGEWATER
28	EASTHAMPTON

29	EVERETT
30	FALL RIVER
31	GILL
32	GLOUCESTER
33	GOSNOLD
34	GRANBY
35	HARVARD
36	HARWICH
37	HEATH
38	HULL
39	KINGSTON
40	LITTLETON
41	LUDLOW
42	MANCHESTER
43	MARBLEHEAD
44	MATTAPOISETT
45	MAYNARD
46	MELROSE
47	METHUEN
48	MONTAGUE
49	MONTEREY
50	NANTUCKET
51	NATICK
52	NEWBURYPORT
53	NORTH READING
54	NORTHAMPTON
55	NORWELL
56	PAXTON
57	PEMBROKE
58	PLYMOUTH
59	PRINCETON

60	ROCHESTER
61	ROCKPORT
62	RUTLAND
63	SALEM
64	SALISBURY
65	SHREWSBURY
66	SOUTH HADLEY
67	SOUTHAMPTON
68	SOUTHBOROUGH
69	SOUTHBRIDGE
70	STOW
71	SWANSEA
72	TAUNTON
73	TEWKSBURY
74	TOWNSEND
75	WATERTOWN
76	WAYLAND
77	WESTFIELD
78	WESTFORD
79	WESTON
80	WESTPORT
81	WILLIAMSBURG
82	WILMINGTON

A4. LIST OF MUNICIPALITIES IN THE SCOTLAND SURVEY SAMPLE

Number	Local Authority Area
1	Aberdeenshire
2	Argyll and Bute
3	Dumfries and Galloway
4	Dundee
5	East Lothian
6	Edinburgh
7	Eilean Siar
8	Fife
9	Glasgow
10	Moray
11	North Ayrshire
12	South Ayrshire
13	Shetland