



Climate adaptation: Why local governments cannot do it alone

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Climate adaptation: why local governments cannot do it alone

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Executive summary

Climate risks and impacts are shaped by the characteristics of territories subjected to them. While the negative impacts of greenhouse emissions are felt across the globe, the direct impacts of climate variability and climate extreme events are inherently local. For example, heatwaves are more pronounced in built-up city centres as opposed to nearby sparsely populated areas. The vulnerability to climate hazards is therefore highly conditioned by local socio-economic factors, such as for example the natural shading provided by trees or individual capacity to adapt homes to changing climatic conditions.

As climate risks and impacts are first and foremost local, many call for climate adaptation to be a locally led responsibility. The United Nations Development Programme, the European Union Strategy on Adaptation to Climate Change, the International Panel on Climate Change (IPCC) and many national governments advocate for a strong local role for climate adaptation. All OECD countries, for example, highlight the role of local governments in their national adaptation plans or strategies (NAP/NAS).

Local authorities are uniquely positioned to foster climate change adaptation

The knowledge local authorities have through experiencing climate variability and climate extremes is key in informing climate risk assessments. Local communities often document historical extreme weather event impacts, which can be instrumental in refining coarser hazard models and climate risk assessments. Local authorities' knowledge of their territory's ability to address climate risks is critical in assessing adaptive capacity.

Through their responsibility for developing their territory, local authorities have an important influence on climate resilience-building. Local spatial development, economic or sectoral development plans have a key impact on future climate risk exposure and vulnerability. Local authorities decide on the degree of integration of climate risk assessments in local land use zoning and permitting decisions, thereby having a key influence on climate resilience-building.

Local authorities are also mandated to apply and enforce national laws and regulations. The execution of this function is a key determinant of successful climate adaptation. Local authorities need to enforce national laws and standards, for example in the development and maintenance of critical services.

As much as there is a role for local authorities to lead on adaptation, they cannot do it alone

The adaptation needs at the local level often exceed local planning, technical and fiscal capacities. Local authorities, especially smaller jurisdictions, have limited technical and fiscal capacity. They often lack the expertise to identify adaptation needs and best adaptation options as well as to implement them. Moreover, implementing adaptation measures requires additional investment, which often exceeds local governments' funding capacities.

Communities highly vulnerable to the impacts of climate change are often also those whose capacity is weakest to adapt. As the capacity to adapt is largely determined by the technical and fiscal means available locally, the most marginalised communities risk being the most vulnerable to the effects of climate change, thereby perpetuating or even worsening existing subnational disparities.

Cooperation is needed across levels of government to foster climate change adaptation at the local level

National authorities need to facilitate a local approach to adaptation. A local approach to adaptation aims at incorporating local adaptation needs and priorities in national adaptation. It seeks to understand the local specificities of climate hazards, exposures and vulnerabilities and promote climate resilience evenly across a country's territory. National authorities can thus enable local action by setting an enabling environment through regulatory, fiscal and policy decisions at the national level.

National governments need to provide technical capacity support. This includes the provision of downscaled climate risk information – expertise on technology and innovation that is too specialised and costly to develop at the local level. National governments can complement local implementation capacities with specialised technical support. This support can be fostered through developing support tools, instruments and knowledge for use at local level.

National governments should ensure their policies and actions harness the efforts of local communities. This includes the national regulatory and policy frameworks, which can encourage local authorities to build climate resilience. National fiscal rules, including grants and subsidies, need to consider climate resilience and prioritise localities and projects most in need of adaptation investments.

National governments need to collaborate with local ones to ensure a coordinated approach. Collaboration can be fostered at the policy and planning stage, for example through involving local authorities in the national adaptation planning processes. National agencies can also establish platforms that foster collaboration between and among national and local agencies in adaptation.

1 Introduction

Despite efforts to mitigate global warming, which has already surpassed 1.4°C above pre-industrial levels, climate change is already inducing considerable damage and threatening the well-being of many communities all over the world (Copernicus, 2023^[1]). For example, across the OECD, almost all regions have experienced an increase in exposure to heat stress in recent years compared to the period 1991-2010 (OECD, 2023^[2]). The abnormally hot summer of 2022, for example, was responsible for more than 60 000 deaths in Europe (Ballester et al., 2023^[3]).

Climate change will increasingly expose all the world's regions to a wide range of risks. Unless there are rapid and large-scale reductions in greenhouse gas emissions, global warming is projected to exceed the objectives of the Paris Agreement, i.e. maintaining global warming below 1.5°C or even 2°C, already in the next few decades (IPCC, 2022^[4]). As of today, greenhouse gases emitted into the atmosphere could lead to between 40 and 100 cm of sea-level rise by 2100¹, threatening 5% of the world's population currently living below this level (OECD, 2019^[5]). Low-lying coastal zones (e.g. the coastal plains and deltaic areas of Bangladesh, Egypt and Viet Nam) will experience a higher risk of flooding, storm surge and coastal erosion (OECD, 2021^[6]). Droughts and heatwaves are expected to become more frequent in the next decades, causing crop losses, food insecurity and malnutrition (IPCC, 2022^[4]; OECD, 2021^[7]). For example, up to 40 million additional people are expected to fall into extreme poverty in Sub-Saharan Africa between now and 2030 due to temperature increase and extreme events (Jafino et al., 2020^[8]). The frequency and intensity of wildfires, as well as the duration of the fire season, are also projected to significantly increase in the coming years, with the global burned surface area increasing by 19% by 2050 compared to 2000 under a moderate emission/RCP 4.5 scenario (OECD, 2023^[9]). Changes in precipitation patterns are also projected to increase the risk of flooding in many regions, particularly in the Pacific Islands and in North America and Europe (IPCC, 2022^[4]). For instance, annual flood losses in Europe are expected to increase fivefold by 2050 and up to seventeen-fold by 2080 (EEA, 2016^[10]).

While the negative impacts of greenhouse emissions are felt across the globe, the direct impacts of climate variability and climate extreme events are inherently local. Climate related hazards occur locally, and only a limited area is exposed to their direct impact. Similarly, a given hazard will have different implications in different places that are geographically close to each other. For example, cities are subject to the urban heat island effect, which usually makes them hotter than neighbouring rural areas. Nearly 80% of cities in OECD countries had annual average temperatures at least 1°C higher than their less urbanised periphery in 2021 (OECD, 2022^[11]). Moreover, the vulnerability to climate events is highly conditioned by local socio-economic factors, such as past experience with and preparedness for extreme events or the resilience of local infrastructure, which reinforces the local specificity of climate adaptation (Simpson et al., 2021^[12]).

As climate impacts are first and foremost local and hence the needs strongly determined by local factors, many call for climate adaptation² to be a locally-led responsibility. For example, the United Nations Development Programme (UNDP) highlights that climate adaptation is local in nature and that local

¹ According to (OECD, 2019^[5]), by 2100, sea level rise is projected to increase by 40cm to 1meter under RCP8.5 scenario, and 30 to 40cm under RCP4.5.

² Adaptation to climate change aims at adjusting to the risks posed by actual and expected climate change to avoid or reduce their impacts on society, economy and environment (IPCC, 2022^[105]).

governments should focus on adaptation activities and develop local strategies and action plans (UNDP, 2021^[13]; UNDP, 2023^[14]). Similarly, the European Union's (EU) Strategy on Adaptation to Climate Change emphasises the importance of climate adaptation at the local level (European Commission, 2021^[15]). The Global Commission on Adaptation (GCA) places an important emphasis on locally-led adaptation, which aims to shift “power to local stakeholders”³.

As much as there is a role for local authorities to lead on adaptation, they cannot do it alone. There are certain local responsibilities, such as land use zoning and permitting, which have an important influence on adaptation progress. However, there are other adaptation decisions that exceed local authorities' capacity or require actions beyond their jurisdictional borders and traditional mandates (e.g. the installation of large flood protection infrastructure). The actions of local authorities therefore fall into a broader national regulatory and political context, which both enables and constrains action at the local level. Similarly, actions taken by one locality can affect resilience elsewhere. For example, heightening dykes in upstream areas can increase peak flows downstream which results in increased flood hazard (Dottori et al., 2020^[16]). Last, but not least, leaving local authorities to deal with adaptation on their own can inadvertently perpetuate existing disparities, leaving already marginalised communities and regions more vulnerable to the adverse effects of climate change.

Consequently, climate change adaptation requires national and local governments to work together to foster local adaptation (Ishtiaque, 2021^[17]). Fostering local adaptation requires a better understanding of local specificities of climate hazards and assessing exposures and vulnerabilities of people and places, including by identifying the financial and technical capacities needed to adapt at the local level (OECD, 2011^[18]; OECD, 2021^[19]). National governments have a critical role in generating knowledge and raising awareness, in creating a conducive fiscal, regulatory and policy enabling environment.

In the remainder of this paper, a local approach to climate adaptation is put forward as one that takes account of the local aspects of climate impacts as well as the value of local contributions to adaptation, while highlighting the importance of enabling actions needed at higher government levels. Section 2 first revisits the importance of the local character of climate impacts and adaptation needs. It then discusses the role of local authorities in adapting to climate change and the limitations of and barriers to local authorities' action. Section 3 illustrates how national governments can facilitate the actions of local authorities, by designing an enabling environment and providing the necessary capacity support. In this paper, the term “local” can refer to “regional”, “territorial” and “subnational” (and vice-versa) to designate the intra-national dimensions of actions, entities, or geographical scales.

³ GCA's Global Hub on Locally Led Adaptation: <https://gca.org/programs/locally-led-adaptation/>

2 The rationale of a local approach for adaptation

2.1. The local specificities of climate risks

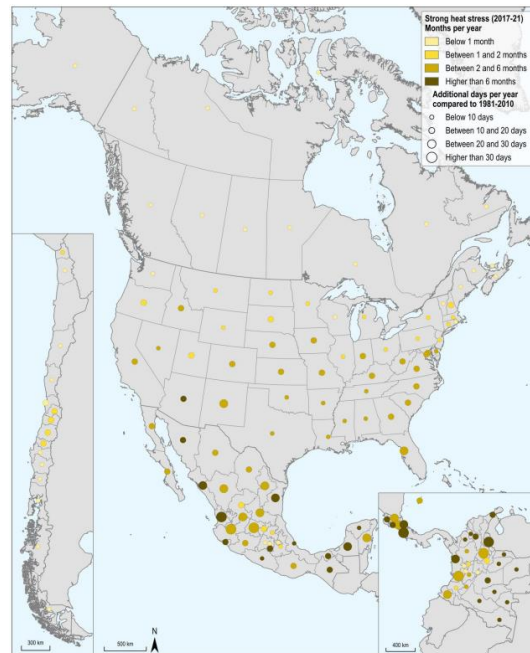
Climate risks, which are determined by a combination of hazard, exposure and vulnerability, are highly context-specific, as they are related to a wide range of local environmental and socio-economic factors (Climate-ADAPT, n.d.^[20]).

Past, current and future climate-related hazards vary considerably from place to place, due to the specific geographic and biophysical characteristics of each area. Different regions within a country may face different types of hazards, singly or concurrently. For example, in 2022, Australia had to tackle both extreme droughts and floods simultaneously, with parts of the States of Victoria and South Australia affected by droughts, while parts of Queensland and New South Wales experienced their highest amount of rainfall on record (May, 2022^[21]). Within the same region, local geographic characteristics can influence the climate hazards experienced by neighbouring localities. For example, the French Riviera is exposed to severe flood risk due to its topography, while municipalities in the nearby Var River delta are prone to landslides and beach erosion (Anthony and J., 2007^[22]).

The exposure to climate events depends on the characteristics of the local area and the elements – people, assets, biodiversity – that might be located there (Cardona et al., 2012^[23]). Exposure to climate hazards is also determined by local socio-economic and environmental specificities. The same hazard (e.g. a heatwave) will have a different impact on a rural agricultural region (e.g. reduced agricultural yields, increased wildfire risk) than on a neighbouring urbanised, densely-populated and industrialised region (e.g. more widespread human health impacts, increased energy demand for indoor cooling). The exposure to climate events of communities, ecosystem and assets largely depends on the characteristics of a local area (Cardona et al., 2012^[23]). For example, settlements and assets located in a floodplain tend to be more exposed to flood risk than do settlements upstream, and assets built along a low-lying coast are much more exposed to storm surges than those built a few kilometres inland. As illustrated in Figure 2.1. , the level of observed population exposure to heat stress in North and Latin America can vary significantly across localities. Climate change is projected to reinforce these regional disparities, in many cases increasing the intensity and frequency of risks in already exposed areas (UCAR, 2021^[24]).

Figure 2.1. Population exposure to heat stress at the local level

Level and growth of population exposure to strong heat stress or worse (UTCI > 32°C) over the period 2017-21



Note: Growth of population exposure is measured based on the reference period 1981-2010 based on OECD.Stat data on exposure to climate-related hazards for OECD large regions (TL2). Heat stress is measured with the Universal Thermal Climate Index (UTCI) indicator that describes how the human body experiences atmospheric conditions.

Source: Maes et al. (2022^[25])

Finally, vulnerability, i.e. the degree to which a community or system is susceptible to harm from climate change, relies on a range of local socio-economic and environmental factors (Cardona et al., 2012^[23]). Vulnerability to climate hazards is affected by factors such as population structure (e.g. population density, age structure), access to healthcare and technologies, unemployment rate, the share of population supplied by the public water supply systems, levels of social integration, etc. (OECD, 2023^[26]). For example, poverty and income inequality exacerbate climate vulnerability (UN, 2016^[27]). People living in poverty often lack access to the resources and infrastructure necessary to cope with and recover from climate-related hazards (UN, 2016^[27]). Agricultural practices greatly influence soil moisture and permeability, which has an impact on the sensitivity of crops to droughts or heavy rainfall (Zalidis et al., 2002^[28]). Rapid population growth and unplanned urban development place additional stress on – and may increase the vulnerability of – ecosystems, infrastructure, and available services and resources (Depietri, Renaud and Kallis, 2012^[29]). The extreme Attica wildfires in Greece laid bare the significantly higher damage caused by the fires in unplanned settlement (OECD, 2023^[9]; OECD, forthcoming^[30]).

2.2. The role of local authorities in climate change adaptation

The call for local adaptation action stems from the recognition that climate risks first manifest locally, and local communities and local authorities have an innate understanding of how impacts affect them and how they need to be addressed. In the following sections, the paper discusses how local authorities, by their role and mandate, make important contributions to climate adaptation.

2.2.1. The key responsibilities of local authorities

To discuss the role of local authorities in climate change adaptation, it is important to understand who these authorities are and what their role is in relation to the different types of national administrations. Subnational authorities constitute the lower tiers of government within a country, responsible for a specific jurisdiction (Table 2.1). The OECD defines a local authority as “a decentralised entity elected through universal suffrage and having general responsibilities and some autonomy with respect to budget, staff and assets” (OECD/UCLG, 2016^[31]). While countries can be organised as unitary or federal states, they all rely on local authorities as entities for the delivery of various services. Most countries have two levels of local authorities: the regions (or states, in most federal countries) and the municipalities. However, others, particularly smaller countries (e.g. Estonia, Iceland, Latvia, Lithuania, Slovenia), rely on a single level of local authority – the municipalities (OECD, 2022^[32]). Still other countries have a third layer between regions and municipalities. These intermediate administrative units can be provinces (e.g. in Belgium and Spain), “*départements*” (France), counties (e.g. in United States, Poland, United Kingdom) or districts (e.g. in Germany). This paper uses the term local to refer to all forms of local government authorities.

The responsibilities of local authorities vary from country to country, while there are several shared forms of responsibility. For example, many local authorities are responsible for: education; territorial development; parts of health service provision; housing; leisure and tourism; or specific infrastructure service provisions. Municipalities are often responsible for the management of local roads and public transport at municipal level, while regions are often responsible for inter-municipal transport networks. Similarly, municipalities are often responsible for early childhood and primary education, while regions often provide for higher education and vocational training. Complementary to this, national governments usually provide the over-arching policy and institutional framework (e.g. determining national primary school curricula). Table 2.1. summarises the main responsibilities that fall under the mandate of local authorities, comparing the lowest and intermediate government tiers.

Table 2.1. Cross-governmental roles and responsibilities

SUBNATIONAL AUTHORITIES	NATIONAL	Central/federal government
		Strategies and priorities; sectoral policies; laws, regulations and budgeting, etc.
		State, department, province, county, district, etc.
		<ul style="list-style-type: none"> Spatial planning Regional economic development and innovation Secondary / higher education and professional training Health (secondary care and hospitals) Social affairs (e.g. employment services, training, inclusion, support to special groups, etc.) Regional roads and public transport Culture, heritage and tourism Environmental protection Social housing Public order and safety (e.g. regional police, civil protection) Local government supervision (in federal countries)
		Municipality, parish, place-based units (watershed, coastal zone etc.), etc.
		<ul style="list-style-type: none"> Urban planning and management Local utility networks (water, sewerage, waste, hygiene, etc.) Local roads and city public transport Social affairs (support for families and children, elderly, disabled, poverty, social benefits, etc.) Primary and preventive healthcare Recreation (sport) and culture Public order and safety (municipal police, fire brigades) Local economic development, tourism, trade fairs Education (nursery schools, pre-elementary and primary education) Environment (green areas) Social housing Administrative and permit services

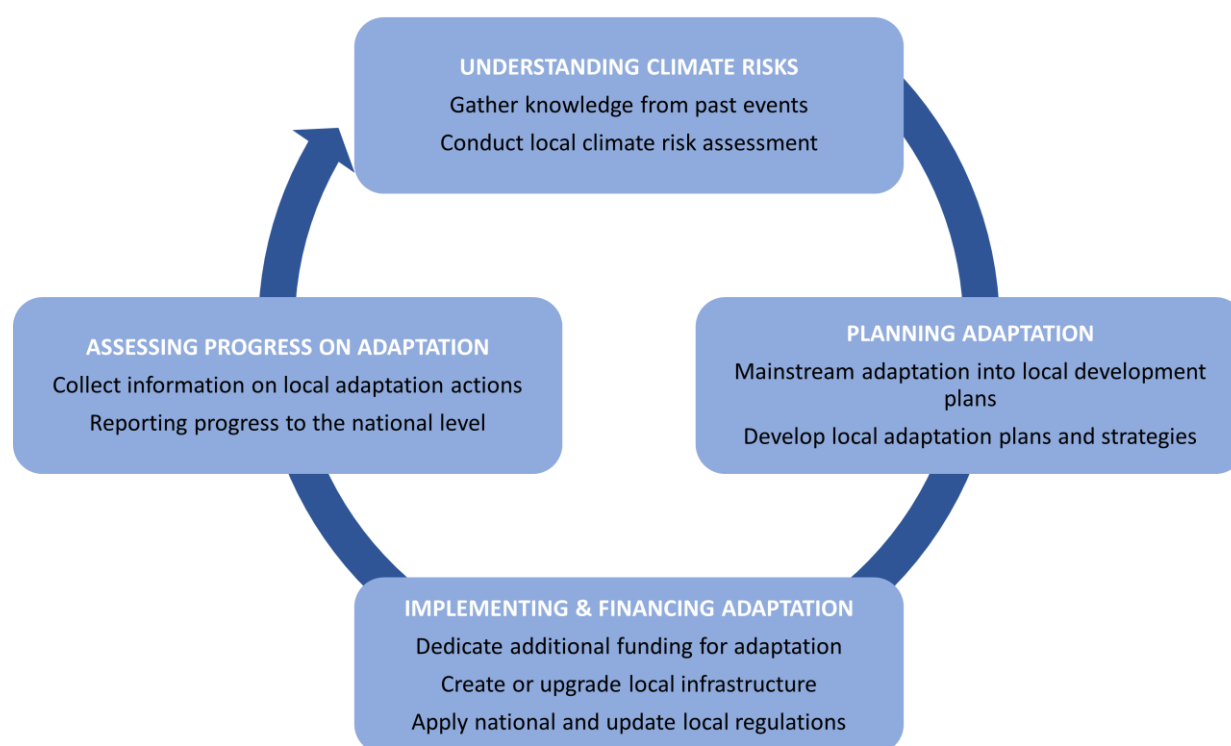
Source: Author’s own based on Cuttler et al. (2012^[33]), OECD (2022^[32]) and Macgregor et al. (2017^[34])

2.2.2. The role of local authorities in adapting to climate change

Adaptation to the impacts of climate change is typically described as constituting four main steps in a policy cycle process Figure 2.2. . The first step includes the assessment of observed and future climate risks and impacts. This is the step of so-called climate risk assessments. Climate risk assessments, in turn, are used to assess adaptation needs and to inform the development and prioritisation of policies (e.g. sectoral or local climate adaptation or climate resilience plans or strategies), regulations (e.g. climate resilience standards in infrastructure), as well as structural (e.g. construction of flood protection measures) and other non-structural measures (e.g. climate risk awareness campaigns). The third step marks the implementation and financing of measures. Finally, it is crucial to understand progress in these adaptation measures' contributions to building climate resilience, which constitutes the fourth step.

Each of these steps is a shared responsibility between different tiers of government. In the following, the role of local authorities is highlighted before discussing the complementary role of national governments.

Figure 2.2. Climate change adaptation cycle and the role of local authorities



Understanding climate risks

While climate risk assessments are often led by key national agencies or experts, there are important local level contributions to calibrating downscaled risk assessments. Local authorities have key information to understand local hazards, exposure and vulnerabilities. This results from their first-hand experience in dealing with the consequences of climate variability and extremes. In addition, local communities often have detailed historical documentation of the local impacts of extreme events that help calibrate downscaled hazard and climate modelling. One example of how local knowledge is integrated into risk assessments is Austria. After national agencies' experts compute and update regional hazard and exposure models, detailed area-specific hazard maps are drawn up. These draft maps are then shared

with local authorities, whose knowledge of past extreme events is used to refine the boundaries of hazard zones (OECD, 2017^[35]).

Local authorities also contribute to monitoring climate impacts as they unfold. Locally operated early warning systems (EWS) serve to monitor, forecast, and inform about imminent floods, storms, droughts, extreme heat and other events. For example, as part of its Local Climate Change Strategy and Action Plan, the city of Tatabánya (Hungary) has implemented a local heat- and UV-alert system to monitor the risk of heatwaves and forest fires (Climate-ADAPT, 2016^[36]). Similarly, the Emilia-Romagna region in Italy has developed real-time hydro-meteorological monitoring technologies and a widespread risk communication programme to share information on hydro-meteorological risks (Clima-ADAPT, 2018^[37]). Both cases focused on rapid information transmission, complementing the national monitoring efforts.

Local authorities also play a critical role in ensuring that local actors share a common understanding and are aware of the risks. For example, they can communicate about the results of local risk assessments, by sharing information and developing awareness-raising campaigns. One such initiative was led by the city of Cape Town, which ran the “Day Zero” campaign in 2018 to reduce the city’s water consumption and avoid water shortages (Martinus and Naru, 2020^[38]). In addition to boosting initiatives by local stakeholders, campaigns such as these can make the actions taken by local authorities more acceptable.

Planning adaptation

While national planning for adaptation is important through both integrated plans and sectoral plans, there is a need for subnational levels (consistent with the country’s governance structure) to integrate adaptation in local planning. Depending on their status and the country’s administrative organisation, local authorities are responsible for different types of territorial development plans and documents (Silva and Acheampong, 2015^[39]). For example, urban government administrations oversee urban development plans. The inclusion of climate risk assessments in the development of urban plans is essential to limit the construction of new buildings in areas at risk, such as flood-prone zones, and to inform the development of local building codes (OECD, 2018^[40]). Local sectoral planning documents (such as for transport or water) also have a crucial role to play in promoting climate resilience-building. As Table 2.3 shows, all OECD countries recognised the importance of local government’s involvement in adaptation planning in their latest official NAS or NAP. Some of them went beyond and defined explicit or mandatory requirements related to the local governments’ role (e.g. Czechia, Denmark, the Netherlands and Sweden).

Aware of their key role in adaptation planning, larger local authorities have designed their dedicated adaptation plans and strategies to ensure that climate resilience building is mainstreamed across all locally-led functions of government (Box 2.1). Some municipalities went further, and in addition to their municipal-level adaptation plan, prepared more targeted plans to address specific risks. For example, as part of the city’s Climate Adaptation Plan (City of Copenhagen, 2011^[41]), in 2012, Copenhagen developed the Cloudburst Management Plan, to reduce the flooding risk that could result from heavy precipitation (OECD, 2018^[40]; Climate-ADAPT, 2016^[42]; Urban Sustainability Exchange, 2021^[43]).

Box 2.1 Urban local adaptation plans: examples across the OECD

- **Barcelona** introduced the Climate Plan 2018-2030 with the objective of reducing emissions and becoming carbon neutral by 2050. It was developed in collaboration with citizens and incorporates mitigation, adaptation, climate justice and citizen action. The plan outlines short- and long-term actions such as updating urban planning regulations to promote adaptation goals, district-specific risk assessments, planning a network of urban green corridors and increasing the share of permeable areas. The plan also presents good examples and best practices of implemented projects, defines the involved actors for the suggested actions and outlines indicators for monitoring.
- **New York's** AdaptNYC plan identifies the climate change hazards that are threatening the city, as well as the neighbourhoods and populations facing the biggest risks, and outlines adaptation measures. The plan includes measures for stormwater management, sewer upgrades, adapting the built environment to reduce the urban heat island (UHI) effect, producing high-resolution heat risk projections, and also increasing social resiliency through awareness-raising, flood risk insurance and other measures.
- The **Tokyo** Climate Adaptation Plan aims to minimise the impacts of climate change on the lives of Tokyo's citizens and on the natural environment. The plan covers natural disasters, human health, agriculture, forestry and fisheries. It also includes an analysis of past conditions and predicted future changes in Tokyo's climate and sets a roadmap for strengthening adaptation measures for 2030 and 2050.
- **Paris** developed its Climate Action Plan to make the city carbon neutral and resilient to climate change. The plan sets targets and key actions for adaptation, such as developing three hundred additional cool islands by 2030, 20 000 new trees to be planted by 2030, 40 water areas to be developed by 2020 and 50 by 2030 and building new pools and open water swimming sites. These measures aim to help Paris become a more resilient and inclusive city, with 40% of its territory covered by vegetation.
- **Rotterdam** developed its Climate Change Adaptation Strategy in 2013, to increase the city's resilience against rising water levels for both the sea and rivers and other climate change impacts such as heavy rainstorms, longer drought periods and other extreme weather conditions. After outlining the effects and consequences of climate change for the city, the plan sets out measures for the different climate risks and introduces examples and best practices for the implementation of actions to address them.

Source: Barcelona City Hall (2018^[44]); City of New York (2022^[45]); Tokyo Metropolitan Government (2021^[46]); City of Paris (2020^[47]); City of Rotterdam (2013^[48])

In some cases, local governments can even be frontrunners and their initiatives can impact adaptation-related policy planning at the national level (Fisher, 2013^[49]). The positive outcomes achieved through local adaptation actions can produce insights and data relevant for the development of more effective and region-specific climate adaptation policies at the national level. In Colombia, for instance, three departments, which represent the second-tier level of government, started to work together on adaptation planning in the same area. This inspired the Ministry of Environment and Sustainable Development to set up nine regional nodes across the country (Dazé, Price-Kelly and Rass, 2016^[50]).

Implementing and financing adaptation

Local authorities have a key role in the implementation of local adaptation measures. Their role includes enforcing national regulations and setting locally specific ones. Regulatory actions of local authorities are framed within (and constrained by) a national regulatory context (Sathaye et al., 2007^[51]; OECD, 2010^[52]), that influences local level actions. For example, while national building guidelines may give a general guideline to incorporate climate adaptation, it is local authorities that develop local building codes that are enforced through the issuing of building permits. Table 2.2. provides an overview of examples. In the Swiss city of Basel, the Building and Construction Law of 2022 mandates green roofing to mitigate the effect of warmer temperatures and as well as heavy precipitation. The Tokyo Metropolitan Government has implemented regulations for urban greenery and stormwater management to address the urban heat island effect and improve resilience to extreme precipitation and flooding.

Table 2.2. Local standards or regulations targeting climate adaptation

Selected examples of municipalities

Locality	Implemented regulation	Description	Targeted hazard
Basel, Switzerland	Building regulation	An amendment to the City of Basel's Building and Construction Law passed in 2002 mandated green roofing for all new buildings with flat roofs.	Extreme temperatures & precipitation
Cape Town, South Africa	Water usage regulation	The "Water By-law" regulation restricts water usage and promotes water conservation by residents, property owners, builders, and other stakeholders. It prescribes measures such as water-efficient plumbing fixtures, rainwater harvesting systems, and water-use restrictions during drought conditions.	Drought
Denver, Colorado, United States	Building regulation	The Green Roof Ordinance (2017) requires new buildings over 25 000 square feet to incorporate climate-proof design features such as green roofs.	Extreme temperatures & precipitation
Hoboken, New Jersey, United States	Land use regulation	The "Resist, Delay, Store, Discharge" (RDS) programme includes regulations that require new developments to incorporate measures, such as rain gardens and permeable pavement, to capture and store stormwater runoff.	Flooding
San Francisco, California, United States	Building regulation	The Better Roofs Ordinance requires all new buildings and roof replacements to have solar panels or a green roof, to increase energy efficiency, reduce the urban heat island effect, and improve stormwater management.	Extreme temperature & precipitation
Tokyo, Japan	Building regulation	Metropolitan-wide regulations require new developments to incorporate green spaces, such as rooftop gardens and vertical vegetation, to combat the urban heat island effect and improve resilience to extreme precipitation and flooding.	Extreme temperature & precipitation

Source: Climate-ADAPT (2016^[53]); City of Denver (2017^[54]); C40 (2015^[55]); San Francisco Planning Department (2017^[56]); City of Cape Town (2019^[57]); UNDRR (2015^[58])

The implementation of climate change adaptation measures requires investments. Investments are needed, for example, for dedicated risk reduction measures (such as dykes, or the creation of a flood retention zones) as well as resilience measures in infrastructure development and operation (e.g. road reinforcement measures; railroad elevation measures). Investment is equally needed for the creation and maintenance of green spaces.

Some adaptation measures are directly and fully funded by local authorities, whereas others may be co-financed by other levels of government. For example, the creation of urban green spaces is often fully funded by local authorities. Resilience measures integrated in road development may be co-financed by higher levels of government. Overall, local authorities are found to oversee 40% of public investment (OECD, 2022^[32]), and bear an even higher share when it comes to environmental spending. In thirty countries sampled, local authorities were responsible for more than half (55%) of environment and climate-related public spending, on average, between 2000-16 (OECD, 2019^[59]). Local investment in measures supporting the environment and climate occurs primarily in the public infrastructure sector, notably

transport (41%), followed by wastewater management (29%) and waste management (13%) (OECD, 2019^[59]).

Local governments raise their revenues from four main sources: grants and subsidies, taxes, user charges and property income (OECD, 2022^[32]). On average, 50% of local budgets come from grants and subsidies received from national governments, followed by revenues from local taxes (35%), user charges (10%) and property income (3%). Other sources of revenue are derived from social contributions, revenue from local companies or natural resources (OECD, 2022^[32]). Private capital can also be an important source of investment for local governments. Some adaptation investments may also lead to public-private partnerships (PPPs) or the use of more sophisticated instruments such as mezzanine or blended finance to attract private investments. These sources contribute to funding adaptation measures but are often insufficient to cover adaptation needs.

Revenue-raising instruments can be designed to encourage local stakeholders to adopt more resilient behaviour. For example, the introduction of water tariffs can help to decrease water consumption while the revenues from such measures can be invested to make water systems more efficient (UNECE, 2009^[60]; US EPA, n.d.^[61]). Australia, France, Israel, Korea, the Netherlands, the states of Arizona and California in the United States, and the province of Ontario in Canada, all implemented water tariff reforms to control water usage and combined them with measures that increase efficiency (OECD, 2021^[62]). Similarly, the introduction of taxes on buildings in flood-prone areas can leverage finance to implement flood protection measures such as dykes or the rehabilitation of river basins. For example, the government of Manizales (Colombia) implemented innovative financial steps to encourage disaster risk reduction (DRR) in the city (Amaratunga et al., 2018^[63]). The municipality reduced taxes for those who had implemented measures to increase the resilience of the houses located in high-risk areas, while it also introduced an environmental tax on rural and land properties as a source of revenue to finance DRR-related measures (Amaratunga et al., 2018^[63]).

Assessing progress on adaptation

The last step in a typical adaptation policy cycle entails measuring progress. This includes monitoring the implementation of actions, but also understanding their contribution to resilience-building. Given their proximity to the implementation of adaptation actions and in experiencing climate impacts over time, local authorities are well placed to contribute to the assessment of progress. An OECD review of NAPs and NASs revealed that one-third of OECD countries, including Belgium, Colombia, Ireland and New Zealand, foresee a role for local authorities in measuring adaptation progress in their NAPs (Table 2.3). Local authorities are well placed, for example, to collect data on adaptation measures implemented at the local level and to record local climate impacts, which in turn serves to improve national climate models.

National adaptation measurement seeks to assess overall progress in the implementation of nation-wide, cross-cutting adaptation efforts and is critical for accountability and transparency to ensure resources earmarked for adaptation by national governments contribute to agreed objectives (IPCC, 2022^[64]; OECD, 2015^[65]). This requires the data and information local authorities may collect on a local level to feed into a national measurement process. The aggregation of local level information at the national level facilitates regional comparison and helps identify where adaptation efforts are lagging.

An increasing number of local governments are using indicators to assess the implementation of their local adaptation plans or to populate indicators set at the national level. Cities using indicators include Athens, Auckland, Barcelona, Glasgow, Lima, Montreal, Nagoya, New York City, Portland, Tokyo and Vancouver (Goonesekera and Olazabal, 2022^[66]). For example, for the “Making Athens a Greener and Cooler City” strategy, 81 adaptation-related indicators (e.g. change in local surface and air temperatures) were developed to measure progress in the implementation of green roofs, parks and blue corridors (Goonesekera and Olazabal, 2022^[66]; C40 Cities, 2016^[67]).

Table 2.3. The role of local governments in OECD countries' national adaptation plans or strategies^a

Country	Reference document(s)	Is the role of local government mentioned in relation to:			
		Climate risk assessment or dissemination of information	Adaptation planning	Adaptation implementation	Adaptation measurement
Australia	NAS 2021-2025 (2021)	•	•	•	•
Austria	NAS (2017)	•	•	•	•
Belgium	NAP 2017-2020 (2017)	•	•	•	•
Canada	NAP (2022)	•	•	•	•
Chile	Chile's Long-Term Climate Strategy (2021)	•	•	•	•
Colombia	NAP (2016)	•	•	•	•
Costa Rica	NAP 2022-2026 (2022)		•	•	
Czechia	NAS/NAP (2021)	•	•	•	•
Denmark	Action plan for a climate-proof Denmark	•	•	•	•
Estonia	Climate Change Adaptation Development Plan until 2030 (2017)	•	•	•	
Finland	NAP (2014)	•	•	•	•
France	NAP (2018)	•	•	•	
Germany	Adaptation Action Plan (2011)**	•	•	•	
Greece	NAS (2016)	•	•	•	
Hungary	National Climate Change Strategy 2018-2030 (2018)	•	•	•	
Iceland	Climate Change Adaptation Policy (2021)	•	•	•	
Ireland	National Adaptation Framework (2018)	•	•	•	•
Israel*	NAP (2017)	•	•	•	•
Italy	NAS (2014)	•	•	•	•
Japan	NAP (2021)	•	•		•
Korea	NAP 2021-2025 (2021)	•	•	•	•
Latvia	NAP 2019-2030 (2019)	•	•	•	•
Lithuania*	National Energy and Climate Action Plan (2021)	•	•	•	
Luxembourg	National Adaptation Strategy and Action Plan 2018-2023 (2018)	•	•	•	
Mexico	National Climate Change Strategy (2013)	•	•	•	
Netherlands	NAS 2018-2019 (2018)	•	•	•	•
New Zealand	NAP (2022)	•	•	•	•
Norway	NAS (2021)	•	•	•	
Poland	NAS 2020 (2013)	•	•	•	•
Portugal	Action Program for Adaptation to Climate Change (2019)	•	•	•	•
Slovak Republic	NAS (2018)		•	•	•
Slovenia	Strategic Framework for Climate Change Adaptation (2016)	•	•	•	•
Spain	NAP 2021-2030 (2020)	•	•	•	•
Sweden	NAS (2018)	•	•	•	•
Switzerland	NAP 2014-2019 (2014)	•	•	•	•
Türkiye	National Adaptation Strategy and Action Plan 2011-2023 (2012)	•	•	•	•
United Kingdom	NAP 2023-2028 (2023)	•	•	•	•

Notes: Black dot means “discussed”. The United States does not have a NAP/NAS at the federal level; therefore, it was not included in the list. When they exist, the reference documents are countries' NAS or NAPs. For other countries, reviewed documents are official climate-related documents which deals with adaptation. Those countries are marked with a “*”.

*For Lithuania, the document used is the “National Energy And Climate Action Plan Of The Republic Of Lithuania For 2021-2030”.

** Adaptation Action Plan of the German Strategy for Adaptation to Climate Change (2011)

Source: Author's own

3 Climate adaptation remains a shared responsibility

Section 2 highlighted the local specificities of climate risks and adaptation and demonstrated the number of existing functions delegated to local authorities that shape adaptation at their level. It also highlighted how in each step of the adaptation cycle, local authorities have an important contribution to make. This section seeks to demonstrate how local adaptation functions are embedded in – and enabled by – national policies. The discussion in this section highlights that, while the local level contribution to building climate resilience is critical, the national role is important to ensure that climate resilience-building is carried out evenly across territories, without leaving any jurisdiction behind.

This section first discusses the limits of local adaptation engagement and actions and then discusses how a shared responsibility between national and local government can be established with a view to fostering local adaptation.

3.1. Limits to local adaptation engagement and action

Local preferences may not be aligned with climate resilience building. Adaptation at the local level can conflict with the political priorities and sensitivities of local elected representatives, especially in small municipalities (Barnett et al., 2015^[68]; World Bank, 2011^[69]). Most decisions of local representatives are made according to the expectations of their constituents, and local representatives tend to focus on short-term action rather than on long-term adaptation solutions. For example, mayors may want to expand their cities by building housing estates and sealing soils to increase municipalities' revenue, when their cities are already prone to flooding. These resilience-diminishing choices can be partly explained by the dichotomy between the short-term of electoral cycles and the long-term outcome of adaptation measures (Averchenkova, Plyska and Wahlgren, 2022^[70]). Poorly aligned individual interests of local decision-makers in climate change also often result in the perception that climate-related issues have to be addressed solely at the national level (Zea-Reyes, Olivotto and Bergh, 2021^[71]).

Misaligned incentives may cause local authorities to over-rely on national governments to invest in adaptation. For example, while local authorities could invest in adaptation measures to limit damages from climate events, post-disaster damage is often covered by national entities, thereby discouraging *ex ante* investments. Such disaster recovery funding at the national level is available for example in Australia, Germany, the United States, Japan and many other countries (Australian Government, 2023^[72]; Carrel, 2021^[73]; U.S. Department of the Interior, n.d.^[74]; OECD/The World Bank, 2019^[75]).

Financing the costs of climate impacts and the investment in adaptation measures also exceeds the capacities of many local authorities. The financing of compensation or rehabilitation for damaged or destroyed public as well as private assets and services can be extremely costly. Implementing adaptation policies represents a significant additional cost that local authorities, in particular small municipalities, often cannot cover from their own budget (Aguiar et al., 2018^[76]; Moser et al., 2019^[77]). In particular, investments in adapting infrastructure exceed the total budget of many local authorities (Boda and Jerneck, 2019^[78]). Based on a survey conducted by the German Environment Agency amongst municipalities, the lack of

resources for preparing (55%) and implementing (49%) adaptation projects were identified as the most important barriers of local adaptation progress (OECD, 2023^[79]). While cities are starting to implement climate adaptation plans, only 9% of all urban projects' finance is directed towards adaptation (Global Covenant of Mayors for Climate and Energy, 2021^[80]).

Similarly, the development of adaptation related expertise may be too costly for most local authorities. With the increasing frequency and intensity of climate variability and climate extremes, new and innovative adaptation knowledge and capacity are needed, going beyond what is available at most local levels. Local authorities often lack technical expertise to produce disaggregated climate related data and information (Covenant of Mayors, 2023^[81]) as well as hazard modelling expertise. This technical capacity is costly and is therefore often built and shared centrally, at national level. The design and installation of adaptation solutions (e.g. dykes, building measures) are often one-off actions that do not justify the development of skills at the local level, particularly in small municipalities. Local authorities therefore do not invest in training their staff and developing these technical skills, which are otherwise available at the national or state level.

In addition, those most vulnerable to climate risks face the greatest adaptation funding constraints. The financial resources available to local authorities are influenced by socio-economic factors, including their population and the economic structure. For example, some of the poorest regions in the South of Italy face difficulties financing their resilience needs (Fina, Heider and Prota, 2021^[82]). By contrast Lombardy, situated in the northern part of Italy, is one of the wealthiest regions in the country, with a higher fiscal capacity the region can mobilise to deliver the objectives defined in the region's climate adaptation strategy (Fondazione Lombardia per l'Ambiente, 2016^[83]). In small, especially rural areas, local governments may also lack creditworthiness (Richmond, Upadhyaya and Pastor, 2021^[84]). Moreover, increasing revenues of localities through higher taxes or tariffs, which are very unpopular measures, is also unlikely to be sufficient to finance adaptation actions.

3.2. Local adaptation is embedded in a broader local and national policy, regulatory and fiscal context

National governments may mandate adaptation actions at the local level. By mandating local governments to take adaptation actions, national authorities ensure that resilience-building becomes an intrinsic part of local decision-making. A clear mandate from national governments to local governments may help increase the acceptability of taking adaptation actions. For example, France implemented the *GEMAPI* initiative, which mandates adaptation measures at the local level, providing authorities with additional and dedicated revenue-raising authority (Box 3.1).

Box 3.1. Delegating adaptation actions to the local level – the case of GEMAPI in France

Since 2018, French modernisation law MAPTAM (*Loi de Modernisation de l'action publique territoriale et d'affirmation des métropoles*) has authorised municipalities and intercommunal services to *manage aquatic environments and flood risk (GEMAPI)*. The devolution aims to facilitate interventions at the local scale and ensures that defined institutions oversee specified tasks. Under GEMAPI, local governments will be responsible for i) hydrographic basin planning, ii) installation and maintenance of water streams, canals, and lakes, including access to them, iii) flood and sea defence measures, and iv) the protection and restoration of water ecosystems. Municipalities or inter-municipal services can raise a maximum tax of EUR 40 per citizen per year, attached to the local property tax to finance new responsibilities. Under the Law, the central government must submit a report to the Parliament, evaluating the outcome and effectiveness of GEMAPI. It promotes a local approach to managing the aquatic environment and flood prevention.

Source: Ministère de la Transition écologique et de la Cohésion des territoires (2020^[85]); OECD (2017^[86])

National policies, standards and regulations constrain and enable local level actions. In France, local authorities are required to consider hazard maps in land-use planning (OECD, 2017^[35]). Similarly, in Norway, municipalities must conduct a climate risk assessment before authorising new building development and are legally required to prohibit new buildings in areas at risk (Climate-ADAPT, n.d.^[87]). A recent OECD study showed that current national procurement procedures in Hungary hinder the planning and implementation of adaptation measures such as the implementation of nature-based solutions (NbS) by local authorities (OECD, forthcoming^[88]). National adaptation plans or strategies, national regulations (e.g. fire regulation) or national funding instruments (e.g. sectoral budgets) all both strongly constrain, while at the same time support and complement, local level action.

Local climate resilience-building is also directly affected by investments made by national sectoral agencies. Resilience investments in critical infrastructure, such as public roads and electricity transmission grids, provided by national sectoral agencies are critical in bolstering local communities' ability to adapt and respond to climate change impacts. For example, a well-connected road network allows for efficient evacuation and emergency response during extreme weather events, while a reliable national electricity grid ensures continuous power supply to vital facilities, even during extreme climate events.

Given that climate change impacts and certain adaptation measures extend well beyond the areas initially affected, the actions of localities in silo are not effective to ensure local and national resilience. Although climate hazards are felt locally, climate impacts can cause disruptions cascading through systems at the national or even global level. Moreover, adaptation efforts rolled out in one place can be undermined by measures taken in another place. For example, while one city may make efforts to permeate land to reduce flood risk, urban development in a neighbouring city upstream may negate all efforts and expose the city to greater risk. Similarly, elevating river dykes in upstream areas can increase the risk of flooding in downstream areas (Dottori et al., 2020^[16]).⁴

⁴ On the other hand, one area may benefit from efforts made by other localities. For example, the restoration of wetlands and floodplains in the upstream areas of the Mississippi River Basin in the US, improved water quality and reduced flood risk for downstream communities (Suttles, Eagle and McLellan, 2021^[106]).

3.3. The role of national governments in supporting local adaptation

National authorities complement financial and technical resources available at the local level and thereby play a key role in addressing local and regional disparities in climate adaptation. The following section explores the role of national governments in providing knowledge, technical capacities and financial support for local climate change adaptation.

3.3.1. Overcoming resource constraints at the local level

Strengthening local technical capabilities

National governments provide important technical expertise for climate risk assessments. Downscaled climate risk data is often generated through national research programmes, laboratories and institutes that have highly trained experts. Italy, for instance, has developed a climate model with high-spatial resolutions, that helps local authorities inform and prioritise adaptation actions (Raffa et al., 2023^[89]). The French national *Futures of Climate* portal makes regionalised climate data available for a variety of uses (Ministère de la Transition Écologique, 2023^[90]).

National governments can help improve local adaptation planning and implementation capacities. They can provide direct technical assistance, as in Portugal, where the “ClimAdaPT.Local” project helps local stakeholders prepare their municipal climate adaptation strategies by raising awareness and developing tools, or launch awareness campaigns, such as the “Netherlands Lives with Water” campaign. In addition, the implementation of some adaptation solutions may even require the creation of new jobs and specific trainings to develop skills related to their operation or maintenance (ILO, 2018^[91]). Governments can therefore partner with universities and experts to create and provide such trainings. For example, Germany has set up the national Center for Climate Adaptation (Zentrum KlimaAnpassung, ZKA) in 2021 to train local adaptation managers. The center also hosts a platform for networking and knowledge exchange for adaptation professionals at sub-national level (OECD, 2023^[79]). Similarly, Greece’s national government provides workshops for regional and local adaptation managers via the EU *LIFE-IP AdaptInGR* program⁵.

National governments are also well-placed to support innovation innovate and share knowledge through pilot projects. In Switzerland ten federal offices have collaborated with subnational authorities to conduct 50 innovative projects, mostly at the local level, during the second phase of the pilot programme “Adaptation to climate change”. The pilot programme offers national funding to co-finance projects, as well as a platform for sharing details and results of pilot projects (Swiss National Centre for Climate Services, 2023^[92]).

Bridging the local investment gap

National authorities have a key role to play in bridging the local adaptation investment gap. The national system of grants and subsidies should indeed integrate climate adaptation objectives and criteria into the allocation of funding. Vertical co-operation also remains essential to ensure concerted management of available financial public resources to prioritise investments where they are most needed. For example, under the Queensland Betterment Programs in Australia, the collaboration of national and local authorities facilitated almost USD 140 million of investment in resilience, which allowed to save almost USD 400 million in reconstruction costs (Queensland Government, 2022^[93]). The Ministry of Environment of the Slovak Republic has developed a strategic document called the Prioritisation of Investment Projects (PIP),

⁵ More information regarding the LIFE-IP AdaptInGR programme is available here: <https://www.adaptivegreece.gr/en-us/get-informed/municipality>

which outlines a national funding prioritisation methodology for adaptation at the local level (OECD, 2023^[26]; Ministry of Environment of the Slovak Republic, 2021^[94]).

National governments can create specific funding programs to help local governments plan and implement adaptation actions. For example, Austria has launched the “Climate Change Adaptation Model Regions for Austria - KLAR!” pilot programme in 2016, which helps finance measures at the regional level (Austrian Climate and Energy Fund, 2023^[95]). As of 2023, a total of 89 regions received funding from the Austrian Climate and Energy Fund to develop climate change adaptation concepts and in the next stage implement 10 concrete adaptation measures in the region; and to raise awareness for climate change adaptation (Austrian Climate and Energy Fund, 2023^[95]).

National government can also enable local governments to raise their own revenues to close vertical fiscal imbalances. For example, providing a greater green tax autonomy to the local level can help local authorities to raise revenues that can be used to finance climate adaptation at the local level (Yilmaz and Stoykov, 2022^[96]).

3.3.2. Ensuring effective and co-ordinated local level action

As a country’s resilience to climate change partly relies on actions taken at the local level, national governments have a vested interest in ensuring adaptation actions are put in place, and that they promote national climate resilience. To foster collective action in favour of national resilience, national governments both guide and frame the actions of local authorities, as well as facilitate vertical and horizontal co-ordination. The following section examines how national governments can foster local level action for adaptation by providing support in guiding, framing and co-ordinating local actions and updating national regulations.

National governments are increasingly involving local stakeholders in the development of their National Adaptation Plans/Strategies (NAPs/NASs) to encourage joint and co-ordinated approach to adaptation. Most of the NAPs/NASs define the roles and responsibilities of all levels of government, including local ones, in planning, implementation and monitoring of adaptation. For instance, in its National Climate Change Adaptation Strategy and Action Plan 2011-2023, Turkey identified relevant local actors and defined responsibilities for delivering the listed objectives (Ministry of Environment and Urbanization of Türkiye, 2012^[97]).

National governments provide specific guidance and toolkits to help local governments take adaptation actions. For example, New Zealand set out a local climate change risk assessment framework, aligned with the country’s National Climate Change Risk Assessment Framework to promote decision-making, risk assessment and data collection at the local level (New Zealand Ministry for the Environment, 2021^[98]). Similarly, the State of New South Wales in Australia developed a guide for local governments to support them in developing local climate risk assessments and assist them in implementing effective climate action, including adapting to the identified risks (DPIE, 2019^[99]). Sweden has also developed a guide for municipalities to support the implementation of NbS at the local level (Swedish EPA, 2022^[100]). Some national governments also use their NAPs and NAS to promote the tools and services available to help local governments. For example, Ireland is providing links to its climate-dedicated information platform Climate Ireland (ICIP) in its National Adaptation Framework (Ireland, 2018^[101]).

Some OECD countries have also created new entities to plan and co-ordinate multi-level adaptation actions. Vertical co-ordination among different levels of government is essential to ensure the coherence of key objectives and actions. In Ireland, the national government required the development of Climate Action Regional Offices (CAROs) to co-ordinate local adaptation planning and align it among the national and local levels and various sectors (Box 3.2). National governments guide local authorities in measuring adaptation. For example, in its “Strategy for Adaptation to Climate Change”, Austria identifies 14 priority sectors and an overall adaptation objective as well as a list of recommended actions, some at the local

level, for each of these sectors (Federal Ministry For Sustainability and Tourism, 2017^[102]). The document details the timetable, objectives, progress made and next steps, as well as the stakeholders (including local stakeholders) involved in these actions. Finally, national governments also use their NAPs and NAS to promote the tools and services available to support local governments. For example, Ireland is providing links to its climate-dedicated information platform Climate Ireland (ICIP) in its National Adaptation Framework (Ireland, 2018^[101]).

Box 3.2. Streamlining climate consideration into local, regional, and national policies

Ireland laid out its national strategy to reduce the vulnerability of the country to negative climate change impacts and foster positive impacts in its first statutory **National Adaptation Framework (NAF)** in 2018. The NAF delineates a whole of government and society approach to climate action by improving the enabling environment for adaptation through ongoing engagement with civil society, the private sector and the research community.

The local adaptation plans and initiatives are built on multi-stakeholder partnerships, including a public consultation, in addition to feedback from key Sectoral, Department and Agency stakeholders. The NAF also delineated the need to set up four **Climate Action Regional Offices (CAROs)**, which work with local authorities, and co-ordinate regional and territorial adaptation planning. CAROs provide technical capacity training and financing to local authorities for them to develop and implement territorial climate plans. The NAF and accompanying initiatives, such as CAROs, align climate policies across local and national governments, but also across sectors.

Under the NAF, in 2019, all 31 regional authorities prepared Local Adaptation Strategies. In 2021, over 13 000 local authority staff received training provided by the Local Authority Climate Action Training Plan.

Source: Government of Ireland (2018^[103]), Climate Action Regional Offices (n.d.^[104])

4 Conclusions

This paper explores the role of local and national authorities in climate change adaptation, but it is not intended to be an exhaustive review of the different roles and functions. The analysis presented in this paper is a first step in informing the discussion on how to best foster local adaptation.

Local governments are uniquely positioned to lead on climate adaptation actions because of their direct experience with the impacts of climate variability and climate extreme events and their understanding of the needs for locally tailored solutions. Local authorities are, to different extents and at different levels, in charge of land-use development, the operation of critical services as well as the protection of the local environment. All of these functions have an important role to play in effectively adapting to climate risks. However, this paper shows that local authorities face important constraints, because addressing adaptation needs requires more technical, financial and legal capacity than often is (or should be) at their disposal. Besides this, climate impacts can cause system disruptions that trickle across jurisdictional boundaries and may require collaborative cross-jurisdictional or higher government action to be addressed effectively. These are some of the reasons why national governments have a significant role to play in ensuring adaptation actions are taken at the right level and consistently across their country's territory.

Applying a local lens to adaptation allows the local specificities of adaptation risks and needs to be integrated into national adaptation policy, recognising the key role of national governments in facilitating local action. National governments provide the necessary information and technical expertise, for example to identify current and future climate risks. This is a technical function that is costly to establish at the local level and one that can be effectively shared at the national level. National governments design national regulatory, policy and fiscal frameworks, which can enable effective subnational action on adaptation. Lastly, national governments are best placed to address adaptation at the right functional level, by providing incentives to local authorities to collaborate.

The primary objective of this paper is to clarify the involvement of local authorities in climate change adaptation vis-à-vis national governments. As local authorities may have different mandates and responsibilities in different types of national administrations, in-depth country-specific analyses are needed that go beyond the scope of this paper.

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Climate adaptation: Why local governments cannot do it alone


Given the direct impacts of climate change are felt first and foremost at the local level, many have called for climate adaptation to be a local responsibility. Indeed, local authorities have a major influence on climate change adaptation - such as through their land use and permitting decisions. Yet, their actions are strongly determined by the national fiscal, regulatory and policy contexts in which they are embedded in. This policy paper provides an overview and a discussion of the roles and responsibilities for climate adaptation across levels of government. It argues that co-operation across levels of government is needed to strengthen adaptation at the local level.

This policy paper was prepared as part of the OECD Territorial Approach to Climate Action and Resilience programme, which supports subnational authorities in their efforts to accelerate the net zero transition and build systemic resilience.

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