Sixth Assessment Report
WORKING GROUP III – MITIGATION OF CLIMATE CHANGE

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INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

Climate Change 2022

Mitigation of Climate Change

National and Sub-national Policies and Institutions

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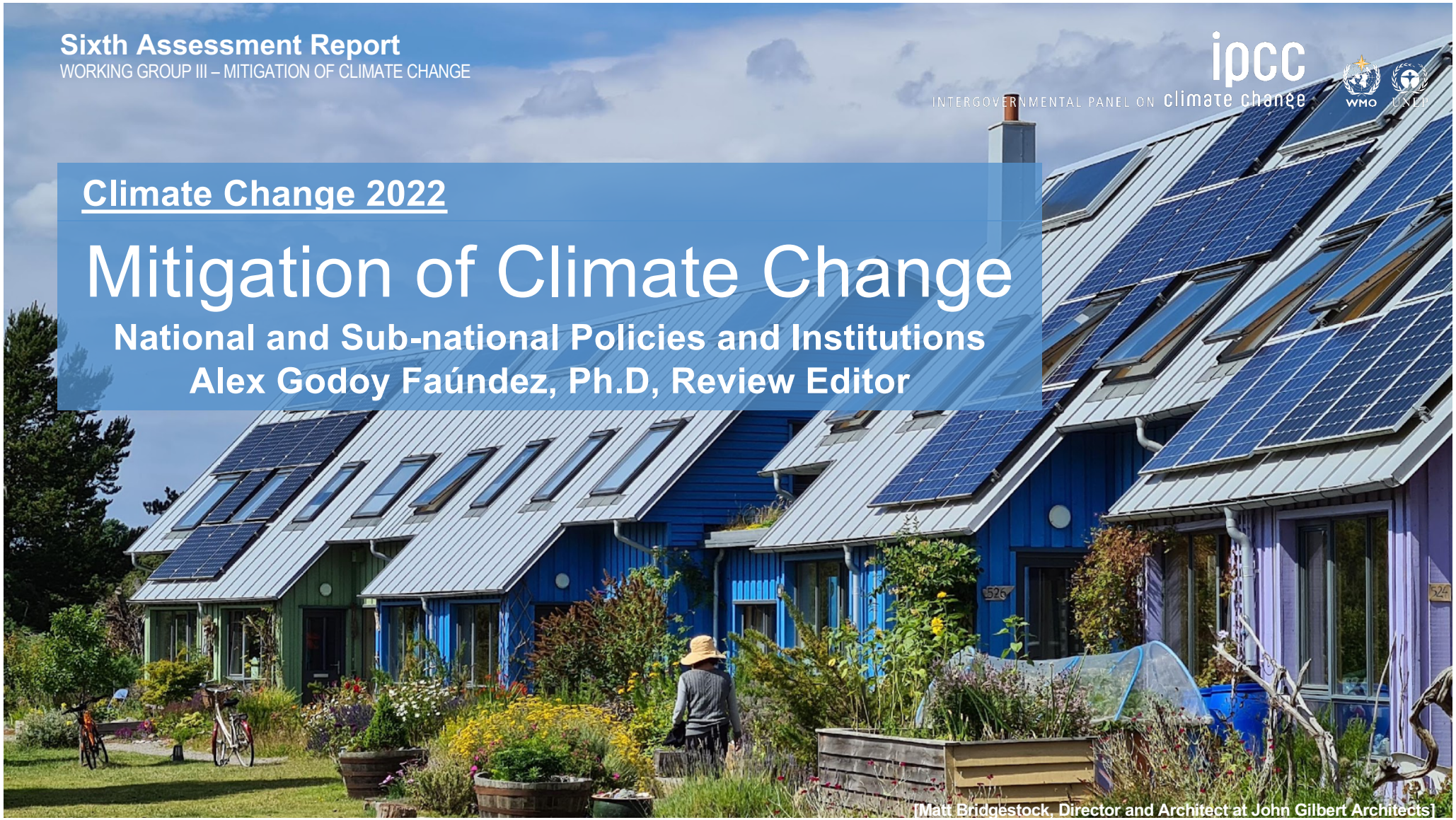

[Matt Bridgestock, Director and Architect at John Gilbert Architects]

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> **Long-term deep emission reductions, including the reduction of emissions to net zero, is best achieved through institutions and governance that nurture new mitigation policies, while at the same time reconsidering existing policies that support continued Greenhouse Gas (GHG) emissions.**

Category	Examples of common types of mitigation policy instruments
Economic instruments	Carbon taxes, GHG emissions trading, fossil fuel taxes, tax credits, grants, renewable energy subsidies, fossil fuel subsidy reductions, offsets, R&D subsidies, loan guarantees
Regulatory instruments	Energy efficiency standards, renewable portfolio standards, vehicle emission standards, ban on SF_6 uses, biofuel content mandates, emission performance standards, methane regulations, land-use controls
Other instruments	Information programs, voluntary agreements, infrastructure, government technology procurement policies, corporate carbon reporting

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Institutions and governance underpin mitigation by providing the legal basis for action. This includes setting up implementing organisations and the frameworks through which diverse actors interact.

Table 13.2 Criteria for evaluation and assessment of policy instruments and packages

Criterion	Description
Environmental effectiveness	Reducing GHG emissions is the primary goal of mitigation policies and therefore a fundamental criterion in evaluation. Environmental effectiveness has temporal and spatial dimensions.
Economic effectiveness	Climate change mitigation policies usually carry economic costs, and/or bring economic benefits other than through avoided future climate change. Economic effectiveness requires minimizing costs and maximizing benefits.
Distributional effects	The costs and benefits of policies are usually distributed unequally among different groups within a society (Zachmann et al. 2018), for example between industry, consumers, taxpayers; poor and rich households; different industries; different regions and countries. Policy design affects distributional effects, and equity can be taken into account in policy design in order to achieve political support for climate policies (Baranzini et al. 2017).
Co-benefits, negative side-effects	Climate change mitigation policies can have effects on other objectives, either positive co-benefits (Mayrhofer and Gupta 2016; Karlsson et al. 2020) or negative side-effects. Conversely, impacts on emissions can arise as side-effects of other policies. There can be various interactions between climate change mitigation and the Sustainable Development Goals (Liu et al. 2019).
Institutional requirements	Effective implementation of policies requires that specific institutional prerequisites are met. These include effective monitoring of activities or emissions and enforcement, and institutional structures for the design, oversight and revision and updating of policies. Requirements differ between policy instruments. A

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> **Climate laws enable mitigation action by signalling the direction of travel, setting targets, mainstreaming mitigation into sector policies, enhancing regulatory certainty, creating law-backed agencies, creating focal points for social mobilization, and attracting international finance.**

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> **Institutions can enable improved governance by coordinating across sectors, scales and actors, building consensus for action, and setting strategies.**

Sub-national actors are important for mitigation because municipalities and regional governments have jurisdiction over climate-relevant sectors such as land-use, waste and urban policy; are able to experiment with climate solutions; and can forge partnerships with the private sector and internationally to leverage enhanced climate action.

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Explicit attention to equity and justice is salient to both social acceptance and fair and effective policymaking for mitigation.

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Carbon pricing is effective in promoting implementation of low-cost emissions reductions.

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> **Regulatory instruments play an important role in achieving specific mitigation outcomes in sectoral applications.**

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> **Removing fossil fuel subsidies could reduce emissions by 1-10% by 2030 while improving public revenue and macroeconomic performance.**

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Policy packages are better able to support socio-technical transitions and shifts in development pathways toward low carbon futures than are individual policies.

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> **The co-benefits and trade-offs of integrating adaptation and mitigation are most usefully identified and assessed prior to policy making rather than being accidentally discovered.**

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> **Climate change mitigation is accelerated when attention is given to integrated policy and economy wide approaches, and when enabling conditions (governance, institutions, behaviour, innovation, policy, and finance), are present.**

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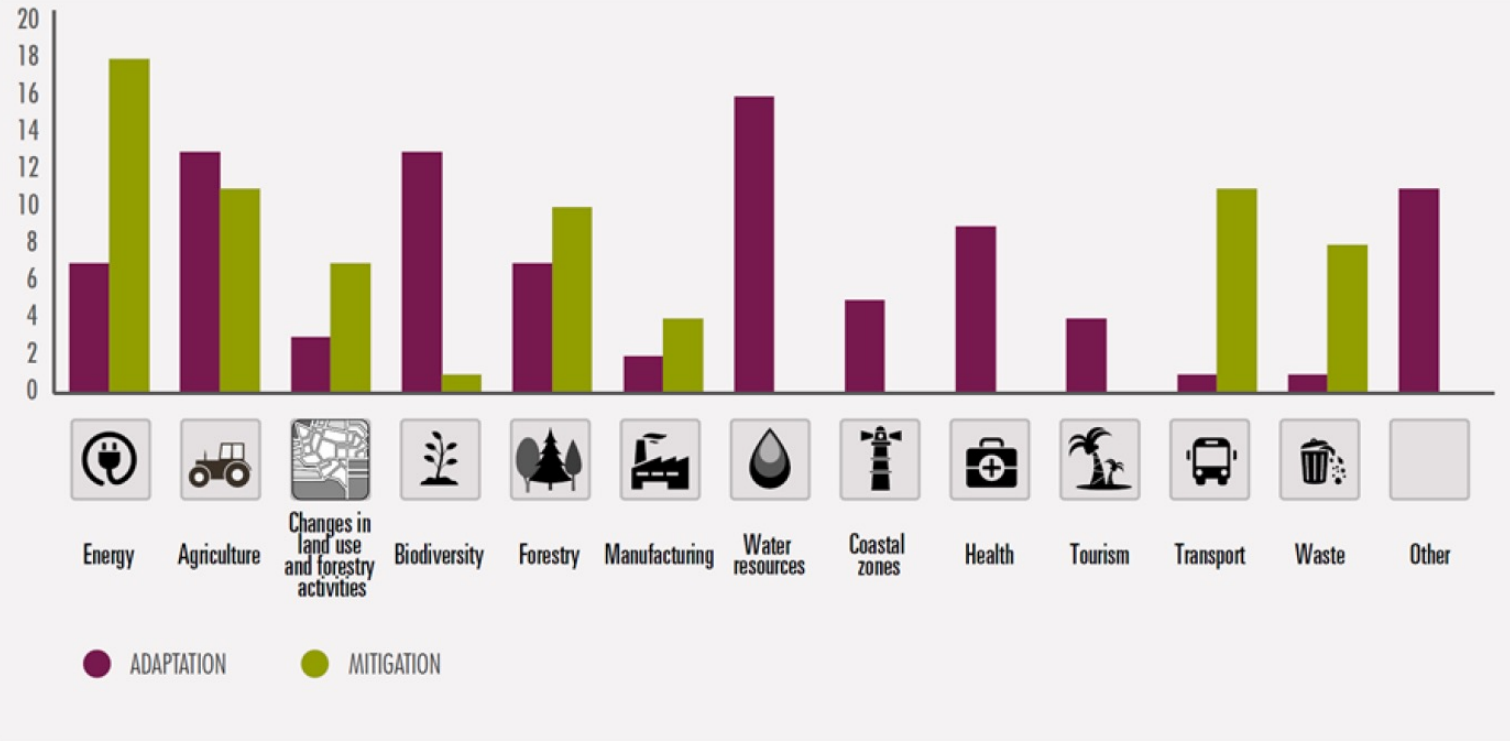
> **Economy wide packages, including economic stimulus packages, can contribute to shifting sustainable development pathways and achieving net zero outcomes whilst meeting short term economic goals.**



Box 13.16, Figure 1 **Latin America and the Caribbean: High priority sectors for mitigation and adaptation. Number of countries that name the following sector in their national climate change plans and/or communications. The purple and green bars represent adaptation and mitigation respectively.**

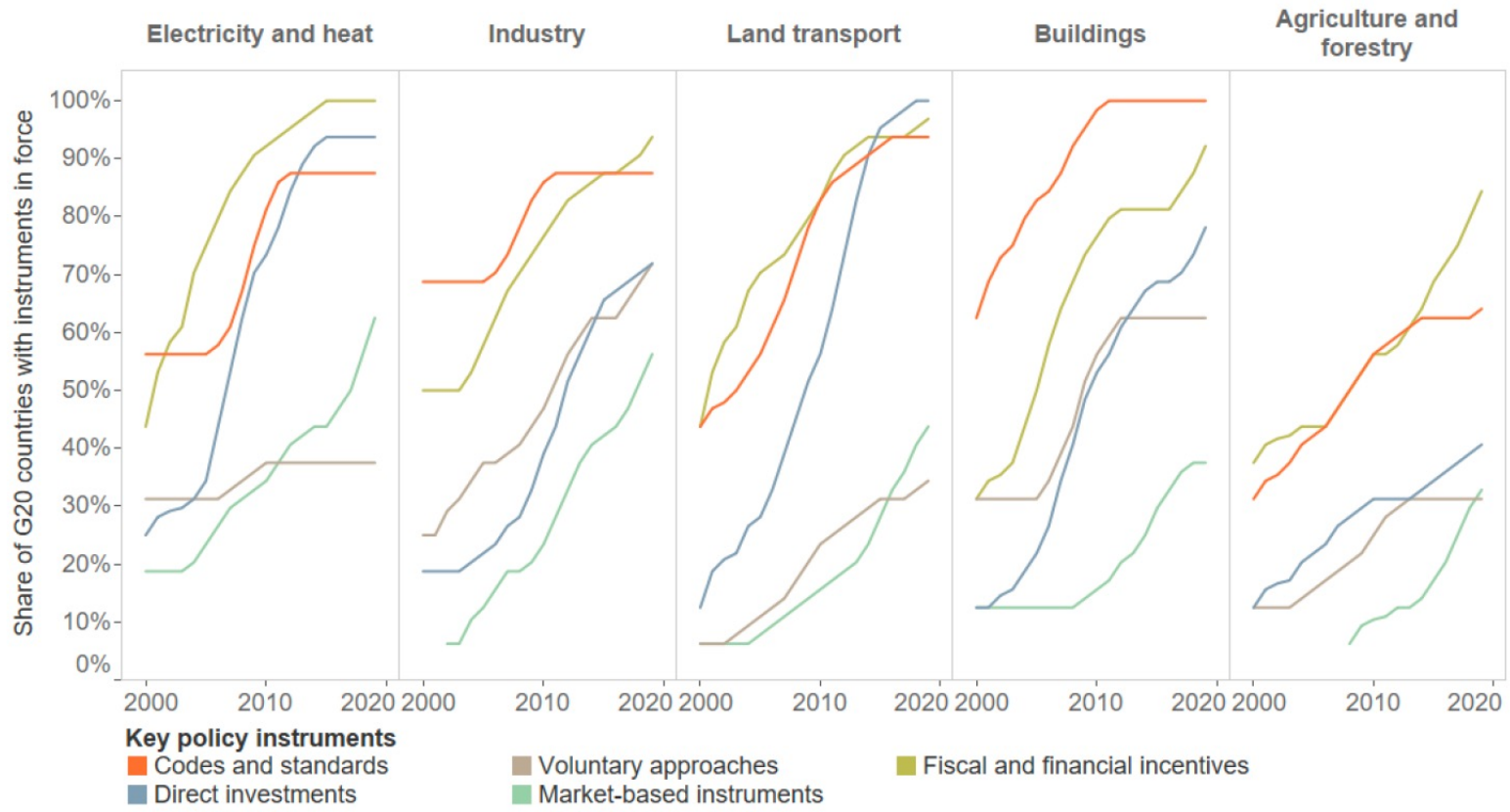
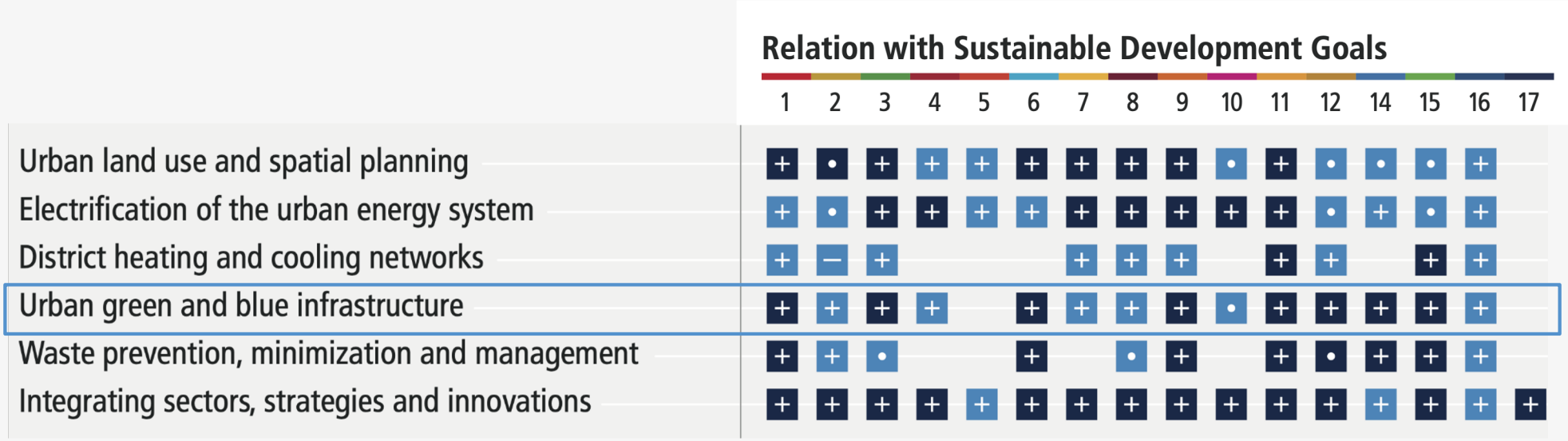


Figure 13.4 Share of countries that adopted different policy instruments in different sectors, 2000-2020 (three year moving average).


SUSTAINABLE DEVELOPMENT GOALS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS

Mitigation options in urban areas



Mitigation options in agriculture and forestry