Goal 11: Sustainable Cities and Communities

Cities

- Slums
- Public Health
- Air Pollution
- Public Transportation
- Disaster Risks
- Urban Planning
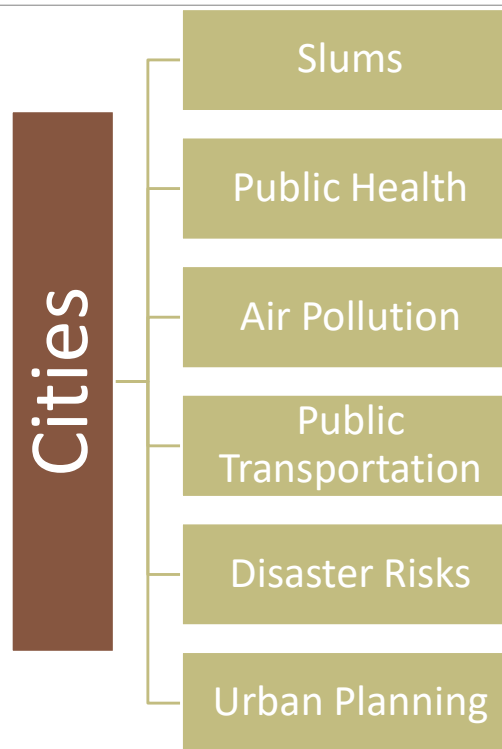
https://www.un.org/sustainabledevelopment/cities/

1 OUT OF 4 URBAN RESIDENTS LIVE IN SLUM-LIKE CONDITIONS (2018)

Currently 3.5 billion people live in cities. Projected to 5 billion in 2030

95 percent of urban expansion will be in developing countries

The world's cities occupy just 3 per cent of the Earth's land, but account for 60-80 per cent of energy consumption and 75 per cent of carbon emissions

As of 2016, 90% of urban dwellers have been breathing unsafe air, resulting in 4.2 million deaths due to ambient air pollution. More than half of the global urban population were exposed to air pollution levels at least 2.5 times higher than the safety standard.

https://www.un.org/sustainabledevelopment/cities/

Target

- By 2030, ensure access for all to adequate, **safe and affordable housing** and basic services and upgrade slums

Indicators

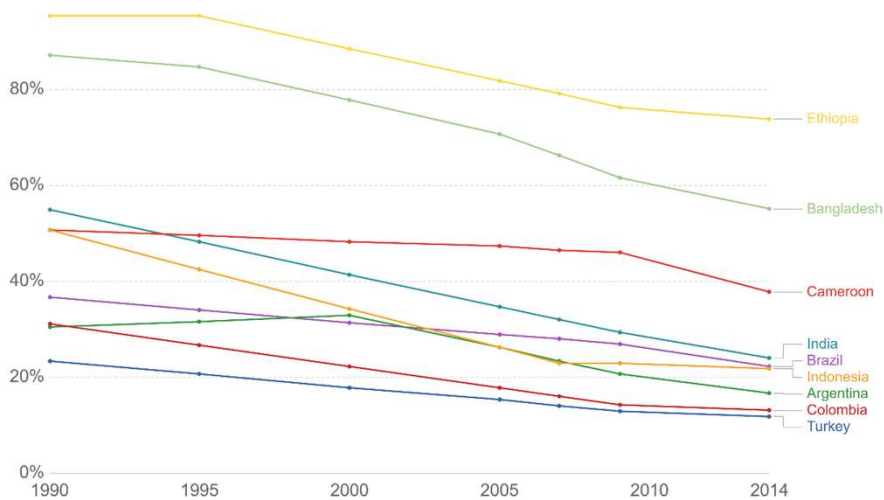- Proportion of urban population living in **slums**, informal settlements or inadequate housing

https://sustainabledevelopment.un.org/sdg11

Share of urban population living in slums

Population living in slums is the proportion of the urban population living in slum households. A slum household is defined as a group of individuals living under the same roof lacking one or more of the following conditions: access to improved water, access to improved sanitation, sufficient living area, and durability of housing.

Source: World Bank

Share of urban population living in slums, 2014

Population living in slums is the proportion of the urban population living in slum households. A slum household is defined as a group of individuals living under the same roof lacking one or more of the following conditions: access to improved water, access to improved sanitation, sufficient living area, and durability of housing.
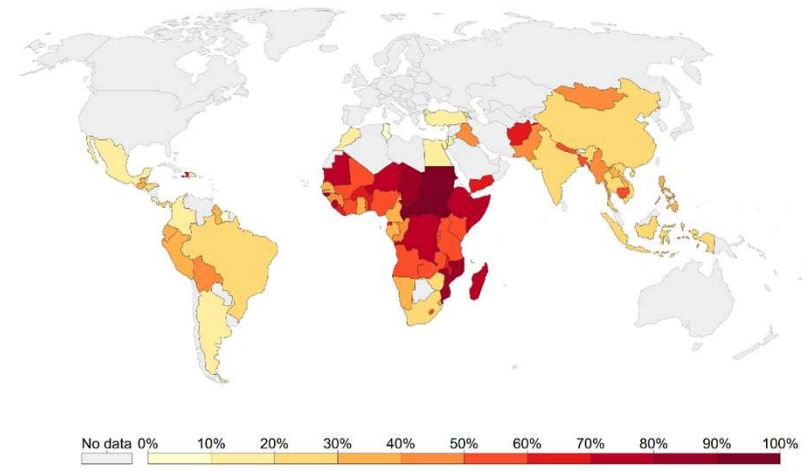
Source: World Bank

Slums- group of people under same roof lacking at least one of the following:
- access to improved water
- access to improved sanitation
- sufficient living area
- durability of housing

There has been a small general decrease over time in all parts of the world

11.2

Target

- By 2030, provide access to safe, affordable, accessible and sustainable **transport systems** for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
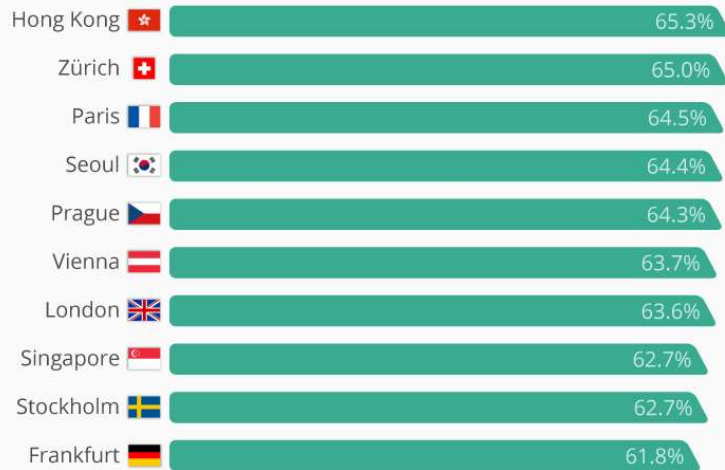
Indicators

- Proportion of population that has **convenient access to public transport**, by sex, age and persons with disabilities

https://sustainabledevelopment.un.org/sdg11

The World's Top Cities For Sustainable Public Transport
Cities ranked by quality of sustainable mobility in 2017*

City	Score
Hong Kong	65.3%
Zürich	65.0%
Paris	64.5%
Seoul	64.4%
Prague	64.3%
Vienna	63.7%
London	63.6%
Singapore	62.7%
Stockholm	62.7%
Frankfurt	61.8%

* (index scores – 100%=highest quality. 0% = lowest quality)
100 cities examined across 23 indicators to give an ranking of
each city's mobility and how sustainable their system is.

@StatistaCharts   Source: 2017 Arcadis Sustainable Cities Mobility Index
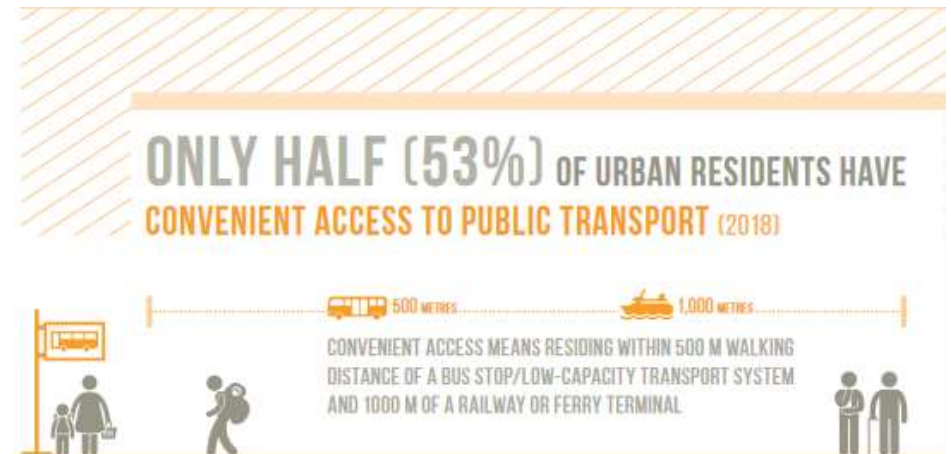
statista

Public transport can help
- decent quality of life
- form a part of the city's productive dynamic
- Create shared prosperity
- social stability
without harming the environment

Some cities, especially in Europe and some of Asia, have very well developed public transport

Many other areas in the Americas and Africa primarily have not had as large a focus on public transport

ONLY HALF (53%) OF URBAN RESIDENTS HAVE
CONVENIENT ACCESS TO PUBLIC TRANSPORT (2018)

500 METRES   1,000 METRES

CONVENIENT ACCESS MEANS RESIDING WITHIN 500 M WALKING
DISTANCE OF A BUS STOP/LOW-CAPACITY TRANSPORT SYSTEM
AND 1000 M OF A RAILWAY OR FERRY TERMINAL

Target

- Strengthen efforts to protect and safeguard the world's **cultural and natural heritage**

Indicators

- Total expenditure (public and private) per capita spent on the **preservation, protection and conservation of all cultural and natural heritage**, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)
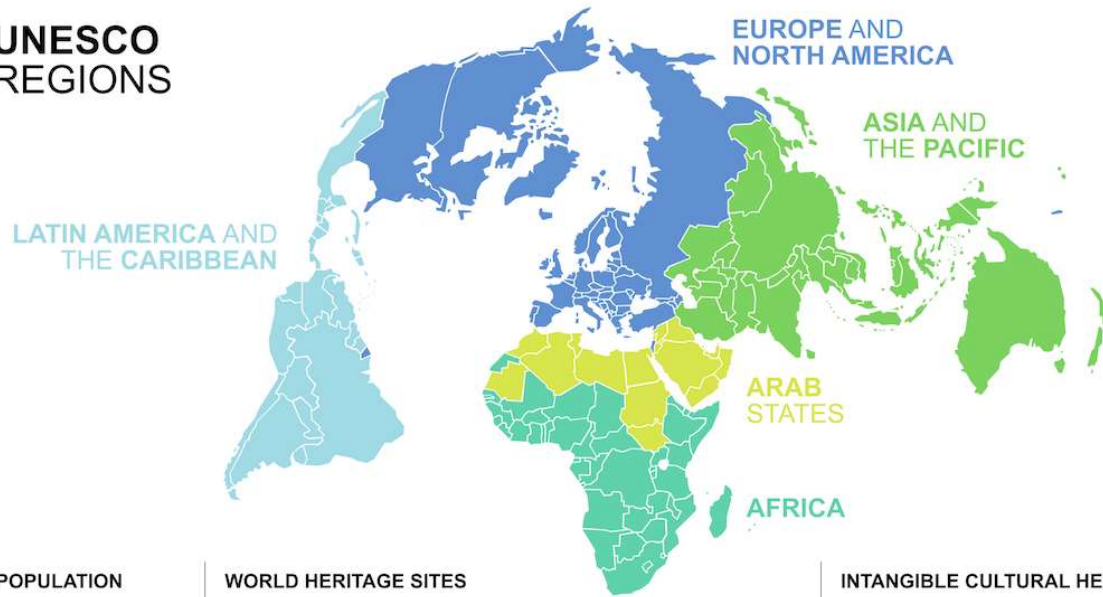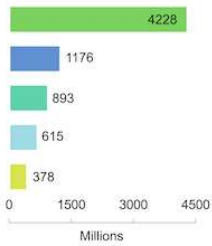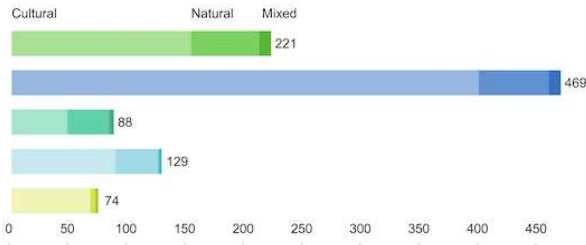
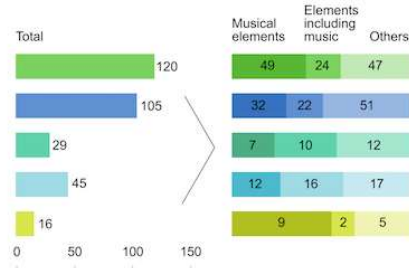https://sustainabledevelopment.un.org/sdg11

UNESCO
(United Nations Educational, Scientific, and Cultural Organization)
has world heritage sites to preserve and protect cultural, natural and other aspects of society relevant to history and heritage

Target

- By 2030, significantly reduce the **number of deaths and the number of people affected** and substantially decrease the direct economic losses relative to global gross domestic product caused **by disasters**, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations

Indicators

- **Number of deaths**, missing persons and persons affected by **disaster per 100,000 people**
- Direct **disaster economic loss** in relation to global GDP, including disaster damage to critical infrastructure and disruption of basic servicesa

https://sustainabledevelopment.un.org/sdg11

Death rates from natural disasters
Number of deaths from all forms of natural disaster, measured per 100,000 individuals in any given year.
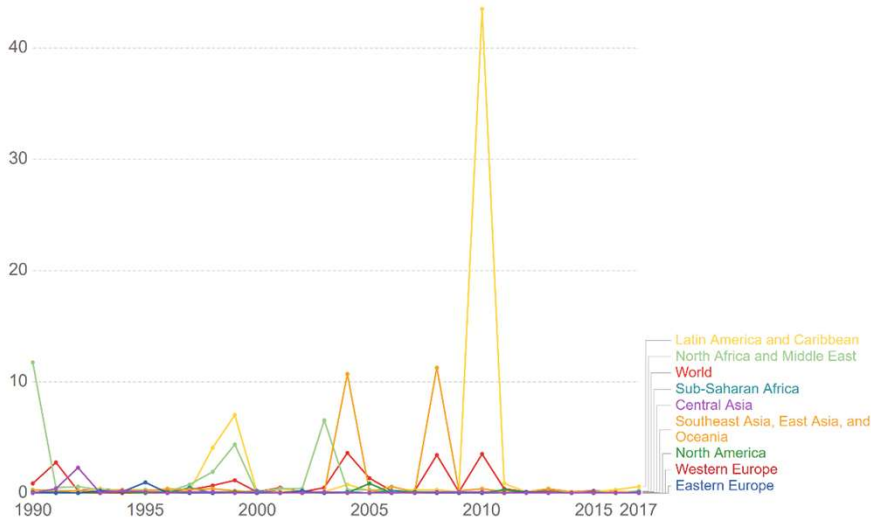
Source: IHME, Global Burden of Disease

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Internally displaced persons from natural disasters
Internally displaced persons are defined as people or groups of people who have been forced or obliged to flee or to leave their homes or places of habitual residence, as a result of natural or human-made disasters and who have not crossed an international border.
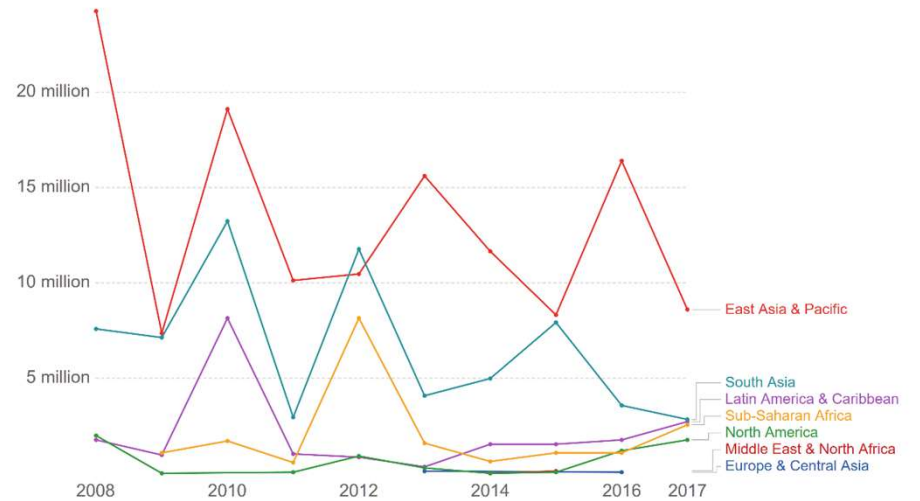
Source: World Bank

OurWorldInData.org/natural-disasters • CC BY

The locations of deaths and displaced persons from disasters has varied over the years. With East Asia, Pacific, South Asia, Latin America, and Caribbean being the highest that is likely because of coastal storms, which will only continue with climate change increasing

Global disaster losses as a share of GDP
Global disaster losses (weather- and non-weather related) in economic terms, expressed as a share of global gross domestic product (GDP). Economic loss data from disasters is based on figures reported by Munich Re.
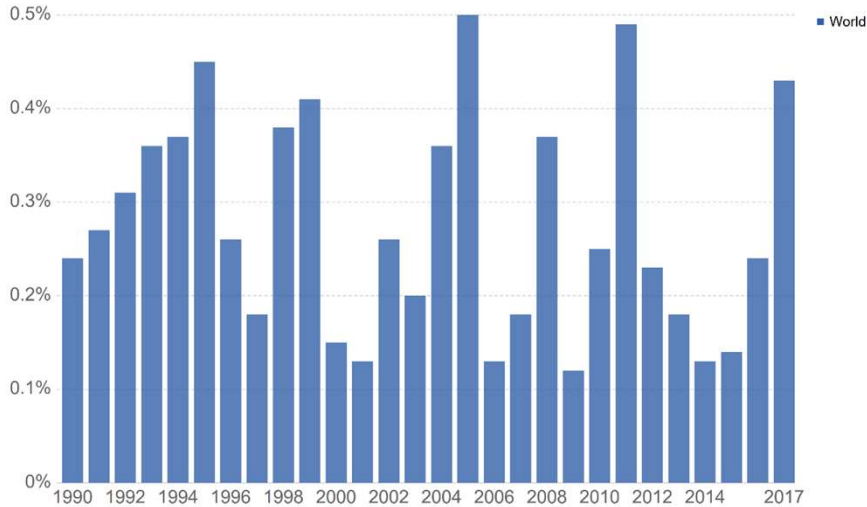
Source: Pielke, R. (2018). Tracking progress on the economic costs of disasters under the indicators of the sustainable development goals. Environmental Hazards, 1-6.
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Direct disaster economic loss as a share of GDP, 2016
The monetary value of total or partial destruction of physical assets existing in the affected area from natural disasters, as a share of gross domestic product (GDP). Direct economic loss is nearly equivalent to physical damage.
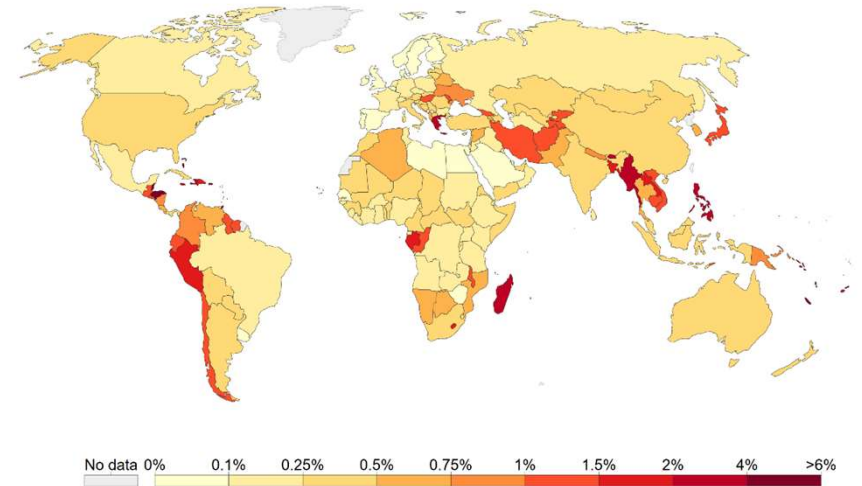
Source: UN Statistics Division
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The share of GDP varies between .15% and .5%, so relatively low because of the vast amount of components of GDP. However, the countries that cover those losses primarily are less developed and coastal, an unequal effect.

Target

- By 2030, reduce the adverse **per capita environmental impact of cities**, including by paying special attention to air quality and municipal and other waste management
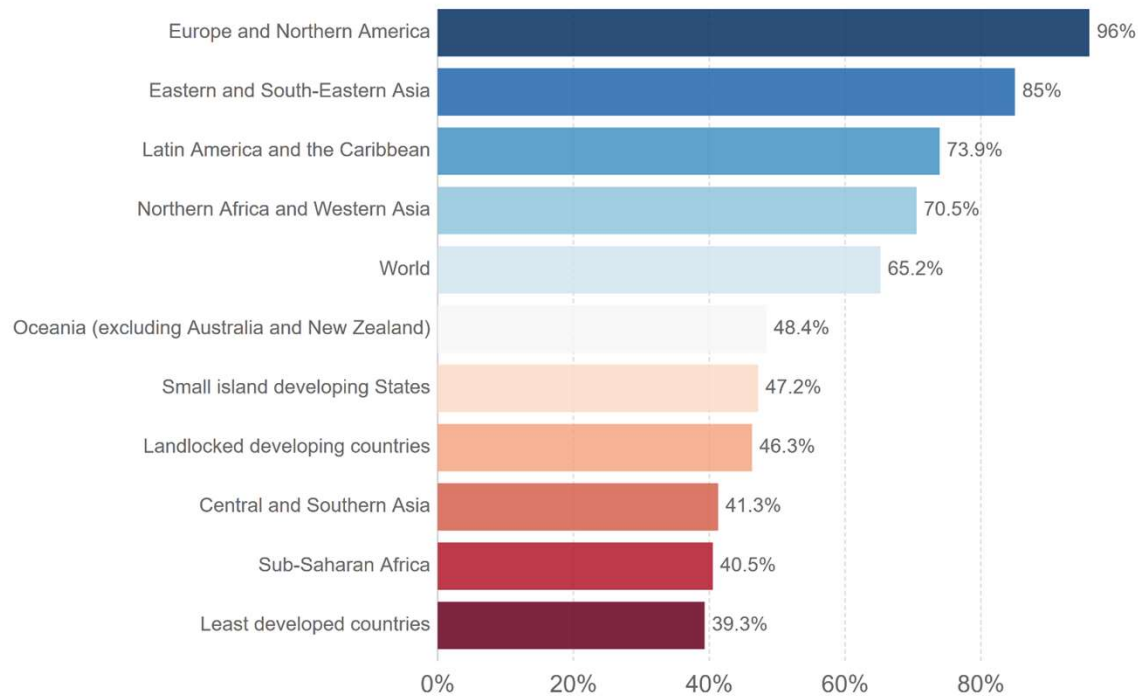
Indicators

- Proportion of **urban solid waste regularly collected** and with adequate final discharge out of total urban solid waste generated, by cities
- Annual mean levels of **fine particulate matter** (e.g. PM2.5 and PM10) in cities (population weighted)

https://sustainabledevelopment.un.org/sdg11

Proportion of population served by municipal waste collection, 2017

Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated.

Our World in Data

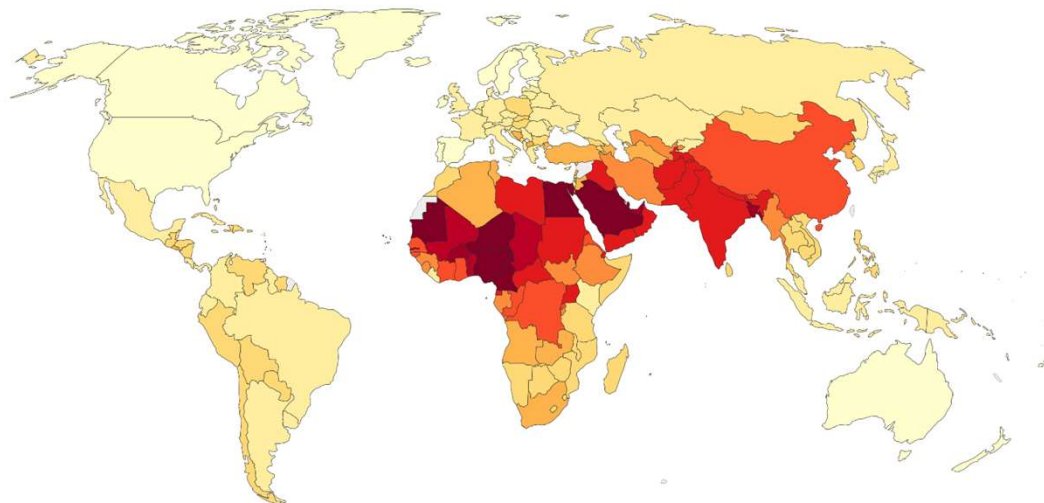| Region	Percentage
Europe and Northern America	96%
Eastern and South-Eastern Asia	85%
Latin America and the Caribbean	73.9%
Northern Africa and Western Asia	70.5%
World	65.2%
Oceania (excluding Australia and New Zealand)	48.4%
Small island developing States	47.2%
Landlocked developing countries	46.3%
Central and Southern Asia	41.3%
Sub-Saharan Africa	40.5%
Least developed countries	39.3%

Source: UN Statistics Division

CC BY

The sanitation factor of waste being collected, not the sustainability of the amount of waste

Particulate matter (PM 2.5) air pollution, 2016

Population-weighted average level of exposure to concentrations of suspended particles measuring less than 2.5 microns in diameter. Exposure is measured in micrograms per cubic metre (µg/m³).

Our World in Data

No data | 0 µg | 10 µg | 20 µg | 30 µg | 40 µg | 50 µg | 60 µg | 80 µg | 100 µg | 120 µg | >140 µg

Source: World Bank

OurWorldInData.org/air-pollution/ • CC BY

The amount of particles people are breathing

The EPA has standards of 12 µg/m³ for keeping people healthy

So many areas averages are well above that. Additionally this is the average, so it is likely many cities are dangerous as well even in the lighter colored areas

Target

- By 2030, provide universal access to **safe**, inclusive and accessible, **green and public spaces**, in particular for women and children, older persons and persons with disabilities
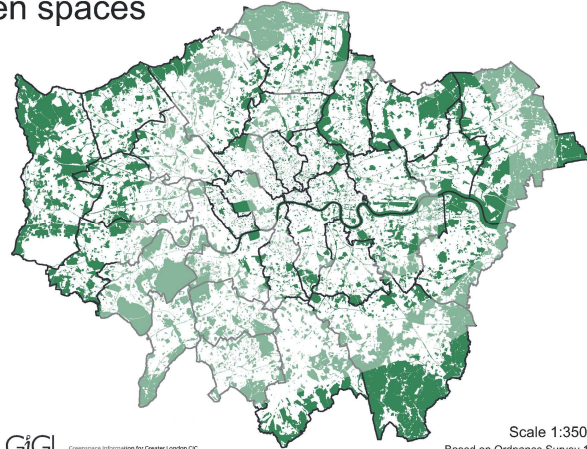
Indicators

- Average share of the built-up **area of cities that is open space** for public use for all, by sex, age and persons with disabilities
- Proportion of persons victim of **physical or sexual harassment**, by sex, age, disability status and place of occurrence, in the previous 12 months
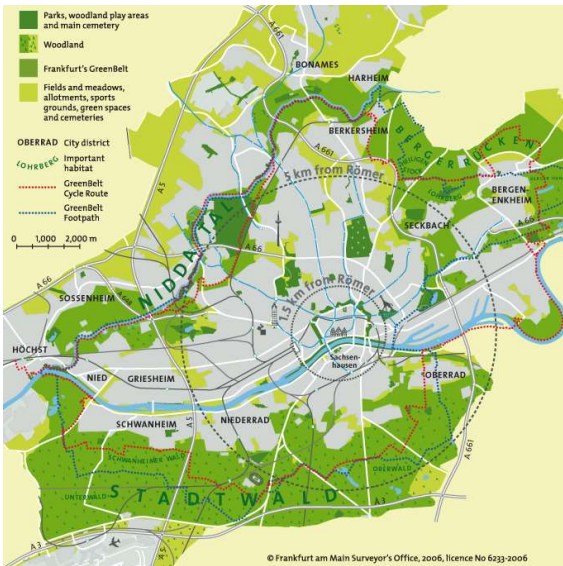
https://sustainabledevelopment.un.org/sdg11

Frankfurt

Open spaces

London

Paris

Recently a greater focus on establishing open green spaces,
Associated with better livability of the city

BUENOS AIRES	TOKYO	ISTANBUL	WHO (WORLD HEALTH ORGANIZATION)	SINGAPORE	VIENNA
1.9m²	3m²	6.4m²	9m²	66m²	120m²

GREEN SPACE PER INHABITANT
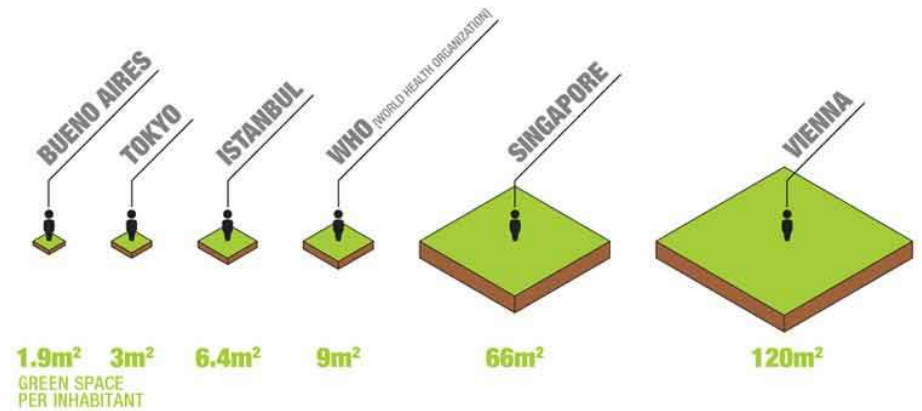
11.B

Target

- By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards **inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters**, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic **disaster risk management** at all levels

Indicators

- Proportion of local governments that adopt and implement **local disaster risk reduction strategies** in line with the Sendai Framework for Disaster Risk Reduction 2015-2030a
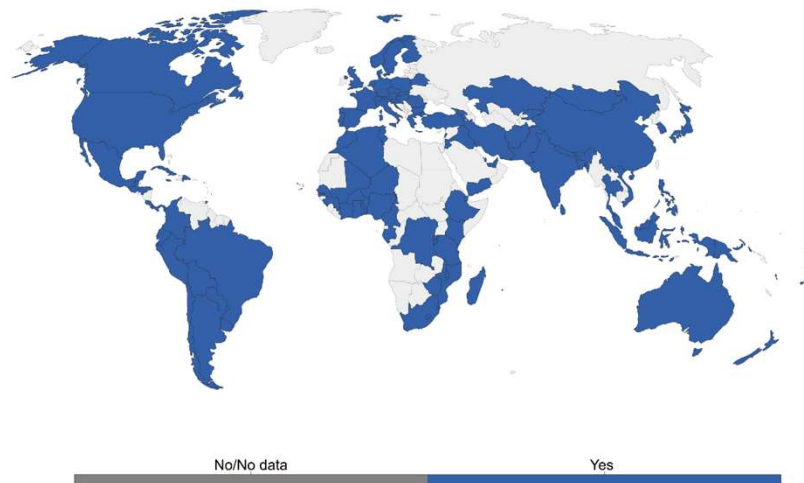- Number of countries with national and local disaster risk reduction strategiesa

https://sustainabledevelopment.un.org/sdg11

Does country have legislative and/or regulatory provisions for managing disaster risk?

Our World in Data

No/No data   Yes

Source: UN Statistics Division   CC BY

All countries with data have disaster risk strategies in place, but not sure about local measures

Sendai Framework for Disaster Risk Reduction
Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.

https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf

Target

- Support least developed countries, including through financial and technical assistance, in **building sustainable and resilient buildings utilizing local materials**

Indicators

- Proportion of **financial support** to the least developed countries that is **allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings utilizing local materials**

LEED (Leadership in Energy and Environmental Design)

Rates buildings on sustainability based on

- ◦ Impact on site and location
- ◦ Water Efficiency
- ◦ Energy Efficiency
- ◦ Material Selection
- ◦ Indoor Environmental Quality

At UTD:

- ◦ SSB- Platinum in 2010
- ◦ School of Management Addition- Silver in 2014
- ◦ ATEC- Silver in 2013
- ◦ Res Hall/Dining Hall/Rec Center West- Silver in 2014
- ◦ BSB- Gold in 2015
- ◦ Alumni Center- Gold in 2015
- ◦ ECSW- Gold in 2019
- ◦ Science Building- On edge of Gold and Silver

CERTIFIED 40-49 points
SILVER 50-59 points
GOLD 60-79 points
PLATINUM 80+ points

https://www.buildinggreen.com/leed

Air Pollution

4.2 million deaths every year result from exposure to outdoor air pollution

Human activities that are major sources of outdoor air pollution, include:
- Fuel combustion from motor vehicles (e.g. cars and heavy duty vehicles)
- Heat and power generation (e.g. oil and coal power plants and boilers)
- Industrial facilities (e.g. manufacturing factories, mines, and oil refineries)
- Municipal and agricultural waste sites and waste incineration/burning
- Residential cooking, heating, and lighting with polluting fuels

Pollutants with the strongest evidence of health effects are particulate matter (PM), ozone (O_3), nitrogen dioxide (NO_2) and sulphur dioxide (SO_2)

Prevention:
- Public transport, walking, biking, or low-emission vehicles
- More compact cities and green space
- Reuse gas from waste
- Clean technologies in industry
- Plant-based diets, less meat and processed foods
- Renewable energy usage

https://www.who.int/airpollution/en/

Dallas CECAP

By 2050, Dallas is likely to experience a 5° F increase in mean temperature during summer months, particularly if global greenhouse gas emissions continue to increase. Climate models also predict a decrease in overall annual precipitation, and an increase in the frequency, intensity, and length of severe droughts.

Comprehensive Environmental & Climate Action Plan
◦ Improve environmental quality of the city
◦ Reduce greenhouse gases
◦ Plan proposes over 90 actions across eight sectors
◦ Achieving carbon neutrality by 2050

City of Dallas is committed to meeting the international emission reduction targets set by the Paris Agreement in 2016 and the goal to keep warming globally at or below 1.5 degrees Celsius

https://www.dallasclimateaction.com/background

Draft of current plan: https://27aabd9a-6024-4b39-ba78-f6074e2fc631.filesusr.com/ugd/349b65_107eb63b25fa4a29b1d41631598fc10a.pdf

Summary *of CECAP Goals, Objectives and Targets:*

Goal	Objectives	Targets
1: Dallas' **buildings** are energy-efficient and climate resilient.	• **B-a**: Increase energy efficiency of existing buildings. • **B-b**: Ensure that new buildings are constructed sustainably and are carbon neutral. • **B-c**: Increase climate resilience for new and existing buildings through structural and operational improvements.	• 100% new construction will be net zero energy from 2030.
2: Dallas generates and uses renewable, reliable, and affordable **energy**.	• **E-a**: Maintain a high degree of reliability during extreme weather events. • **E-b**: Encourage investment in, and greater use of, renewable energy. • **E-c**: Ensure affordable access to renewable electricity	• 739,000 MWh and 3,695,000 MWh solar power installed by 2030 and 2050 respectively. • 5% and 50% of all Dallas residents & businesses enrolled in renewable energy plans by 2030 and 2050
3: Dallas' communities have access to sustainable, affordable, **transportation** options.	• **T-a**: Shift the surface transportation system to move people and goods in fuel-efficient vehicles. • **T-b**: Reduce trips where people drive alone. • **T-c**: Synergize land use and housing with transportation infrastructure to increase access to walking and biking options, and public transit. • **T-d**: Ensure that walking, biking, public transit, vehicular transportation infrastructure is reliable and safe under all weather conditions.	• Install more than 9,000 publicly available EV charging outlets by 2030 • All new transit buses and light duty vehicles after 2030 to be fully electrified, and then full fleet transition by 2040. • Single occupant vehicle travel mode shift from 88% to 79% in 2030 and 88% to 62% in 2050.
4: Dallas is a **zero-waste** community.	• **SW-a**: Create opportunities to go beyond recycling and choose to refuse, reduce, reuse and repair • **SW-b**: Operate a clean, green and efficient waste system. • **SW-c**: Generate energy from organics.	• Divert 35% and 80% of organic waste diverted to anaerobic digestor by 2030 and 2050 respectively. • Divert 60% and 90% of paper waste by 2030 and 2050 respectively. • 35% and 45% reduction in waste diverted from landfills in 2030 and 2040 respectively.
5: Dallas protects its **water resources** and its communities from flooding and drought.	• **WR-a**: Conserve and protect water resources through community stewardship, educational programs and best management practices. • **WR-b**: Protect neighborhoods from flooding and prepare for extreme heat and droughts. • **WR-c**: Be a regional leader in water resilience by leveraging innovative approaches, strategies and technologies	• % decrease in per-capita annual water consumption. • 5%, and 10% of water for indirect reuse implementation by 2030 and 2050 respectively. • 30%, 60% and 100% reduction in number of impaired water bodies listed in the watershed (within DWU service area) by 2030, 2040 and 2050 respectively. • 45% and 100% reduction in GHG emissions from treatment facilities by 2035 and 2050 respectively.
6: Dallas protects and enhances its **ecosystems,** trees and green spaces that in turn improve public health.	• **EG-a**: Leverage green spaces to provide climate adaptation benefits • **EG-b**: Increase, enhance and maintain healthy forests, parks, and green spaces. • **EG-c**: Integrate nature-based solutions into the public realm as a public health strategy.	• 33%, 37% and 40+% canopy cover by 2030, 2040, 2050 • 20%, 50% and 75% reduction in urban heat island index by 2030, 2040, 2050 respectively. • 80%, 90% and 95% population within ½ mile walk to a park or trail by 2030, 2040, 2050 respectively.
7: All Dallas' communities have access to healthy, local **food**.	• **FA-a**: Build organizational capacity and partnerships around an Urban Agriculture network • **FA-b**: Improve food access in food deserts. • **FA-c**: Reduce food miles by encouraging local food production and consumption. • **FA-d**: Reduce food waste by making it easy for restaurants, markets and grocery stores with surplus food to reach communities in need. • **FA-e**: Prepare the food system to be more resilient to extreme weather events	• 50%, 75%, 100% of the population within ½ mile walk or 10-minute drive to healthy, affordable food by 2030, 2040, 2050 • Increase 20%, 50%, 75% acres of urban gardens producing food for community distribution, local markets or restaurants by 2030, 2040, 2050 • Increase 10%, 25%, 50+% of restaurants, farm stands, or markets sourcing from local producers by 2030, 2040, 2050
8: All Dallas' communities breathe clean **air**.	• **AQ-a**: Take a comprehensive approach to addressing air quality at the neighborhood level • [several other actions in other focus areas also contribute towards Air Quality Goals]	• Meet ground level ozone attainment standard by 2030 and maintain status through 2050. • Maintain attainment for Lead, CO, Nitrogen Dioxide, Particulate Matter (PM10), (PM2.5) and Sulfur Dioxide through 2050.

Ted Talks

Human and environment focused cities (13 minutes):
https://www.ted.com/talks/peter_calthorpe_7_principles_for_building_better_cities