

Appendix A

ARC3.2 Glossary

Term	Definition ¹
4Rs (reduce, reuse, recycle, resource recovery, and disposal)	<i>Reduce</i>: This refers to waste avoidance and materials management, i.e., avoiding or reducing primary/ virgin materials for manufacturing and preserving natural resources. This requires reducing financial and environmental resources in the collection, transport, treatment, and disposal of waste. For example, wastage can be minimized through reduced packaging, improved design, and use of durable materials. <i>Reuse</i>: This refers to the practice of using materials over and over again for the same purpose for which they were intended. Reusing waste may require collection but relatively little or no processing. <i>Recycle</i>: This refers to any activity that involves the collection, sorting, and processing of used or unused items that would otherwise be considered as waste into raw material which is then remanufactured into new products. <i>Resource recovery</i>: This encompasses recycling, reprocessing, and energy recovery consistent with the most efficient use of the waste material. Resource recovery includes converting organic matter into useable products (such as compost and digestate) or energy recovery in the form of electricity and/or heat. <i>Disposal</i>: If none of the above options is possible, then waste should be disposed of in a controlled manner. This includes using a sanitary landfill or pretreating the waste in other ways in order to prevent harmful impacts on public health or the environment.
Acidification	Acidification refers to a reduction in the pH of the ocean over an extended period time caused primarily by uptake of carbon dioxide (CO ₂) from the atmosphere
Actors	Individuals, communities, organizations, and networks that participate in decision-making related to urban adaptation and mitigation.
Adaptation (or Climate Change Adaptation)	Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory, autonomous, and planned adaptation.
Adaptation deficit	Failure to adapt adequately to existing climate risks
Adaptive capacity	The degree to which system dynamics can be modified to reduce risk. Traditionally, adaptive capacity focused on human actors and institutions, but, in the context of urban biodiversity and ecosystems, non-human actors, behavior, species interactions, and human–ecological interventions are also important. The ability of individuals or communities to utilize their resources and capitals to resist and adapt to present and future hazards. This capacity varies across and within societies, conditioned to the degree to which the geophysical, biological, and socioeconomic systems are susceptible to the adverse impacts of climate change while being dependent on several factors such as economic wealth, technology, information and skills, infrastructure, institutions, and equity. The ability of an agent or system to prepare for stresses and changes in advance of the shock or to adjust in the response to the effects of the shock. A function of the quality of provision and coverage of infrastructure and services, investment capacity, and land-use management. Urban adaptive capacity during extreme events depends on : (1) proper and simultaneous functioning of lifeline systems including transportation, water, communications, and power; (2) the robustness of critical facilities for public health, public safety, and education; and (3) preparedness programs and response and relief capabilities.
Adaptive management	A structured, iterative process of decision-making in the face of imperfect information. Adaptive management recognizes the uncertainties associated with projecting future outcomes and considers a range of possible future outcomes when formulating interventions. It also explicitly incorporates models of complex systems to support decisions and requires regular updating of models to support institutional learning and iterative decision-making, both of which can facilitate more effective management of complex systems.
Aerobic composting	The degradation of organic waste by micro-organisms in a controlled environment and in the presence of oxygen to produce a stable product: compost. The process, which is ineffective for the management of municipal solid wastes high in plastics, metals, and glass content, can directly emit varying levels of gases including nitrous oxide, depending on how the closed system is managed.

¹ All key climate change definitions in this Glossary are taken from the Intergovernmental Panel on Climate Change (IPCC) Fifth Report (AR5).

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Term	Definition
Avoid-Shift-Improve (ASI)	A transport policy and investment paradigm that emphasizes: (1) avoiding unnecessary or low-value travel through smarter urban planning, transport pricing, sound logistics, and telecommunications; (2) shifting travel to lower polluting modes like public transport, walking, cycling, and rail freight; and (3) improving the remaining transport with cleaner vehicles and fuels and more efficient network operations.
Biological diversity	The variability among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems.
Biological technologies	Technologies that require lower temperature than thermal technologies for waste treatment. Examples of these technologies are anaerobic digestion, composting, biodiesel production, and catalytic cracking. They are considered appropriate treatment systems for biodegradable waste. Byproducts of these technologies include electricity, biogas, compost, and chemicals.
Bus rapid transit (BRT)	Bus systems that run on a segregated lane. They currently operate or are being built in more than 300 cities. Cities with established systems, such as Curitiba and Bogota, have seen reduced automobile trips, fuel use, and emissions.
Buyout programs	Government programs reimbursing shorefront landowners for abandoning property in high-risk zones.
Cap-and-trade	A market-based policy tool for protecting human health and the environment by controlling large amounts of emissions from a group of sources. A cap-and-trade program first sets an aggressive cap, or maximum limit, on emissions. Sources covered by the program then receive authorizations to emit in the form of emissions allowances, with the total amount of allowances limited by the cap. Each source can design its own compliance strategy to meet the overall reduction requirement, including the sale or purchase of allowances, installation of pollution controls, and implementation of efficiency measures, among other options. Individual control requirements are not specified under a cap-and-trade program, but each emission source must surrender allowances equal to its actual emissions in order to comply. Sources must also completely and accurately measure and report all emissions in a timely manner to guarantee that the overall cap is achieved.
Carbon sequestration	The process of capturing and storing CO₂ emissions. This may involve removing CO₂ from the atmosphere or directly capturing the emissions at their source. Processes that capture CO₂ emissions from sources like coal-fired power plants, then stores, reuses, and removes the emissions from the atmosphere. Storage is typically provided in geologic formations including oil and gas reservoirs, unmineable coal seams, and deep saline reservoirs.
Catastrophe bond	A financial instrument developed by insurers or governments to pass extreme risks on to private investors who are willing to assume them in exchange for high interest rates.
Cities (<i>see also</i> 'urban systems')	Complex human-dominated social-ecosystems that interrelate dynamically with the economic and technological systems and the built environment.
City Creditworthiness Program	A program designed by the World Bank to help city financial officers conduct thorough reviews of their municipal revenue management systems and take actions to qualify for a rating.
Clean development mechanism (CDM)	One of the "flexibility mechanisms" defined under the Kyoto Protocol. Its objective is to assist developing countries in achieving sustainable development and mitigating greenhouse gas emissions that cause climate change. In addition, the CDM aims to assist industrialized countries in achieving compliance with their quantified emission limitations.
Climate risk factors	The subset of climate hazards that are of most consequence for a given city. They are selected on the basis of interactions between researchers and stakeholders and expert judgment using quantitative and qualitative climate hazard information.
Coastal City Flood Vulnerability Index (CCFVI)	A tool measuring city vulnerability to flooding comprised of a hydro-geological component (sea level rise, river discharge, soil subsidence, cyclones, storm surge), socioeconomic component (exposed populations, vulnerable groups), and a politico-administrative component (institutional organizations, flood risk maps, flood protection measures)
Combined sewer systems	Waste removal systems designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe and deliver it to treatment plants. During heavy precipitation events, the capacity of combined sewers can be exceeded, leading to discharges of untreated wastewater directly to nearby water bodies.

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Term	Definition
Congestion pricing	Congestion pricing or congestion charge is a system of surcharging users of public goods that are subject to congestion through excess demand such as higher peak charges for use of bus services, electricity, metros, railways, telephones, and road pricing to reduce traffic congestion. This pricing strategy regulates demand, making it possible to manage congestion without increasing supply.
Conservation easement	Transfer of rights to prevent further development while landowner remains on the property
Cost-benefit analysis (CBA)	A cost-benefit analysis is a process by which business decisions are analyzed. The benefits of a given situation or business-related action are summed and then the costs associated with taking that action are subtracted.
Decarbonization	Decarbonization denotes the declining average carbon intensity of primary energy over time.
Decision-centric approach (DCA) (see also <i>Impact-Centric Approach</i>)	Urban disaster risk management and climate change adaptation that aims to reduce hazard exposure, nurture resilience, build capacity, and establish governance that enables stakeholders' visions and goals.
Development-accumulated risk	Social construction of risk stemming from government's refusal to address existing vulnerabilities resulting from unplanned or poorly planned development.
Disaster	Severe alterations in the normal functioning of a community or a society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic, or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery.
Disaster risk	The likelihood over a specified time period of severe alterations in the normal functioning of a community or a society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic, or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery.
Disasters Social Vulnerability Index (DSVI)	A statistical evaluation of a series of indicators related to demographics, living standards, and economic capacity for administrative units or social groups.
Downcycling (see also <i>Upcycling</i>)	The process of converting waste materials into products that have less value than the original.
Early warning systems (EWS)	System designed to warn a population of potentially fatal phenomena that might cause casualties and/or structural damage to housing or infrastructure
Ecosystem-based adaptation (EbA)	Climate-resilience techniques that use ecological services for adaptation. Adaptation that uses biodiversity and ecosystem services as part of an overall adaptation strategy to help people and communities adapt to the negative effects of climate change at local, national, regional, and global levels.
Ecosystem services (see also <i>Urban ecosystem services</i>)	The benefits that people obtain directly or indirectly from ecosystem functions such as protection from storm surges, cooling during heat waves, regulation of air quality, and provision of food, fiber, and freshwater.
El Niño Southern Oscillation	El Niño (La Niña) episodes are characterized by warming (cooling) surface waters of the tropical central and eastern Pacific. The Southern Oscillation is a seesaw pattern of changes in global-scale tropical and subtropical surface pressure, trade winds, circulation, and precipitation.
Environmental gentrification	Low-carbon building and construction standards that undermine socially progressive intentions of housing policy and result in housing designs that are unaffordable for low- and medium-income households.
Equality	A state or quality of correspondence in quantity, degree, value, rank, or ability; for example, with respect to status, rights, or opportunities. In urban areas, crucial components of equality include the right to adequate housing and security of tenure; affordability, accessibility, location, cultural adequacy, and habitability of accommodation; and availability of services, infrastructure, and facilities.
Equity	Fairness or justice in the way that people are treated.
Equity Reference Framework (ERF)	A way to operationalize common but differentiated responsibilities in international climate negotiations.
Evacuation	To remove from a dangerous place.

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Term	Definition
Exposure	The fact or condition of being affected by something or experiencing something : the condition of being exposed to something. The inventory of people, property, or other valued items in areas where hazards may occur.
Fuzzy cognitive mapping	Interview and analysis method that aids in assessing the relative impact of weather events among individuals and groups and supports developing socially feasible adaptation options. A fuzzy cognitive map (FCM) is a weighted, directed and causal network of a situation or system produced by an interviewee. FCMs can be analyzed using network statistics and scenario evaluation.
Gender equality	When women and men have the same conditions for realizing their full human rights and potential to contribute to national, political, economic, social, and cultural development and to benefit from the results; the same valuing by society of both the similarities and differences between women and men and the varying roles that they play.
Gender equity	The process of being fair to women and men. To ensure fairness, measures must often be available to compensate for historical and social disadvantages that prevent women and men from otherwise operating on a level playing field.
Gender mainstreaming	The process of making women's and men's concerns and experiences an integral dimension of the design, implementation, monitoring, and evaluation of policies in political, economic, and social spheres so that women and men benefit equally, and inequality is not perpetuated.
Gender-sensitive	Acknowledging the different rights, roles, and responsibilities of women and men and the relationships between them with a goal of transforming unequal gender relations to promote shared power, control of resources, and decision-making.
Global climate models (GCMs)	Physics-based mathematical representations of the Earth's climate system over time that can be used to estimate how sensitive the climate system is to changes in atmospheric concentrations of greenhouse gases and aerosols.
Green cities	Planning paradigms emphasizing ecological restoration and connected multifunctional green infrastructure in dense, compact cities. These prioritize walkable and mixed land uses and respond to the needs of people and ecosystems.
Green infrastructure	Combined engineering and ecological systems that provide ecological services such as cooling, stormwater management, urban heat island reduction, carbon storage, flood protection, and recreation.
Greenhouse gas (GHG)	Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds. This property causes the greenhouse effect. Water vapor (H ₂ O), carbon dioxide (CO ₂), nitrous oxide (N ₂ O), methane (CH ₄), and ozone (O ₃) are the primary greenhouse gases in the Earth's atmosphere. As well as CO ₂ , N ₂ O, and CH ₄ , the Kyoto Protocol deals with the greenhouse gases sulfur hexafluoride (SF ₆), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).
Hazard (see also 'Urban climate hazard')	The potential occurrence of a natural or human-induced physical event that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, and environmental resources.
Health	A state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. In cities, health is associated with social, economic, and environmental determinants, including climate change.
Health dis-benefits	Interventions adopted by different sectors that increase the adverse impacts of climate change on health. For example, urban wetlands designed primarily for flood control may promote mosquito breeding.
Health system	All the organizations, institutions, and resources that are devoted to producing actions principally aimed at improving, maintaining, or restoring health.
Heat wave	Prolonged periods of heat crossing either an absolute or relative threshold above a long-term temperature average that differs by location; typical relative thresholds are two or three standard deviations above mean temperatures.
High occupancy toll (HOT) lanes	Highway lanes with access criterion that encourages carpooling and higher vehicle occupancy, such as cars with two or more passengers. In general, HOT lanes tend to be progressive (impose a tax rate in which people with higher incomes pay proportionally more than people with lower incomes), especially when alleviating congestion on the unpriced lanes.

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Term	Definition
Impact-centric approach (ICA) (see also <i>Decision-Centric Approach</i>)	A linear approach in disaster risk management and climate change adaptation decision-making for cities that starts with an examination of the climate hazards to cities and then takes into account vulnerability to hazards by integrating the knowledge of existing city capacities in order to understand the likely impact of disasters and climate change.
Indian ocean dipole (IOD)	A coupled ocean–atmosphere phenomenon in the equatorial Indian Ocean defined as the difference between the sea surface temperature (SST) of the eastern and western parts of the Indian Ocean; it is measured by the Dipole Mode Index (DMI). A negative IOD event is characterized by cooler than normal water in the tropical eastern part of the Indian Ocean and above normal warmer water in the western part of the Indian Ocean basin.
Informality	A state of regulatory flux, where land ownership, land use and purpose, access to livelihood options, job security, and social security cannot be fixed and mapped according to any prearranged sets of laws, planning instruments, and regulations.
Informal settlement/slum	A heterogeneous type of settlement with a certain degree of deprivation. Commonly, slums are considered to lack one or more of five basic housing conditions: (1) durable housing of a permanent nature, 2) sufficient living space, 3) safe access to water, 4) access to adequate sanitation, and 5) security of tenure.
Integrated solid waste management (ISWM)	A comprehensive, multidimensional, and integrated approach to solid waste management in cities that is effective, environmentally sustainable, socially acceptable, and affordable.
Justice	Justice can refer to either social or environmental justice. The social justice movement seeks to establish fair distributions of wealth, opportunity, and privileges by means of fair treatment, proportional distribution, and the meaningful involvement of all people in social decision-making. The goals of the environmental justice movement are healthy environments and protection from environmental hazards for all people, regardless of race, nationality, origin, or income. Environmental justice interacts with environmental risk, exposure, impacts, sensitivity, and adaptive capacity. In that respect, social justice and environmental justice are inextricably linked.
Landscape dynamics	Spatial and temporal scaling of disturbance regimes and its influence on equilibrium/non-equilibrium states in a particular landscape.
Land value capture	Local public sources of finance such as development impact fees, tax incremental financing, public land leasing and development right sales, land readjustment programs, connection fees, joint developments, and cost-benefit-sharing.
Local climate zones (LCZs)	Urban neighborhood classification characterized by typical building heights, street widths, vegetative cover, and paved area.
Low-Carbon City Development Program (LCCDP)	An ISO-compliant environmental management system at the city level helping city governments to plan, implement, monitor, and account for low-carbon investments and climate change mitigation actions across all sectors in the city over time.
Low elevation coastal zone (LECZ)	The area below 10 meters in elevation that is hydrologically connected to the sea. The LECZ is home to approximately 10% of the world's total population and 13% of its urban population.
Madden Julian Oscillation	The dominant mode of tropical intraseasonal climate variability (on the order of 20–100 days). It is a “pulse” of cloudiness and rainfall moving eastward in the equatorial region, in the Indian Ocean, and the western Pacific Ocean, and it can excite atmospheric teleconnections that affect the climate and weather in many regions around the world.
Maladaptation	Practices, even if well intended, that are likely to increase the proportion of a population living in vulnerable conditions. For instance, desalination, while addressing immediate water needs, can be considered maladaptive since it requires an enormous amount of energy and therefore increases GHG emissions.
Managed or strategic relocation/managed realignment (see also <i>Relocation</i>)	Process that involves moving the existing built environment near coasts inland. Because people often tend to be unaware of increasing coastal risks due to climate change, setbacks and managed realignment are generally unpopular and politically contentious. Greater stakeholder involvement from the onset may, however, encourage increased public acceptance.
Mega-city	A very large city, typically one with a population of more than 10 million people.
Microgrid	A group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected or island-mode.

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Term	Definition
Mitigation (or, <i>Climate Change Mitigation</i>)	An anthropogenic intervention to reduce the anthropogenic forcing of the climate system; it includes strategies to reduce greenhouse gas sources and emissions and enhancing greenhouse gas sinks.
Multiple criteria analysis (MCA)	A general framework for supporting complex decision-making situations with multiple and often conflicting objectives that stakeholders groups and/or decision-makers value differently.
Municipal separate storm sewer systems (MS4)	Waste system in which stormwater and wastewater are managed separately. Therefore, during intense precipitation events, stormwater can be discharged, but not sewage, thus avoiding combined sewer overflows.
Municipal solid waste (MSW)	Solid waste generated from community activities, e.g., residential, commercial and business establishments. While construction waste and hazardous wastes are excluded as MSW in European countries, they are considered as MSW in most developing countries. Commonly called garbage, trash, or refuse, MSW refers to waste generated from the following activities: residential (single and multi-family dwellings); commercial (offices, stores, hotels, restaurants); institutional (schools, prisons, hospitals, airports); industrial (manufacturing, fabrication, etc., when the municipality is responsible for their collection); non-recycled construction and demolition debris; municipal services (street cleaning, landscaping).
National Development Banks	National publicly owned entities that collect funds from the stock market and/or savings and deposits. City governments and municipalities may be able to apply to these domestic public banks for resources under special lines with favorable lender conditions in the field of climate change mitigation and adaptation.
Natural climate variability	Variations in the climate due to natural processes; effects of human activities on the climate system are superimposed on the background of natural variability. Climate varies on daily, monthly, seasonal, and annual timescales; these affect the frequency and intensity of extreme events that can produce natural disasters.
Non-motorized transport (NMT)	Transport options including walking or cycling; this is the lowest greenhouse gas emissions option, accounting for half of all trips in many cities.
North Atlantic Oscillation	An oscillation of atmospheric pressure between subtropical and high latitudes; it is the dominant mode of atmospheric circulation variability in the North Atlantic region. Its influence on climate extends from North America to Europe, Asia, and Africa. The NAO and its influence are stronger in boreal winter, but are present throughout the year. Its index exhibits interannual variability but also a tendency to remain in one phase for long periods, so its impacts may be persistent.
Nuisance flooding	Less extreme tidally related coastal flood events. Two-thirds of U.S. nuisance flood days since 1950 can be attributed to climate change.
Public-private partnerships (PPP)	Coalitions between local authorities and private entities that are commonly used to create critical infrastructure, housing affordability, and urban regeneration. The role of the municipality in PPPs consists of facilitating project development by removing barriers while the private sector assumes part of the risk, provides funding, and manages the project.
Radiative forcing	A measure of the influence a factor has in altering the balance of incoming and outgoing energy in the Earth-atmosphere system and an index of the importance of the factor as a potential climate change mechanism.
Recycling (see also <i>Upcycling and Downcycling</i>)	Process that results in products that have the same value as the original or can be used for the same purpose. The conversion of waste into reusable material.
Regional climate models (RCMs)	Mathematical code that scientists use to project future climate at the local scale. RCMs simulate climate processes that occur at finer spatial resolution, such as convective precipitation.
Relocation (see also <i>Managed or strategic relocation/managed realignment</i>)	The physical movement of people instigated, supervised, and carried out by either local or national authorities. Relocation practices that are temporary are known as <i>evacuation</i> , whereas more permanent efforts to counteract slow-onset effects of climate change imply resettling in another area and usually require planning. <i>Voluntary relocation</i> versus <i>forced relocation</i> depends on the extent to which communities are driving the process and whether existing frameworks and guidelines are put in place to support them.
Representative concentration pathways (RCPs)	Trajectories of radiative forcing caused by greenhouse gases and other important agents such as aerosols. Each RCP is consistent with a trajectory of greenhouse gas emissions, aerosols, and land-use changes developed for the climate modeling community as a basis for long-term and near-term climate modeling experiments. RCPs serve as inputs to global climate models and are used to project the effects of these climate drivers on future climate.

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Term	Definition
Resilience	The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and change.
Response	Any action taken by governmental and non-governmental actors to manage environmental change, in anticipation of known change or after change has happened. Responses are fashioned through power, through consensus, compromise, or coercion, often by actors who frame mitigation and adaptation in the context of other environmental concerns (e.g., energy and disaster risk management), development pressures and goals (e.g., economic growth and human well-being), and in pursuit of a range of often conflicting values and priorities.
Response capacity	A pool of resources and assets that governmental and non-governmental actors may draw on for climate change mitigation and adaptation while attending to other development needs.
Risk	The potential for consequences where something of human value (including humans themselves) is at stake and where the outcome is uncertain. Risk is often represented as probability of occurrence of a hazardous event(s) multiplied by the consequences if the event(s) occurs.
Salinization	Saltwater intrusion upstream and into coastal aquifers, potentially jeopardizing urban drinking water supplies and contaminating agricultural soils. This is a slow process that can be accelerated by human-induced activities such as excessive extraction from aquifers.
Saving schemes	Strategy designed to encourage savings through small but regular deposits or deductions from salaries. In the context of adaptation, saving schemes commonly serve as coping strategies, allowing households to overcome the impact of a climate event.
Sensitivity	The degree to which an agent or system is affected by a hazard.
Setbacks	Regulations restricting shore construction based on erosion or elevation thresholds.
Shoreline protection	Engineering structures or enhanced natural features designed to withstand current and anticipated sea level rise, storm surge, and shoreline retreat. Protection includes armoring the shoreline with hard infrastructure defenses and soft defenses that mimic natural processes.
Smart growth	A planning framework centered around the conservation of open spaces, enhancement of mixed land use, denser development, and walkable neighborhoods.
Sorting and collection	Waste sorting is the process of separating municipal solid waste into different types. Sorting can occur before or after the waste is collected. Collection involves gathering waste from households, from community and street bins, or from bulk generators into larger containers or vehicles. It extends to activities such as driving between stops, idling, loading, and on-vehicle compaction of waste.
Subnational Technical Assistance (SNTA) program	World Bank program assisting subnational entities to prepare for and obtain credit ratings. The SNTA program provides technical assistance to improve subnational creditworthiness and address weaknesses highlighted by a rating assessment.
Subsidence	Settling of land caused by groundwater overdraft, sediment compaction, long-term geologic processes, enlarging of coastal inlets, dredging of ports and waterways, and upstream trapping of sediments in reservoirs.
Sustainable development goals (SDGs)	Goals passed by the United Nations in September 2015 intended to inspire, guide, and promote sustainable development.
Sustainable drainage systems (SuDS)	Measures aimed at retaining and infiltrating storm water (bio-swales, rain gardens, retention basins, bio-lakes, wetlands, rainwater harvesting systems). This allows for control of water discharge and reduces flood risk.
Thermal technologies	Waste-processing methods that operate at high temperature to produce heat or electricity as a primary byproduct. Gasification and pyrolysis are advanced forms of incineration and suitable for processing dry waste with low moisture content.
Transformation	The conditions under which system-level changes take place in which the risk management regime of a specific site, sector, or institution is fundamentally altered as one management regime is replaced by another regime.
Transit-oriented development (TOD)	Compact, pedestrian-friendly development that incorporates housing, retail, and commercial growth within walking distance of public transportation, including commuter rail, light rail, ferry, and bus terminals.
Transit-synergized development (TSD)	Multisectoral “node-and-network” approach that integrates land use, mass transit, green buildings, green districts, and advanced energy infrastructure to promote healthy, climate-resilient districts and cities.

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Term	Definition
Turbidity	The measure of relative clarity of a liquid. It is an optical characteristic of water and is an expression of the amount of light that is scattered by material in the water when a light is shined through the water sample. The higher the intensity of scattered light, the higher the turbidity. Excessive turbidity, or cloudiness, in drinking water is aesthetically unappealing and may also represent a health concern.
UCCRN Regional Hubs	The Hubs promote enhanced opportunities for urban climate change adaptation and mitigation knowledge and information transfer, both within and across cities, by engaging in ongoing dialogue between scholars, experts, urban decision-makers, and stakeholders.
Upcycling (<i>see also Recycling and Downcycling</i>)	The reprocessing of waste materials into products that have higher value than the original.
Urban design	The arrangement and design of buildings, public spaces, transport systems, services, and amenities; the process of giving form, shape, and character to groups of buildings, to whole neighborhoods, and the city. It blends architecture, landscape architecture, and city planning together to make urban areas functional and attractive.
Urban ecosystems	All vegetation, soil, and water-covered areas that may be found in urban and peri-urban areas at multiple spatial scales (parcel, neighborhood, municipal city, metropolitan region), including parks, cemeteries, lawns and gardens, green roofs, urban allotments, urban forests, single trees, bare soil, abandoned or vacant land, agricultural land, wetlands, streams, rivers, lakes, and ponds.
Urban ecosystem services	Those ecosystem functions that are used, enjoyed, or consumed by humans in urban areas, which can range from material goods (such as water, raw materials, and medicinal plants) to various non-market services (such as climate regulation, water purification, carbon sequestration, and flood control).
Urban heat island	The temperature gradient between dense, built-up environments and rural areas around them. Elevated surface and air temperatures in cities due to the low albedo of urban surfaces (such as rooftops and asphalt roadways), trapping of radiation within the urban canopy, differential heat storage, and greater surface roughness. Reduction in evapotranspiration due to impervious surfaces also contributes to the urban heat island.
Urban planning	The field of practice that uses space as a key resource for development; it takes place at the scale of the city or city-region, whose overall spatial pattern it sets.
Urban water systems	The infrastructure that cities rely on for managing the availability of good-quality water for different users. Key determinants of a well-functioning system include water for health and well-being, economic productivity, recreational and cultural benefits, and environmental services, as well as a design consistent with the available operational capacity.
Urbanization	A set of system-level processes through which population and human activities are concentrated at sufficient densities at which scalar factors become present that in turn can promote further agglomeration effects; conversion of non-urban land to urban land uses.
Vulnerability	A lack of resilience or reduction in adaptive capacity. Exposure to a hazard, sensitivity to that exposure, and capacity to adapt to the hazard.
Vulnerability mapping	A tool consisting of a set of indicators for identifying the need for and planning the implementation of transitional adaptation measures in cities, as well as monitoring and evaluating their results.
Waste-to-energy (WTE)	Waste-to-energy or energy-from-waste is the process of generating energy in the form of electricity and/or heat from the incineration of waste
Waste treatment	The process of converting nonrecyclable waste into composts or energy in various forms of useable heat, electricity, or fuel.
Water security	The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socioeconomic development; for ensuring protection against water-borne pollution and water-related disasters; and for preserving ecosystems in a climate of peace and political stability. The sustainable availability of water for different uses and the avoidance of water-related disasters.
Water-sensitive urban design (WSUD)	Urban planning and design approach that considers all the elements of the water cycle and their interconnections to achieve an integrated outcome that sustains a healthy natural environment while addressing societal needs and reducing climate-related risks.
Zoning	Land management policy that mandates which areas can be developed and under which conditions.

Appendix B

Acronyms and Abbreviations

4PCCD	Public-Private-People Partnerships for Climate Compatible Development	CCSR	Center for Climate Systems Research
AAG	American Association of Geographers	CCUS	Carbon Capture Utilization and Storage
ABDI	Brazilian Industrial Development Agency (Agência Brasileira De Desenvolvimento Industrial)	CDF	Community Development Funds
ABS	Australian Bureau of Statistics	CDIA	Cities Development Initiative for Asia
ACC	African Center for Cities	CDKN	Climate and Development Knowledge Network
ACCA	Asian Coalition for Community Action Program	CDM	Clean Development Mechanism
ACCCRN	Asian Cities Climate Change Resilience Network	CEBA	Community-Ecosystem-Based Adaptation
ACEEE	American Council for Energy-Efficient Economy	CEMC	Community Emergency Management Coordinator
ACHR	Asian Coalition for Housing Rights	CEO	Center for Economic Opportunity
ADB	Asian Development Bank	CERs	Certified Emissions Reductions
ADB/JFPR	Asian Development Bank/Japan Fund for Poverty Reduction	CFC	Chlorofluorocarbon
AIANY	American Institute of Architects New York City chapter	CH ₄	Methane
AICP	American Institute of Certified Planners	CHP	Combined Heat and Power
AIMA	Active Integrated Mitigation and Adaptation	CIF	Climate Investment Fund
AMO	Atlantic Multi-Decadal Oscillation	CIT	Canberra Institute of Technology
AMOC	Atlantic Meridional Ocean Circulation	CIUP	Community Infrastructural Upgrading Program
ANU	Australian National University	CMIM	Center for Mediterranean Integration in Marseilles
APA	American Planning Association	CMIP5	Coupled Model Intercomparison Project Phase 5
AR5	IPCC Fifth Assessment Report	CNG	Compressed Natural Gas
ARC	Argentine Red Cross	CNRS	Centre national de la recherche scientifique
ARC3	First UCCRN Assessment Report on Climate Change and Cities	CO	Carbon Monoxide
ARC3.2	Second UCCRN Assessment Report on Climate Change and Cities	CO ₂	Carbon Dioxide
ASI	Avoid-Shift-Improve	COMLURB	Companhia Municipal de Limpeza Urbana
AURAN	African Urban Risk Analysis Network	COP	Conference of the Parties
BAPPEDA	Planning and Regional Development Agency (Badan Perencanaan dan Pembangunan Daerah)	COPPE	Centre for Integrated Studies on Climate Change and the Environment
BCR	Brussels Capital Region	CORE	Centralized Organic Recycling Equipment
BEST	Integrated Social Economic Development, Tangerang (Bina Ekonomi Sosial Terpadu)	CPC	Climate Planning Committee
BIS	Bank of International Settlements	CRED	Center for Research on Environmental Decisions
BLHD	Regional Environmental Agency (Badan Lingkungan Hidup Daerah)	CRL	Crossrail LTD
BMP	Best Management Practices	CRPP	City Resilience Profiling Program
BNDES	Brazilian Development Bank	CSDS	Case Study Docking Station
BORDA	Bremen Overseas Research and Development Association	CSE	Centre for Science and Environment
BRAC	Bangladesh Rural Advancement Committee	CSIRO	Commonwealth Scientific and Industrial Research Organization
BRT	Building Resiliency Task Force	CSO	Combined Sewer Overflow
BRTs	Bus Rapid Transit Systems	CSR	Corporate Social Responsibility
BSMR	Baixada Santista Metropolitan Region, São Paulo	DAC	Durban Adaptation Charter
BUCEA	Beijing University for Civil Engineering and Architecture	DCA	Decision-Centric Approach
C3	Command, Control, and Communication Centre	DCLG	Department for Communities and Local Government
C40	C40 Cities Climate Leadership Group	DEP	Department of Environmental Protection
CAP	Climate Action Plan	DG	Distributed Forms of Electricity Generation
CARICOM	Caribbean Community Countries	DHC	District Heating and Cooling
CBA	Cost-Benefit Analysis	DHW	Domestic Hot Water
CBD	Convention on Biological Diversity	DKPP	Department of Cleanliness, Parks, and Cemetery
CBO	Collateralized Bond Obligations	DMI	Dipole Mode Index
CBO	Community-Based Organization	DRM	Disaster Risk Management
CC	Climate Change	D'RAP	Durban Research Action Partnership
CCA	Climate Change Adaptation	DRR	Disaster Risk Reduction
CCAC	Climate and Clean Air Coalition	DSM	Demand Side Management
CCC	Climate Change Commission	DSNY	New York City Department of Sanitation
CCCI	Cities and Climate Change Initiative, UN Habitat	DSVI	Disasters Social Vulnerability Index
CCCLs	Construction Control Lines	DTKBP	Dinas Tata Kota Bangunan dan Pemukiman or Department of City Planning Building and Settlement
cCCR	Carbonn Cities Climate Registry	DUDCP	Department of Urban Development and City Planning
CCD	Climate Compatible Development	E3	European Environment and Epidemiology
CCFVI	Coastal City Flood Vulnerability Index	EbA	Ecosystem Based Adaptation
CCO	Climate Change Office	ECDC	European Centre for Disease Control and Prevention
cCR	Carbon Climate Registry	EDF	Environmental Defense Fund
CCRIF SPC	Caribbean Catastrophe Risk Insurance Facility	EDGAR	Emissions Database for Global Atmospheric Research
CCS	Carbon Capture and Sequestration	EEA	European Economic Area
		EEPCO	Environmental Engineering and Pollution Control Organization
		EEQ	Empresa Electrica de Quito
		EHCC	Earth Hour City Challenge
		EIU	Economist Intelligence Unit

EMDAT	International Disasters Database	IPCC	Intergovernmental Panel on Climate Change
EMSIG	Emission Simulation in Gemeinden	IPP	Intergovernmental Pilot Project
ENCC	National Strategy on Climate Change	IRP	Integrated Resource Plan
ENSO	El Niño Southern Oscillation	ISCT	Institute for Social and Environmental Transition
ENSP	Environmental Science and Policy	ISWM	Integrated Solid Waste Management
EPA	Environment Protection Agency	ITCZ	Inter Tropical Convergence Zone
EQCC	Quito Climate Change Strategy (Estrategia Quiteña al Cambio Climática)	ITT	Inter- and Transdisciplinary
EquIA-urban	Urban Equity Impact Assessments	IUWM	Integrated Urban Water Management
ERF	Equity Reference Framework	IWRM	Integrated Water Resource Management
ERP	China's Eastern Route Project	JELKA	Jena Local Decision Support Tool (Jenaer Entscheidungsunterstützung für lokale Klimawandelanpassung)
ES	Ecosystem Services	JWP	Joint Work Program
ETS	Emissions Trading System	K4 C	Knowledge Centre on Cities and Climate Change
EU	European Union	KICAMP	Kinondoni Integrated Coastal Area Management Project
EWMP	Eco-Citizen World Map Project	KIPRAH	Kita-Pro-Sampah or We-Pro-Waste
EWS	Early Warning Systems	KISS	Keck Institute for Space Studies
FAR	Floor Area Ratios	KLIMP	Sweden's Climate Investment Program
FAS	First Aid Service	KMS	Kenya Meteorological Services
FEMA	Federal Emergency Management Agency	KSI	Key Sustainability Initiatives
FERC	Federal Energy Regulatory Commission	KWASA	Khulna Water Supply and Sewerage Authority
FFCO ₂	Fossil Fuel Carbon Dioxide	LA	Los Angeles
FINEP	Funding Authority for Studies and Projects	LAB	Local Action for Biodiversity
FIOCRUZ	Oswaldo Cruz Foundation	LAC	Latin America and the Caribbean
FIRMS	Flood Insurance Rate Maps	LAMATA	Lagos Transit Authority
FiT	Feed-in Tariff	LCCDP	Low Carbon City Development
FUNAB	Fundo Nacional do Ambiente (Mozambican Government's Environment Fund)	LCCP	London Climate Change Partnership
GAR	Green Area Ratio	LCZ	Local Climate Zones
GCF	Green Climate Fund	LECZ	Low Elevation Coastal Zone
GCMs	Global Climate Models	LED	Light-Emitting Diode
GCP	Gross City Product	LEED	Leadership in Energy and Environmental Design
GCV	Glasgow Clyde Valley	LFGTE	Landfill Gas-to-Energy
GDP	Gross Domestic Product	LGAs	Local Government Authorities
GEA	Global Energy Assessment	LIDAR	Light Detection and Ranging
GEAG	Gorakhpur Environmental Action Group	LNG	Liquefied Natural Gas
GEF	Global Environmental Facility	LPTP	Rural Technology Development Institute, Surakarta (Lembaga Pengembangan Teknologi Pedesaan)
GFDRR	Global Facility for Disaster Reduction and Recovery	LST	Land Surface Temperatures
GHG	Greenhouse Gases	MA	Millennium Ecosystem Assessment
GIS	Geographical Information System	MCA	Multiple Criteria Analysis
GLA	Greater London Authority	MCII	Munich Climate Insurance Initiative
GLAC	Greater Los Angeles County	MCUR	Medellin Collaboration on Urban Resilience
GNI	Gross National Income	MDGs	Millennium Development Goals
GPC	Global Protocol for Community-Scale GHG Emissions	MDMQ	Municipality of the Metropolitan District of Quito,
GPS	Global Positioning System	MENA	Middle East and North Africa
GtCO ₂ e	Gigatons of Carbon Dioxide Equivalent	MEP	Mechanical Electrical and Plumbing
GW	Giga Watts	MJO	Madden-Julian Oscillation
GWP	Global Warming Potentials	MODIS	Moderate Resolution Imaging Spectroradiometer
HAP	Heat Action Plan	MoSE	Experimental Electromechanical Module (Modulo Sperimentale Elettromeccanico)
HDB	Housing and Development Board of Singapore	MoSSaiC	Management of Slope Stability in Communities
HEAT+	Harmonized Emissions Analysis Tool	MOTF	Modeling Task Force
H-E-V	Hazard-Exposure-Vulnerability	MRF	Material Recovery Facilities
HFA	Hyogo Framework for Action	MRS	Metropolitan Region of Santiago de Chile
HPFPI	Homeless People Federation Philippines Inc.	MRV	Measurement Reporting and Verification method
HUDC	Housing and Urban Development Company	MS4	Municipal Separate Storm Sewer Systems
HVAC	Heating Ventilation and Cooling	MSW	Municipal Solid Waste
IADB	Inter-American Development Bank	MTA	Metropolitan Transit Authority
IBGE	Institute of Geography and Statistics	MtCO ₂ e	Million Metric Tons of Carbon Dioxide Equivalent
IBHS	Institute for Business and Home Safety	MW	Megawatts
ICA	Impact-Centric Approach	NAO	North Atlantic Oscillation
ICLEI	Local Governments for Sustainability	NAPA	National Adaptation Program of Action
ICT	Information and Communications Technology	NASA	National Aeronautics and Space Association
ICTA	Institute of Environmental Science and Technology	NCCAP	National Climate Change Action Plan
ICUC9	International Conference on Urban Climate	NCE	National Commerce Exchange
IDF	Integrated Development Foundation	NDRRC	National Disaster Risk Reduction and Management Council
IEA	International Energy Agency	NEPP	National Environmental Policy Plan
IHS	Housing and Urban Development Studies	NGOs	Non-Governmental Organizations
IIED	International Institute for Environment and Development	NIMBY	Not-in-My-Backyard
IMF	International Monetary Fund	NIST	National Institute of Standards and Technology
IMN	National Meteorological Institute		
INDC	Intended Nationally Determined Contributions		
INDECI	Civil Defense Institute of Peru		
IOD	Indian Ocean Dipole		

NMT	Non-Motorized Transport	SMIAs	Significant Maritime and Industrial Areas
NOAA	National Oceanographic and Atmospheric Administration	SNTA	Subnational Technical Assistance
NPCC	New York City Panel on Climate Change	SPNI	Society for the Protection of Nature in Israel
NPV	Net Present Value	SRA	Sandy Regional Assembly
NRC	National Research Center	SSTs	Sea Surface Temperatures
NYC-EJA	New York City Environmental Justice Alliance	SUDP	Strategic Urban Development Plan
		SuDS	Sustainable Urban Drainage Systems
		SVI	Social Vulnerability Index
ODI	Open Data Institute	SWM	Solid Waste Management
ODU	Old Dominion University		
OECD	Organization for Economic Co-operation and Development	TMG	Tokyo Metropolitan Government
OEM	Office of Emergency Management	TOD	Transport/Transit-Oriented Development
OR	Odds Ratio	TPH	Toronto Public Health
		TSB	Technology Strategy Board
		TSD	Transit-Synergized Development
PACCM	Mexico City's Climate Action Program		
PAHO	Pan American Health Organizations	UASBs	Upflow Anaerobic Sludge Blankets
PAPD	Participatory Action Plan Development	UCCRF	Urban Climate Change Resilience Framework
PAYD	Pay-As-You-Drive	UCCRN	Urban Climate Change Research Network
PAYG	Pay-As-You-Go	UCGS	Urban Climate Change Governance Survey
PCMs	Phase Change Materials	UCLG	United Cities and Local Governments
PDO	Pacific Decadal Oscillation	UHI	Urban Heat Island
PES	Payment for Ecosystem Services	UKCIP	United Kingdom Climate Impacts Program
PIMA	Passive Integrated Mitigation and Adaptation	UMIS	Urban Metabolism Information Systems
PM	Particulate Matter	UN	United Nations
PNA	Pacific North American Pattern	UNDESA	United Nations Department for Economic and Social Affairs
PNRS	Policy on Solid Waste Management	UNDP	United Nations Development Program
PoA	Program of Activities	UNEP	United Nations Environment Program
PPIAF	Public-Private Infrastructure Advisory Facility	UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
PPPs	Public-Private Partnerships	UNESCO	United Nations Educational, Scientific, and Cultural Organization
PSA	Pressure Swing Adsorption	UNFCCC	United Nations Framework Convention on Climate Change
PSE	Puget Sound Energy	UNFPA	United Nations Population Fund
PUC	Public Utility Commissions	UN Habitat	United Nations Human Settlement Program
		UNICEF	United Nations Children's Emergency Fund
		UNISDR	United Nations International Strategy for Disaster Reduction
RAY	Reconstruction Assistance on Yolanda	UNPF	United Nations Population Fund
RB	Recycle-Banks	UPAF	Urban and Peri-urban Agriculture and Forestry
RCMs	Regional Climate Models	UPROSE	United Puerto Ricans' Organization of Sunset Park
RCPs	Representation Concentration Pathways	URBAHT	Urban Heat Tool
RDM	Robust Decision-Making	URMRCC	Urban Risk Management Response to Climate Change
REMMAQ	Metropolitan Atmospheric Network of Quito	USAID	United States Agency for International Development
RMI	Royal Meteorological Institute	US DOE	United States Department of Energy
ROAP	Regional Office for Asia and the Pacific	UWS	Urban Water Systems
RRR	Relative Risk Ratios		
		VER	Voluntary Emission Reductions
SACN	South African Cities Network	VIMS	Virginia Institute of Marine Science
SACZ	South Atlantic Convergence Zone	VKT	Vehicle Kilometers Travelled
SALGA	South African Local Government Association	VMT	Vehicle Miles Traveled
SBA	Sustainability Benefits Assessment	VOCs	Volatile Organic Compounds
SCL	Seattle City Light		
SCL	ARC3.2 Summary for City Leaders	WASH	Water, Sanitation, and Hygiene
SDG-F	Sustainable Development Goals Fund	WAVES	Waterfront Vision and Enhancement Strategy
SDGs	Sustainable Development Goals	WB/CA	World Bank/Cities Alliance
SDI	Slum/Shack Dwellers International	WEC	World Energy Council
SDSN	Sustainable Development Solutions Network	WEDO	Women's Environment and Development Organization
SELAVIP	Latin American, Asian, and African Social Housing Service	WHO	World Health Organization
SERREE	South East Region of Renewable Energy Excellence	WMNY	Waste Management of New York
SES	Social-Ecological Systems	WSUD	Water-Sensitive Urban Design
SFDRR	Sendai Framework for Disaster Risk Reduction	WTE	Waste-to-Energy
SI	Sustainability Institute	WWF	World Wildlife Fund/World Wide Fund for Nature
SIDS	Small Island Developing States	WWTP	Wastewater Treatment Plants
SLoCaT	Sustainable Low-Carbon Transport		
SLR	Sea Level Rise		
SMAC	Municipal Secretariat of Environment, Rio de Janeiro (Secretaria Municipal de Meio Ambiente)		
SME	Small and Medium Enterprise		

Appendix C

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