SUPPORTING CLIMATE-SMART INFRASTRUCTURE PROJECTS

CASE STUDIES

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Supporting Climate-Smart Infrastructure Projects – Case Studies

Introduction

The following document comprises six good practice case studies (three international and three Turkish) demonstrating green and resilient infrastructure interventions and key lessons applicable to the Turkish urban development context.

The case studies have been selected from a longlist (see Appendix A) to support the preparation of the World Bank's lending operations in Türkish cities.

International Case Studies

I1 – Vienna: Smart Climate City Strategy

Location	Vienna, Austria (Google Earth Map) Google Earth of Seestadt development.
Target Sector	A smart city strategy for sustainable development across eleven sectors (or 'thematic areas') – see 'Description' section for further details.
Climate Focus	**Climate Mitigation**: • Energy reduction and increased usage of renewables • Energy-efficient buildings • LED street lighting • Low-carbon and electric transport • Smart technology usage, supporting resource efficiency • Waste reduction and circular economy **Climate Adaptation**: • Improved drinking water sources and water reuse • Introduction of nature-based solutions and green infrastructure • Conservation of materials • Improved thermal comfort in buildings • Reduced heat island effects • Preservation of Vienna green belt • Local and regional food supply chains
Implementation Modality	City Government and identified municipal departments and agencies. Led by the publicly-owned Smart City Vienna Agency (TINA). The implementation of the framework includes several private-sector companies, academic institutions and non-governmental organisations, with individual projects coming with their own bespoke implementation modality and partner arrangements.
Key Stakeholders	**National Level**: The Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT), The Austrian Climate and Energy Fund, Austrian Association of Cities and Towns (established the Smart Cities and Regions Platform in 2013) **Subnational Level**: City of Vienna Municipal Government led by the Office of the Mayor, including municipal departments such as district planning and land use, energy planning, urban development and planning, environmental protection, and social services. **Private Sector and Civil Society**: business community, academic institutions (e.g. Technical University of Vienna and Vienna University of Economics and Business), residents (e.g the Vienna Climate Team that includes citizens and climate professionals to develop local climate projects) .
Finance and Funding	The **Smart City Framework Strategy** was financed with **EUR 141,852**, of which EUR 99,400 was provided by **The Austrian Climate and Energy Fund** under the Federal Ministry Republic of Austria Climate Action, Environment, Energy, Mobility, Innovation and Technology Ministry. The initial implementation of 21 projects in Vienna has been financed by the Smart Cities initiative of **The Austrian Climate and Energy Fund**, with projects ranging from EUR 125,000 to close to EUR 8M (for the Smart Cities Demo Aspern Seestadt).

	The Seestadt masterplan is being overseen by Wien 3420 (development cooperation) estimated to be completed in 2030, a mixed-use masterplan that will deliver 20,000 housing units and over 2.6 million m2 of developed floor space, with approximately EUR 5 billion to be invested.
Description	The City of Vienna's Smart City Framework Strategy until 2050 was initially adopted in 2014, updated in 2019, and includes **eleven thematic areas**. To enable the realization of the Smart City Framework there is a need to strike a balance between **efficient use of resources, quality of life, and innovation** that aligns with sustainable development ambitions. Vienna's **population** has risen drastically in recent years and is likely to reach the **3-million mark in the next 25 years**. This increased growth results in additional demand on energy, affordable housing, social services and other enabling infrastructure services to **create a liveable and net-zero city by 2040**. A summary of the **eleven thematic areas**: **Digitalisation.** Vienna is a leading city for digital participation, use of digital technology to create transparency and actively involve citizens in decision-making processes. **Urban ecology, environment, and water.** To create new woodlands and green spaces for recreation and reduce heat island effects. The city's food supply is largely sourced from the city itself and the surrounding region. Water supply and wastewater infrastructure are maintained and operated to a high standard. **Energy supply**. Reduction in carbon-based energy sources and an energy grid that incorporates a decentralized, renewables-based energy supply. Such examples can be seen from the Siemens campus in Vienna which has introduced efficiency measures since 2010 and more recently with the microgrid project in 2020 that is fully monitored by Siemens technology and IoT platform. **Mobility and transport.** Vienna is to realise the concept of a 15-minute city with short distances to services and amenities, mixed-use neighbourhoods and redesigned streets for more activity. This goal will be supported through the development of the WienMobil app, which identifies public transport routes, footpaths, bicycle paths and carsharing routes. **Energy-efficient buildings.** Greening, shading and passive cooling of buildings are a standard incorporated within building permitting; active cooling systems are powered by renewables. Circular planning and construction to maximize the conservation of resources by 2030 in all new builds and refurbishment projects. That is included the City of Vienna and partners to develop the **BRISE project (Building Regulations Information for Submission Envolvement)** to fully digitize the building permitting and review process. **Zero waste and circular economy.** Vienna waste management follows a zero-waste principle and will reach net zero by 2040. Efforts are to be made to repair, recycle or resource products and waste items. Consumption-based approach for calculating carbon footprints to achieve the city's net zero goal by 2040. **Adapting to climate change.** All new development zones and buildings are assessed in terms of their contribution to adapting to climate change and their designs are accordingly optimised. Such examples include the Seestadt development which has demarked at least 50% of the 240Ha to be parks, green spaces, a central lake and access roads/paths from the initial design. To date, Seesdadt has over 40 buildings that have been awarded by the Austrian Sustainable Building Council. **Health and social inclusion.** The decarbonisation of the city's healthcare sector is prioritized and accelerated to improve energy efficiency and conserve resources. Investments in public infrastructure to mitigate and adapt to climate change will equally consider how to strengthen community cohesion. Demonstrated through the E-MINDFUL project which aims to shape public attitudes towards migrants as key contributing factors within communities.

	Participation, engagement, and culture. The city will develop public-facing tools to encourage participation in budgeting and the use of public funds. This will include developing participation standards in a collaborative approach and considering multilingual outreach and documentation. Examples can be drawn from BRISE Vienna project which allows citizens to view and comment on building projects before they are realized. **Education, science, and research.** The city-wide rollout of the learning communities ("Bildungsgrätzln") by 2030 and the city's goal of establishing a "Learning City" through multi-use public spaces and buildings. Sustainable and resource-efficient development is integrated and taught in all educational institutions. **Economy and employment.** The productivity of Vienna's urban economy increases, underpinning the city's prosperity, resource efficiency and competitiveness. The city's businesses will establish a climate action alliance for the joint development of a sustainable urban economy. Realised through the annual Development Policy Symposium a platform to share best practices and technological innovations to tackle global issues and achieve the UN's sustainable development goals. The strategy also notes **interconnected goals and measures** and recognizes **cross-cutting issues** such as cooperation across municipal boundaries and multi-stakeholder engagement.
Expected Results and Impact Monitoring	**Energy supply and energy efficiency**. Increasing energy efficiency and decreasing energy consumption per capita by 40% by 2050. Increasing the energy mix of renewables by 2030 to be over 20% and 50% by 2050. Per capita energy consumption for heating, cooling and hot water in buildings is planned to fall by 20% by 2030 and 30% by 2040. Vienna's heat supply will be 100% fossil-free by 2040. **Decarbonisation.** Commercial traffic within the municipality boundaries is largely CO2-free by 2030. Vienna aims to reduce its local (per capita) greenhouse gas emissions by 55% by 2030 and to zero by 2040 (2005 baseline). From 2040, any remaining residual emissions are to be offset by carbon sinks and EU carbon trading programs. **Green spaces**. All citizens will be within a 250-meter proximity to green spaces by 2050. To mitigate against summer overheating, buildings will include green roofs, rainwater harvesting and shading features including building materials to improve micro-climate within dense urban areas. **Zero waste and circular economy.** Food waste is cut by 50% by 2030 and reduced to an absolute minimum by 2050. By 2040 at least 70% of building components, products and materials are recovered from demolition and refurbishment projects for reuse. Vienna aims to exceed the EU target of a 60% solid waste recycling rate by 2030. Vienna is also adopting digital technology and tools to increase monitoring and management mechanisms, e.g. to inform planning and management in energy trading and smart traffic light systems.
Co-Benefits	**Internet of things** are integrated to encourage the use of new technologies and artificial intelligence to identify new sustainable materials, economic models, and smart processes (e-governance, e-health, e-mobility, etc.) in public, private, and third sectors. Vienna to be the **digitalisation capital** and **innovation leader**, promoting good governance, transparency, and active engagement and participation, as well as attracting highly skilled people to the digital economy sector. By 2030 all **municipal administrative processes** are planned to be digitized and fully automated, and by 2040 all energy requirements for digital services and infrastructure shall be 100% supported by renewables. **Healthcare and Social**. The city has made concerted efforts to apply a gender lens to urban design practices. Planners have undertaken over 60 urban projects specifically with women in mind. Increased access and provision for affordable housing, as well as good healthcare and education. Currently, more than 60% of the city's inhabitants reside in

	subsidized housing and the political commitment by viewing housing as a basic human right. Life expectancy of the city's population is targeted to increase by 2 years by 2030.
Enabling Conditions	Vienna City Council established the first version of the Smart City Wien Framework Strategy in 2014. The first monitoring was undertaken in 2017, which guided the revision of the 2019 strategy and the city created the Executive City Councillor for Innovation, Urban Planning and Mobility. This was further guided by the city becoming a signatory to the Paris Agreement on Climate Action. The Smart City Framework is further supported by the Kima-Fahrplan (Vienna Climate Plan) which benefits from the Wiener Klimart (Vienna Climate Council) to advise the administration on climate policy projects. The EU emission reduction targets resulted in binding targets for Austria. The measures required to meet the targets set out in the "National Energy and Climate Plan for Austria (NECP)". The Austrian federal government has also committed to achieving net zero by 2040 and a 100% renewable electricity supply by as early as 2030, which guided the Vienna Smart City Framework energy targets and in some cases exceeds. Additional alignment at the national level and city level is targeted regarding the UN 2030 Agenda for Sustainable Development, EU Circular Economy Action Plan, and European Green Deal, among others. Increased access to labour markets and job opportunities through the Smart City Framework Strategies goals of creating 20,000 additional jobs by 2050 by establishing Vienna as a central hub for digital technology and circular economy.
Prerequisites	**Supra-National: Alignment with EU climate commitments and policy frameworks, and corresponding access to finance and incentives** such as through TRANSFORM (Transformation Agenda for Low Carbon Cities – funding EU's 7th Framework for Research) **National:** Established **national climate commitments** such as the Austrian federal government's commitment to achieve net zero by 2040. That supports the ambitions, goals and targets identified in the Vienna Smart City Framework and the contribution to the country's GHG reduction targets. Establishment of a dedicated national **Climate and Energy Fund** that has raised a total of EUR 150 million, dedicated to financing climate-smart projects in Austria including those identified in the Smart City Framework. **Sub-National:** Creation of the **Smart City Vienna Agency** (TINA) as a publicly owned company to oversee the implementation and fundraising with the EU, knowledge sharing, partnerships, as well as outreach beyond Vienna.
Relevance to the Turkish context	In 2019 the National Government developed the 2020-2023 National Smart Cities Strategy and Action Plan. The development of smart cities plans and implementation of programs is being overseen by the Ministry of Environment and Urbanization which established the Smart Cities and Geospatial Technologies Department that was tasked to develop the National Smart City Strategy. One of the first cities where the Strategy and Action Plan is being implemented is Gaziantep. Since the development of the National Smart City Strategy and Action Plan there has been a steady uptake in the adoption of technology and digital solutions to support government functions and support to e-Government platforms to encourage open data and electronic functions for citizens to make payments on property taxes, register a business, among other social services. For example, in Gaziantep technologies are being implemented to monitor and improve efficiencies in key sectors such as solid waste management to monitor transportation, and collection systems and monitor the quantities of waste being recycled. Another key sector leading the uptake of 'smart' technology solutions in Türkiye is the energy sector which is seeing energy distribution companies (DISCOs) undertaking a series of pilots such as smart grid monitoring, electric vehicles charging stations and the

	rollout of Türkiye's LED streetlighting program to replace 30% of the country streetlights to LED which is estimated to create a savings of $40M. For Turkish cities that are considering implementation of the National Smart Cities Strategy and Action Plan, a key lesson from the Vienna Smart City Climate Strategy is the integrated and solution-focused approach to implementation of 'smart city' measures. For example, Vienna intends to implement public-facing digital tools as a means of facilitating increased citizen participation in budgetary and decision-making processes. Improvements to the educational enabling environment are being carried out with a view to fostering innovation around digital technology and equitable economic growth.
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I2 – Tokyo: Disaster Prevention Parks

Location	Tokyo, Japan (Google Earth Map to Rinkai Park) (Google Earth Map to Yokoamicho Park)
Target Sector	**Integrated land use planning and disaster risk management** (multimodal public parks, disaster preparedness and response centers, evacuation points and shelter spaces)
Climate Focus	**Climate Mitigation**: • Protection of green spaces • Solar-energy supply **Climate Adaptation**: • Disaster preparedness and response facilities • Multimodal green infrastructure • Reduction in natural disaster impacts • Reduced impacts from urban heat islands effect • Increased biodiversity
Implementation Modality	Tokyo Metropolitan Government in coordination with the Disaster Prevention Management Division, Metropolitan Park Association, Bureau of Construction, and national and sub-national emergency services and disaster response agencies.
Key Stakeholders	**National Government**: Ministry of Land, Infrastructure, Transport and Tourism, Japan Metrological Agency, Fire and Disaster Management Agency, National Police Agency

	Sub-National Government: Tokyo Metropolitan Government, Bureau of Construction, Tokyo Metropolitan Parks Association, Disaster Prevention Park Division, Tokyo Fire Department **Citizens and Businesses:** Through active participation in Tokyo Disaster Prevention Plans and involvement during disaster simulation drills.
Finance and Funding	Historically, Japan invests more than 5% of the country's fiscal resources in disaster risk reduction. Park investments and maintenance fall under the Tokyo Metropolitan Government's annual budget. Introduction in 2017 of "Park Private Finance Initiatives", but unclear if these are implemented for existing or future disaster parks as well.
Description	With a long history of significant disaster events taking place including tsunamis, nuclear events, fires, volcanic eruptions, and pandemics, Japan has become a global leader in disaster risk management innovation and investment. Tokyo's 'disaster parks' are an example of how emergency or disaster risk management functions can be integrated with everyday urban functions and services. One of the initial disaster parks, Yokoamicho Park, was built in 1922 and served as an evacuation point during the Great Kanto Earthquake in 1923 – marking 100 years post the earthquake Tokyo Metropolitan Government is driving to develop the city's Long-Term Strategy and accompanying programs to ensure a continued resilience pathway to manage disaster risks and events. Tokyo has a network of 58 public parks that are designated as evacuation sites. Another 37 parks are designated as "shelter places" and "bases for life-saving operations". The Tokyo Metropolitan Action Plan of 2020 also includes the goal of building an additional 75 ha of integrated green spaces with the dual functionality of being a disaster prevention park. Some of the disaster parks provide shelter spaces and survival bunkers during a disaster event, which include solar-powered charging stations, public benches that transform into cooking stoves, and manholes that can act as public toilets. Under the parks' grass lie large water reservoirs and storage spaces for emergency supplies and food to survive the first 72 hours post a disaster event. One prominent disaster park is the Rinkai Disaster Prevention Park. During a large-scale disaster event, such as earthquakes, the park acts as a central base of operations for disaster response and coordination, while also providing space for medical care and evacuations. During normal operations, the park features 13.2 ha of green and open space and provides information to citizens on disaster preparedness, response and prevention techniques and knowledge.
Expected Results and Impact Monitoring	**Environment**: The investments into disaster parks has contributed to increased green spaces in Tokyo, better access to these spaces for citizens, and an increase of biodiversity. Due to their dual functionality, the parks also maximise their role and function. **Disaster Risk Capacity**: The disaster parks create space that are used to conduct disaster drills and training for emergency response services and for citizens. The Rinkai Prevention Park includes a disaster prevention learning experience facility to help prepare citizens to survive the first 72 hours post an earthquake event. Additionally, the Tokyo Metropolitan Government has developed and issued the "Lets Get Prepared" disaster preparedness manual to citizens within the Tokyo Metropolitan Area to provide details on how to prepare and respond should a disaster event occur. **Disaster Risk Resilience:** The disaster parks provide safe open spaces during earthquakes.
Co-Benefits	While primarily functioning as green and open spaces. Disaster Parks incorporate several design features that provide co-benefits related to disaster risk management and recovery: • **Water**: Water supply and fire prevention tanks to respond to potential disruption to the general water supply network • **Transport**: Helipad and evacuation routes to coordinate entry and exit to disaster zones • **Housing**: Shelter facilities to temporarily house residents that had to escape their homes

	• **Food**: cooking facilities to allow for warm meals in the absence of electricity or gas supply from the general network • **Health**: Public toilets facilities to support improved sanitation during disasters • **Energy**: Solar energy lighting to reduce dependence on the energy network in case of power loss
Enabling Conditions	**Supra-National Policy: Sendai Framework for Disaster Risk Reduction** was adopted in 2015 (including by Japan). The third UN World Conference on Disaster Risk Reduction in Sendai, Japan, reflects on risk assessments, risk reduction and building back better principles. **National Level**: Japan has **integrated governance and technology of disaster risk reduction** at both national and sub-national government levels through policies and budget allocations. Revision of the **Urban Parks and on Urban Green Spaces (2017)** to introduce private finance initiatives and quasi-public park systems creating 'Urban New Commons'. Establishing advanced **early warning systems and flood control integrated information systems** linked to response mechanisms and broadcasting early warning messages prior to disaster events. The Ministry of Land, Infrastructure, Transport and Tourism **developed Guidelines on Planning and Design of Disaster Refuge Parks** (1999) that was reviewed and revised in 2012 by Japanese Landscape Architects as "**Revitalization Ideas based on Landscape Regeneration**", following the 2011 Tōhoku earthquake and tsunami event. **Sub-National Level: Tokyo Metropolitan Government's** vision for greening was included in the **Action Plan 2020** for creating and preserving a rich natural environment, including the development of 95 hectares of new parkland by 2020. The Action Plan set forth the objective of parks also supporting disaster risk management.
Prerequisites	Development of the Regional Disaster Prevention Plan for the Tokyo Metropolitan Government and surrounding cities – embraced a more proactive approach to disaster risk management for prevention and preparedness. Annual and consistent budget allocation for disaster risk management including investments to enhance systems, maintenance, and monitoring, further supports the integrated coordination between municipal government and disaster risk management agencies and responders. Recognition of green infrastructure to reduce disaster impacts and assist in recovery and preparedness is additionally outlined in the handbook for practitioners "Protected Areas as a Tool for Disaster Risk Reduction" (2015) developed by the Ministry of the Environment Government of Japan. Commitment to disaster risk reduction national programs "Urban Park Program". Classification of open spaces and public parks that have multi-purpose functions as defined in the Planning and Design Refuge Parks (1999) guidelines. Interest and commitment of residents to inform themselves on disaster risk preparedness and response, as well as participate in corresponding exercises and drills.
Lessons Learned	It is understood that municipalities, metropolitan municipalities and disaster and emergency management presidency of Türkiye (AFAD) actively collaborate to identify evacuation routes and shelter spaces for citizens to provide the immediate response for survival for the first 72 hours post a disaster event. The evacuation spaces are published on municipalities' websites and platforms. Following one of the largest earthquake disasters in 1999, the response was to enhance efforts to improve building standards and to designate hundreds of green spaces as evacuation points. However, since the 1999 earthquake disaster, the country has witnessed that many of the designated parks have been lost or redeveloped. AFAD has developed a new strategic plan for 2019 – 2023 that is responsible for disaster risk management, coordination and raising awareness to the public for disaster preparedness and response. The AFAD strategic plan outlines a series of strategic goals to enhance

	coordination between stakeholders, adopting of technology for identification and management and to review shelter facilities and sheltering policies to enhance the country's capability to enhance preparedness for future disaster events. Assembly areas after disasters and emergencies have been determined by AFAD. Citizens can learn the closest assembly area to them according to their addresses via the e-government system. The country has developed a multi-purpose early warning system for meteorological events (i.e., heavy rain, storm, flood, northeaster, southwester, etc.) that is integrated into online platforms and linked to citizens' mobile phones that send push messages to citizens should a disaster event be anticipated. However, there is no early warning system in place for earthquakes. Establishing urban parks can help meet multiple social needs, by increasing a city's public amenities, disaster resilience, environmental conservation, tourism and local economic development. However, growing financial pressures is likely to put pressure on the sustainability of public parks. Private partnerships in urban park management could create opportunities to enhance market-based approaches, to identify supportive/complementary uses for tourism, retail, restaurants, etc. This would involve a local government having a good understanding of the viability of the public parks assessment management strategy. All parks in Türkiye are public parks except botanical ones that contain special landscape elements, which means that parks are one of the services that municipalities and metropolitan municipalities should provide to any city. The PPP model in public parks in Türkiye means that private sector provides full or partial financing. Considering the potential budget limitations in both local municipalities and central government, the PPP model might be a useful tool in increasing the number of public parks having disaster prevention functions.
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I3 – Paris: Clichy-Batignolles Eco District

Location	Paris, France (Google Earth Map)
Target Sector	**Urban Transformation** (land use and biodiversity, buildings, energy, transport)
Climate Focus	**Climate Mitigation**: • Non-motorised and public transport • Energy-efficient buildings • Renewable energy production **Climate Adaptation**: • Green spaces and green roofs (urban heat island effects, increased biodiversity) • Sustainable drainage networks and systems for storm and floodwater management
Implementation Modality	**Land-value capture** through **transit-oriented development**. **Public Sector Development Corporation**: Paris et Metrople Amenagement (P&Ma) – Functions include: Planning authority, coordination/project management, ownership and tendering of land and development concessions, permitting power, infrastructure provision **Private developers and social housing associations** purchase serviced land from P&Ma, with construction rights for each building plot to follow architectural, landscaping, environmental and sustainable development guidelines; 20 property development firms developing and constructing the 27 lots.
Key Stakeholders	• **Public sector**: City of Paris, Paris & Metropole Amenagment, Espaces Ferroviaries (real estate arm of SNCF – railway operator) • **Private developers**: BPD Marignan, Artelia, Emergie, Nexity, VINCI, Kaufman & Broad, Bouwfonds Marigna and Mab Development, Bouygues Immobilier, and others. • **Private companies**: Veolia (Waste Management), EMBIX (District Heating) • **Other stakeholders**: MINES ParisTech Engineering School
Finance and Funding	The project was developed through a **Zone d'Aménagement Concerté (ZAC), a tool under French law allowing public authorities to target an area for redevelopment and share the costs with private developers.** In this model, the costs associated with the common public equipment (roads, networks, etc) are partly charged back to the private developers which will occupy the land, through a dedicated land tax. • **Land**: Mix of public land ownership through SNCF Réseau and the City of Paris which has been requalified from their mostly railway/industrial qualifications to dwellings.The land immediately under and adjacent to the buildings was sold to the the private developers • **Finance**: EUR 505M, with EUR 286M investments by the City of Paris. A large part of this budget was dedicated to acquiring the land from SNCF Reseau (formerly RFF) and repurposing from its industrial use to dwellings. These preparatory costs were then partly charged back to private developers through land tax. à • **Grant**: EUR 4.3M City of Paris and EU (FEDER fund) for piloting smart grid system (CoRDEES project)
Description	The Clichy-Batignolles is to be a **model for sustainable urban development in Paris**, France, integrating considerations of mixed-uses and social diversity, energy efficiency, reduction of greenhouse gases and improved biodiversity. The **eco-district** brings together a **wide range of uses and urban functions** including housing, offices, retail, administrative facilities, public transport and recreational facilities. The **54-hectare site** is located on the former SNCF railway yard and creates a plateau above the railway lines. It was designed through a collaborative approach with workshops **commencing in 2012** with public authorities, private developers, design consultants, residents, and others. The majority of the construction works has been completed and **expecting a final completion date of 2024**. The approach was to establish the **centralized Martin Luther King Park**, around which high-density buildings can sensitively be developed delivering high environmental and sustainability standards. • **Public transport and non-motorised transport:** Extension of the public transport links providing two metro lines and provision of two commuter train lines, with additional

	bus stations surrounding the development. Emphasis on the urban design to encourage active mobility routes and pathways and limiting car parking and space for private cars. • **Building footprint:** 140,000 sq. m office space and 31,000 sq. m retail and recreational space provided (plus a 120,000 sq. m courthouse). • **Housing:** 3,400 housing units are being developed with 50% social housing (exceeding the city's requirement of 25%), 30% capped-rental housing and 30% housing at market prices, provided for a total of 7,500 inhabitants. • **Energy efficiency and renewable energy:** All buildings are connected to a heating grid supplied by geothermal energy. Rooftop solar photovoltaic (PV) was introduced generating around 3,500 MWh per year. • **Solid waste:** All household waste is connected to a pneumatic collection system, reducing the need for refuse containers in public areas and collection vehicles. Vacuumed waste is channelled to an underground collection point. The majority of retail outlets are also serviced by the underground parking and servicing network. • **Green spaces:** Provision of the 10 ha Martin Luther King Park with additional private green spaces equating to over 6,500 sq. m; and 16,000 sq. m of green roofs which equates to around 30% of total rooftop areas. In compliance with the Paris Plan for Biodiversity, regional plants were chosen that adapt well to the fauna of the Ile de France. Rainwater harvesting is collected and channelled to wetlands.
Expected Results and Impact Monitoring	**Carbon neutral monitoring:** The City of Paris aims to make the eco-district building and public spaces carbon neutral and applies its own carbon footprint tool as a design tool and monitors the actual performance of buildings in operation. • Specialised engineering and design firms are engaged to meet environmental targets and requirements. Projects are **monitored during the design, construction and operation** for at least 1 year using predetermined indicators. • Developments in the eco-district must meet **environmental and sustainable development specifications**, requiring developers to place 4% of the sale price in an escrow account that is returned when **compliance specifications are verified**. This condition is not required for social housing landlords. • **Energy-efficient buildings** in the development will result in a reduction of 4,000 tons of CO2 per year, with the development aiming to have 40% of electricity consumed being generated from rooftop PVs. • **Green spaces** in the development are contributing to tackling the effects of urban heat island and additionally include water reuse which covers 40% of the wetland's needs. The inclusion of permeable paving makes up 12% of the development's surface area and contributes to **reduced flood risks**. The **development** has been **globally recognised** receiving numerous sustainability awards including being featured during COP22 Marrakesh as the international winner of the green building and city solutions awards.
Co-Benefits	• Regeneration of infrastructure assets creates a **vibrant and sustainable neighbourhood**. • The development through densification is **capturing investments** that are improving the **public transportation linkages** and extensions of metro lines. • Creation of a public park and urban design principles encourage **walkability and non-mortised transport**. • Once completed the development will provide **12,700 jobs**.
Enabling Conditions	• **Regional climate policy:** Paris Climate Action Plan in place since 2006 and was updated in 2018. Carbon footprint tools have been in place since 2009. The eco-district follows the polices established in the Paris Climate and Biodiversity Plans and the Housing for All policy. • **Planning policy:** Helped identify development zones for urban transformation and establishing eco-districts, defining architectural, urban design, landscape, environmental and sustainability guidelines for development. • **Implementation plans:** Entailed the creation of a publicly owned company to manage and deliver the development of individual lots to the specified guidelines and meet the environmental and sustainability requirements. • **District heating:** The development was awarded EUR 4.3 million to pilot the initial large-scale smart grid project. The neighborhood platform will provide real-time data on

	energy consumption and production to owners, occupants property managers, utilities, and local authorities, among others.
Prerequisites	• A **clear vision** for the development to be a model sustainable eco-district exceeding national and local climate policies and housing provisions. • Identification and creation of a **special development zone**, with the transfer of public lands to a **single entity** P&Ma to deliver the project. • **French law** requires developments with over 1,500 inhabitants to offer at least 25% social housing by 2025 as reflected in the Paris 2011-2016 Local Housing Program. • The French Ministry of Housing and Sustainable Habitat launched in 2012 the **EcoQuartier certification program** to verify and evaluate sustainable projects.
Lessons Learned	The Mass Housing Development Administration (TOKI), which operates under the Ministry of Environment, Urbanization and Climate Change, was founded in 1984 and is enabled to cooperate with municipalities to develop underprivileged/underdevelopment areas in the country. TOKI is not designed to compete with the private sector but is designated to support urban regeneration and slum transformation projects, provision of social housing projects for low and middle-class groups, and provision of open and green spaces within development projects. In addition to TOKI, municipalities and metropolitan municipalities also work with private housing companies such as "Emlak GYO", "Sinpas GYO" and "Kiptaş". Municipalities and metropolitan municipalities can use the PPP model in housing production. Türkiye additional has developed several legal policies and frameworks to support urban regeneration with the latest being in 2012 “the Law on the Regeneration of Areas under Disaster Risk” to provide procedures and principles for the renewal of urban areas that are considered high risk. Municipalities are required to develop 1:5000 and 1:1000 scaled development plans that are to be approved and provide the legal basis for implementation Through the development of Green City Action Plans and other city planning frameworks that are developed by municipalities incentives are being included for developers to encourage energy efficiency in buildings to obtain increased floor area rations (FAR) for building plots.
Sources and Additional Information	https://aasarchitecture.com/2019/09/clichy-batignolles-eco-district-in-paris/ https://archive-clichy-batignolles.parisetmetropole-amenagement.fr/sites/default/files/exe_web_cb_dossierpresse-en_2.pdf https://csis.myclimateservice.eu/node/5200 https://www.construction21.org/city/fr/clichy-batignolles-ecodistrict-paris.html https://ensia.com/articles/paris-is-building-the-eco-community-of-the-future-right-now-heres-how/ https://www.planete-energies.com/en/media/article/clichy-batignolles-eco-district-energy-solutions https://www.parisetmetropole-amenagement.fr/en/clichy-batignolles-paris-17th https://www.paris.fr/pages/nouveau-plan-climat-500-mesures-pour-la-ville-de-paris-5252 https://archive-clichy-batignolles.parisetmetropole-amenagement.fr/sites/default/files/pistegrandformat_def_web_anglais_220415.pdf https://www.parisetmetropole-amenagement.fr/en/about-paris-metropole-amenagement-45 https://www.parisetmetropole-amenagement.fr/sites/default/files/2018-11/BD_CB_DossierPress_En_060317.pdf https://uia-initiative.eu/en/uia-cities/paris

Turkish Case Studies

T1 – Eskisehir: Porsuk Creek Green Corridor and Natural Disaster Mitigation Project

Location	Eskişehir, Türkiye (Google Earth Map)
Target Sector	Water infrastructure, green infrastructure, land use, transport
Climate Focus	**Climate Mitigation**: • Green transport • Air, water, and soil quality **Climate Adaptation**: • Urban heat island • Water-sensitive design • Land use & erosion management • Sustainable drainage networks • Renewed and redesigned green spaces
Implementation Modality	The Eskisehir Metropolitan Municipality (EMM) in collaboration with Eskisehir Water and Sewage Administration (ESKI) led the rehabilitation and transformation. This was initiated by implementing Article 18 of the Zoning Law No. 3194, enabling EMM to acquire and assemble all land parcels within the zoning boundaries prior to the commencement of the development.
Key Stakeholders	• **Public sector**: Eskişehir Metropolitan Municipality (EMM), Eskişehir Water and Sewerage Administration (ESKİ) • **Private sector:** Mott MacDonald Ltd., Temelsu International Engineering Services Inc., Prota Engineering, Su Yapı Engineering and Consulting Inc., Scott Wilson Kirkpatrick & Cons. Inc., and local landowners.
Finance and Funding	EMM received a loan from the **European Investment Bank (EIB)** that includes 3 components. • **Component 1:** EUR 132 million for the construction of light rail system with 14 km. • **Component 2:** EUR 23 million for water supply infrastructure • **Component 3:** EUR 26.5 million for improvements alongside the creek
Description	Porsuk Creek, which provided freshwater and recreational use to Eskisehir's residents until the 1970s, started to be exposed to the negative **effects of industry production and urbanization** over time. By the 2000s, the creek could not bear the **pollution**. It was categorized in 2002 by the Organization for Security and Cooperation in Europe (OSCE) in the category of **"The most dangerous rivers in terms of pollution and health, where no living things other than harmful bacteria and viruses live, of which bed is full of wastes"**. The rehabilitation project of the Porsuk Creek started with the **"Eskişehir Urban Development Projects"** (2003-2009). The shore of the Porsuk Creek, which divides Eskişehir city center into two, has been **redesigned as a green corridor.** It has been ensured that biodiversity is protected along the banks and that the green corridor is continuous. • **Green Spaces:** The amount of green space in Eskişehir was increased by 1,445,074 m2. • **Creek rehabilitation:** 9.6 kilometres of the stream bed was rehabilitated. Cafes, restaurants, artificial ponds, an indoor Olympic swimming pool, outdoor pools, an artificial beach with the length of 310 m, sports fields and children's playgrounds were created. • **Public transport and non-motorised transport:** A clean transportation alternative was created with the opportunity provided by the Porsuk Creek passing through the middle of the city: - **Water transportation** through the creek was provided by boating for touristic purposes. - **13 vehicle and 9 pedestrian bridges** were renovated to compensate for the damages after the 1999 earthquake and to reduce possible future earthquake damages.

	- **Light rail** (under the Eskişehir Urban Development Project) with 14 km of double track and 24 stations was provided. - **Pedestrian roads and bicycle paths** were planned. • **Water supply:** Water quality was improved via rehabilitation of 240 km of the network (80 km inner and 160 km outer urban areas), accompanied by a leak detection program . SCADA and computer-based hydraulic network model of the supply system were provided. 125 km of sewerage network was extended. Irrigation channels were repaired and upgraded.
Expected Results and Impact Monitoring	• **Connectivity:** The addition of pedestrian and vehicle bridges, as well as the light rail have improved multi-modal connectivity between the two sides of Eskisehir to the West and East of the creek. • **Creek rehabilitation:** The creek has become an aesthetic value of the city again. Porsuk Creek re-emerged as a place where citizens can engage in recreational activities. Biodiversity and water quality have improved. • **Green spaces:** Per capita amount increased from 1.9 m2 in 2009 to 13.84 m2 in 2021. Urban Park is located on an area of approximately 300 thousand square meters between the Otogar and Gökmeydan Districts. Türkiye's first artificial beach with a length of 350 meters was built in Urban Park. In addition to the artificial beach, there are two swimming pools for children, horse riding areas and restaurants in Urban Park. • **Climate resilience:** Water loss prevention, increased flood mitigation, reduced urban heat island effect, and erosion prevention through infrastructure upgrades and creek rehabilitation. • **Disaster resilience:** Structural improvements to creek, bridges, and water infrastructure has increased resistance against physical disaster impacts. The project has received many awards, including the **"Municipality Award for Developing and Implementing the Best Urban Design and Renewal Project"** (given by Istanbul Metropolitan Municipality), and "Great Environment Award in the Best Rehabilitation Category" (given by Water for Life Association (HAYSU)). Additionally, the project was one of the finalists among 115 different cities in the **2018 World Urbanism Competition** by the World Resource Institute (WRI).
Co-Benefits	• **Economy:** Rehabilitation of the Creek has played a role in boosting tourism in the city. Data from 2019 (i.e. 10 years after completion of the project) suggests that the number of domestic tourists has increased by 430% and the number of foreign tourists increased by 820%, compared to figures from 2009. Riverbank improvements increased attractiveness of the area for businesses. Property values around tram stations tripled. • **Society:** The project area has evolved into a safe, attractive, improved, and liveable urban space. The accessibility needs of all users, such as wheelchair users, elderly people, and families with strollers, were considered in the project and instead of vertical and arched bridges, non-sloping bridges are designed.
Enabling Conditions	• **Article 14 of Municipal Law No. 5393:** It explains that municipalities are responsible for public services such as afforestation, enhancing social facilities and improving technical infrastructure. • **Article 7 of the Metropolitan Municipality Law No. 5216:** It explains the duties and responsibilities of metropolitan municipalities. It gives the authority to make and implement projects to the Metropolitan Municipalities. • **Article 18 of the Zoning Law No. 3194:** It provides an easier implementation process to the government rather than expropriation in terms of financials. Within the scope of the Article 18, the government can use 45% (development readjustment share) of the land free of charge (it can be 45% of the parcel, building block, or the whole project area including many building blocks depending on the project scale). The purpose of Article 18 is to increase green areas, and social facilities.
Prerequisites	• The implementation mechanism in the creation of such a large recreation area should be provided by **Article 18 of the Zoning Law No. 3194**, otherwise the government would have to pay money for the expropriation. Thanks to the implementation of Article 18, the government can use 45% of the land for public services. • The scale of such intervention required support by an international finance institution.

Lessons Learned	• The project demonstrates that rehabilitation of a natural asset and its surroundings can improve perceptions of safety and help improve access of residents and tourists alike to green and open spaces. • The recreational area design benefitted from solutions that ensured that landscape elements fit the local context and can easily be maintained. • This project and similar projects in the future would benefit from **a pre-defined monitoring plan** and **process** that allows for **clearer tracking** of the project's impacts to inform **learning** and **replication**.
Sources and Additional Information	• https://dkm.org.tr/uploads/yayinlar/1606808514604.pdf • https://www.suyapi.com.tr/tr/18328/Eskisehir-Kentsel-Gelisim-Projesi-Bilesen-2-Dogal-Afet-Zararlarini-Azaltma-Projesi • https://www.plantdergisi.com/haber-eskisehir%E2%80%99in-kalp-atisi-4082.html • https://polen.itu.edu.tr/items/481f3050-7cda-4b5b-a56c-c82cd8e3f31a • http://en.temelsu.net/eskisehir-municipal-urban-development-project/ • https://porsukkd.eskisehir.bel.tr/dosya/ktr.pdf https://porsukkd.eskisehir.bel.tr/proje.php • https://una.city/nbs/eskisehir/river-rehabilitation-and-creation-green-corridor • https://wrisehirler.org/haberler/uluslararas%C4%B1-%E2%80%98%C5%9Fehirler-i%C3%A7in-wri-ross-%C3%B6d%C3%BCl%C3%BC%E2%80%99n%C3%BCn-finalistleri-aras%C4%B1nda-eski%C5%9Fehir-de-var • https://ge.eskisehir.bel.tr/icerik_dvm.php?icerik_id=5215&cat_icerik=1 • https://halktv.com.tr/gundem/eskisehir-belediyesine-buyuk-cevre-odulu-161942h • https://www.thecityfixTürkiye.com/kentsel-donusum-kendini-yeniden-yaratan-eskisehirin-turistik-bir-kente-donusum-hikayesi/ • https://www.eskisehir.bel.tr/sayfalar.php?sayfalar_id=68

T2 – Izmir: Izmirdeniz Program & Green Infrastructure Strategy

Location	İzmir, Türkiye (Google Earth Map)
Target Sector	Multi-Sector
Climate Focus	**Climate Mitigation**: • Public transport modes and multi-modal hubs • Green transport network. • Biodiversity net gain and increased green spaces **Climate Adaptation**: • Coastal protection • Green infrastructure • Flood risk management
Implementation Modality	Izmir Metropolitan Municipality tenders each sub-project to private companies aligned with the **Public Procurement Law.**
Key Stakeholders	• **Public Sector:** Izmir Metropolitan Municipality, Directorate of Studies and Projects, Department of Urban Design and Urban Aesthetics, Ege University • **Private Sector:** Advisory Board (Experts from different disciplines such as architects, engineers, planners, etc.)
Finance and Funding	• Planned design projects are tendered to private companies under the **Public Procurement Law.** • **The costs in the Izmirdeniz Project vary according to each sub-project** such as the implementation of street lighting systems, landscaping, and pedestrian bridge construction.
Description	The Izmirdeniz Project plans to rejuvenate **the 40 km coastline** between Mavişehir and İnciraltı Urban Forest. The scope of the project was phased and grouped into 4 different regions being: • **Zone 1:** Mavişehir-Alabey Tersanesi (Karşıyaka) • **Zone 2:** Turan-Alsancak Limanı (Bayraklı) • **Zone 3:** Alsancak Limanı-Konak Köprülü Kavşağı (Konak-Alsancak) • **Zone 4:** Konak Köprülü Kavşağı-İnciraltı Kent Ormanı (Güzelyal) At the commencement of the project, a **Design Strategy Plan Report** was developed to identify approaches and projects that could strengthen the relationship of residents with the sea. The Design Strategy included projects such as: • **Coastline rehabilitation:** Cycling and pedestrian paths, sports fields, and recreational areas along the entire coastal axis, and an improved coastal silhouette were provided by the rehabilitation of the entire bay. • **Urban silhouette:** Improvements of buildings facades to create continuity along the coastline. • **Urban design elements:** Ergonomic equipment (seating elements, urban lighting, etc.) were incorporated as part of the urban design. • **Ecological sustainability:** Sustainable usage of the green areas provided with the integration of the zones of the project. Ecological corridors were created between the development zones with landscaping. • **Environmental health:** Efficient use of clean water was provided. • **Flood risk reduction:** The potential flood risk was reduced through the project design. In addition, the methods implemented for each project are aligned to integrate nature-based solutions as detailed in the **Izmir Green Infrastructure Strategy** (One of the primary goals of the strategy is the establishment of a blue-green network system on the axis extending along the gulf).
Expected Results and Impact Monitoring	• **Urban identity:** Creating the identity of Izmir again via this project by emphasizing the relationship between the city, and the sea. Improving the quality of Izmir as a “Place”. Ensuring the use of the Gulf as a show venue. • **Continuity:** Providing integration between the coastline and buildings facades. • **Sustainable usage:** Different activities such as “Travel route”, “Urban traces workshop”, “Bicycle workshop”, and “Collect-complete-design” were organized to ensure the sustainability of the project and strengthen the relationship of the citizens with the city. • **Environmental quality**: Creating a qualified and improved physical environment.

	Izmirdeniz project was included as a sample project in the book **"Design for Social Innovation: Case Studies from Around the World"**, published by Routledge in November 2021 and included 45 case studies from 6 different continents around the world.
Co-Benefits	• **Social inclusion:** Design features of the waterfront were planned keeping in mind the needs of different demographic groups, to enable better access to the seafront for all residents in Izmir. • **Stakeholder and citizen engagement:** Different types of activities such as Izmir Culture Workshop, and Izmir Design Forum were organized with the citizens and experts to ensure their participation in the process. • **Economy:** The project increased the opportunity for private sector investments for private sector.
Enabling Conditions	• **Vision:** The most important factor in the viability of this project was the path followed by the Izmir Metropolitan Municipality (Governance) by establishing a clear vision that guided the project and was captured in the Design Strategy Report. • **Public Procurement Law:** Allows the procurement of services and projects that can be delivered by the private sector. • **Izmir Green Infrastructure Strategy:** The implementation of Izmirdeniz Project has become easier with the Izmir Green Infrastructure Strategy as both are mutually supportive. Izmirdeniz Project provides all the gains targeted in the Izmir Green Infrastructure Strategy: - **Environmental gain:** Efficient use of clean water resources. - **Minimization of climate change impacts:** Avoiding potential flood risk. - **Socio-economic gains:** Revitalizing the local economy and a healthy city. - **Biodiversity increase:** Ecological corridor and landscape transition.
Prerequisites	• There must be a **high participation** among stakeholders at the concept stage of the project and viewed as a collaborative approach. • **Interdisciplinary integration** should be ensured. • The vision of the local government should be **governance**, not government. • The local government should have an **innovative design approach**. • **Institutional capacity** should be sufficient to implement design ideas.
Lessons Learned	• Not only along the coast but also the urban lifestyle has changed positively. The city started describing itself as a “Healthy City”. • Izmirdeniz Project largely serves the Izmir Green Infrastructure Strategy prepared by the Izmir Metropolitan Municipality for the entire city. • This kind of big idea project is not easy to implement by other Turkish municipalities: - Process management - Inter-participant integration - The vision and institutional capacity of the municipality - There should be a road map planned for the whole city such as Green Infrastructure Strategy, showing how green areas, wetlands, connections between these areas will be designed, and which stakeholders will be responsible.
Sources and Additional Information	https://raillynews.com/2020/10/Ministry-approval-for-izmirdeniz-project/ https://raillynews.com/2022/03/izmirdeniz-project-was-shown-as-an-example-to-the-world/izmirdeniz-project-was-shown-as-an-example-to-the-world/ https://www.emo.org.tr/ekler/2a60cddf6f0fa17_ek.pdf http://www.izmirdeniz.com/Bagimsiz/Index/63 http://www.izmirdeniz.com/CKYuklenen/dokumanlar/kiyi_tasarim_tasarim_stratejisi.pdf https://www.izmir.bel.tr/tr/Haberler/izmirdeniz-projesi-dunyaya-ornek-gosterildi/46356/156 https://www.emo.org.tr/ekler/c19774cbec71228_ek.pdf https://kentstratejileri.com/2017/03/03/izmir-deniz-projesinin-maliyeti-ve-bazi-onemli-sorular/ http://izmirdoga.izmir.bel.tr/CKYuklenen/%C4%B0zmirYe%C5%9FilAltYap%C4%B1Stratejisi.pdf https://dkm.org.tr/uploads/yayinlar/1606808514604.pdf

T3 – Kocaeli: Wastewater Recovery Project

Location	İzmit, Türkiye (Google Earth Map)
Target Sector	Water infrastructure
Climate Focus	**Climate Mitigation**: • Water infrastructure • Water stress • Resource efficiency **Climate Adaptation**: • Water-sensitive design • Resource stress • Drought • Water reuse
Implementation Modality	Kocaeli Metropolitan Municipality implemented the project by using its own financial resources and in cooperation with ISU (Kocaeli Water and Sewage Administration)
Key Stakeholders	• **Public Sector:** Kocaeli Metropolitan Municipality, ISU (Kocaeli Water and Sewage Administration) General Directorate, Local municipalities in Kocaeli, Ministry of Environment, Urbanization and Climate Change, Ilbank, Istanbul Technical University, and Maramara Municipalities Union. • **Private Sector:** Organized Industrial Zones (Dilovası, Gebze, Kocaeli Alikahya, and Asım Kibar OIZs), TÜPRAŞ (Türkiye Petroleum Refineries Inc.), and HABAŞ (An establishment that manufactures of medical and industrial gas, electricity, steel, tube, heavy machinery, and distributes of LNG, CNG and LPG), Goodyear Tires Trade Inc., Prometon Türkiye Industrial and Commercial Tires Inc., Air Liquid Gase Industry and Trade Inc., Entek Electricity Production Inc., Federal Mogul Powertrain Automotive Inc., Protection Chlorine Alkali Industry and Trade Inc., Shell Turcas Petrol Inc., Yurt Engineering, Remondis, and Emre Rail Energy.
Finance and Funding	The project was financed through a loan by Ilbank and equity contribution. The project owner also collaborated with industrial facilities in the region.
Description	Kocaeli is an industrial city and one of the cities with very high water consumption. The ongoing drought in Kocaeli has brought with it measures to reduce the pressure on drinking and non-drinking water resources. The “Wastewater Recovery Water Project” was initiated in 2015 with the aim of both **recycling water treated in the wastewater treatment plants back into the economy** and **reducing consumption pressures on water resources.** The wastewater generated in the treatment plants is re-evaluated in the recycling facilities by using **rapid sand filter (RSF)**, **pressure sand filter (PSF)** and channel type u**ltraviolet disinfection (UV)** technologies. The wastewater is treated by **12 treatment plants** and is subjected to a second treatment in this recovery water plant.

No.	Unit Name	Purification Method			Capacity (m3/day)
		UV	RSF	PSF	
1	Kandıra Cebeci WWTP RU	X			9,000
2	Kandıra Center WWTP RU	X			6,000
3	Başiskele Kullar WWTP RU	X	X	X	17,000
4	İzmit Plajyolu WWTP RU	X	X		10,000
5	Körfez WWTP RU		X	X	64,000
6	Gebze WWTP RU	X		X	1,200
7	Dilovası WWTP RU	X	X		20,000
8	Gebze Cumaköy MWWTP RU	X	X		1,000
9	İzmit Umuttepe MWWTP RU	X	X		1,000
10	Kandıra Seyrek MWWTP RU	X	X		600
11	Kandıra Sucuali MWWTP RU	X	X		600
12	Dilovası Köseler MWWTP RU	X	X		1,000

WWTP: Wastewater Treatment Plant
MWWTP: Modular Wastewater Treatment Plant
RU: Recovery Unit

	Recovery water is used by organizations in **TÜPRAŞ** (Türkiye Petroleum Refineries), **HABAŞ** (An establishment that manufactures of medical and industrial gas, electricity, steel, tube, heavy machinery, and distributes of LNG, CNG and LPG), and **other various organized industrial zones** (e.g., Alikahya, Asım Kibar, and Federal Mogul). • **Industries:** Use of recovered water as process water in industrial plants. Organized industrial zones have started to use recovered water for cooling/process water and garden irrigation. • **Sustainable water use:** The wastewater recovery facilities have an annual recovery water capacity of 48 million m2. Meeting the water needs for cleaning purposes from the recovered water in the wastewater treatment plant. Use of recovered water in the construction of the tramway (Plajyolu-Kuruçeşme line). • **Green spaces:** Use of recovered water in green field irrigation (Irrigation of Yahyakaptan walking path, Izmit, Başiskele and Kandıra green areas)
Expected Results and Impact Monitoring	• **Water saving:** With the project, 1/3 of the water used by the industrial facilities is supplied from wastewater that is recovered. (31% of the industry's total water requirement). It is aimed to expand the use of recycled water by keeping the water cost low. • **Water stress:** To reduce the pressure of water use in industrial facilities for drinking water resources. • **Drought mitigation:** The use of recovery wastewater started instead of the usage of water resources (groundwater) of the Dilovası region. TÜPRAŞ does not use the water of Sapanca Lake anymore. • **Climate resilience:** The use of recovery water was maximized rather than the usage of groundwater. 12,226,584 m3 of recovery water was used, and approximately 12,4 million m3 of drinkable water was saved in 2021. 75,596,351.32 Turkish Lira income was obtained from total recovered within 7 years (2015-2021).
Co-Benefits	• **Economy:** Savings were achieved in water consumption throughout the city. Industrial establishments have started saving money on water costs (In 2021, 12.2 million m3 was produced and given to industrial facilities). • **Partnership Engagement:** During the launch and implementation of the project, cooperation was made with many different institutions and organizations: Ministry of Environment, Urbanization and Climate Change, Ilbank, Istanbul Technical University, and Maramara Municipalities Union.
Enabling Conditions	• **Regulation on Water Pollution Control:** It provides necessary legal and technical requirements to prevent water pollution and protect underground and surface water resources in line with sustainable development goals. • **Regulation on Wastewater Collection and Removal Systems:** It provides procedures, principles, design, project planning, construction, and operation of wastewater collection and removal systems. • **Planned polices:** - In the **Circular Economy Action Plan of Türkiye**, which is planned to be completed in 2023, it is planned that the use of recovered wastewater will become mandatory. - In line with the policies planned on a **national scale**, it is foreseen that after 2026 it will be mandatory for all industrial facilities to use treated wastewater.
Prerequisites	• Initial investment costs and operating costs should be determined. • Resources and institutional capacity should be provided for R&D studies. • Integration between wastewater treatment plants, recovery water plants, existing/planned practices, water supply and water pricing should be ensured.
Lessons Learned	• Through the increased use of recovered wastewater, pressure on groundwater resources and water resources planned for use during droughts has been reduced. • **Sustainable resource efficiency** has been achieved by selling the recovered wastewater at a cheaper price, thereby increasing **the demand for recovered wastewater**. • **Water savings** were achieved in the whole city (1.5 months of water usage savings)

	• **Efficiency** has been achieved in **water management**. • Similar recovery facilities can be added to other wastewater treatment plants in other provinces of the country.
Sources and Additional Information	• https://www.akillisehirler.gov.tr/proje-envanteri/kocaeli-geri-kazanim-suyu/ • https://www.aa.com.tr/tr/ekonomi/kocaelide-geri-kazanim-suyu-ile-50-milyon-liralik-tasarruf/673653 • https://www.sabah.com.tr/ekonomi/kocaelide-geri-kazanim-suyu-ile-milyonlarca-metrekup-tasarruf-5885302 • https://www.isu.gov.tr/haberler/detay.aspx?Id=10914 • https://www.isu.gov.tr/icerik/detay.aspx?Id=329

Lessons for Green and Resilient Urban Development

From the six case studies analysed above and other experience, **key lessons or 'success factors' for a green and resilient urban infrastructure interventions have been distilled in this section.** These success factors have been organised under the categories of 'Policy and Finance', 'Planning and Design', and 'Processes and Partnerships' and described in the context of the urban development sectors relevant to this Assignment.

Policy and Finance

Success factors listed in this section relate to the **enabling environment for urban infrastructure development – policy, regulatory targets, financial support etc. – at the national and sub-national levels** that support the implementation and operation of green and resilient urban development projects.

- **Strong commitment to climate action from national government:** Ambitious national commitments on climate action, as demonstrated through their Nationally Determined Contributions (NDCs), National Climate Strategies, and National Adaptation Plans are an essential factor for driving investment in green and resilient infrastructure at the municipal level. Incrementally ambitious or progressive national standards around climate action also enables municipalities to prioritise or implement interventions based on the direction of travel of national policy e.g., while the Kocaeli Wastewater Recovery Project's implementation was initiated in 2015, it prepares the city for an expected update to national standards that will require all industrial facilities to use treated wastewater from 2026.
- **Sub-national policies align with national climate action goals:** The Tokyo Disaster Parks case provides a good example of alignment of policies from national to municipal level around disaster management. In addition to enabling support and approvals at every tier of government, often targets (such as carbon emission reduction targets) set at the national level are supported by funding and financing programmes that can be leveraged by municipalities for infrastructure implementation.
- **Policy and strategic mechanisms to encourage optimising co-benefits:** Infrastructure interventions that are primarily aimed at climate action are often well-positioned to incorporate social, economic, or cultural co-benefits. Setting up strategic or governance mechanisms that encourage optimising co-benefits within climate adaptation and mitigation projects may also reach a wider set of beneficiaries within the city. In Paris, policies encouraging mixed-income housing development also support equitable economic development and enable the provision of benefits for low-income households.
- **Appropriate legal and regulatory measures to support land requirements for public purposes:** Land acquisition and assembly for projects of public importance are enabled in the Turkish context, as illustrated by the Izmirdeniz project. Land acquisition regulations should be carefully drafted to ensure that the rights and interests of residents affected by the project are safeguarded. Municipalities that commit to best practices around social safeguarding (e.g. by following the World Bank's guidelines on social safeguarding), especially when projects involve resettlement or relocation of residents, can minimise risks to implementation and prevent delays in completion of the project. In addition to direct land acquisition, municipal governments should consider implementing other 'light-touch' policy instruments that incentivise development of privately owned properties in line with public benefits e.g., policies enabling land value capture, development bonuses for integrating public uses etc.
- **Secure, multi-year budgets for operations and maintenance of the infrastructure asset:** Financial uncertainty for investing in maintenance of urban infrastructure investments can be minimised by committing to multi-year allocations for the operational phase of the asset. Certainty in operational funding can also help implement additional measures and support improved monitoring of outcomes.

Planning and Design

Success factors listed in this section relate to **aspects of project design** that lead to successful outcomes from a green and resilient urban infrastructure intervention:

- **Aligning design criteria and codes with requirements from international financing and funding sources:** Often international and national financing or funding sources may require adherence to specific design standards and codes or require incorporation of specific safeguarding or stakeholder engagement processes. Prior to implementation, producing a bespoke set of design criteria and standards that consolidates or aligns all requirements from a financing perspective can avoid conflicts/confusion and enable consistent implementation of requirements.
- **Leveraging the power of the public sector to act at scale:** For interventions spanning multiple sectors or large areas of land, municipalities can guide urban development by carrying out actions that are challenging

or time-consuming for the private sector. Public sector involvement in large interventions can be planned in a manner that provides direction for related or aligned private investments and development. City governments do not necessarily have to fully bear the costs of large-scale improvements on their own, as illustrated by the Clichy-Batingnolles Eco District in Paris where large-scale public improvements were implemented by city government, but the cost of imrpvoements were partly recouped from private developers through a dedicated land tax.

- **Optimizing multi-use and co-benefits through intervention design:** Particularly for green infrastructure, emergency and disaster management interventions, the nature of the intervention provides opportunities for mixed-use or multi-purpose spaces that can result in social and economic co-benefits. Both the Tokyo Disaster Parks and Porsuk Creek Rehabilitation projects illustrate this lesson, by designing flood protection and disaster response infrastructure that enables their use as green public spaces as secondary functions.
- **Complementing 'hard' infrastructure solutions with 'soft' measures:** To maximise the benefits from infrastructure investment, proposed projects should look to incorporate 'soft' measures (e.g., capacity development programmes, community support or interaction initiative, social inclusion or economic development initiatives) that work hand-in-hand with the infrastructure intervention. The Vienna Climate Smart City Strategy demonstrates several economic inclusion and educational initiatives along with investment in smart infrastructure solutions.
- **Tailoring the design of green infrastructure solutions to local context and capacity:** While green infrastructure solutions can be applied to any sector, the choice of specific interventions should look to maximise the benefits from them and align to clear opportunities within the context or address any concerns around viability. For example, the presence of large industrial facilities as consumers plays a role in maintaining long-term feasibility of the Kocaeli Wastewater Recovery project.

Processes and Partnerships

Success factors listed in this section relate to how the infrastructure intervention is implemented, including approaches, processes, stakeholder engagement etc.:

- **Developing individual projects under the umbrella of an overarching strategy:** As demonstrated by the Vienna Smart Climate City Strategy, an integrated strategy or plan enables distinct projects across various sectors to aim for a common set of objectives. Similarly, articulating a single vision of improving access to the sea for Izmir's residents in the Design Strategy Report for the Izmirdeniz program helped drive an alignment of objectives for various interventions related to water quality improvement, waterfront development, better urban design codes, and traffic planning.
- **Implementing complex transformation projects through distinct phases:** A phased approach to implementation can minimise financial risks and allow large interventions to develop 'proof of concepts' to secure financing or funding for subsequent phases. Phased developments also provide opportunities to minimise disruption within cities and allow for lessons learnt to be applied to subsequent phases. For cities with low capacity, phasing enables matching the scale of development to available resources.
- **Setting up a monitoring and learning approach:** Putting in place a clear monitoring approach and related key performance indicators informs learning for future similar initiatives. Sound monitoring approaches also allow stakeholders to understand causal relationships between past investment and design decisions and future outcomes. Monitoring and feedback mechanisms can also create more buy-in and engagement from citizens and community members.
- **Maximising opportunities for private sector, civil society and academic partnerships:** Academic institutions and civil society organisations in the city may often hold data or be able to convene a wide range of stakeholders to ensure that a planned project addresses key concerns or that the solution is being designed and implemented in a optimal manner. The private sector may bring in technical and resource capacity to improve quality or viability of a project.
- **Engaging residents during planning and implementation of projects:** In addition to engaging residents of the city in the planning and design phase of a project, clear and frequent updates on progress of implementation can ensure buy-in from a wide range of stakeholders. Where possible, urban development interventions should look to offer capacity-building opportunities for residents, with a direct impact on their quality of life. Engagement can take many forms and, depending on the local capacity, can leverage digital approaches as demonstrated by the Vienna Climate Smart City Strategy, which builds on existing digital tools that enable residents to comment on proposed building projects before implementation has commenced.

Appendix A Longlist of Good Practice Case Studies

Legend

Shortlisted Case Studies covered under Section 3

Additional Case Studies suggested by Consultant Team

A.1 International Case Studies

#	Region	City, Country	Case Summary	Focus	Sector	Scale	Comments	Link
1)	Europe	Paris	**Climate Bond Issuance** Sustainable development has been a major concern for the City of Paris for more than 10 years. When, in 2015, the City of Paris hosted the COP21, the City Hall wanted to send out a strong signal to the international community and to other local and regional authorities and show the diversity of municipal ecological actions and commitments. To emphasize this, the City of Paris erected the climate bond to finance climate and energy projects. The total size of the bond is € 300 million, with a running time until May 2031. The bond aims at private investors who consider it as a secondary advantage to invest in the sustainability of the city of Paris. They will receive a profit rate of 1.75% per year. 20% of the climate bond funds have been assigned to adaptation projects. The bonds finance projects in the Paris Climate Action Plan that aim to reduce greenhouse gas emissions by 75% by 2050. Areas of action include renewable energy, building energy retrofits, mobility electrification, improved waste collection, water use demand management, and reduction of the urban heat island effect. Notable projects are a 20 GWh per year-saving retrofit of 200 schools, 300 charging points for electric vehicles, and the creation of a new electric bus rapid transit line, as well as urban farming and city greening programs. Currently, two projects with a climate adaptation objective have been included in the bond and are being implemented: planting 20,000 trees in the city and creating 30 hectares of new parks by 2020.	Climate Mitigation: various Climate Adaptation: biodiversity, land use	Finance	Micro (many locations)	Could be interesting to include a different kind of case study that starts off from the financial instruments towards investment projects (not the other way around)	https://climate-adapt.eea.europa.eu/en/metadata/case-studies/climate-bond-financing-adaptation-actions-in-paris https://www.c40.org/case-studies/cities100-paris-dedicated-climate-bonds-for-cities/
2)	Europe	Paris	**Oasis Schoolyard's project** The project seeks to renew, dynamize and green the existing public schoolyards by improving their thermal conditions, responding simultaneously to multiple urban issues such as the lack of green areas within the city, the design of appropriate public spaces for children growing up in the city and in general the enhancement of citizens' quality of life. This includes an active work in community cohesion improvement, which is achieved by providing to the local community free access to the schoolyards on Saturdays. By December 2021, 72 schoolyards had been transformed, and the City's goal is to reach all 770 kindergarten, elementary and middle schools by 2050.	Climate Adaptation: stormwater management, urban heatwaves	Buildings, Social Infrastructure	Micro	Can be applied to public infrastructure assets in general, beyond schools	https://aiph.org/green-city/guidelines/case-studies/paris-france-social/ https://climate-adapt.eea.europa.eu/en/metadata/case-studies/paris-oasis-schoolyard-programme-france
3)	Europe	Paris	**Clichy-Batignolles Eco-District** Employing virtually all the tools in the green builders' toolkit, Clichy-Batignolles aims to be tangible evidence of the city's commitment to reducing its carbon footprint as well as an experimental laboratory for testing what's possible in climate-sensitive redevelopment. What used to be a train yard is being turned into an urban park surrounded by energy-efficient buildings that will house 7,500 residents and provide places of employment for more than 12,000 people. (…) Overseen by a public company owned by the City of Paris, developers at Clichy-Batignolles must follow extremely strict guidelines for building energy consumption. Much of the district's heat and electricity comes from renewable sources, rare in Paris today. The development innovated the use of a neighborhood-scale geothermal heating system that taps into a warm water table beneath the park, drastically reducing energy needed for heating. To cut carbon emissions further, the layout of the development encourages walking and use of mass transit while limiting space for cars. In addition to retail and office space, the district encompasses a wide range of housing and services, including four schools, medical services, daycare facilities, gyms and an activity center for teens with performing arts spaces and a practice kitchen.	Climate Mitigation: energy efficiency and renewables, green buildings, water usage Climate Adaptation: stormwater, urban heat, biodiversity	Energy, Buildings, Transport, Land Use, Social Infrastructure	Macro / Micro	Proposed by WB	https://archive-clichy-batignolles.parisetmetropole-amenagement.fr/sites/default/files/exe_web_cb_dossierpresse-en_2.pdf https://archello.com/project/clichy-batignolles-eco-district https://csis.myclimateservice.eu/node/5200 https://ensia.com/articles/paris-is-building-the-eco-community-of-the-future-right-now-heres-how/
4)	Europe	Ljubljana	**Sustainable tourism in Ljubljana** Over the years, we have obtained as many as 8 certificates in three categories. Among other things, we are proud of as many as 1,640 bicycle docking stations and precise waste collection, which can be used for further processing. Ljubljana is the recipient of the Slovenia Green Destination Platinum, the Slovenian green destination certificate within the highest, platinum category. The Green Scheme of Slovenian Tourism (ZSST) is a national program and certification scheme under the umbrella brand SLOVENIA GREEN. The centre of Ljubljana has been traffic-free since 2008. The area closed to traffic covers 12 hectares and is the largest car-free zone in the European Union. Ljubljana boasts the highest rate of household waste separation in the European Union (69,5% in 2020). Waste containers in the city centre are located underground.	Climate Mitigation: emission reductions, air quality Climate Adaptation: heat stress, local produce	Social Infrastructure, Transport, Buildings, Economy, Land Use, Agriculture, Water	Macro	Good as it combines tourism (relevant to Turkish cities) with sustainability topics	https://www.visitljubljana.com/en/about-us/sustainable-tourism-in-ljubljana/

#	Region	City, Country	Case Summary	Focus	Sector	Scale	Comments	Link
5)	Europe	Vienna	**Smart City Vienna framework strategy** that supported numerous innovations, including in public mobility, district heat network, biodiversity monitoring and protection, building permitting process	Climate Mitigation: energy efficiency and renewables, air quality Climate Adaptation: urban heat waves	Buildings, Energy, Transport, Land Use	Macro		https://www.vienna.convention.at/en/sustainability/green-city/smart-city-415344
6)	Europe	Vienna	**Aspern Seestadt** Seestadt is one of Europe's largest urban development projects. Here in Vienna's fast-growing 22nd district in the north-east of the city, a new urban centre is taking shape – a smart city with a heart, designed to accommodate the whole spectrum of life. A multi-phase development through to the next decade will see the creation of high-quality housing for over 25,000 people and, eventually, thousands of workplaces. Built on a foundation of innovative concepts and forward-looking ideas, this city-within-a-city combines high quality of life with economic drive and offers something for everyone.	Climate Mitigation: energy efficiency and renewables, micro mobility Climate Adaptation: urban heat waves, water reuse	Buildings, Energy, Land Use, Social Infrastructure	Macro	Renard visited this as part of the EBRD Green Cities Annual Conference and general impression to most visitors was mixed.	https://blog.allplan.com/en/viennas-sustainable-city-within-a-city#:~:text=The%20new%20development%20is%20located,as%20Vienna's%201st%20district. https://theworld.org/stories/2021-03-01/viennas-green-mini-city-offers-model-sustainable-urban-living https://www.aspern-seestadt.at/
7)	Europe	Vienna	**Spittelau waste incineration plant** The Spittelau waste incineration plant is a piece of art that processes around 250,000 tonnes of household waste every year to produce green heating and electricity. The Spittelau waste incineration plant makes a key contribution to Vienna's waste management system. Around 50 percent of the energy produced every year from waste incineration comes from biogenic or renewable sources.	Climate Mitigation: emission reduction, circular economy, green energy	Waste, Energy	Micro	WB GFC Vienna case study visit	https://positionen.wienenergie.at/en/projects/spittelau-waste-incineration-plant/
8)	Europe	Vienna	**Vienna Central Station** Around the new central station, which significantly facilitates transport to and through Vienna, an entirely new district, with housing, office buildings and various leisure offers, was created. A new housing district – the Sonnwendviertel – was built on a 59-hectare site. Altogether, approximately 5,000 apartments have been built to accommodate 13,000 residents, offices for 20,000 employees and space for hotels, shops, services and catering establishments. Overall, three environmental impact assessments have been performed. The effects on a wide range of areas such as the burden on noise and climate pollution, ground water, air pollutants and other pollutants were investigated and assessed. An impressive example of the protective measures laid down: around 14,000 soundproof windows and eight kilometres of noise barriers. In the construction of the central station is also on respected for an eco-friendly construction sites: all the recyclable material – especially concrete demolition and ballast – was prepared on the premises and reinstated. Excavation that could no longer be used on the construction site, was transported by rail. This created a private loading track. To meet the enormous demand for concrete, an own construction site concrete mixing plant produced up to 180 cubic meters of concrete per hour. All these measures meant a decisive minimising of the transport of the and on the ground. Equal priority was given to the use of sustainable materials and to achieving the greatest possible energy efficiency. Geothermal energy, solar energy, district heating and cooling networks, an integrated CO2-modulated ventilation system and grey water utilisation: together, these resources make Vienna Central Station a model project of energy-efficiency, in which resource use is minimised and the environment protected.	Climate Mitigation: energy efficiency, circular economy, green energy Climate adaptation: heat stress, water resource use	Buildings, Land use, Water, Energy, Waste	Micro	WB GFC Vienna case study visit Renard comment: sound to me like a stronger case among the Vienna examples	https://smartcity.wien.gv.at/en/vienna-central-station/
9)	Europe	Vienna	**Neues Landgut** Neues Landgut is an innovative urban redevelopment which is currently under construction. It includes 1500 housing units (50% social housing / 50% free market), a school-campus, offices, a large library and a central green area. Two long-existing buildings are used as multi-purpose spaces.	Climate Mitigation: Transport, Buildings	Buildings, Land use	Micro	WB GFC Vienna case study visit	https://www.gbstern.at/themen-projekte/neues-landgut/
10)	Europe	Vienna	**Danube Island** The Danube Island (Donauinsel) is an innovative flood protection system to protect the city of Vienna from flooding from the Danube. Central element of the flood protection is the New Danube (Neue Donau) which relieves the Danube in case of flooding. At the same time the Danube Island is a 21 km long nature reserve for leisure seekers in the middle of the city. A number of biotopes have been created by preserving cut-off meanders of the Danube, excavating ponds and developing special surface structures on Danube Island. The necessary maintenance work includes clean-ups after floods, mowing and watering the island and its embankments, as well as cutting aquatic weeds in the New Danube. The city of Vienna has purchased special mowing boats for this purpose.	Climate Adaptation: flood protection, biodiversity, heat stress	Land use, Biodiversity, Water	Micro	WB GFC Vienna case study visit	https://www.wien.gv.at/english/environment/waterbodies/danube-island/ https://www.washingtonpost.com/climate-solutions/2021/10/30/flood-vienna-danube-climate-change/ https://www.wien.gv.at/english/environment/waterbodies/danube-island/dicca/project-description/index.html
11)	Europe	Cologne	**Climate Council planning work** climate impact assessments for all new projects; mobility transformation; e-infrastructure; SmartCity Cologne platform	Climate Mitigation: green transport; regional food supply	Transport Agriculture / Social Infrastructure	Macro	First big German city to declare climate emergency	https://mayorsofeurope.eu/energetics/cologne-climate-council-presented-its-goals-by-2030-and-2040/ https://www.urban-transport-magazine.com/en/cologne-is-first-big-city-in-germany-to-declare-climate-emergency/ https://www.smartcity-cologne.de/

#	Region	City, Country	Case Summary	Focus	Sector	Scale	Comments	Link
12)	Europe	London	**Climate-Proofing Social Housing Landscapes – Groundwork London and Hammersmith & Fulham Council** Groundwork London – an environmental regeneration charity part of the Groundwork federation - in partnership with Hammersmith and Fulham Council, received LIFE+ funding for the Climate-Proofing Social Housing Landscapes project in 2013. The project, which came to an end in September 2016, has demonstrated an integrated approach to climate adaptation in urban areas by undertaking a package of affordable, light-engineering climate change adaptation measures based around the retrofitting of blue and green infrastructure. Alongside this, the project has also featured in-depth community engagement and awareness-raising of climate change adaptation opportunities, as well as training local apprentices and local authority staff in the skills to implement and maintain such measures. These measures have been implemented in three different social housing contexts in West London, within areas characterised by high levels of multiple deprivation including higher exposure to climate-related risks. Ultimately, the project aimed to demonstrate an integrated approach to addressing climate-related and wider socio-economic challenges in vulnerable urban environments.	Climate Adaptation: urban heat island, water-sensitive design Climate Mitigation: affordable housing retrofitting	Housing and Land Use	Micro		https://climate-adapt.eea.europa.eu/en/metadata/case-studies/climate-proofing-social-housing-landscapes-2013-groundwork-london-and-hammersmith-fulham-council
13)	Europe	Stuttgart	**Stuttgart: combating the heat island effect and poor air quality with ventilation corridors and green-blue infrastructure** Stuttgart's location in a valley basin, its mild climate, low wind speeds, industrial activity and high volume of traffic has made the city highly susceptible to poor air quality. Development on the valley slopes has prevented air from moving through the city, worsening air quality and contributing to the urban heat island effect. A Climate Atlas was developed for the Stuttgart region, presenting the distribution of temperature and cold air flows according to the city's topography and land use. Based on this information, a number of planning and zoning regulations were recommended that also aim at preserving and increasing open space in densely built-up areas. As a result, over 39% of Stuttgart area is protected, green areas (urban forests, trees in parks and in streets) have been expanded and ventilation corridors have been preserved from urban expansion. To further improve resilience to hotter summers and more frequent heatwaves, other adaptation measures have been and are being implemented in the city, including green roofs, greening of tram tracks and buildings, shading facades of buildings through street trees and upgrading of smaller public spaces to "cool spots". Blue infrastructures, such as drinking fountains and other water elements are also being improved. All these adaptation measures help to reduce the heat island effect that will further increase due to hotter summers and more frequent and intensive heatwaves. Ventilation corridors and expanded green areas also contribute to improving the urban air quality, respectively dispersing and reducing air pollutants.	Climate Adaptation: urban heat island, water-sensitive design	Biodiversity, urban design	Macro		https://climate-adapt.eea.europa.eu/en/metadata/case-studies/stuttgart-combating-the-heat-island-effect-and-poor-air-quality-with-green-ventilation-corridors
14)	Europe	Hamburg	**Four pillars to Hamburg's Green Roof Strategy: financial incentive, dialogue, regulation, and science** In response to climate change, one of Hamburg's objectives is to become greener, in the city and on the roofs. In this context, Hamburg is the first German city to have developed a comprehensive Green Roof Strategy. The goal is to install a total of 100 hectares of green roof surface in the metropolitan area. The Hamburg Ministry for Environment and Energy is providing financial support for the creation of green roofs to the sum of € 3 million until the end of 2024. Building owners can receive subsidies to cover up to 60% of installation costs. Additional benefit stems from lower maintenance costs due to the longer lifetime of green roofs, lower energy costs because of improved building insulation and a 50% reduction on rainwater fees thanks to the rainwater retention function of green roofs.	Climate Mitigation: energy efficiency in buildings Climate Adaptation: urban heatwaves, stormwater management	Buildings, Energy	Macro		https://climate-adapt.eea.europa.eu/en/metadata/case-studies/four-pillars-to-hamburg2019s-green-roof-strategy-financial-incentive-dialogue-regulation-and-science
15)	Europe	Jena	**Mainstreaming climate change adaptation into urban planning: greyfield land redevelopment in Jena (Germany)** Jena is a city of about 108,000 inhabitants and – due to its specific geographic location – is exposed to various climate change-related risks, whereas heatwaves are the most relevant. Climate projections for Jena expect a substantial increase of this risk in the future. Under the frame of "JenKAS - Jena Climate Adaptation Strategy", a concept for adapting the city to climate change impacts was developed between 2009 and 2012 as part of a project funded by the Federal Ministry of Transport, Building and Urban Development and the Federal Institute for Research on Building, Urban Affairs and Spatial Development. The overall goal of the project was to lay the ground for mainstreaming climate change adaptation into urban planning. The redevelopment of the Inselplatz - a 3 hectares inner city square mainly used as parking area – into a new campus of the Friedrich Schiller University was one of the first practical interventions for which the JenKAS approach was applied. As part of the planning process economic assessments were conducted to determine the most suitable bundle of adaptation measures to reduce local heat risk and to improve the local climate of this specific area in the medium and long-term perspective.	Climate Adaptation: urban heatwaves	Land use, Buildings	Micro		https://climate-adapt.eea.europa.eu/en/metadata/case-studies/mainstreaming-climate-change-adaptation-into-urban-planning-greyfield-land-redevelopment-in-jena-germany
16)	Europe	Rouen	**Multifunctional water management and green infrastructure development in an eco-district in Rouen** The former industrial area "Luciline" in Rouen, along the Seine river, has been profoundly re-designed into an ecodistrict covering 9 hectares in total and including both climate change adaptation and mitigation solutions. Sustainable living is the core principle of the neighbourhood re-design. Sustainability solutions are implemented in fields playing an important role in climate change adaptation and mitigation, such as energy, water, biodiversity, transport and planning. Measures include a system of small canals connected to the Seine river improving drainage of water from the built environment and open spaces, green areas and tree corridors, a heating and cooling system using groundwater (prior to its release to the Seine River), energy saving measures in buildings, improved access to public transport, easy accessibility of the area by foot and bicycle and compact building planning. The project for the ecodistrict won a climate adaptation award (Trophées Ademe 2014 "Adaptation climatique et territoires") and received the official ecodistrict label of the French Department of Sustainable Development. Additionally, the city of Rouen received the label "Territoire à énergie positive pour une croissance verte" from the Ministry of Environment. The development of the area is expected to be completed by 2030, after which "Luciline-Rives de Seine" will serve as a model for other similar operations locally and in the region.	Climate Mitigation: energy efficiency and renewables, green buildings Climate Adaptation: stormwater and flood management, urban heat, biodiversity	Energy, Buildings, Transport, Land Use, Social Infrastructure	Micro/ Macro		https://climate-adapt.eea.europa.eu/en/metadata/case-studies/multifunctional-water-management-and-green-infrastructure-development-in-an-ecodistrict-in-rouen

#	Region	City, Country	Case Summary	Focus	Sector	Scale	Comments	Link
17)	Asia	Quezon City	**Clean Energy in Quezon City: A Wasteland turned into a Waste-to-Energy Model** Quezon City has been renowned for its unparalleled success in solid waste management. By implementing an innovative program, the city is transforming an iconic wasteland into an internationally recognized waste-to-energy model, becoming the first city in the Philippines to recover methane gas from waste disposal. This innovative project would have not been possible without the strong political will of the city to radically transform the 'Payatas' open dumpsite into a controlled waste disposal facility, especially after a trash slide claimed 300 lives in the local community. Following this tragedy, the city initiated massive rehabilitation works, including slope reprofiling, stabilization and greening, leachate collection and recirculation, the improvement of the drainage system, and the fortification of access paths to the site.	Climate Mitigation: emission reduction, waste to energy Climate Adaptation: landslide protection, flood management	Waste, land use	Micro		https://www.c40.org/case-studies/clean-energy-in-quezon-city-a-wasteland-turned-into-a-waste-to-energy-model/
18)	Asia	Kuala Lumpur	**Revitalising the Kuala Lumpur Klang River Waterfront into Resilient Sustainable Pedestrian Areas** The ROL project was initiated under the government Economic Transformation Programme (ETP) for the Greater KL/Klang Valley National Key Economic Area (NKEA). Greater KL/Klang Valley has been acknowledged as an important economic region. It comprises 20% of the nation's population and contributes 30% of the nation's GNI. The key goal for Greater KL/Klang Valley's transformation plan is to drive economic growth and attain liveability; aspiring to be among the top 20 most liveable cities in the world and among the top 20 fastest growing city economies in the world. By 2020, NKEA projected 300,000 new jobs to be created through the implementation of Nine Entry Point Projects (EPP). These projects are pivotal to the economic growth in the Klang Valley and Kuala Lumpur. Among the EPPs that will impact Kuala Lumpur most significantly and which are most likely to act as a magnet for growth are: the ROL project, an integrated Mass Rapid Transport (MRT) network and the greening of the city and iconic places.	Climate Mitigation: emission reduction Climate Adaptation: water management, urban heat waves	Land Use, Water Infrastructure, Biodiversity, Transport	Macro / Micro		https://www.c40.org/case-studies/revitalising-the-kuala-lumpur-klang-river-waterfront-into-resilient-sustainable-pedestrian-areas/
19)	Asia	Auckland	**The Oakley Creek Project – Greening Auckland's Infrastructure** Significant flooding issues affected a 1.3 kilometre section of the stream, in an area that was slated for greater intensification under the Auckland Unitary Plan. To overcome these issues, the Auckland Council replaced the existing concrete channel with a wider, naturalised stream channel. The use of plants – native trees, ferns and flaxes – increased the water-carrying capacity of the watercourse and provided greater potential for stormwater to naturally soak into the ground.	Climate Adaptation: flood management	Land Use, Biodiversity	Micro		https://www.c40.org/case-studies/the-oakley-creek-project-greening-auckland-s-infrastructure/
20)	Asia	Tokyo	**Tokyo Disaster Parks** Tokyo's refuge parks are cleverly disguised survival bunkers for the masses during times of urban chaos and dysfunction. They are outfitted with solar-powered charging stations for electric bicycles and smart phones in case of electrical failure, public benches that transform into cooking stoves, and manholes that double as emergency toilets. Under the rolling grass hills and cherry blossom trees are water reservoirs and storehouses containing enough food to allow entire districts to survive the critically important first 72 hours following a disaster. (…) Other disaster parks, however, are integrated into the daily lives of citizens. Hikarigaoka Park was built in 1940, a year that marked the 2,600th anniversary of the founding of Japan. It includes a bird sanctuary, camp grounds, archery fields and gardens, and can support approximately 270,000 stranded people in the event of disaster. In addition to providing power, cooking facilities and provisions, it serves as a local hub, relaying information from officials at the Tokyo Rinkai disaster prevention park to local residents.	Climate Adaptation: disaster emergency response and recovery; water and electricity supply	Land Use, Energy, Water, Social Infrastructure	Micro (several)		https://www.theguardian.com/cities/2014/aug/19/tokyo-disaster-parks-hi-tech-survival-bunkers-hidden-green-spaces-earthquake https://www.spoon-tamago.com/2020/09/29/tokyo-public-parks-disaster-preparedness/ https://www.tokyorinkai-koen.jp/en/about/ https://www.cambridge.org/core/journals/urban-history/article/abs/small-parks-big-designs-reconstructed-tokyos-new-green-spaces-19231931/F4F01AAF83958B7DE6EFF5B14FA0B09E
21)	Asia	Tokyo	**Toshima Ward Office Building (Toshima Eco-Musee Town)** This project is the first of its kind in Japan to mix the governmental together with residential buildings in one tower designed by Kengo Kuma and Nihon Sekkei. The concept recalling "co-existence with nature and building" where this site once upon a time called Nezuyama blessed with abundance of nature. The tower symbolize tree with its base (1F-10F) covered with so-called "Eco-Veil" curtain wall with having solar panels, greeneries and sun shading devices. Its architectural spaces given highest priority to save energy to provide users maximum comfortability, safety and stability in the project.	Climate Mitigation: green building design, energy and water efficiency Climate Adaptation: thermal comfort	Buildings	Micro	WB mentioned, but already has a case study on it	https://alg.jp/en/work/toshima-eco-musee-town/
22)	Americas	Vancouver	**Vancouver - Zero Emissions From New Buildings** Vancouver has developed the most stringent building codes in North America for a cold climate city, in an effort to cut emissions in half from newly constructed buildings under seven stories high. Energy efficiency standards were set higher than LEED Gold standards by focusing on greenhouse gas emissions rather than energy consumption. These ambitious codes and regulations are part of Vancouver's Green Buildings program, which set the city on the path to eliminate emissions in new buildings by 2030. Buildings are an important area of focus for the Canadian city if it is to achieve its goal of 80% carbon emission reductions by 2050. Thanks to a large-scale hydroelectric plant, the city's electricity supply is 93% renewable, so by focusing on building highly efficient new buildings, Vancouver can make big strides towards a zero-carbon future.	Climate Mitigation: emission reduction, energy efficiency, renewables	Buildings	Macro		https://www.c40.org/case-studies/cities100-vancouver-zero-emissions-from-new-buildings/ https://wwf.panda.org/wwf_news/?342675/Vancouver https://archive.fiducienationalecanada.ca/sites/www.heritagecanada.org/files/Ting%20Pan%20Speaker%20Presentation.pdf https://greenmunicipalfund.ca/case-studies/case-study-vancouver-becoming-worlds-greenest-city

#	Region	City, Country	Case Summary	Focus	Sector	Scale	Comments	Link
23)	Americas	Vancouver	**Vancouver - Low Carbon District Heating Cuts Emissions [TO BE COMBINED WITH #22 IF SELECTED]** The Vancouver Neighbourhood Energy Strategy is rolling out low carbon district heating and cooling systems in high-density areas of the city. The strategy serves the dual purpose of converting existing fossil fuel-based district heating systems to run on low carbon fuel sources, such as wood chips, and building new district heating systems to serve both new developments and existing buildings. With three new systems operational, two new systems on the way, and an additional two low carbon conversions of existing systems to be completed in 2020, the Neighbourhood Energy Strategy aims to reduce city-wide carbon pollution by 11%, which is one-third of the city's overall climate reduction target. To facilitate the roll out of low carbon district heating, Vancouver has created a competitive selection process involving relevant utilities and use of franchise agreements to leverage private sector expertise and financing. This approach includes the use of a number of different enabling policy tools, and results in minimal financial exposure and risk to the city government. Vancouver has taken the unusual step of openly sharing its information, including consultant studies, financial models, building standards, and franchise agreement contracts with other cities.	Climate Mitigation: emission reduction, energy efficiency, renewables	Buildings, Land Use, Energy, Finance	Macro	Include as a smaller element in Vancouver case above	https://www.c40.org/case-studies/cities100-vancouver-low-carbon-district-heating-cuts-emissions/
24)	Americas	Chicago	**Chicago - Energy Savings Fund Efficiency Investments** In 2012, the Chicago Infrastructure Trust (CIT), a financing vehicle used to secure private capital for innovative public infrastructure, inaugurated its pilot project, Retrofit One. It raised $13.7 million for 114 energy efficiency projects, including advanced lighting management and building automation systems, in 60 public buildings in 2015. An Energy Savings Agreement serves as the core financing structure for the project, and municipal cost savings accruing from saved energy are shared with private investors according to specific terms. The agreement also includes a conditional payment structure requiring participating energy service companies to guarantee minimum project savings over 14 years. To date, the scheme has generated $1.4 million in annual cost savings and profit for investors. By involving third party financing, the project will contribute to Chicago's Climate Action Plan, which aims to reduce greenhouse gas emissions by 80% by 2050, while minimizing both energy project risk and the city's financial responsibility.	Climate Mitigation: energy and water efficiency, building carbon emissions	Buildings	Macro		https://www.c40.org/case-studies/cities100-chicago-energy-savings-fund-efficiency-investments/
25)	Americas	San Francisco	**San Francisco - Mandatory On-site Treatment Conserves Water** San Francisco's Non-potable Water Program allows buildings and districts to incorporate decentralized, on-site water systems. Collecting and treating non-traditional sources of water, such as rainwater, stormwater, blackwater, and graywater, can reduce the use of potable water by up to 50% for residential buildings and 95% for commercial buildings. The collected water is used for irrigation of green surfaces, toilet flushing, and other non-potable uses. San Francisco's program is designed to streamline the process for the private sector and create a new water management paradigm within the city.	Climate Mitigation: energy efficiency Climate Adaptation: drought management	Buildings, Water	Macro		https://www.c40.org/case-studies/cities100-san-francisco-mandatory-on-site-treatment-conserves-water/
26)	Americas	Medellin	**Medellín - Restoring Ecosystems Provides Opportunities for Locals** Unregulated urban growth on hillside areas of Medellín has caused environmental degradation of land and water resources. This socially integrated approach to managing vulnerable land not only improves the environment, but encourages economic growth and social inclusion in existing communities. The Peripheral Garden of Medellín was established in 2012 in response to the risks of urban growth in uphill neighborhoods. Covering more than 65 hectares, the garden features footpaths, bike lanes, and clean mobility corridors, while facilitating ecological restoration, environmental preservation, and sustainable housing. Thousands of native trees have been planted to restore ecosystems, and organic orchids have been developed to encourage new eco-businesses and preserve regional farming traditions. Conscious of the communities that already inhabit these areas, the city included them in the process by providing employment and educational opportunities.	Climate Mitigation: emission reductions from housing and transport Climate Adaptation: landslides, urban heat, flood management	Land Use, Biodiversity, Housing, Transport	Macro		https://www.c40.org/case-studies/cities100-medellin-restoring-ecosystems-provides-opportunities-for-locals/
27)	Americas	Mexico City	**Mexico City - Green Bonds for Climate Action** Mexico City's Climate Action Program is designed to maximize emissions reductions and increase resilience against future climatic shocks. The city issued $50 million worth of green bonds to finance much of the project, including investments in a new bus rapid transit lines and an LED street lighting project. This was the first example of such a financing scheme for a Latin American city, and proved popular, the bonds were oversubscribed by a factor of 2.5. The city also has an online monitoring system designed to track compliance of the program and the progress of each of its 102 climate actions. Finally, the program includes a gender perspective, which seeks to reduce inequality gaps between men and women caused by climate change effects.	Climate Mitigation: energy efficiency, public transport	Transport, Energy	Macro	Could be interesting to include a different kind of case study that starts off from the financial instruments towards investment projects (not the other way around)	https://www.c40.org/case-studies/cities100-mexico-city-green-bonds-for-climate-action/ https://www.climatescorecard.org/2021/06/mexico-city-working-to-reduce-emissions-through-mobility-sector-emission-reduction-plan-and-solar-city-project/ https://mcr2030.undrr.org/news/mexico-city-focuses-solutions-and-scale
28)	Africa/ MENA	Nairobi	**Nairobi Climate Action Plan (CAP) 2020-2050** The Nairobi City County government has today launched the Climate Action Plan (CAP) 2020-2050 which was spearheaded by Nairobi Governor Ann Kananu and Nairobi Metropolitan Services (NMS) Director General, Major General Mohammed Badi. This policy makes Nairobi the first city in Kenya to adopt such a plan which aims to create green jobs, restore parks, open spaces that will improve mobility options to citizens, enhance air point's management and embrace clean energy options. Speaking during the launch, Kananu said her government is working closely with the C40 cities climate leadership group to develop scientific evidence based on greenhouse gas emissions in the city which informed the transformative climate change interventions contained in the plan. The CAP 2020-2050 has partnered with NMS, Nairobi City County, C40 Cities, Kenya Forest Service, Equity Bank, Safaricom and others.	Climate Mitigation: green energy Climate Adaptation: urban renewal, public spaces	Energy, Economy, Land use, Transport	Macro	Showcases collaboration between different entities at the subnational level	https://www.kenyanews.go.ke/nairobi-county-launches-climate-action-plan-2020-2050/

#	Region	City, Country	Case Summary	Focus	Sector	Scale	Comments	Link
29)	Africa/ MENA	Nairobi	**Luthuli Avenue Sustainable Mobility** Nairobi City County Government has ventured into an ambitious exercise to convert one of Nairobi's busiest streets from a 2-way to a 1-way street. Luthuli Avenue boasts a high number of electronic businesses and is often characterized by a high volumes of public service vehicles that contribute to urban traffic congestion, air pollution and noise pollution, which have been detrimental to the quality of Luthuli Avenue's businesses. The conversion of the Avenue to a one way street will go a long way to decongest the city and direct traffic out of the central business district. The added benefit of improved air quality through the beautification and planting of trees will drive the push for cleaner air. Air quality monitors are also being installed in the street to collect data which will enhance monitoring capabilities of pollution levels. The cycling lanes and pedestrian walkways will improve urban mobility within the city.	Climate Mitigation: vehicle emissions, air quality	Transport	Micro		https://cmiist.wordpress.com/i-cmiist-kenya/nairobi-case-stude-1/ https://www.c40.org/case-studies/nairobi-luthuli-avenue/
	Africa/ MENA	Amman	**Amman Electric Bus Project** Provision of up to EUR 2.8 million (to be available in JOD) unsecured sub-sovereign loan to GAM to finance the purchase of up to 15 new battery electric buses ("BEB"), as a pilot rollout for the first electric bus transport in the city. The project is a follow-on investment of Amman's Green City Action Plan, and is part of a larger fleet expansion project that involves purchasing a total of 151 buses, including 136 diesel Euro V buses in addition to the remaining 15 BEB buses considered herein. The project aims to improve public transport in the city of Amman, while serving as a crucial first step towards transitioning into low-carbon transport infrastructure. Total Project cost is expected to be EUR 5.6 million, which is expected to be co-financed by a Green Climate Fund ("GCF") concessional loan of EUR 2.8 million in addition to the Bank loan of EUR 2.8 million.	Climate Mitigation: vehicle emissions, air quality	Transport, Energy	Micro		https://www.ebrd.com/work-with-us/projects/psd/52505.html

A.2 Turkish Case Studies

#	City	Case	Focus	Sector	Scale	Comments	Link
1)	Izmir	**"Izmirdeniz" Program** Installation of coastal equipment, expansion of coastal bicycle path, rehabilitation of coastal silhouette, coastal landscaping; Lack of coast city linkage, pedestrian access and green spaces, insufficient water transport use, heavy vehicle traffic and congestion on Mustafa Kemal Boulevard and through Mithatpasa Park	Climate Mitigation: public transport modes and multi-modal hubs Climate Adaptation: coastal protection	Multi-Sector	Macro	Good program with multiple actions, IFI involvement, hard and soft actions	https://raillynews.com/2022/03/izmirdeniz-project-was-shown-as-an-example-to-the-world/izmirdeniz-project-was-shown-as-an-example-to-the-world/ https://raillynews.com/2020/10/Ministry-approval-for-izmirdeniz-project/
2)	Kahramanmaras	**Governor House to Castle Urban Design Project** Traffic transformation around historic Grand Bazaar: Change in traffic routing, parking, and pedestrianization alongside major thoroughfares through the inner city center; (Planned) rehabilitation and restoration of 15 July Democracy Square and Grand Bazaar Infrastructure, facades, and store offering	Climate Mitigation: reduced carbon emissions from traffic Climate Adaptation: improved urban heat island effect	Transport / Land Use	Micro		
3)	Konya	**Bicycle Transport Projects** Türkiye's 'longest bicycle network' as part of a 'smart and sustainable city' 550 kilometers of bicycle paths (additional 95 km; Search for improved efficiency and attractiveness of the network given decreasing use; Interlinked with Konya; Government's 'smart and sustainable city' approach	Climate Mitigation: reduced carbon emissions from traffic	Transport	Micro	Trying to avoid a case study from a city potentially participating in WB GFC	https://marketplace.eiturbanmobility.eu/best-practices/first-bicycle-tram-offered-exclusively-to-bike-users-in-konya/ https://www.bogaziciproje.com.tr/en/our-projects/konya-bicycle-transportation-master-plan-preliminary-projects-of-bicycle-path-corridors https://www.dailysabah.com/Türkiye/Türkiyes-cycling-capital-konya-promotes-ride-to-school/news
4)	Eskişehir	**Porsuk Creek Coast Green Corridor (Natural Disaster Mitigation Project – Porsuk Project)** The Porsuk Creek was reintroduced to the city and the surrounding area of the Porsuk Creek was transformed into a green corridor for the city. 9.6 kilometres of the stream bed in the city has been rehabilitated. 13 vehicle and 9 pedestrian bridges over the Porsuk Creek have been renovated, primarily the bridges in the city centre. A water level control structure containing 8 boat transfer structures was constructed. It has been ensured that the city has more green areas of 1.445.074 m². Within the scope of the project, Disaster risk has been reduced. Green space accessibility has increased. The urban heat island effect has been reduced, erosion has been prevented, and air and soil quality has been increased.	Climate Mitigation: Green transport, air quality, soil quality, erosion management Climate Adaptation: Urban heat island, water-sensitive design, land use	Transport, Land use, Water infrastructure, green infrastructure	Micro		https://dkm.org.tr/uploads/yayinlar/1606808514604.pdf
5)	Gaziantep	**Allaben Stream – Green Corridor** Alleben Stream passes through the west-east axis of the city center. There is a green corridor along the stream. Within the scope of the project, green space accessibility and the amount of green space per capita have increased. The urban heat island effect has been reduced and adaptation to climate change has been achieved.	Climate Mitigation: Green transport, erosion management, noise reduction, emission reductions Climate Adaptation: Urban heatwaves, urban heat island	Land use, water infrastructure, green infrastructure	Micro	Could be good to include the project as the Consultant Team is currently working with the City in the context of Gaziantep GCAP.	https://dkm.org.tr/uploads/yayinlar/1606808514604.pdf

#	City	Case	Focus	Sector	Scale	Comments	Link
6)	İzmir	**Izmir Green Infrastructure Strategy [COMBINED WITH #1]** It is a project developed together with a group of European and non-European partner cities with the aim of developing, implementing and repeating city plans. It aims to reduce the impacts of climate change, improve air quality, improve water management, as well as increase the sustainability of cities through innovative nature-based solutions.	Climate Mitigation: Erosion management, noise reduction, emission reductions Climate Adaptation: Water-sensitive design	Land use, Water infrastructure, Biodiversity, Green infrastructure, Buildings	Macro	Could be good to include the project as the Consultant Team has experience about the City in the context of Izmir GCAP.	http://izmirdoga.izmir.bel.tr/CKYuklenen/%C4%B0zmirYe%C5%9FilAltYap%C4%B1Stratejisi.pdf
7)	Ankara	**Çiğdemim Neighborhood Garden** Çiğdemim Neighborhood Garden is built on an area of approximately 1,500 m2 in Çiğdem District with a population of 14,071 in Çankaya. Çiğdemim Neighborhood Garden fills an important gap in order to develop living practices in harmony with nature in the city and to draw attention to the urban-rural relationship, local production and consumption, and clean and accessible food. With the activities organized here, the knowledge and awareness of the residents about ecological agriculture, composting, sustainable life and seeds are increased.	Climate Mitigation: Air quality, emission reductions Climate Adaptation: Biodiversity, land use, local produce,	Land use, Green infrastructure, Social infrastructure, Biodiversity, Agriculture	Micro		https://dkm.org.tr/uploads/yayinlar/1606808514604.pdf
8)	Istanbul	**Istanbul Bicycle Master Plan** It has been prepared in order to encourage the use of bicycles, to ensure the integration of bicycle users into public transportation systems, to improve social and individual health, to improve existing bicycle paths and to create bicycle path standards suitable for the spatial structure of the city.	Climate Mitigation: Emission reductions, energy efficiency and sustainability, green transport	Transport	Macro		https://bisiklet.ibb.istanbul/wp-content/uploads/2021/01/ISTANBUL_BISIKLET_ANA_PLANI_2020_04_03.pdf
9)	Ankara	**İsmet İnönü Playground** This area, which has a high commercial value, has been protected by turning it into a green area. With the biological pond, the existing ecosystem was protected. With the use of local plants and shrubs, the local ecosystem was protected, and water was saved. With the protection of the existing trees and especially the afforestation of the side of the bicycle path, a refreshing environment has been provided to the citizens and the creatures living in the park. Thus, the formation of urban heat islands was prevented.	Climate Mitigation: Air quality, green transport Climate Adaptation: Biodiversity, land use, urban heat island	Green infrastructure, Land use, Water infrastructure	Micro		https://dkm.org.tr/uploads/yayinlar/1606808514604.pdf
10)	Adıyaman, Batman, Diyarbakır, Gaziantep, Kilis, Mardin, Şanlıurfa, Siirt, and Şırnak	**South-eastern Anatolia Project (GAP)** It is an integrated project that covers the development and services of urban and rural infrastructure, transportation, industry, education, health and other sectors, as well as dams, hydroelectric power plants and irrigation facilities that are planned to be built on the Euphrates and Tigris rivers. It is a people-oriented regional development project known as "Upper Mesopotamia" and aiming at the social and economic development of the South-eastern Anatolia Region. The project is not yet completed.	Climate Mitigation: Various Climate Adaptation: Various	Water infrastructure, Energy, Agriculture, Land use, Transport, Industry	Macro	Maybe not ideal as a national/regionally driven program	http://www.gap.gov.tr/gap-nedir-sayfa-1.html
11)	Manisa	**Electric Bus Project** Manisa Metropolitan Municipality has implemented the Electric Bus Project to reduce the traffic density in the city with environmentally friendly vehicles. The 25-meter electric buses have the capacity to carry 190 passengers, 70 of whom are seated.	Climate Mitigation: Emission reductions, energy efficiency and sustainability, green transport	Transport	Micro		https://www.manisa.bel.tr/Projeler/d191_100-elektrikli-otobus-projesi.aspx
12)	Kocaeli	**İzmit [(Kocaeli Water and Sewerage Administration General Directorate (ISU)], Wastewater Recovery Project** Kocaeli Metropolitan Municipality ISU General Directorate, which developed the recovery water project as an example for the country, in order to bring the water treated in the wastewater treatment plants to the economy and to reduce the stress on drinking and utility water with the drought experienced in the province, R&D carried out for the utilization of the recycled water from the treatment plants it operates in industrial facilities. Instead of leaving the treatment water made in 12 treatment plants operated with the project, which is an example for the country, the recovery water obtained by passing a second treatment from the recycling water facilities.	Climate Mitigation: Water infrastructure Climate Adaptation: Water-sensitive design	Water Infrastructure	Micro		https://www.isu.gov.tr/haberler/detay.aspx?Id=10914
13)	Gaziantep	**Usage of SPP In irrigation** Gaziantep Governorship is planning to install a 5 MW SPP in Nizip district for the purpose of agricultural irrigation from pumps using solar energy. Within the scope of the project worth 20 million 500 thousand liras, the Governor's Office will install a grid-connected SPP on an area of 472 thousand square meters shown by the State Hydraulic Works.	Climate Adaptation: Urban heatwaves, urban heat island, food supply	Agriculture, Water	Micro		https://www.enerjigunlugu.net/gaziantep-valiligi-tarimsal-sulama-icin-5-mwlik-ges-kuracak-40995h.htm
14)	Konya / Şanlıurfa	**Use of sewage sludge as organic fertilizer** Natural sludge, which the Konya Metropolitan Municipality treats and stabilizes at the Central Wastewater Treatment Facilities, both provides support to the farmer and increases the productivity of the crops in the soil.	Climate Mitigation: Energy efficiency, emission reductions Climate Adaptation: Urban heatwaves, urban heat island	Agriculture, Water, Waste	Micro		https://www.aa.com.tr/tr/yesilhat/sifir-atik/konyada-aritma-camuru-organik-gubre-oluyor/1818126

#	City	Case	Focus	Sector	Scale	Comments	Link
15)	İstanbul	**Recycling and Compost Facilities** Recycling and Compost Facility with a waste processing capacity of 1,000 tons/day produces 12,000 tons of compost per year from organic waste. The compost obtained in the Recycling and Compost Facility is used by the Istanbul Metropolitan Municipality Parks and Gardens Directorate in afforestation and landscaping works in various parts of the city.	Climate Mitigation: Emission reductions, energy efficiency and sustainability Climate Adaptation: Biodiversity	Agriculture, Waste, Land Use	Micro		https://cevre.ibb.istanbul/atik-yonetimi-mudurlugu-sube-mudurlugu/kompost-ve-geri-kazanim-tesisleri/
16)	Istanbul	**Istanbul Urban Transformation Masterplan** As part of the Istanbul Urban Transformation Plan, a Multi-Criteria Analysis (MCA) was developed to provide a quantitative tool and evidence base to support the identification of areas that could be subject to urban transformation. The MCA considers the variety, potential combination and spatial distribution of problematic urban conditions across Istanbul. A GIS database was developed as part of the Istanbul Urban Transformation Plan, which set out the existing urban conditions across the city and provide data by which to determine where the greatest constraints are. The MCA attributes a score to geographically distinct areas based on the range and severity of problematic conditions exhibited in each area. This subsequently provides a tool to assist in the identification of areas that require urban transformation.	Climate Mitigation: Building efficiency, emissions reduction in transport Climate Adaptation: earthquake risk reduction, heat stress, flood risk reduction	Land Use, Buildings, Transport	Macro	Need to confirm what investments actually followed the masterplan	https://publications.aecom.com/sustainable-legacies/article/resilient-cities-need-a-multi-disciplinary-approach