

### 3. Promote quality and innovative regional development under the guidance of ecological and green concepts

The demonstration zone hopes to find a way out of the traditional homogeneous development model of inefficient regional competition at the expense of the environment, and instead promote ecologically sound economic and social development of a high quality by coordinating ecological protection and economic development, environmental quality and project development. In order to transform ecological advantages into soft environmental advantages that attract and gather various high-end innovation factors, the demonstration zone proposes to cultivate an industrial system in which the innovation chain and industrial chain make headway together and build a new economy with global influence, centring on five environmentally friendly economic systems: digital economy; innovative economy; headquarters economy; service economy; and lake economy. In terms of spatial organization, the demonstration area coordinates the three major spaces for ecological development, production and residents, and gives priority to ecological protection while declining concentrated and contiguous development. Weighing up the regional development mode of characteristic towns in the south of the lower reaches of the Yangtze River, the demonstration area builds a multi-centre, networked and integrated layout.

## Tehran, Iran: Smart Tehran Programme – Promoting Inclusive, Integrated and Sustainable Urban Management with Smart City Functionality

### Case background

A growing metropolis accommodating some 8.9 million inhabitants as of 2018, Tehran is a rapidly evolving city with the population predicted to grow to 10.24 million by 2030.<sup>15</sup> Spanning 61,562 hectares, population growth, unprecedented rates of urbanization and

deficiencies in urban monitoring and management have aggravated issues of environmental pollution, traffic congestion and quality of urban life in Iran's capital.<sup>16</sup> To meet these new challenges head on, Tehran municipality launched STP in 2019, aiming to transform the metropolis into a more sustainable and liveable smart city for citizens, tourists and businesses (see Figure 6.8). Accordingly, the programme has envisioned a higher quality of urban life with more efficient transportation systems, integrated infrastructure and a dynamic, vibrant economy with human-centred urban management. The six core strategic objectives of the plan include: ① Improving transparency and public engagement; ② Increasing citizen satisfaction; ③ Promoting sustainable urban development; ④ Fostering partnerships and co-creation; ⑤ Advancing digital transformation; ⑥ Promoting urban innovation.

STP has sought the delivery of an integrated city-wide strategy for sustainable urban development, leveraging efficient information and communications technology (ICT) that enables citizens to more effectively contribute to urban management. In addition, it has looked to embed a culture of hi-tech, accessible digital platforms into Tehran's infrastructure and services, and develop an optimized system of automated processes and e-services for the city, its citizens and stakeholders. Knowledge-based, modern ICT platforms have been viewed as essential components to ensure more inclusive urban decision-making. STP is enabling Tehran to foster greater levels of collaboration through the engagement of all stakeholders within the smart city ecosystem (including businesses, policymakers, regulators, decision-makers, investors and innovation groups) thus shifting away from a traditional siloed approach in the delivery of Tehran's urban services towards an inclusive, integrated and innovative open-data approach. However, it is important to note that Tehran is not only aiming to enhance the city through ICT infrastructure, but also seeks to fulfil the six dimensions of becoming a 'smart city' achieving: ① A smart economy; ② Smart mobility; ③ A

15 United Nations Department for Economic and Social Affairs. URL: <https://population.un.org/wup/Publications/Files/WUP2018-Report.pdf> (Accessed: 10/06/2022).

16 International Department of Smart Tehran, Tehran Municipality. URL: <http://www.smartcity-dialogues.com/wp-content/uploads/2019/12/DAY-01-FARJOOD-BINA-Tehran.pdf> (Accessed: 10/06/2022).



Figure 6.8 An open forum session and public participation at the 2019 International Innovation & Technology Exhibition

smart environment; ④ Smart infrastructure; ⑤ Smart governance; ⑥ Smart life.

As a revolutionary approach to city management, STP has transformed the way key urban services are being delivered throughout the municipality, as well as the means by which citizens are engaging with everyday life in the city. Utilizing the potential of smart technology, connections are improving between residents, businesses, government officials and other urban stakeholders. The programme is hence making a strong contribution to sustainable urbanization and the SDGs; broadening and strengthening citizen participation and better integrating them in key decision making processes whilst realizing a mode of governance that is more responsive and representative. The city is actively enhancing its sustainability, with positive repercussions felt across socio-economic, environment and cultural spectrums.

Implementation process

Smart Tehran has built upon the main challenges and priorities set out by Tehran's city council. STP was deployed through a practical approach focusing on several flagship and proof of concept projects to advance the delivery of smart city services (see Table 6.1). The Smart Tehran Centre (STC) is the primary entity responsible for planning, implementing and monitoring STP projects, whilst the Smart Tehran

Table 6.1 Evolution of the Smart Tehran Programme

Phase	Year	Action
STP 0	2018	Planning and marketing
STP 1.0	2019	Initial and proof of concept projects
	2020–2021	Vertical projects
STP 2.0	2022–2025	Horizontal development and scalability

Strategic Council (STSC) leads smart city policymaking and the Tehran Municipality ICT Organization leads in the development of ICT related infrastructure and strategy.

In 2018, STP initiated the pre-planning phase STP 0.0 to focus on smart city planning and developing related policy and macro-strategy whereby smart city pilot projects developed and implemented increased public awareness of the smart city ecosystem among residents, businesses, government officials and other city stakeholders. STSC and STC were also formally established in STP 0.0 to advance centralized decision-making. Subsequently, STP 1.0 was launched in 2019 with the implementation of 5 initiatives and 12 plans, with STP 2.0 (2022—2025) currently underway, focusing on expanding and improving existing services, further developing smart city services at a macro level and evaluating the impact of STP 1.0. Importantly, STP 2.0 also underlines long-term investment mechanisms in smart city ecosystems to secure private sector budgets, and 5G smart services based on collaborative regulation. Where the majority of the implemented initiatives, plans and projects are related to STP 1.0, these initiatives and plans are detailed below.

### 1. Development of STP 1.0

STP 1.0 embraced a three-year (2019—2021) roll-out plan that focused on five core initiatives as shown in Table 6.2. The first initiative is the foundation of STP 1.0 where the citizen services platform MyTehran aims to consolidate multiple digital city services into a single application, whilst neighbourhood and public engagement (BAHAM) serves as an urban innovation and engagement platform that drives smart city development. In order to generate innovative solutions and achieve Tehran's vision of utilizing the 'city as a platform', the second initiative raises two plans that aim to help integrate and enhance the innovation ecosystem and promote smart technologies and devices. The third and fourth initiatives promote green and sustainable modes of transportation and energy use. And the fifth initiative fosters the use of shared, open data and the integration of smart building services, smart municipal services/solutions and smart city infrastructure development. The initiative focuses on improving data accessibility for stakeholders as it brings together projects such as Open Data for Cities (containing over 1,400 datasets), open Application Programming Interfaces, a transparent municipal portal and decision support systems based on smart

**Table 6.2 The 5 core initiatives and 12 associated plans of STP 1.0**

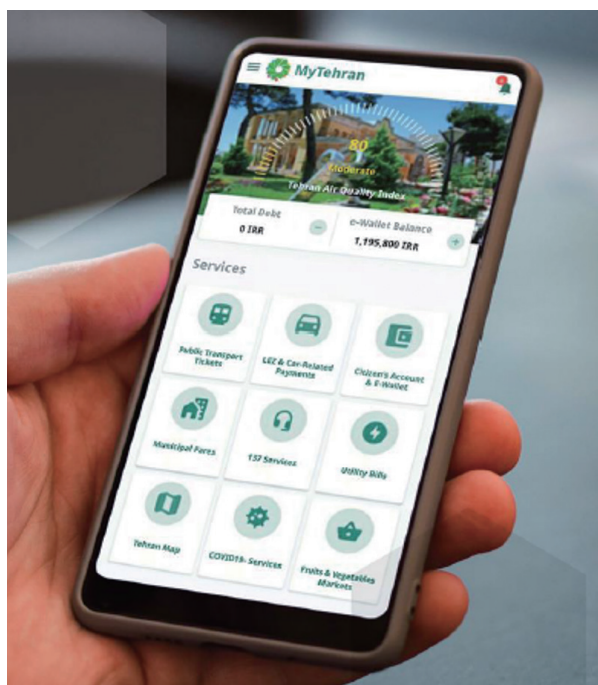
Initiatives	Related plan
Smart Citizenship and Digital Services	Citizen Services Platform – MyTehran
	Neighbourhood and Citizen Engagement
Innovative Tehran	Urban Innovation Market Platform
	Smart Urban Zones and Centres
Smart Travel	Smart Mobility Services
	Green Mobility
Smart Environment, Energy and Security	Smart Waste, Energy and Environmental Management
	Security and Urban Crisis Fast Alarm
Digital Transformation of Municipalities	Shared and Open Data
	Smart Urban Construction Services
	Smart Municipal Services and Solutions
	Smart City Infrastructure Development



city data to assist in optimizing city management. In addition, smart city applications and city e-services are deployed to create the 'Virtual Urban Area'. The 5 initiatives are comprised of 12 plans and 63 related projects. The introduction to the three main plans in STP 1.0 to achieve Smart Tehran – MyTehran, BAHAM and Green Travel, are described below.

## 2. Citizen Services Platform – MyTehran

The Smart Citizenship and Digital Services initiative spearheaded the launch of MyTehran, a mobile application unique to the region in regard to its fully integrated, user-friendly interface made easily accessible for citizens and supported by smart city technologies (see Figure 6.9). The idea of MyTehran was devised in April 2018 to provide account registration services for citizens entering Tehran's low-emission zone. Subsequently, over 40 services were added to the APP and the entire suite of payment services was developed in just two years. With over 3 million users registered in the short term and over 450,000 accrued transactions daily, MyTehran has



Source: Metropolis Urban Sustainability Exchange. URL: <https://use.metropolis.org/case-studies/mytehran-app--1> (Accessed: 13/06/2022)

**Figure 6.9 The MyTehran APP**

become one of the largest digital platforms for smart city operations in the Middle East.

The primary focus of the application revolves around finance, citizen's rights, location-based services such as on-street smart parking, and e-services such as housing and construction. For example, location-based services integrate geographic information system data layers supplied through accurate government data collection to provide personalized multi-modal routing and business optimization for local service providers. Virtual Tour Tehran and Tehran Interactive Map and Routing System realize the real-time GPS updates for location and traffic conditions in which information on public places and buildings are contained. Electronic services channel direct communication and interaction between municipal officials and citizens, while financial technology services and e-wallets make remote payments smoother (e.g. paying for utility bills such as water, electricity and gas supplies, municipal service fees, low-emission zone fees, municipal micro-electronic bills, e-ticketing systems, and on-street parking and e-tolling).

To guarantee optimal performance, the APP can also receive user feedback, requests and counter-views through in-house alerts and notifications, while the Citizen Cartable function provides transparent information about citizens' interactions with the municipality. MyTehran is revolutionary for the region by eliminating the need for in-person presence to prevent unnecessary travel, providing remote services that have a positive impact on reducing pollution and positive effects in lowering the risk of population exposure to COVID-19. The plan has significantly improved government efficiency and resident satisfaction (with a 68 percent satisfaction rate),<sup>17</sup> and new applications are being developed continuously to better serve citizen engagement (e.g. the BarBarg APP provides online posting of shipping documents, taxi-hailing services, direct debits, virtual tours, and mobile payments for bus and taxi fares via QR code scanning).

## 3. Facilitating public engagement

BAHAM is another plan permitting direct interaction

17 Metropolis Urban Sustainability Exchange. URL: <https://use.metropolis.org/case-studies/mytehran-app--1> (Accessed: 13/06/2022).

and engagement between citizens and government under the Smart Citizenship and Digital Services initiative. It creates a more accountable and responsive system catering to public needs. The plan promotes innovative collaboration between citizens, accelerators, science and technology parks, incubators, start-ups, investment firms and government entities which also empowers the private sector (in particular start-ups) to help them address new challenges. It aims to build synergies (such as using business-to-business pairings) in creation, proof of concept and commercialization in the city and its innovation ecosystem. Where BAHAM has been integrated into MyTehran, traditional and modern tools have been utilized for gathering local input in the design and implementation phases of projects. It has not only increased the visibility of municipal projects but is also supported by neighbourhood development plans (170 of which have been prepared and 183 are in the pipeline.<sup>18</sup>) BAHAM elaborates technical details for all 353 community projects in Tehran and citizens can rank, vote and score the projects as well as inquire or propose neighbourhood development plans projects to local communities through the 137 hotline. Requests are analysed by artificial intelligence which also provides special features such as robot-chat to meet the needs of people with a hearing impairment or other disability. Such inclusive online services facilitate a more equitable, bottom-up decision-making process, promoting citizen participation and dialogue with municipality officials, and improving the socio-economics and culture of disadvantaged communities.

#### 4. Promoting green mobility

Green mobility is the second plan under the Smart Travel initiative and consists of six projects. The plan encompasses electric vehicle charging stations, electric bus fleet development and light rail public transport, facilitating the development of noise and air quality sensor networks and exclusive bike lanes. Tehran municipality has been instrumental in the development of the Green Travel plan and an interactive bicycle APP. Car-free Tuesday, for example is sponsored and promoted by the Mayor of Tehran, and government-supported *Safar-e Eshgh* and *Naqsh-e Charkh* (campaigns to encourage the use of bicycles) and other initiatives have been promoted.

The city's proactive social networking and interpersonal skills led to a partnership with the Dutch MoveMobility group, drawing on their experience in running numerous bicycle APPs in several countries. Since creating user-friendly APPs requires understanding the preferences and needs of local residents, the Tehran government contracted a local company called Rajman for the APP's development (see Table 6.3). The Docharkheh APP, as shown in Figure 6.10, provides users with navigation, route selection and tracking functions motivating more people to cycle through promotional activities. For more convenience for cyclists, the navigation function has been developed to be adjustable to individual needs in four modes – fast, attractive, easy and safe. The tracking function allows users to view a summary of the route, helping citizens to manage their vehicle usage. The

**Table 6.3 Timeline for developing the interactive bicycle APP**

Timeline	Action
July 2019	Selection of brand and logo
December 2019	Launch of the interactive bicycle APP at the third Smart Tehran Conference
June 2020	Public launch of the APP for Android mobile on World Bicycle Day
September 2020	Public launch of the APP for iOS mobile on World Car Free Day
From winter 2020 to winter 2021	Launch and development of the APP

18 Hoseini, S. A. K.. URL: <https://smartehtehran.medium.com/baham-smarter-tehran-together-99d2e38e1547> (2021) (Accessed: 14/06/2022).



Source: Smart Tehran Centre. URL: [\(https://smartehteran.medium.com/mytehran-mega-application-4679f515f9de\(2021\)\)](https://smartehteran.medium.com/mytehran-mega-application-4679f515f9de(2021)) (Accessed: 15/06/2022)

**Figure 6.10 The interactive bicycle APP**

APP encourages people to participate more in cycling by not limiting users' choice of promotional activities. Combined with other smart mobility services and management systems, Docharkheh actively relieves traffic congestion and issues such as environmental pollution and excessive energy use, and contributes to the creation of a green city. In December 2020, there were more than 5,900 registered users on the APP, 200 bike stations established along the 600 km new bike lanes and 2,000 new smart bikes in the city.

## Reference experiences

### 1. Harness the potential of digitization to increase citizen participation and accountability in urban decision-making

Digital transformation is modernizing Tehran's urban governance. With a growing distrust in governmental decision-making among citizens globally, ensuring transparent and accessible municipal services delivery is critical to building trust between citizens and

officials. Increasing citizen participation in dealing with city affairs through STP is significant to promoting more socially equitable and inclusive city governance. On the one hand, it permits more diverse solutions to challenges, and on the other hand, it helps to add more accountability at the institutional level. The digitization of city services is also key to improving the administrative efficiency of local governments, creating a more resilient knowledge and information base at key city levels. In areas where the private sector is raising the bar on customer experience and engagement, the government also wants to keep pace. Therefore, local governments should recognize that digital public services are critical to advancing the implementation of achieving goals and effecting sustainable governance solutions.

### 2. Leverage innovation and technology to accelerate smart city development

Technology-related infrastructure deployment has enhanced Tehran's sustainable development. By promoting green transportation applications such as



Docharkheh, citizens are now favouring greener modes of 'soft' transportation, thus relieving environmental pollution, energy consumption and traffic congestion. In addition, smart waste collection e-applications are reshaping traditional methods of solid waste management through smart sorting, collection, control and disposal. By increasing the accessibility and connectivity of key services, social sustainability can be solidified, creating a more inclusive and equitable city. Encouraging the use of new technologies within local governments can thus be seen as highly beneficial to help generate innovative solutions to the challenges faced by individual city governments, understanding them as key tools to promote sustainable urbanization in line with the 2030 Agenda.

### 3. Improve governance resilience and crisis management capacity in the context of public health emergencies

With the increasingly structured smart city infrastructure, Tehran municipality is capable of effective COVID-19 containment. Six key tools have significantly improved governance in crisis: MyTehran citizen services platform; Shahr-Pay payment platform; a bicycle development plan to promote social distance; smart waste collection management; Behesht Zahra online funeral services; and open data for epidemic prevention and control. The outbreak of COVID-19 has accelerated the widespread use of technology in cities. Digital services are changing and adjusting citizen behaviour in multiple ways to improve living standards in the post COVID-19 pandemic era. This new era is full of hope in cities that apply smart technologies as the level of urban governance interventions has been greatly improved, supported and aided by increased levels of data sharing among citizens, businesses and the city management level.

## Los Angeles, United States of America: Leveraging Partnerships and Open-source Technology to Drive Local Action on the SDGs

### Case background

With a lack of commitment to international agreements on sustainable development at the national level in the

United States of America, Los Angeles (LA) took the initiative to become one of the first cities in the world to take action on the SDGs at the local level. Following Mayor Eric Garcetti's pledge of striving to meet SDG commitments (see Figure 6.11), LA council adopted the SDG framework in late 2017, through which the Goals have now become fully integrated into the city's sustainability plan (LA's Green New Deal) and other strategic documents. The city government also committed to an open data approach to increase the transparency and accountability of urban management, empowering citizens to participate in governance with a greater understanding and impact on the ground. Through such an open-source data approach, the city has sought to maximize the advancement of the 2030 Agenda, enable the identification of opportunities to identify successful initiatives, mobilize new initiatives, identify weak spots and those being left behind, whilst also expand connections with partners and practitioners locally and globally. Such an active approach has placed the city in a position to spearhead the global development agenda.



Source: City of Los Angeles. URL: <https://sdg.lamayor.org/about/sdgs-la> (Accessed: 03/06/2022)

**Figure 6.11** Mayor Eric Garcetti positioned the city of Los Angeles to springboard action on the SDGs