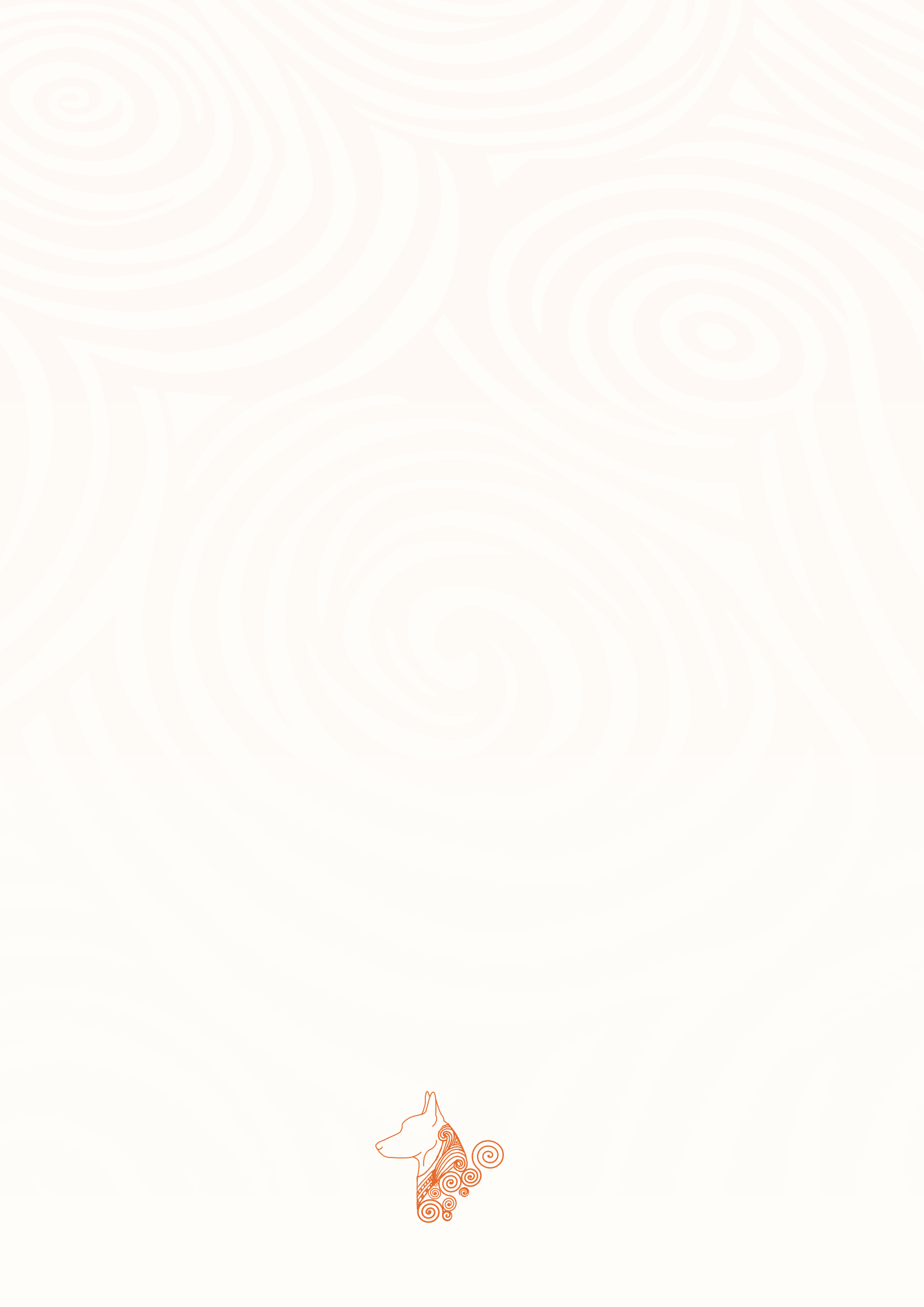# UDON THANI
VOLUNTARY LOCAL REVIEW 2024

The Implementation of the UN Sustainable Development Goals in Udon Thani City Municipality

Title:
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The Implementation of the UN Sustainable Development Goals in Udon Thani City Municipality

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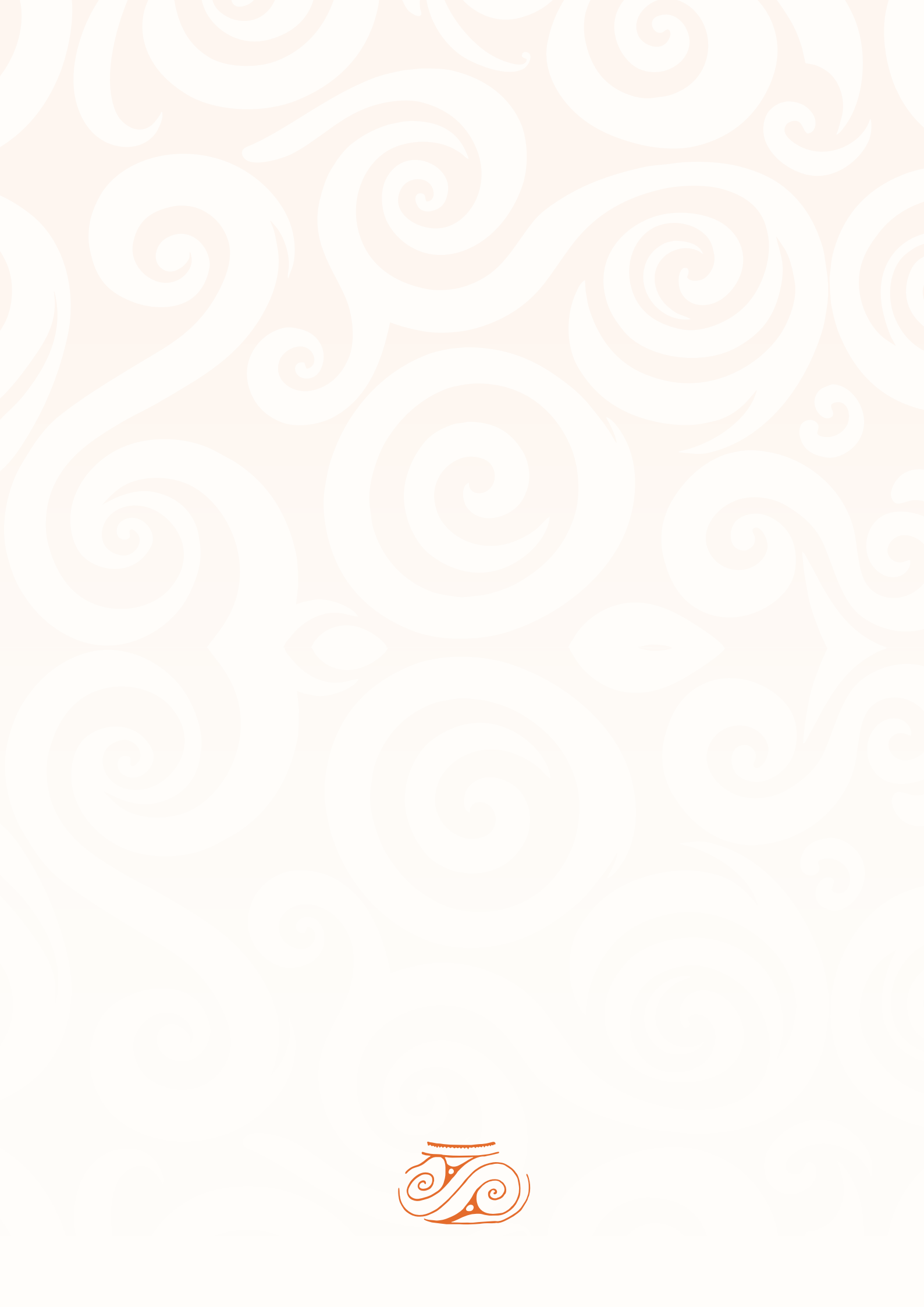
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CONTENTS

JOINT FOREWORD
from Implementing Partners

The world is severely off track to realize the 2030 Agenda. This has been recognized in the 2024 Sustainable Development Progress Report, underscoring the urgent need for intensified efforts to accelerate progress towards the implementation of the SDGs.

We congratulate the efforts by Udon Thani City Municipality in Thailand for demonstrating its commitment to SDG implementation by publishing its first Voluntary Local Review (VLR), becoming one of the front-runner cities in Thailand doing so.

Being the first city in Thailand to adopt the Global Urban Monitoring Framework (UMF) as a local-level data collection framework as part of its VLR development process, Udon Thani City Municipality shows that credible, reliable and granular data is needed to determine efficient and effective responses to the needs and challenges of all population groups in the city, including the vulnerable ones who are usually left behind.

The VLR process in Udon Thani City Municipality is an example of how a VLR can translate global commitments into evidence-based local actions. The city has identified six priority SDGs and related actions: SDG 3 (Good Health and Well-being): Initiatives to improve health-care quality and coverage and address public health challenges; SDG 4 (Quality Education): Enhancing educational opportunities, and promoting cultural and educational activities for youth; SDG 8 (Decent Work and Economic Growth): Supporting small and medium enterprises (SMEs), promoting local products, and stimulating economic activities; SDG 11 (Sustainable Cities and Communities): Increasing green spaces, improving community safety, converting solid waste into money to support greening the city, and promoting sustainable urban development; SDG 13 (Climate Action): Developing a carbon credit programme; and SDG 16 (Peace, Justice, and Strong Institutions): Enhancing governance efficiency and transparency, increasing public engagement, and combating misinformation. We trust that the example of Udon Thani City Municipality can become a model of progress, inspiring other municipalities in Thailand to join the VLR movement.

We sincerely thank municipal authorities, both the elected representatives and officials, especially Mayor Thanadorn Phuttharak, for his leadership; Deputy Mayor Nitat Noychanad, Deputy Mayor Phoonkiat Phuttharak and Advisor Komon Detkawinloet, for their close supervision of the process; and Ms. Siriwarang Homepirome, Secretary to the Mayor, and Ms. Tanyong Tissarak, Division Director, for the coordination. We are thankful to the community members and leaders, Municipal Council, Municipal Youth Panel, Udon Thani Rajabhat University, and Udon Thani Provincial Office for local support. Our gratitude extends to the Ministry of Interior (MOI), Ministry of Foreign Affairs (MFA), National Statistical Office (NSO), and Office of the National Economic and Social Development Council (NESDC) for guiding the strengthening of Voluntary National Review (VNR)–Voluntary Local Review (VLR) integration.

The UN-Habitat Bangkok Office is pleased to have closely supported the development of this VLR as part of the 2030 Agenda Subfund Project, with the support of the UN-Habitat Regional Office for Asia Pacific and the UN-Habitat Headquarters. United Nations Economic Commission for Asia Pacific (UNESCAP) and United Cities and Local Governments (UCLG) also congratulate Udon Thani City Municipality on completing its first VLR.

Kazuko Ishigaki
Regional Representative
**UN-Habitat Regional Office
for Asia and the Pacific (ROAP)**

Dr. Bernadia Irawati Tjandradewi
Secretary General
**United Cities and Local
Governments, Asia-Pacific**

MESSAGE
from the Mayor

Udon Thani City has been a land of civilization and opportunities for more than 5,000 years. Udon Thani City demonstrates its resilience. Despite the influence of globalization, the stories of prosperity, society, people, homes, and ways of life have transformed countless times. Due to its geographical advantage, which allows connections with neighbouring countries, the city has continued to progress. The strategic focus on transportation, logistics and connectivity has strengthened the city in terms of infrastructure, economy, society and cultural diversity.

The Udon Thani City Municipality is a local government that plays a crucial role in determining the development direction of the city and ensuring its alignment with the direction of Udon Thani province. The municipality's development goals focus on addressing the needs of the people. With comprehensive policies, including those for urgent matters, urban development, economic growth, tourism, human resource development, public health, public safety, and personnel management, the municipality strives to create a more liveable city.

The achievements of various projects and activities result from the dedication and hard work of officers, private sector involvement, and public engagement. The goal is to enhance the quality of life for all residents as the city's mission and vision are to create **"A city of prosperity, a society of abundant happiness" and "Udon Thani's City of Opportunities."** respectively.

The Udon Thani City Municipality is deeply honoured to be selected as a model city in Thailand, becoming the second city in the country to prepare a Voluntary Local Review (VLR) showcasing its progress towards the 2030 Agenda for Sustainable Development. Udon Thani City Municipality is also recognized as a city working towards the Sustainable Development Goals (SDGs), through UN-Habitat's SDG Cities Flagship Programme, using the Urban Monitoring Framework (UMF) for data collection. We hope that the VLR of Udon Thani City Municipality will serve as a valuable guide for other cities in the country. The analysis and suggestions from the VLR can be translated into actionable strategies for implementation.

Dr. Thanadorn Phuttharak,
Udon Thani City Municipality

ACKNOWLEDGEMENTS

ABBREVIATIONS
and acronyms

ADB	Asian Development Bank
APFSD	Asia-Pacific Forum on Sustainable Development
ATK	Antigen Test Kit
CCTV	Closed-circuit television
CPI	City Prosperity Index
CSO	Civil society organization
DCCE	Department of Climate Change and Environment
DPT	Department of Public Work and Town and Country Planning
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
EU	European Union
GPP	Gross Provincial Product
IGES	Institute for Global Environmental Strategies
IT	Information technology
JICA	Japan International Cooperation Agency
MICE	Meetings, Incentive Travel, Conventions, and Exhibitions
MBT	Mechanical biological treatment
MFA	Ministry of Foreign Affairs
MOI	Ministry of Interior
MSW	Municipal Solid Waste
NCD	Non-communicable disease
NESDC	Office of National Economic and Social Development Council
NUA	New Urban Agenda
ONEP	Office of National Economic and Social Development Council
OV-RDT	Urinary Opisthorchis Viverrini Rapid Diagnostic Test
PM	Particulate matter
RDF	Refuse-derived fuel
SDG	Sustainable Development Goal
SEI	Stockholm Environment Institute
SME	Small and Medium Enterprises
STEMI	ST-Segment Elevation Myocardial Infarction
T-VER	Thailand Voluntary Emission Reduction Program
TAO	Tambon (Subdistrict) Administration Organization
TGO	Thailand Greenhouse Gas Management Organization
UCLG	United Cities and Local Governments
UMF	Urban Monitoring Framework
UNCC	United Nations Conference Centre
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNECA	United Nations Economic and Social Commission for Africa
UN-Habitat	United Nations Human Settlements Programme
UNESCWA	United Nations Economic and Social Commission for Western Asia
UNICEF	United Nations International Children's Emergency Fund
VLR	Voluntary Local Review
VNR	Voluntary National Review
VSR	Voluntary Subnational Review
WHO	World Health Organization

EXECUTIVE SUMMARY

Udon Thani City Municipality's Voluntary Local Review (VLR) outlines progress and ongoing challenges in achieving the Sustainable Development Goals (SDGs). The VLR comprehensively assesses the city's development across various social, economic, environmental, cultural and governance domains. The city has demonstrated significant progress and success in various actions that advance the achievement of the SDGs. This section highlights the successes of past operations, lessons learned, key initiatives, showcasing the municipality's dedication to leaving no one behind, as well as addressing persisting challenges.

Udon Thani City Municipality sets itself as **"A city of prosperity, a society of abundant happiness."**(Udon Thani City Municipality, 2023)[1] This vision emphasizes creating an inclusive, sustainable and vibrant urban environment that addresses the needs and lifestyles of its diverse population. The city aims to integrate economic, social and environmental aspects into the city development plan to ensure sustainable development. This is structured around four key missions and six strategic directions, guiding over 390 projects annually. The missions are: infrastructure development and environmental conservation, quality of life and social capital, cultural preservation and art promotion, and good governance. The Local Development Plan (2023-2027) is structured around four key missions and six strategic directions, guiding over 390 projects annually. The missions are: infrastructure development and environmental conservation, quality of life and social capital, cultural preservation and art promotion, and good governance.

Udon Thani City Municipality's VLR is built on the United Nations Human Settlements Programme (UN-Habitat) and United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) global and regional VLR guidelines to be action-oriented, serving as more than a data collection and analysis exercise. The Global Urban Monitoring Framework (UMF) is applied as the indicator framework of reference to facilitate the data collection process. This VLR aims to transform findings into actionable strategies that drive local development, ensure stakeholder engagement, and align local initiatives with the national and global SDG targets.

For the preparation of the VLR, Udon Thani City Municipality has identified five priority SDGs, reflecting the city's strategic focus areas:

SDG 3 (Good Health and Well-being): Initiatives to improve healthcare quality and coverage and address public health challenges.

SDG 4 (Quality Education): Enhancing educational opportunities, promoting cultural and educational activities for youth.

SDG 8 (Decent Work and Economic Growth): Supporting small and medium enterprises (SMEs), promoting local products, and stimulating economic activities.

SDG 11 (Sustainable Cities and Communities): Increasing green spaces, improving community safety, converting solid waste into funds to support greening the city, and promoting sustainable urban development.

SDG 13 (Climate action): Carbon credit programme.

SDG 16 (Peace, Justice, and Strong Institutions): Enhancing governance efficiency and transparency, public engagement, and combating misinformation.

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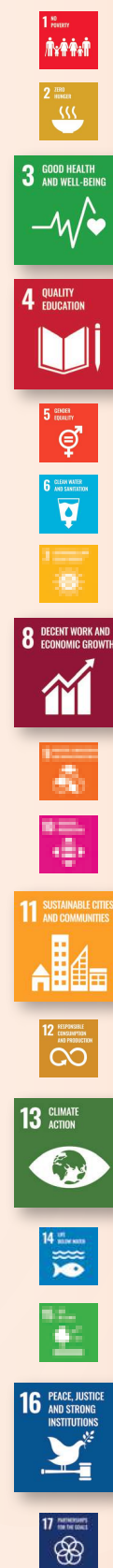
1.   *Udon Thani City Municipality*

SUCCESS
and lessons learned

Health-care infrastructure, birth registration and child nutrition

One of the key successes in Udon Thani City Municipality is the birth registration rate, with almost 100 per cent of births being officially recorded. This achievement is crucial for ensuring that every child has a legal identity and access to social services. The municipality's effective administrative systems, public engagement, and public awareness campaigns have played a vital role in achieving this milestone. The lesson learned is the importance of continuous outreach and education to maintain high registration rates. Despite the generally good health facilities and services, a community outreach programme is still needed to support families with children under 5 years old, addressing the increasing rates of child overweight and wasting in the city.

Education and youth empowerment

Udon Thani City Municipality has recorded some achievements in the education sector, boasting high completion rates for primary and secondary education levels. Over 90 per cent of students complete Primary 6, Secondary 3, and Secondary 6, which is higher than national averages. This success is attributed to strong educational support systems, teacher training programmes, and community involvement in schools. The lesson learned is the value of investing in education and engaging stakeholders in the educational process.

Economic growth and inclusiveness

The municipality has seen steady economic growth, with a 22 per cent increase in Gross Provincial Product (GPP) per capita from 2015 to 2022. In terms of economic inequality, according to the Gini coefficient, Udon Thani Province is lower than the national average, but it still needs to be addressed as it is increasing since 2017. This issue needs to be addressed at the national level.

Public transport

The existing public transport infrastructure, including intercity buses and trains, has facilitated economic activities and mobility. However, there is a need for state-owned transportation services to ensure affordability, safety, and coverage, especially for financially disadvantaged residents. The lesson learned is the critical role of transport infrastructure in driving economic growth and the importance of making it accessible to all.

Environmental management

Udon Thani City Municipality's advancements in environmental management are noteworthy. The municipality has achieved a 100 percent solid waste collection. The wastewater treatment facility covers 16.77 percent of the city and needs to be expanded to cover the whole city. Green spaces account for 10.92 percent of the total area, exceeding national standards. However, air quality remains a challenge, with particulate matter (PM) 2.5 and PM10 levels exceeding the World Health Organization (WHO)'s recommended standards. Tree coverage has declined due to urban sprawl, resulting in a lower climate adaptive capacity to heat and urban flooding. The lesson learned is the need for continuous investment in ecosystem rehabilitation, environmental technologies, green infrastructure, and stricter pollution controls. However, the city successfully utilized waste-to-energy incinerator technology to reduce carbon emissions and participate in Thailand's Voluntary Emission Reduction Program (T-VER), selling 37,783 tons of carbon credits to a German foundation for 11.7 million baht. The income from the carbon credit program has been used for improving green spaces in the city.

Strengthen institution capacity and transparency

Udon Thani Municipality, in collaboration with the City Police Station, is implementing the Smart Safety Zone 4.0 system to create a crime-free city using technology and a comprehensive safety framework. With over 1,300 CCTV cameras and various safety measures like speed detection and enhanced street lighting, the municipality is working to ensure public safety, particularly in key economic zones, ahead of the 2026 World Horticultural Expo. Additionally, the municipality has been addressing the issue of statelessness since 2008 by registering stateless individuals and ensuring they gain access to basic rights, such as legal identification and opportunities for employment, through collaborative efforts with various organizations. The municipality also promotes transparent governance by training community leaders to strengthen public participation and community development.

PARTICIPATION
and inclusive development

Stakeholder engagement in SDG progress review

The process of reviewing SDG progress in Udon Thani City Municipality has been highly participatory, involving a wide range of stakeholders, including local government officials, community leaders, civil society organizations, businesses, and residents, a total of approximately 150 persons. This inclusive approach has ensured that the voices and needs of community members are considered and addressed in the VLR. Regular public consultations, workshops, and feedback sessions have been conducted to gather input and build consensus on development priorities. This engagement has not only fostered a sense of ownership among stakeholders but also enhanced the relevance and effectiveness of policies and initiatives aimed at achieving the SDGs.

Demonstrating development that "leaves no one behind"

Udon Thani City Municipality has made efforts to ensure that development benefits all population groups, particularly marginalized and vulnerable ones. Initiatives such as initiating community health volunteers, registering stateless persons, providing support in housing, and offering targeted support for local businesses have contributed to more equitable development outcomes. Additionally, the municipality has implemented programmes to empower women, youth and the elderly, ensuring they have equal access to opportunities and resources to improve their quality of life. These efforts demonstrate the municipality's commitment to inclusive development and its dedication to leaving no one behind.

Overcoming challenges in driving SDGs

Despite significant progress, Udon Thani City Municipality has encountered several obstacles in its journey towards achieving the SDGs. One of the primary challenges has been the migration of residents to other regions of Thailand for better job opportunities, which has posed challenges to local economic development.

To address these issues, the municipality has focused on supporting entrepreneurship and improving local infrastructure.

Another challenge has been environmental sustainability, particularly with regard to the management of air quality, sealing of natural areas, and reduction of green spaces. The municipality has had to balance rapid urbanization with the need to protect and enhance the natural environment. Efforts to improve waste management and reduce pollution have required substantial investment and public cooperation. The municipality has learned that fostering a public engagement in environmental management is crucial for the success of these initiatives.

Drawing lessons on the quality of life into the VLR

Udon Thani City Municipality's VLR incorporates a human-centric approach, prioritizing the well-being and the quality of life of its residents. It includes a focus on material and non-material aspects, such as physical health, mental well-being, and social inclusion. By using a combination of the Quality of Life Initiative's global and customized local indicators across nine domains, the VLR unfolds the city's specific challenges, allows the city to set priorities and collect relevant local data, providing a clearer understanding of its progress towards achieving the SDGs.

Udon Thani City Municipality's achievements in health care, education, economic growth, environmental management, and inclusive development highlight its commitment to sustainable development. The lessons learned from past operations and the continuous engagement of stakeholders in the SDG review process have been instrumental in driving progress. By addressing the challenges encountered and building on these successes, Udon Thani City Municipality is well-positioned to continue its journey towards achieving the SDGs and improving the quality of life for all its residents.

INTRODUCTION
to Udon Thani City Municipality

Achieving the SDGs presents a unique challenge, particularly for secondary cities like Udon Thani City Municipality, where resources are limited. The city's rapid expansion has surpassed management capabilities, resulting in an unbalanced urban development that demands innovative solutions. Amid these challenges, the VLR process emerges as a vital mechanism for fostering sustainable development and addressing the complex needs of Udon Thani City Municipality's urban environment. Udon Thani City Municipality, in partnership with UN-Habitat, started this VLR journey to help tackle these challenges and transform the city in line with the 2030 Agenda for Sustainable Development. This VLR is the turning point of Udon Thani City Municipality to shape its city development efforts by evaluating its progress towards the SDGs and paving the way for a more sustainable future.

Udon Thani City Municipality is a vibrant city with a rich cultural heritage and a dynamic economy, working towards fostering a more sustainable future for its people by reviewing its achievements, challenges and lessons learned.

Developed in collaboration with UN-Habitat and other international partners, Udon Thani City Municipality's VLR involves participatory and inclusive approaches by engaging a wide range of stakeholders, including local communities, businesses, academia, and civil society. This is a key feature of the process to ensure that the voices of various sectors are addressed and integrated into the city's sustainable development vision.

This report is structured to provide a comprehensive overview of Udon Thani City Municipality's achievements towards the SDGs, identify its priority goals, encourage multistakeholder discussion, and shape its sustainable future. Moreover, it incorporates the Global UMF as a guiding tool to facilitate the indicator selection and data collection process, along with the Action-oriented VLR Methodology that was used as a guiding document to ensure that the VLR is not just a document of record but a road map for actionable change.

1.1 Udon Thani City Municipality's Vision

City's vision:
"A city of prosperity, a society of abundant happiness."

The development strategy of Udon Thani City Municipality (2023-2027) is comprehensive, focusing on several key areas to foster a thriving urban environment. It aims to upgrade infrastructure and environmental conservation, making the city a friendly location for living, commerce, investment and tourism. Enhancing the quality of life and social capital to create a harmonized society where every resident feels ownership and actively participates in development is key to the municipality's mission.

The strategy also emphasizes the preservation and development of culture and arts in all dimensions, adding value to the community and propelling Udon Thani towards becoming a cultural capital. Additionally, the municipality is committed to excellence in service provision, governance and service innovation. A significant part of its vision is to establish Udon Thani as a leading Meetings, Incentive Travel, Conventions, and Exhibitions (MICE) city, leveraging its strategic position and facilities to attract global events and tourists. Through these strategic directions, Udon Thani City Municipality aims to pave the way for a future that is not only prosperous but also harmonious and resilient.

Udon Thani City Municipality is committed to sustainable urban development. The SDGs are well incorporated into the national strategies and translated to subnational and local government strategies. Udon Thani City Development Plan embraces the SDGs as a foundation framework for policy framing, planning and implementation. The plan's alignment to SDGs strengthens the effort to translate global goals into local actions that address the unique challenges and opportunities within the city's context. The city's approach to the implementation of its policies is holistic. It integrates economic, social and environmental aspects to make sure to inclusively address the concerns and challenges of its diverse residents.

Missions and strategies under Local Development Plan

Enabled by the MOI's Regulations on the Preparation of Plan by Local Administration Organization of B.E. 2548 (2005), Udon Thani City Municipality has prepared and enacted its development plan every five years. The current development plan of 2023–2027 comprises four missions and six strategic directions, guiding over 390 projects annually to drive the municipality's development forward.

The plan's preparation process began by gathering input from the public. This participatory approach ensured that the development initiatives directly address the needs and priorities of the local population. The Udon Thani City Municipality Civil Council and the Children and Youth Council played an important role in representing the residents and addressing their concerns. By involving the community in the planning stage, the city administration was able to tailor its strategies to reflect the real challenges and opportunities within the city.

The plan is well-aligned with national and regional frameworks, incorporating the 20-year National Strategy (2018–2037), the Thirteenth National Economic and Social Development Plan, the Northeastern Development Strategy, the Provincial Development Strategy, and Udon Thani Province's strategic plan for local governance. The details are discussed in the next section.

Table 1 Missions and strategies indicated in Udon Thani City Municipality's Development Plan of 2023–2027

Missions	Strategies
Develop infrastructure and conserve the environment to become a regional livable city.	◎ Develop infrastructure, promote tourism economy, and conserve the environment to make a sustainable and livable city. ◎ Develop Udon Thani into a city of sports and meetings, incentives, conferences, exhibitions (MICE). ◎ Create a city context and operational processes that facilitate investment and promote new entrepreneurs.
Improve quality of life and social capital to create a happy society, a city owned by all residents, and inclusive in development.	◎ Elevate the quality of life and social capital to foster a caring society and create a city of well-being.
Conserve and develop arts and culture in all dimensions to add value to the community and drive strategic moves towards a cultural metropolis.	◎ Develop the city as a centre of local cultural wisdom and creative arts.
Develop the municipality's administrative organization to excel in local governance with integrity and innovation in administration.	◎ Develop organizational management systems and enhance the potential of personnel to become a high-performance organization.

1.2 Udon Thani City Municipality's context

Geography

Udon Thani City Municipality is located in Mueang Udon Thani District, Udon Thani Province, approximately 562 kilometres away from Thailand's capital, Bangkok. The topography in Mueang Udon Thani District is not flat. It includes alternating highlands and lowlands; some parts are low-rise hills, having an average elevation of less than 200 metres above sea level. The urban area is concentrated in the lowlands. The city's terrain slopes from south to north. There are two main natural waterways, Huay Mak Khaeng and Huay Mang, which serve as natural drainage channels from the city. Additionally, Udon Thani City has two large water sources for water supply production and as a backup raw water source: Nong Prachak Sinlapakhom and Nong Sim. The city area covers 47.70 km2, according to the Udon Thani City Municipality Regulation B.E. 2548 (2005), which is used for community zoning. The city is divided into 105 communities (Figure 1), each with its own elected leader who collaborates closely with city officials.

Figure 1 Administrative boundaries of Udon Thani City Municipality

Source: Udon Thani City Municipality's Annual Report of 2022

Population

Udon Thani City Municipality has a registered population of 116,870 people and 62,158 households as of December 2022[2]. The non-registered population is around 36,000 people, according to the Registration and Identification Card service records estimation. The population density is 3,157 people per square kilometers. Regarding the age structure, the working-age population (20–59 years) constitutes the highest proportion, with the majority being aged 45–54 years. The proportion of women below 45 years is slightly lower than men (Figure 2). Considering the aging society, Udon Thani City Municipality has been an aged society, where the proportion of people aged over 60 years is more than 20 percent of the total population[3].
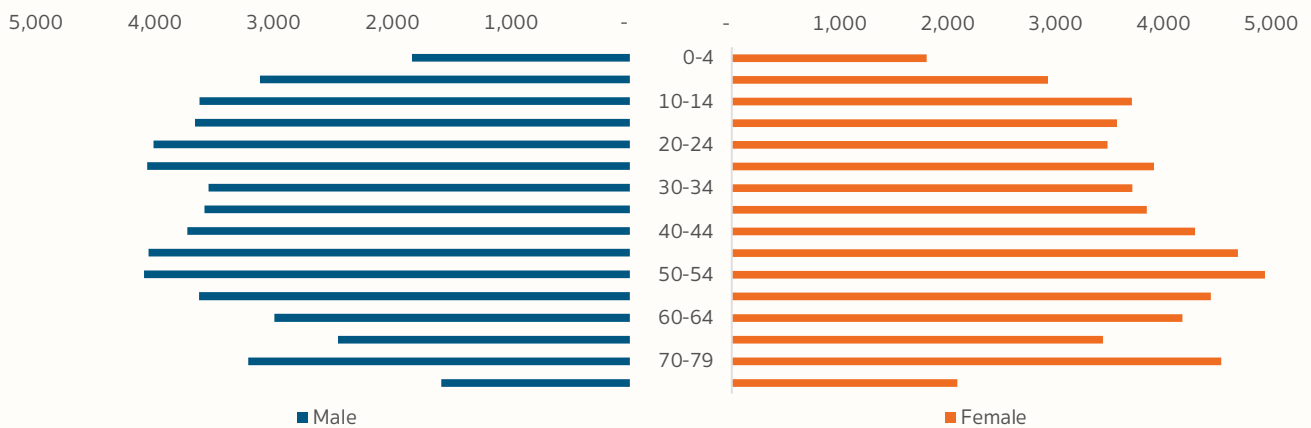
Figure 2 Demography of Udon Thani City Municipality as of 2022 [4]

Economic development

Udon Thani City Municipality has a diverse economic landscape, including agriculture, the service industry, tourism, and small-scale production. There are 994 agricultural households with a total cultivation area of 1,243 Rai (The "Rai" is a unit of area commonly used in Thailand to measure land. One Rai is equivalent to 1,600 square meters), of which 896 Rai are rice fields and the remaining 347 Rai for other farming activities. Within the city landscape, there are also areas for fisheries and livestock. In terms of the private service industry, there are 68 hotels and approximately 60 other service businesses. Museums, monuments, multicultural streets, and several religious sites are tourist attractions that bring visitors and stimulate economic activities. There are several small-scale factories in the outskirts and wholesale businesses spread across urban areas. In addition, the city serves as a transportation hub to connect Laos with other parts of Thailand. There are a railway station, airport, and intercity bus station.
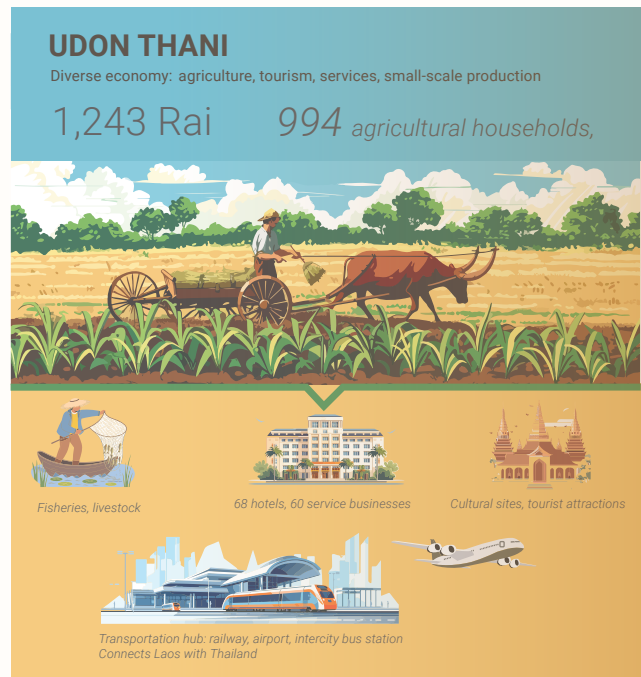
UDON THANI
Diverse economy: agriculture, tourism, services, small-scale production
1,243 Rai   994 agricultural households,

Fisheries, livestock   68 hotels, 60 service businesses   Cultural sites, tourist attractions

Transportation hub: railway, airport, intercity bus station
Connects Laos with Thailand

Administrative structure

The administrative structure of Udon Thani City Municipality (Figure 3) is in total 12 sections, divided into 8 divisions, 3 bureaus and Environment and Office of the Municipal Clerk departments. Each department carries out specific missions. Key departments include the Municipal Clerk departments, Division of Finance, Bureau of Public Works, Bureau of Public Health and Environment, Bureau of Education. The Municipal Clerk departments monitor the overall operations of the municipality. Departments with related or similar functions are grouped together for efficient operation according to the responsibilities and duties assigned. This organization is overseen by the Deputy Mayors with specific policies addressing specific challenges apart from the City Development Plan.
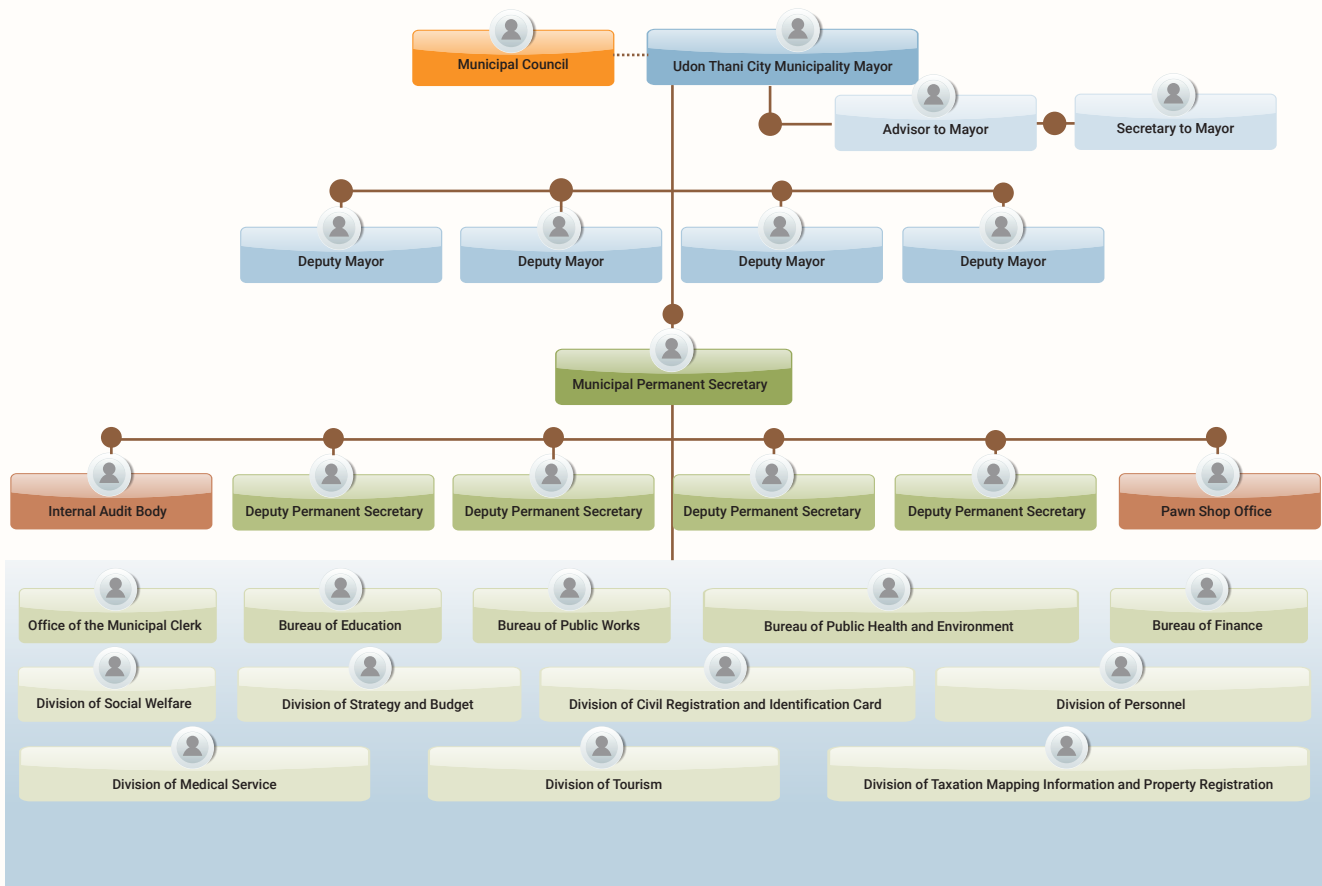
Figure 3 Administrative structure of Udon Thani City Municipality

Alignment of Local Development Plan to national and provincial plans

Udon Thani City Municipality's Local Development Plan is framed based on the needs of the people through regular public participation. The city development plan is not developed in isolation but is mapped against policies and frameworks at the national and subnational levels (Figure 4). This alignment ensures consistency and synergy with broader development agendas, making it more likely for its initiatives to receive support and to be integrated with larger-scale projects. The goals adopted from the global SDGs provide a universal framework of targets tailored to fit the local context within the city, ensuring that global priorities are reflected in local actions.
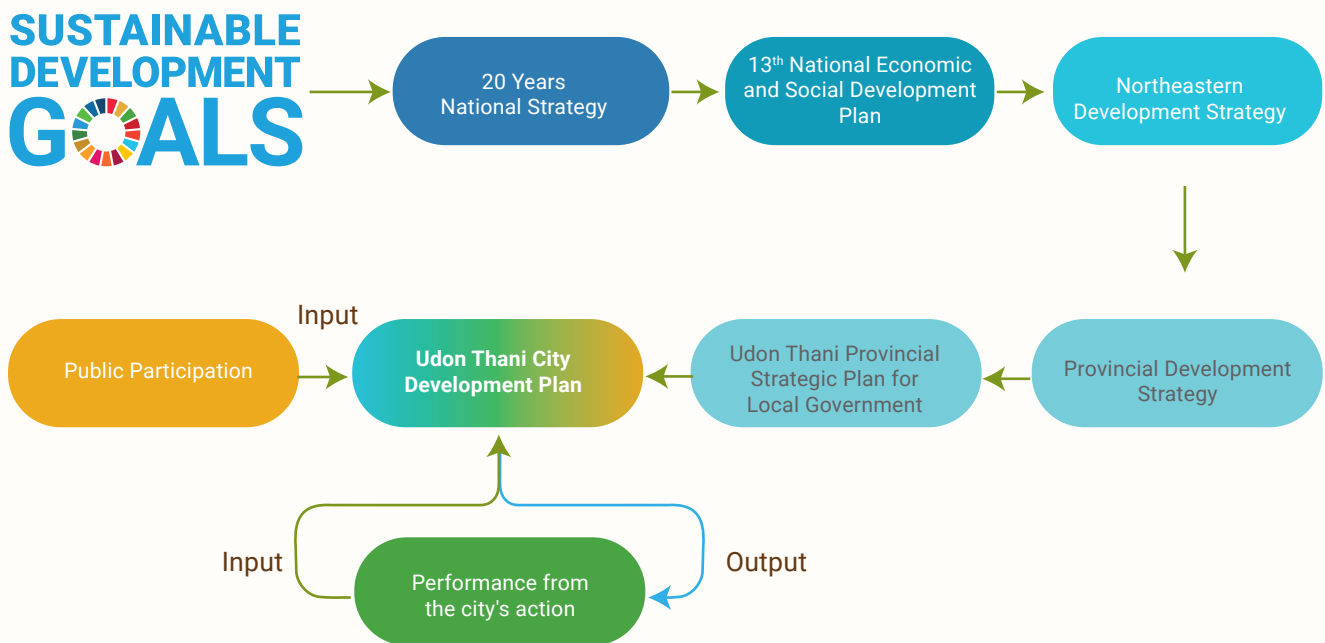

Figure 4 Alignment of Udon Thani City Municipality's Local Development Plan to provincial plans, national plans, and international frameworks

1.3 Udon Thani City Municipality's framework on SDGs

Udon Thani City Development Plan 2024 covers 15 SDGs (SDG 1, SDG 2, SDG 3, SDG 4, SDG 5, SDG6, SDG 7, SDG 8, SDG 9, SDG 10, SDG 11, SDG 13, SDG 15, SDG 16 and SDG17) (Table 2). The city's holistic approach shows that to effectively work on one goal, multidisciplinary approach from various actors is needed. However, some critical issues, such as unique social problems mentioned in Table C 7 need to get strong public participation to drive positive changes. Thus, the city prioritizes a participatory approach for policy framing and implementation to tackle problems, which will lead to creating sustainable urban development. To establish participatory city guidelines and ensure that everyone in the city envisions the same future, the city has developed the Udon Thani City Municipality Civil Council and the Children and Youth Council. These councils aim to create a platform where everyone can directly address their concerns to the city and share experiences and knowledge, thereby strengthening collaboration. The Municipality Civil Council is a key instrument in providing suggestions, shaping policy, and collaborating on project implementation. These councils will not only serve as consultation actors for solving social problems but will also assist the city in designing many key initiatives with the goal of making it **"The City for All."**

Leaving no one behind

The Leave No One Behind principle of inclusivity of the 2030 Agenda for Sustainable Development, is a core principle of Udon Thani City Municipality. The municipality has committed to promote inclusive community by integrating the SDGs into its City Development Plan. The process of planning always includes collecting insights and expectations from the public. Engaging stakeholders such as local communities, the private sector, academia, and civil society is essential for shaping the city's policies and strategic direction. Public consultations ensure equal participation across all ages, gender, disability, ethnicity, religion or economic backgrounds. For instance, an initiative aimed at diminishing inequality involves enhancing the accessibility of educational and healthcare services.

Integrated implementation

The city's inclusive implementation ensures that no aspect of sustainable development is neglected. The shared responsibility among all divisions and bureaus of the city administration facilitates a coordinated effort towards achieving these goals. By distributing the implementation tasks across different divisions, the plan leverages the specific expertise and capacities of each division, enhancing the efficiency and effectiveness of its initiatives.

The Udon Thani City Development Plan represents a model of how local governments can integrate the SDGs into their development planning. By starting with a base of public consultation, aligning with broader policy frameworks, focusing on key areas while not neglecting the comprehensive SDG agenda, and sharing implementation responsibilities across departments, Udon Thani is working towards sustainable development in a way that is both focused and inclusive. This approach not only contributes to the global goals but also ensures that development is responsive to the specific needs of the local community.

Facilitating services for the elderly and disabled in obtaining their national ID cards

Seminar on Age-Friendly and Disability-Friendly Cities with Universal Design-May 1, 2023

PREPARATION
of the VLR

2.1 Summary of the process

Udon Thani City Municipality's VLR is a part of the project **"Fostering COVID-19 Recovery and SDG Implementation through Local Action in Asia-Pacific, Arab and African countries,"** which is a collaboration between UN-Habitat, UNECA, ESCAP, UNESCWA, UNDESA, and UCLG, funded by 2030 Agenda for Sustainable Development Sub-Fund. The objective is to promote inclusive post-pandemic recovery and advance the localization of the SDGs in Asia and the Pacific, Africa and the Arab States, with two major outcomes: (1) Strengthened capacities of local and regional governments to develop VLRs and localize the SDGs to advance the post-pandemic recovery process, and (2) Enhanced multilevel governance and interlinkages between local and national governments as well as regional and international processes on SDG implementation and COVID-19 recovery.

The process is built on Guidelines for Voluntary Local Reviews Volumes 1–2 by UN-Habitat, the Global Guiding Elements for VLRs of SDG Implementation by UNDESA, Asia-Pacific Regional Guidelines on Voluntary Local Reviews by ESCAP, and Action-oriented VLR by UN-Habitat.

The process is divided into four steps: (1) Planning and institutionalizing, (2) Definition of VLR structure and SDGs, (3) Gathering inputs and data, (4) Report writing, and (5) Endorsement (Figure 5).
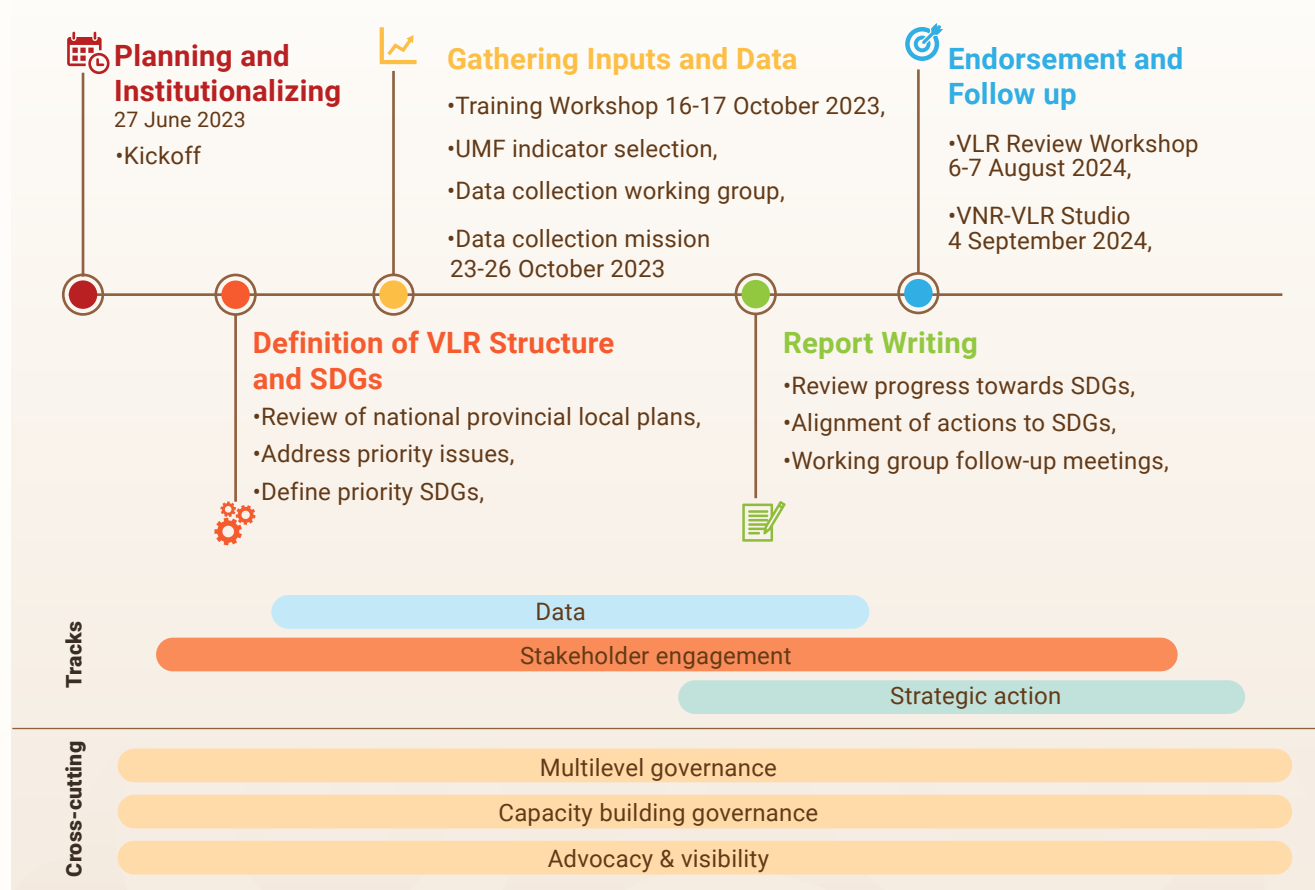

Figure 5 VLR process

The process started with data collection planning, data collection methodology following the Urban Monitoring Framework (UMF), communication systems, and setting up relevant agencies, stakeholders, and working groups. City action plan and other initiative was mapped with 17 SDGs (Table 2) and the UMF indicators (Table 3). A VLR-VNR collaboration was established to inform subnational and national organizations of the challenges and gaps identified through the VLR process. This has facilitated addressing the issues in the VLR. Data gathering was carried out by the working group with technical support from UN-Habitat. Data was gathered through both secondary published and unpublished sources, as well as stakeholder interviews. 39 out of 77 UMF indicators was collected. Among 39 indicators, four indicators apply proxy from district level and eight proxy are from provincial data. VLR report was reviewed and endorsed by the city government and shared with NESDC and the Ministry of Foreign Affairs for incorporation into the VNR.

Table 2 Alignment between SDGs and the City Development Plan 2024

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

Strategy	Sector	Actor	SDGs
Strategy 1: Develop infrastructure, promote tourism economy, and conserve the environment to make a sustainable and livable city.	Industry and civil engineering / Housing and community	• Bureau of Public Works • Bureau of Public Health and Environment	11, 13, 15
	Religion and culture	• Division of Tourism	8, 11, 17
Strategy 2: Develop Udon Thani into a city of sports and MICE (Meetings, Incentives, Conferences, Exhibitions) City.	Religion and culture	• Division of Tourism	8, 11
Strategy 3: Create a city context and operational processes that facilitate investment and promote new entrepreneurs.	Religion and culture	• Division of Tourism	8
Strategy 4: Elevate the quality of life and social capital to foster a caring society and create a city of well-being.	Industry and civil engineering / Community empowerment	• Bureau of Education • Division of Social Welfare • Bureau of Public Health and Environment	1, 2, 3, 5, 8, 10, 11; 2, 3, 11
	Social welfare	• Division of Social Welfare	1, 10, 11, 15
	Religion and culture	• Division of Tourism • Bureau of Education	10, 11, 17; 11
	Education	• Bureau of Education	3, 4
	Public health	• Bureau of Public Health and Environment	1, 2, 3, 6, 4, 11
		• Bureau of Education • Division of Medical Service	1, 2, 3, 4, 10, 11; 3, 4
	Commerce	• Bureau of Public Health and Environment	3, 11
	Peace and justice	• Office of the Municipal Clerk	8, 15, 16
Strategy 5: Develop the city as a center of local cultural wisdom and creative arts.	Religion and culture	• Office of the Municipal Clerk • Division of Tourism	3, 4, 10, 11; 10
	Religion and culture	• Bureau of Education	4, 11
Strategy 6: Develop organizational management systems and enhance the potential of personnel to become a high-performance organization.	General administration	• Office of the Municipal Clerk • Division of Strategy and Budget	11; 17
	Commerce	• Pawn Shop Office	11
	General administration	• Division of Civil Registration and Identification Card	1, 4, 10, 11
	Community empowerment	• Division of Social Welfare	4, 11

Table 3 Alignment between City Development Plan, SDGs, and UMF

UMF Domains	Objectives	City's Development Plan	Other relevant targets	SDG 1	SDG 3	SDG 4	SDG 5	SDG 6	SDG 8	SDG 11	SDG 12	SDG 16	SDG 17
Social	Safe and Peaceful	• Road infrastructure improvement	UNICEF 8		SDG 3.7.2								
		• Raise awareness and provide training on road safety			SDG 3.6.1								
	Inclusive	• Training program for community health volunteers on health and well-being		SDG 1.4.2		SDG 4.1.2							
		• Capacity building program for community leaders and marginalized people			SDG 3.4.1					SDG 11.5.1			
	Resilient	• Promote quality of life among community members			SDG 3.4.2								
		• Capacity building for teachers, provide financial support to students and provide facilities to schools											
	Sustainable	• Provide incentive to disaster affected persons	CPI							SDG 11.1.1			
Economy	Safe and Peaceful												
	Inclusive	• Provide training to promote career to community members such as handicrafts, mechanical work, agriculture	CPI						SDG8*				SDG 17.8.1
	Resilient	• training program for community health volunteers on health and well-being							SDG8*				
		• Improve internet infrastructure in the city and schools	CPI						SDG8*				
	Sustainable	• Promote MICE City and tourism industry	CPI										
		• Promote cultural road promoting economic activities	CPI										
Environment	Safe and Peaceful	• Improve drainage system and wastewater						SDG 6.3.1		SDG 11.6.1	SDG 12.4.2		
		• Public engagement and capacity building for integrated municipal solid waste managemnt								SDG 11.6.2			
	Inclusive	• Infrastructure development for creating safe spaces for cultural activities								SDG 11.7.1	SDG 12.8.1		
	Resilient	• Waste to energy incinerator and carbon credits	CPI										
	Sustainable	• Improve security of Nong Prajak Park by installing CCTV	NUA-50										
Culture	Safe and Peaceful	• Infrastructure development for creating safe space for cultural activities	C2030-14										
	Inclusive	• Promote cultural road promoting economic activities	C2030-21										
	Resilient	• Operate and manintain cultural spaces such as • museum, religious buildings	C2030-7										
		• Organize annual events related to local tradition and culture	C2030-01										
	Sustainable	• Promote local culture as part of economic development	C2030-05										
Governance	Safe and Peaceful	• Improve security of public areas by installing CCTV • Promote collaboration with police offices and										SDG 16.1.1	
		• community networks to prevent crime activities										SDG 16.5.1	
	Inclusive	• Promote transparent government	NUA-75				SDG 5.5.1b						
	Resilient	• Strengthen collaboration with other organizations to provide support to marginalized groups	CPI										
		• Change mindset of personnel to be more proactive	NUA 58										
	Sustainable	• Encourage stateless persons to register to be able to receive basic rights								SDG 11.a.1		SDG 16.9.1	

Action-oriented VLR

Udon Thani City Municipality's VLR is built on Action-oriented VLRs, a methodology that provides a practical road map for VLR development, including key phases, tracks, specific steps, and tools. More importantly, it guides users on how to transform VLRs into instruments for action, connecting SDG monitoring and reporting to all dimensions of SDG localization, linking VLR findings to concrete initiatives or further investigations.

In the earlier years, VLRs were often limited to a review of the existing conditions in a given city, metropolitan area, or region. However, there has recently been an increased awareness that VLRs have the potential of being more than just a stocktaking exercise to understand where cities are. If VLR findings are built upon with strategic recommendations that plug into existing policy environments, VLRs have the potential to act as a road map for change that drive action with specific, evidence-based suggestions to guide planning, financing, and future initiatives.

Urban Monitoring Framework (UMF)

Udon Thani City Municipality's VLR applies the Global UMF in its data collection process. This VLR report utilizes the UMF as a framework for data analysis to assess the city's achievement, discussing gaps and future direction analysis. UMF was endorsed by the United Nations Statistical Commission in March 2022 for implementation as part of the Harmonized Global United Nations Systemwide Strategy for monitoring the SDGs and the New Urban Agenda (NUA) and other regional, national and subnational urban programmes (Figure 6). It harmonizes existing urban indices and tools, including the widely implemented City Prosperity Index (CPI). The framework aims at ensuring thematic integration and inter-linkages among various dimensions of development, disaggregation of data, and inclusion of groups that are traditionally excluded. It promotes working at different scales and functional urban areas, including ecological functional areas, enabling city comparability, and the possibility of more in-depth policy analysis.

The UMF also serves as a monitoring tool for UN-Habitat's SDG Cities Flagship Programme and supports reporting through the VLRs and the preparation of urban data for the United Nations Common Country Assessments. It comprises a set of metrics that guide stakeholders to evaluate progress of cities and urban areas by indicators, domains, city objectives, and against other cities globally.

The framework was developed in response to the request of the United Nations Statistical Commission that called for a peer review mechanism of existing urban indices and monitoring tools, as well as the need to develop and adopt an urban monitoring framework. Its development involved a consultative process led by UN-Habitat and involving 36 partners from the United Nations system, cities and local governments, national governments, civil society, and academia and research organizations, among others.
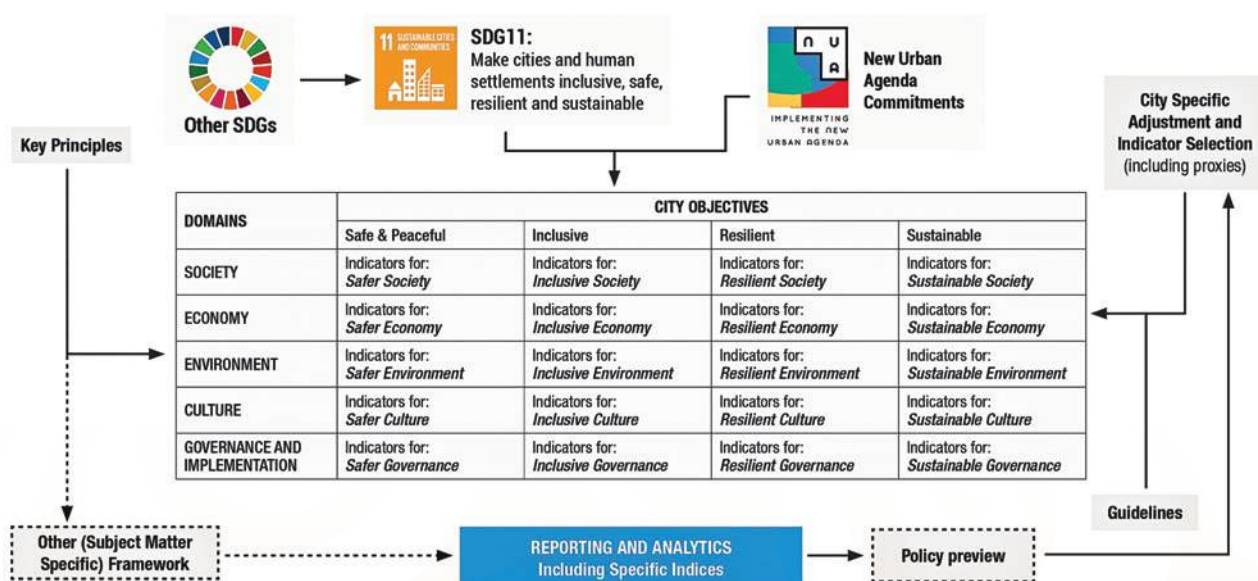
Figure 6 UMF

The UMF can be used for self-assessment, evidence-based policy development, and future planning. The framework includes 77 indicators in five domains, which are 1) society; 2) economy; 3) environment; 4) culture; and 5) governance and implementation. Each domain consists of four objectives, which are 1) safe and peaceful; 2) inclusive; 3) resilient; and 4) sustainable. Among all, 57 indicators align with SDG indicators and the others are in alignment with other UN's frameworks and indicators, such as United Nations International Children's Emergency Fund (UNICEF), New Urban Agenda (NUA), etc.

Internationalization

Multilevel governance is a key component of Udon Thani City Municipality's VLR process. At the national level, United Nations in Thailand and the MOI initiated a collaboration on the acceleration of SDGs. The Statement of Commitment was signed by the United Nations Resident Coordinator, the Executive Secretary of ESCAP, the Permanent Secretary of MOI, and the 76 Governors of Thailand on 6 June 2022 at the United Nations Conference Center (UNCC) (Figure 7). There have been follow-up events to strengthen the partnership and initiatives to ensure successful SDG localization every year.

The selection of Udon Thani City Municipality to conduct a VLR is based on a consultation with Office of the National Economic and Social Development Council (NESDC) on 8 April 2022. The selection criteria were a city's political commitment, minimum level of data availability, access to local communities for participatory process, alignment to national counterparts, population size, and geographic location.

Figure 7 Signing of Statement of Commitment between the United Nations Thailand and MOI on 6 June 2022

Stakeholder engagement

Representatives from international organizations (UN-Habitat, ESCAP, UNDP), the national government (NESDC, Ministry of Foreign Affairs), and the provincial government (Udon Thani Provincial Office, Udon Thani Provincial Statistical Office) were engaged in the process of conducting Udon Thani City Municipality's VLR. There was an inception meeting to gain the official commitment of the city to develop its VLR and to kick-start the Action-oriented VLR process. The meeting was hosted by UN-Habitat with the involvement of the city executives and staff, NESDC, ESCAP, and UNDP.

At the city level, municipal executives, staff, council, private sector, education sector, civil society, youth council, and a group representing the elderly and people with disabilities have all been engaged in the process. They participated in the VLR training workshop, the city's Strength-Weakness-Opportunity-Threat (SWOT) analysis and multistakeholder consultations. This collaborative effort led to a better understanding of the Action-oriented VLR and ensured that all key stakeholders were aware of the VLR. More importantly, it fostered a sense of ownership towards the VLR.

Incorporating the Human-Centric Concept of Quality of Life in the VLR

Developing Udon Thani City Municipality's VLR through a human-centric approach on quality of life, especially understanding the main challenges and improving the overall quality of life in the city. This entailed a baseline assessment of various aspects of the quality of life in the city, including physical health, mental well-being, social inclusion, and community resilience with reference to two sets of indicators: the global layer indicators and the local layer indicators. The global layer provides a universal set of indicators applicable to all cities, while the local layer is customized to reflect the city's specific issues across nine domains like housing, education, economy, governance, culture & recreation, environment, basic services and mobility, social cohesion and health and wellbeing. By tracking these indicators, the city could keep track and improve quality of life.

CITY'S PROGRESS

This chapter provides a comprehensive overview of city progress based on the domains of the UMF. The UMF domains include: 1) society, 2) economy, 3) environment, 4) culture, and 5) governance and implementation. Each UMF indicator is aligned with the SDG indicators.

3.1 Highlights of progress

Society Domain

Udon Thani City Municipality has maintained high proportions of births in health facilities, reflecting strong healthcare infrastructure. Low-income families with children aged under five years old need support on child nutrition. CCTV installations in public spaces have improved neighborhood safety, evidenced by numerous requests for footage primarily related to vehicle loss, theft and robbery. The adolescent birth rate in Udon Thani Province is lower than the national average, indicating effective youth health programs. Traffic fatalities have decreased, with most involving males aged 36-60 riding motorcycles. Public transport includes inter-city buses, trains, and local taxis, contributing to sustainable and multimodal mobility. Income inequality is lower than the provincial and national average, but still needs to be addressed for future economic sustainability.

Economic Domain

The city promotes local handicraft products, and tourism through skill development, marketing, and events, while supporting local businesses to reduce the wealth gap. Udon Thani's strategic location enhances its economic opportunities, with investment in infrastructure and hosting national expositions. Public transport is robust, with significant inter-city and local options. Economic indicators show positive trends in GPP per capita and household income.

Environment Domain

Advanced technologies and a skilled workforce support environmental management. Wastewater treatment and solid waste management are comprehensive, with all municipal solid waste collected and managed in controlled facilities. Air quality monitoring and hazardous waste collection are prioritized. The city maintains substantial open public spaces, contributing to residents' quality of life. Tree coverage needs to be expanded to strengthen climate adaptability and preserve biodiversity.

Culture Domain

Efforts to elevate Udon Thani's cultural heritage include promoting local wisdom, customs, and traditions, and educating youth on cultural aspects. Cultural participation and employment are supported through various initiatives, with significant open spaces dedicated to cultural activities.

Governance and Implementation Domain

Governance improvements focus on efficiency through IT adoption, strong public engagement, and transparency. Initiatives include open-data approaches, enhancing communication channels, and protecting against misinformation. Financial autonomy and secure tenure rights to land are also emphasized, with extensive data collection on land and property ownership.

These comprehensive efforts demonstrate Udon Thani's commitment to sustainable development, enhancing residents' quality of life, and fostering economic growth while addressing social, environmental, and cultural challenges.

3.2 Society Domain

Highlights

Udon Thani City Municipality has made significant progress in the social domain, with high rates of births in health facilities, although slightly below provincial and national averages. The prevalence of overweight and wasting of children under 5 years has been lower than the province average and the country's target (10%). However, the wasting portion is higher than the country's target (5%). Neighborhood safety has improved through extensive CCTV installations to used as prevention tools and to collect data for plan and policy improvement. Sexual crime is a significant issue, while robbery and theft cases increase during school term. The adolescent birth rate is lower than the national average, showing a declining trend. Traffic fatalities have decreased from 20.31 per 100,000 in 2018 to 11.92 in 2023, with most fatalities involving males aged 36-60 and motorcycle riders. The city's robust public transport system includes inter-city buses, trains, and local taxis, with high passenger usage. Education completion rates exceed 90% for primary and secondary levels, surpassing national averages. Additionally, 87.70% of land plots are citizen-owned, and 28.30% are also privately owned, with some limitations due to the type of land rights. Men are the majority of property owners. These efforts reflect Udon Thani's commitment to enhancing healthcare, safety, education, and property ownership for its residents. Economic inequality is improving, but it is still a challenge.

Review of targets

3 GOOD HEALTH AND WELL-BEING	INDICATOR (S) | UMF 1.1.5 / SDG 3.1.2
	Proportion of births in health facilities

Most health facilities equipped to offer birth services in Mueng Udon Thani District are found in Udon Thani City. The proportion of births in health facilities in the district could therefore be used to understand the performance of Udon Thani City as well. The indicator on proportion of births in health facilities is crucial for assessing healthcare performance, particularly regarding maternal care.

Over the past three years (2020–2022), Mueng Udon Thani District has observed a high proportion of births in health facilities, ranging between 90.91% and 92.89%, as shown in Figure 8. These figures indicate a consistent performance in maintaining high rates of health facility-based births. However, Mueang Udon Thani District has slightly lower birth rates in health facilities than Udon Thani Province and the national average. This statistic suggests that while Mueng Udon Thani District is performing well, there may still be room for improvement to align more closely with provincial and national standards.

Proportion of births in health facilities (%)
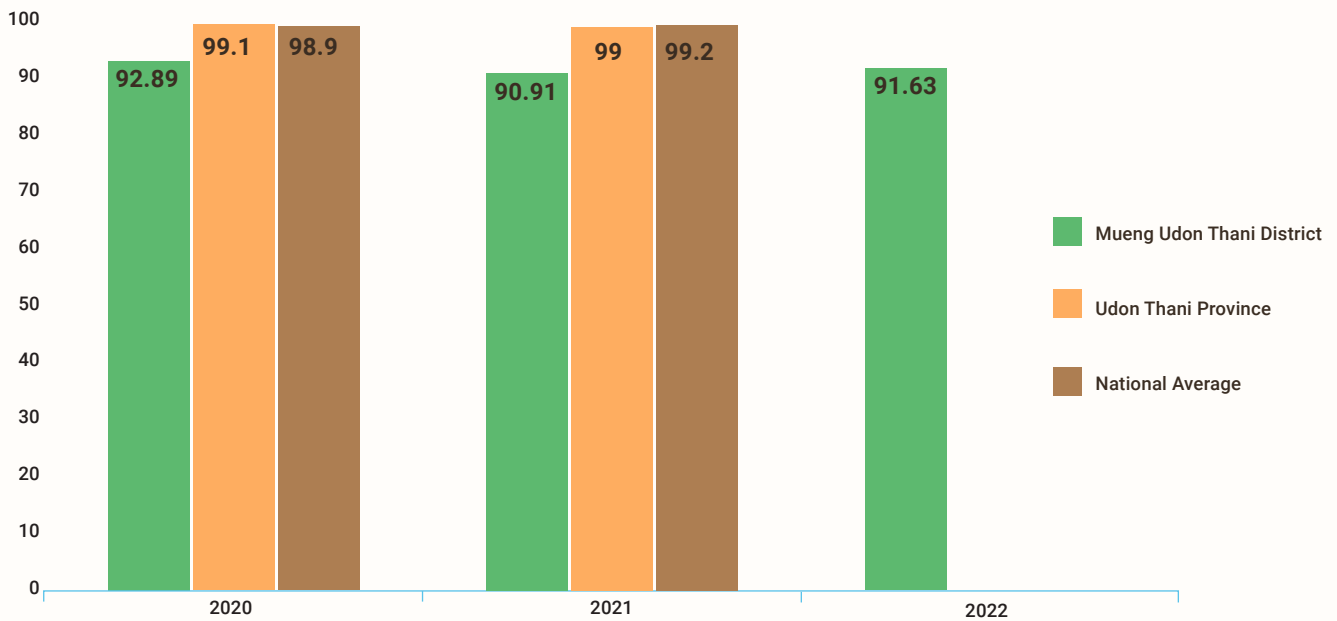
Figure 8 Proportion of births in Mueng Udon Thani District health facilities (a) between 2020 to 2022 compared with Udon Thani Province and national data (b)

Source: Department of Administration (total births) [a], Udon Thani Provincial Public Health Office (births in health facilities) [a] and National Statistical Office of Thailand [b]

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16 PEACE, JUSTICE AND STRONG INSTITUTIONS

INDICATOR(S) | UMF 1.1.6 / SDG 16.1.4

Neighbourhood safety

Udon Thani City Municipality has taken significant measures to enhance public safety and security by installing closed-circuit television (CCTV) cameras in various public spaces. These CCTV installations play a crucial role in monitoring and addressing incidents such as theft, robbery, etc. Residents may request CCTV footage from the city. The number of CCTV requests can reflect the location, time, and frequency of the incidents. By analyzing these requests, authorities, and residents can gain insights into the prevalent safety issues and the effectiveness of the CCTV system in addressing them. Additionally, the quality of life assessment provided insights on the proportion of people seen in their neighborhood after dark and the proportion of the population that feels safe walking alone around the area they live in after dark, which can be found in Appendix E: Data from the Quality of Life Index.

Figure 9 shows the number of police files for property and sexual crime in Udon Thani Province and the country from 2021–2022. This provincial data is used as a proxy to explain Udon Thani City Municipality. The number of cases decrease from 623 to around 400 cases per 100,000 population during COVID pandemic (2020-2021) and rise again to 555 in 2022 but still lower than 2017 for both Udon Thani Province and the country overall. Sexual crime in Udon Thani Province is about two times of the country's statistics, while property crime is much lesser than in the country.

By analyzing the requests, it is clear that the high number is divided into two periods: December to February and July to August (Figure 10). Considering this, it fits with the school terms, which are from mid-May to the end of August and mid-November to the end of February, when houses are empty during the daytime. If the city wants to reduce the incidence, it could focus on prevention programs during school times by patrolling around residential areas during the daytime.

Number of police reports filed of Udon Thani Province (Case/100,000 capita)

Udon Thani Province

	2017	2018	2019	2020	2021	2022
Provincial sexual crime	623	529	496	395	419	555
Provincial property crime	176	128	137	125	117	148

Thailand

	2017	2018	2019	2020	2021	2022
National sexual crime	300	263	249	218	208	230
National property crime	958	799	739	670	705	771
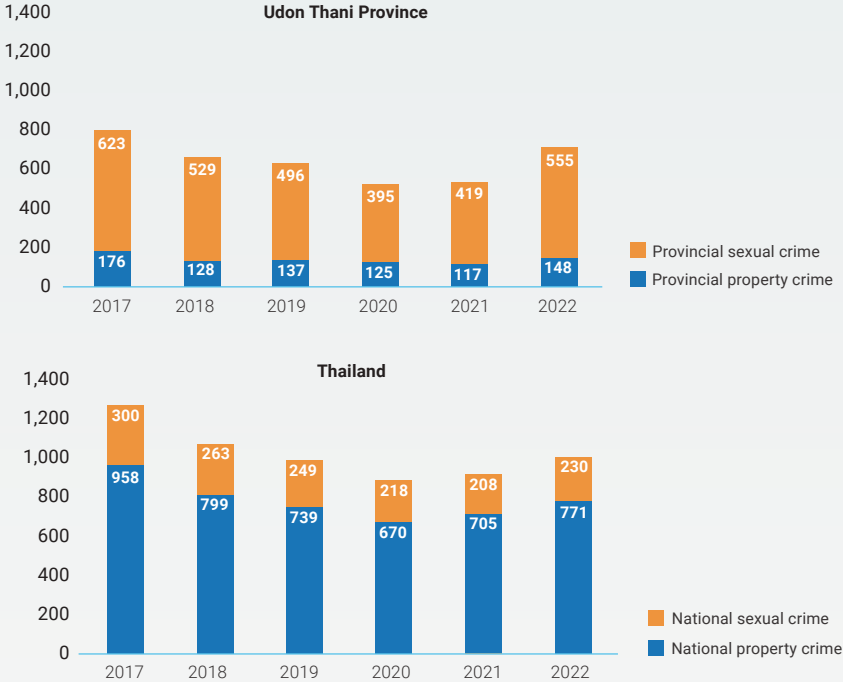
Figure 9 Number of Police reports filed of Udon Thani Province from 2017 to 2022 (Case)

Source: National Statistical Office

Number of Requests for CCTV Footage to Udon Thani City Municipality in Fiscal Year 2023 (Time/100,000 capita)

Theft, robbery, etc.

Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.
3	7	12	20	18	8	7	7	12	19	12	9

2022--------- ● ------------ ● --------2023--------- ● ----------- ● ----------- ● ----------- ● ----------- ● ------------ ● ------------ ● ----------- ● ------------ ● -----------
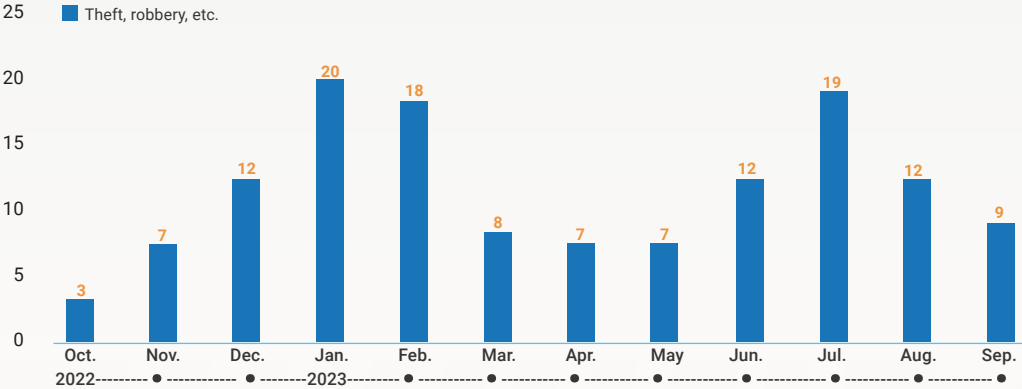
Figure 10 Number of Requests for CCTV Footage to Udon Thani City Municipality in Fiscal Year 2023

Source: Udon Thani City Municipality

INDICATOR(S) | UMF 1.1.5 / SDG 3.1.2

Adolescent birth rate

Adolescent birth rate data is collected at the provincial level. Thus, the provincial statistics is used as a proxy for Udon Thani City Municipality. This allows for a comprehensive understanding of the adolescent birth trends in the area.

The adolescent birth rate in Udon Thani Province for the age group of 10−14 years is reported to be 0.74 cases per 1,000 individuals on a 3-year average from 2020 to 2022. For the age group of 15−19 years, the rate is higher, at 22.80 cases per 1,000 individuals. When compared to national data, which shows 0.87 cases per 1,000 individuals for the 10−14 age group and 24.70 cases per 1,000 individuals for the 15−19 age group, it is evident that Udon Thani Province has a lower adolescent birth rate than the national average (Figure 11). The trend over the observed period indicates a slight decrease in the birth rate among teens. Specifically, there is a reduction in the 10−14 age group for the provincial data from 0.84 cases per 1,000 individuals in 2020 to 0.56 cases per 1,000 individuals in 2022, which is quite significant. However, the national statistics for the 10−14 age group remain relatively stable around 0.8-0.9 cases per 1,000 individuals throughout 3 years. For the 15−19 age group, both the provincial and national levels show a decrease in the range of 13−14%.

This data suggests that Udon Thani Province is experiencing a positive trend in reducing adolescent birth rates. The significant decrease in the 10−14 age group indicates effective interventions and programs that may contribute to this decline. The reduction in the 15−19 age group aligns with the national trend, further indicating successful efforts to address teen pregnancies.

Adolescent birth rate (Person/1,000 capita)

Legend:
- Provincial average for 10-14 years
- National average for 10-14 years
- Provincial average for 15-19 years
- National average for 15-19 years

2020: 0.84, 0.9, 26.42, 28.7
2021: 0.80, 0.9, 22.47, 24.4
2022: 0.56, 0.8, 19.50, 21
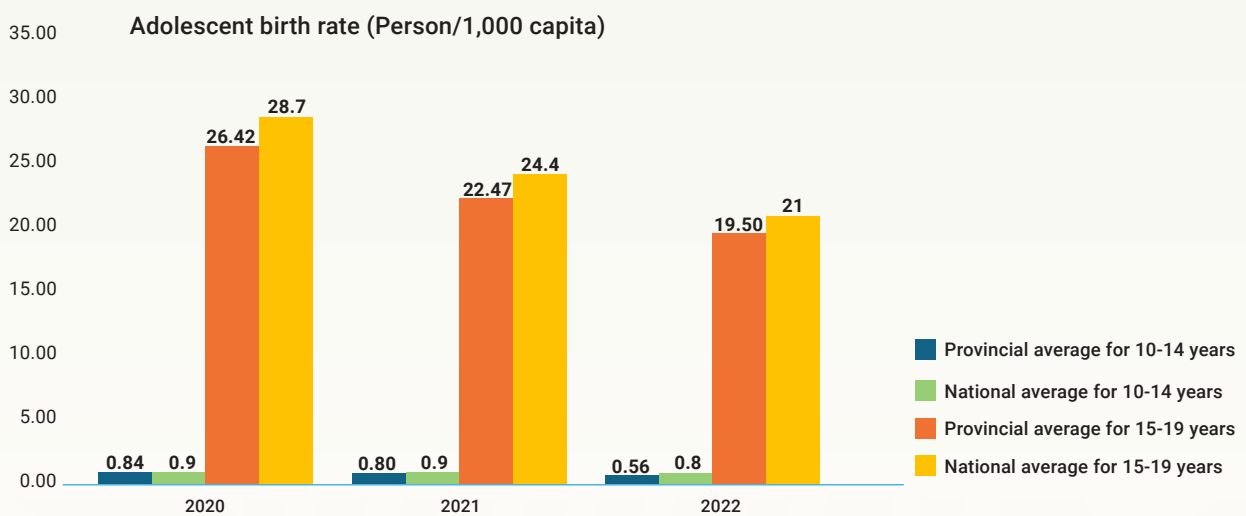
Figure 11 Adolescent birth rate per 1,000 capita for 2020−2022 of Udon Thani Province (a) compared with the national data

Source: Udon Thani Provincial Public Health Office (public only)[a] and Public Health Department[b]

Traffic fatalities

Traffic fatalities data is collected at the provincial level. Thus, the provincial statistics are used as a proxy for Udon Thani City Municipality. This approach provides a broad perspective on the trends and safety measures within the municipality.

Over recent years, traffic fatalities in Udon Thani have been declining. There were 20.31 fatalities per 100,000 population in 2018, compared to 11.92 fatalities in 2023 (Table 4). Compared to the national average, Udon Thani Province has the lower rates of fatalities.

This significant reduction indicates improvements in road safety measures, public awareness, and possibly infrastructure enhancements within the province. Compared to the national average, Udon Thani Province consistently exhibits lower rates of traffic fatalities. This comparison underscores the effectiveness of the strategies implemented in the province to enhance traffic safety. The lower fatality rates in Udon Thani suggest that the province is making progress in mitigating traffic-related deaths compared to the national average, which remains higher.

Table 4 Traffic fatalities per 100,000 in Udon Thani Province and Thailand between 2018–2023

Year	Udon Thani (a)	Thailand (b)
2018 (2561)	20.31	
2019 (2562)	14.58	
2020 (2563)	17.66	
2021 (2564)	13.04	
2022 (2565)	9.97	22.72
2023 (2566)	11.92	21.37

Regarding demographics, more than 80% of the total traffic fatalities in Udon Thani Province in 2023 are males. Age between 36–60 has the most fatalities compared to the other age group. More than 80% of the fatalities are motorcycles (Figure 12).

This significant gender disparity highlights the need for focused awareness and safety programs tailored specifically towards male drivers and riders. The age group between 36 and 60 years old has the highest number of fatalities compared to other age groups. This demographic is often in their working years, possibly engaging in daily commutes or occupational driving. By gender, the national analysis of road accident fatalities by the Ministry of Transport (2020) between 2011 and 2019 found that 82.85% of the fatalities were males, while 17.15% were females[5]. Understanding the behaviors and circumstances that lead to higher fatalities in males in this age group can help in designing effective preventive measures. These may include targeted road safety campaigns, workplace safety programs, and community outreach.

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5. https://www.otp.go.th/uploads/tiny_uploads/PDF/2563-06/25630601-RoadAccidentAna2562_Final.pdf

จำนวนผู้ประสบภัย จำแนก เพศ

17.30%

82.70%

- ● ชาย ● หญิง

จำนวนผู้ประสบภัย จำแนก ช่วงอายุ

ช่วงอายุ	เปอร์เซ็นต์
อายุ 1-14 ปี	4.43%
อายุ 15-18 ปี	5.38%
อายุ 19-24 ปี	14.56%
อายุ 25-35 ปี	16.46%
อายุ 36-60 ปี	42.41%
อายุมากกว่า 60 ปี	16.77%
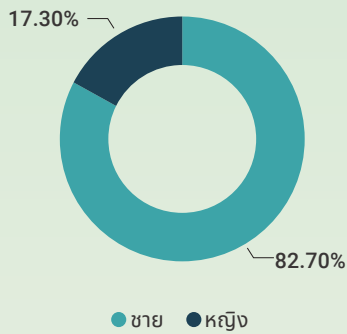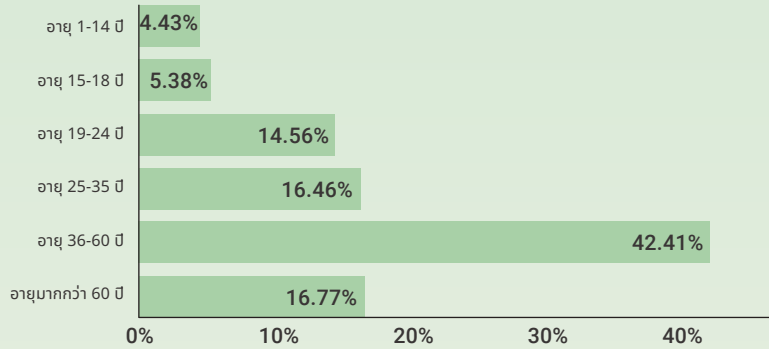
จำนวนผู้ประสบภัย จำแนก ประเภทรถ

16.35%

83.65%

- ● รถจักรยานยนต์ ● รถยนต์

จำนวนผู้ประสบภัย จำแนก ช่วงเวลา

ช่วงเวลา	เปอร์เซ็นต์
02:00-05:59	9.78%
06:-09:59	11.99%
10:00-13:59	14.51%
14:00-17:59	19.87%
18:00-21:59	31.23%
22:00-01:59	12.62%
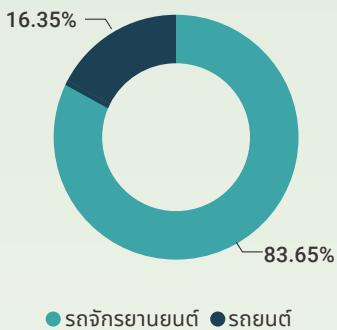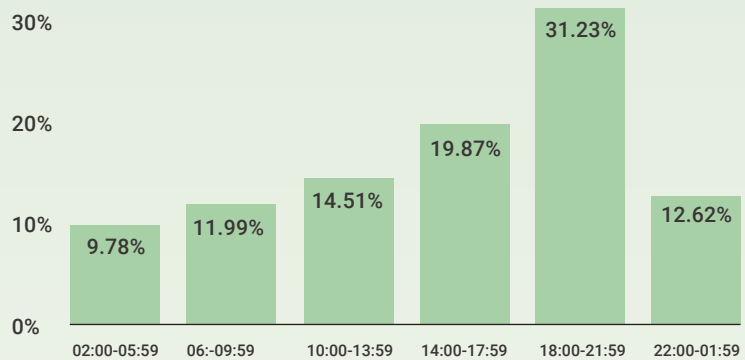
จำนวนผู้ประสบภัย จำแนก รายชั่วโมง

ชั่วโมง	เปอร์เซ็นต์
0	3.15%
1	3.47%
2	2.84%
3	2.84%
4	2.21%
5	1.89%
6	1.58%
7	3.79%
8	3.47%
9	3.15%
10	3.79%
11	3.47%
12	3.79%
13	3.47%
14	3.79%
15	4.10%
16	6.94%
17	5.05%
18	8.83%
19	10.09%
20	6.94%
21	5.36%
22	3.47%
23	2.52%
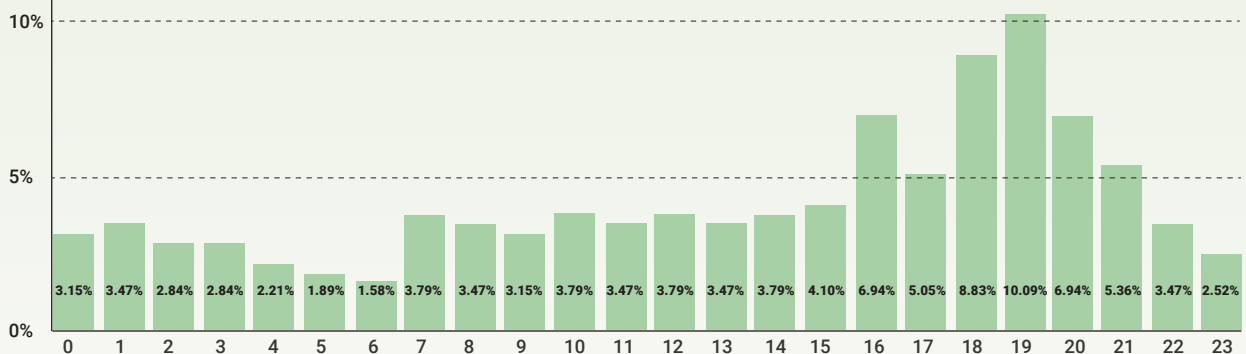
Figure 12 Breakdown of traffic fatalities in Udon Thani Province in 2023 (b) with the national data

Source: Udon Thani Provincial Public Health Officea and ThaiRCSb (https://www.thairsc.com)
Thailand's traffic fatalities are calculated from the total number of traffic fatalities (ThaiRSC)
and the registered population (DOPA, MOI)

INDICATOR(S) | UMF 1.2.2 / SDG 11.2.1

Access to public transport

Public transport in Udon Thani includes both inter-city and intra-city services, providing comprehensive connectivity for residents and visitors.

For the transport between cities, there are 2 inter-city bus stations with both international and domestic routes i.e., Bangkok – Udon Thani, Udon Thani – Nong Khai – Vang Vieng (Lao PDR), and Udon Thani – Vientiane (Lao PDR). By train, there are 2 train stations in the municipality's boundaries, Udon Thani and Nong Khon Kwang stations, with more than 10 routes to Bangkok and Nakhon Ratchasima. Map of the inter-city bus station is shown in Figure 13.

For the transport within the city, Udon Thani offers various modes to accommodate the daily commuting needs of its residents. These are four routes of minibus services that cover the main roads of the city. Three-wheeled vehicles are widely available for quick and convenient trips around the city. They are especially popular among tourists and for short-distance travel. Another transport service is Grab Taxi, offering a convenient and efficient mode of transportation within Udon Thani City. These services are available through mobile applications, making it easy for residents and visitors to book a ride with their smartphones.

For inter-city transport, private sector services offer convenience but pose challenges regarding safety regulation and price control. To address these issues, the city could implement its own public transportation service, ensuring strict safety standards, affordable fixed fares, and comprehensive coverage, especially in underserved areas. The quality of life assessment also allowed reflection on the proportion of population that has convenience access to public transport and proportion of population satisfied with the quality of public transport in the city, which can be found in Appendix E: Data from the Quality of Life Index.

Public Transportation in Udon Thani City Municipality
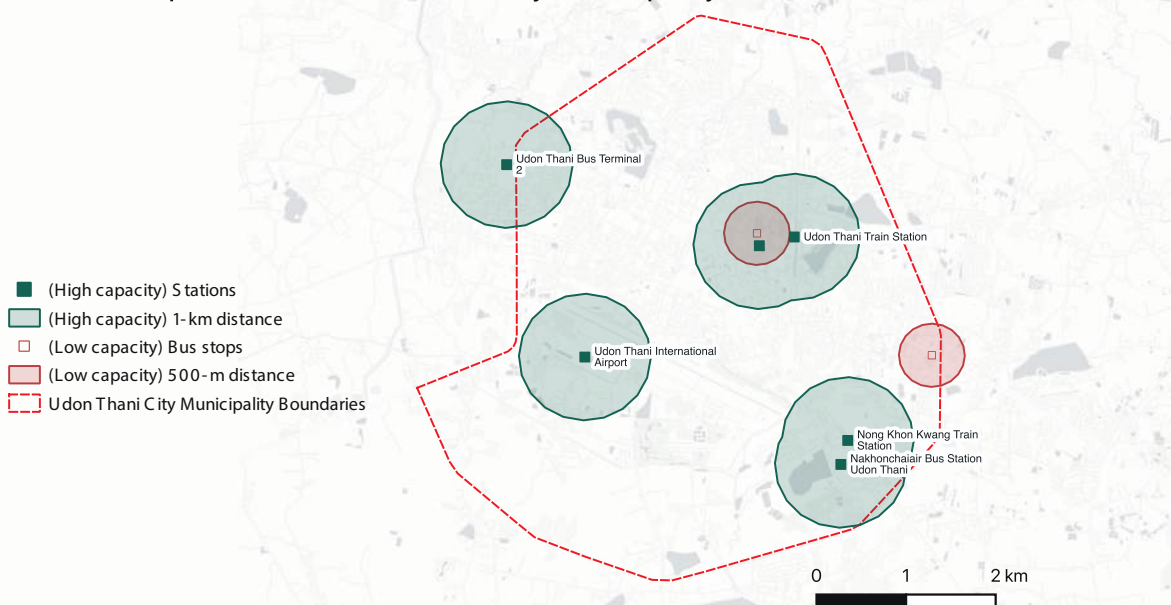
Figure 13 Map of the location of public transport in Udon Thani City Municipality as of 2024

Source: Udon Thani City Municipality

INDICATOR(S) | UMF 1.2.3 / SDG 4.1.2

Education completion rate

There are 47 educational facilities in Udon Thani of all levels of education i.e., kindergarten, primary, and secondary schools, including 9 vocational schools and 3 universities; of which 12 are under Udon Thani City Municipality's management. The others are public schools under Ministry of Education's supervision and private schools.

Udon Thani City Municipality provides pre-school, primary, and secondary education to its residents through 12 municipal schools. Education completion rates of all levels of education, Primary 6, Secondary 3, and Secondary 6, are above 90% and higher than the national averages, reflecting the effectiveness of the local education system (Figure 14). The high completion rates can be attributed to various factors, including the quality of teaching, school infrastructure, and effective educational policies implemented by the municipality. While data on percentage of population satisfied with the quality of public schools and educational facilities in the city, leveraged through the application of the quality of life assessment, can be found in Appendix E: Data from the Quality of Life Index.

Proportion of education completion rate by education level
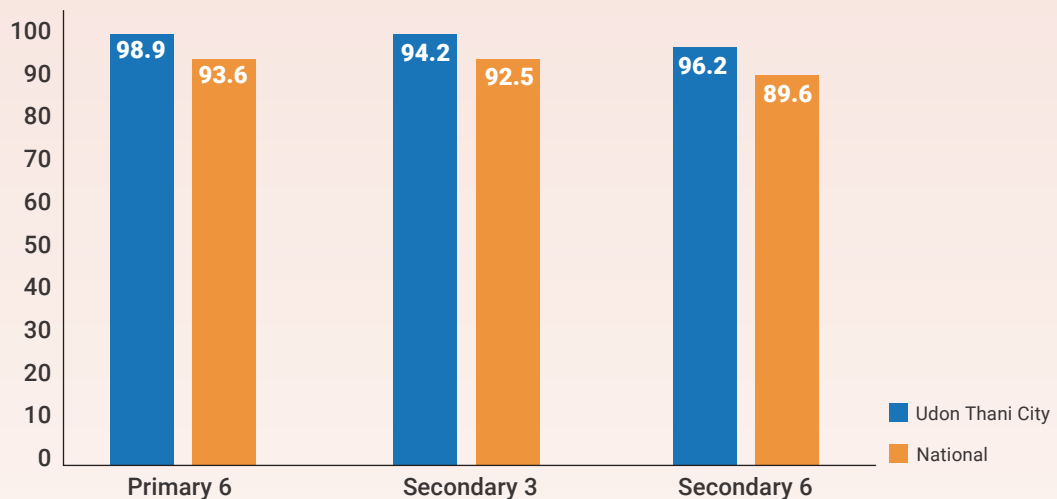
Figure 14 Proportion of education completion rate by education level
of Udon Thani City Municipality (a) compared with national data (b) in 2022

Examining the distribution of educational facilities (Figure 15), it is evident that most schools are concentrated in the city center. This leaves some parts of the city without a school within an 800-meter radius, meaning students from these areas must commute by vehicle to school every day. This situation can be burdensome for their guardians in terms of both time and expense, and it also increases the risk of traffic accidents.

Educational Facilities in Udon Thani City Municipality
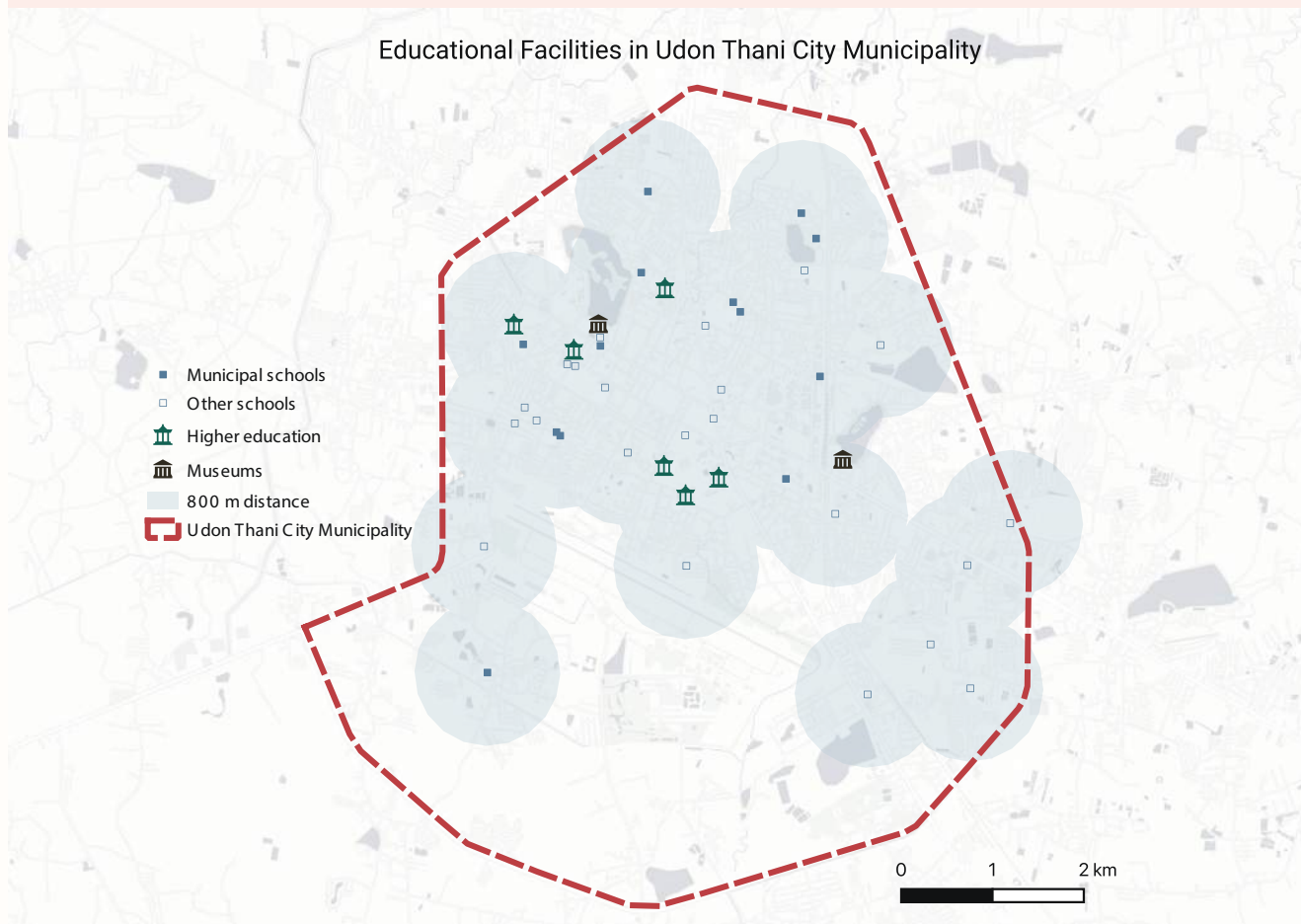
Figure 15 Map of education facilities in Udon Thani City Municipality as of 2024 (a)

Source: Udon Thani City Municipality (2nd Semester, Academic Year 2022)[a] and NESDC[b]

INDICATOR(S) | UMF 1.2.4 / SDG 1.4.2

Secure tenure rights to land

Udon Thani City Municipality collects the data on land and property ownership every year, providing a comprehensive overview of land distribution within the city.

Land ownership by type of rights

There are 46,121 land plots owned by citizens, which accounts for 87.70% of the total land ownership in the city (Table 5). The others are different rights granted by the government to an individual for the utilization of land. This high percentage of privately owned land reflects the stability of individual land ownership within Udon Thani City.

Table 5 Land ownership by type of rights

Type of rights	Number of plots
Title Deed	46,121
State-owned, used by individual	692
Certificate of Utilization of Land (NS 3 K)	3,799
Certificate of Utilization of Land (NS)	1,937
Certificate of Utilization of Land (NSL)	24
Others	19
Total	**52,592**

Property ownership

Property ownership is an important aspect of the local economy and demographics in Udon Thani City Municipality. 33,069 people, including a juristic person, own at least one property, accounting for 37.36% of the municipality's adult population with an age of 20 years and older. 59.14% of property owners are men, compared to 39.42% who are women (Table 6). Thanks to the quality of life assessment, data on proportion of population reporting it is easy to find good housing in my city at a reasonable price was also leveraged and it can be found in Appendix E: Data from the Quality of Life Index.

Table 5 Land ownership by type of rights

Ownership	Number of people
Juristic person	476
Male	19,556
Female	13,037
Total	33,069
Percent to total registered adult population (2022) (aged 20 and above)	37.36%

Source: Udon Thani City Municipality (2023)

Prevalence of overweight among children under 5 years of age

Prevalence of overweight among children under 5 years of age is collected by Mueang District Public Health Office. Thus, the district statistics is used as a proxy for Udon Thani City Municipality.

Child overweight refers to a child who is too heavy for her or his height. This type of malnutrition results from expending too few calories for the amount of food consumed and increases the risk of noncommunicable diseases (NCD) later in life. It is one of the World Health Assembly's nutrition target indicators.

Figure 16 compares the prevalence of overweight children under 5 years old in Mueng District with the provincial average in 2022. Mueng District shows a slightly higher prevalence than the provincial average but remains below the national target of 10%.

Despite Mueng District performing relatively well compared to other districts in the province, the increasing number of overweight children is a serious concern. National data reveals that the number of overweight children has doubled over the past 20 years. This increase in prevalence is linked to food security issues and access to food, as well as how people use food. The quality of food, often characterized by high ultra-processed food with high salt and sugar content and no good nutritional value, tends to be available for poorer populations, exacerbating the problem. There is lots of evidence that poverty tends to increase the availability and consumption of such unhealthy food options. Additional insights on the subject, specifically on percentage of population living below the national poverty line, household income, level of concern on debt, level of financial liquidity and proportion of saving to monthly expense, can be found in Appendix E: Data from the Quality of Life Index.

The city has implemented programs to address this issue in schools and among adults. However, more proactive interventions are needed to reduce the number of overweight children and improve food security, access to nutritious food, and overall food quality.

Prevalence of overweight among children under 5 years of age %

National target is below 10%

	Mueng District	Province
	9.4	9.29
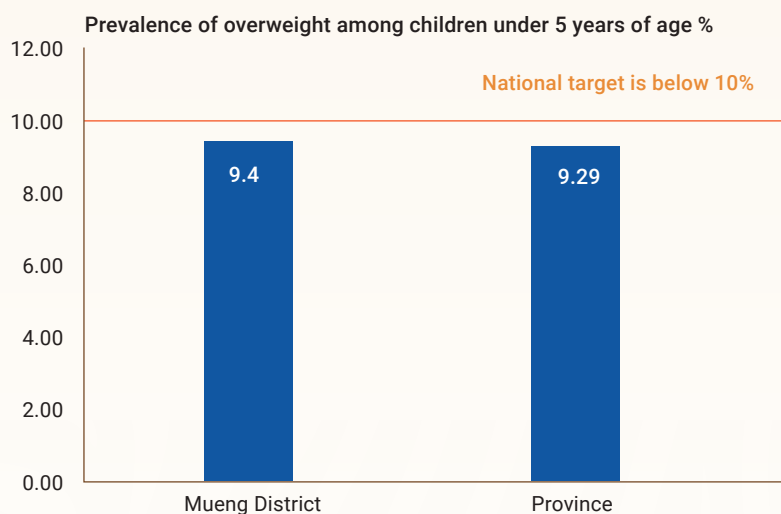
Figure 16 Prevalence of overweight among children under 5 years of age of Mueng District and Udon Thani Province as of September 2022

Source: Ministry of Public Health (2022)

INDICATOR(S) | UMF 1.2.5a / SDG 2.2.2a

Prevalence of wasting among children under 5 years of age

2 ZERO HUNGER

Prevalence of wasting among children under 5 years of age is collected by Mueang District Public Health Office. Thus, the district statistics is used as a proxy for Udon Thani City Municipality.

Child wasting refers to a child who is too thin for their height, usually due to recent rapid weight loss or failure to gain weight. A moderately or severely wasted child is at an increased risk of death, although treatment is possible. Child wasting is one of the nutrition target indicators set by the World Health Assembly.

In 2022, Mueng District had a slightly higher proportion of wasted children than the national target and performed better than the overall province (Figure 17). Nationally, the proportion of wasted children increased from 10.5% in 2020 to 11.7% in 2022.

This rising trend suggests that the number of wasted children could become a significant challenge for Udon Thani City in the future. The problem may stem from families facing financial and workload challenges, limiting their ability to focus on their children's nutrition. The city should increase its support for families with children under 5 years old, which could improve family circumstances and lead to healthier children and adults in the future. Supplementary data on proportion of the working population feel that it is easy to find a good job in Udon Thani City can be found in Appendix E: Data from the Quality of Life Index.

Prevalence of wasting among children under 5 years of age %
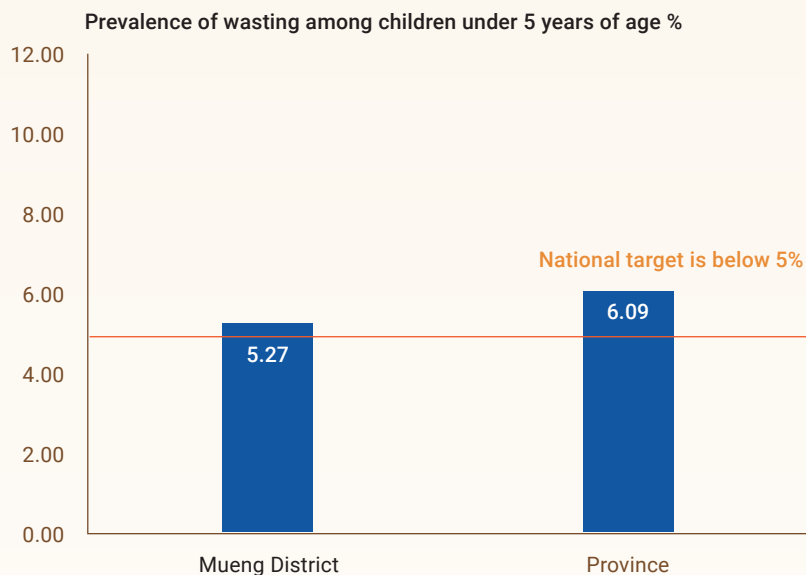
Figure 17 Prevalence of wasting among children under 5 years of age of Mueng District and Udon Thani Province as of September 2022

Source: Ministry of Public Health (2022)

Secure multilingual education

12 municipal schools under the supervision of Udon Thani City Municipality's management provide multilingual education to students. 100% of municipal schools teach English, while 83% teach Chinese in addition to English (Figure 18). These schools teach English, ensuring every student gains proficiency in this essential global language. Additionally, 83% of the municipal schools also offer Chinese language classes, reflecting the importance of Chinese in regional and global contexts. By integrating multilingual education into the curriculum, Udon Thani City Municipality not only enhances students' communication skills, but also broadens their cultural horizons and competitiveness among their young residents. Compared with the capital city, Bangkok, Udon Thani City shows better performance in terms of providing access to multilingual education.

Proportion of multilingual schools
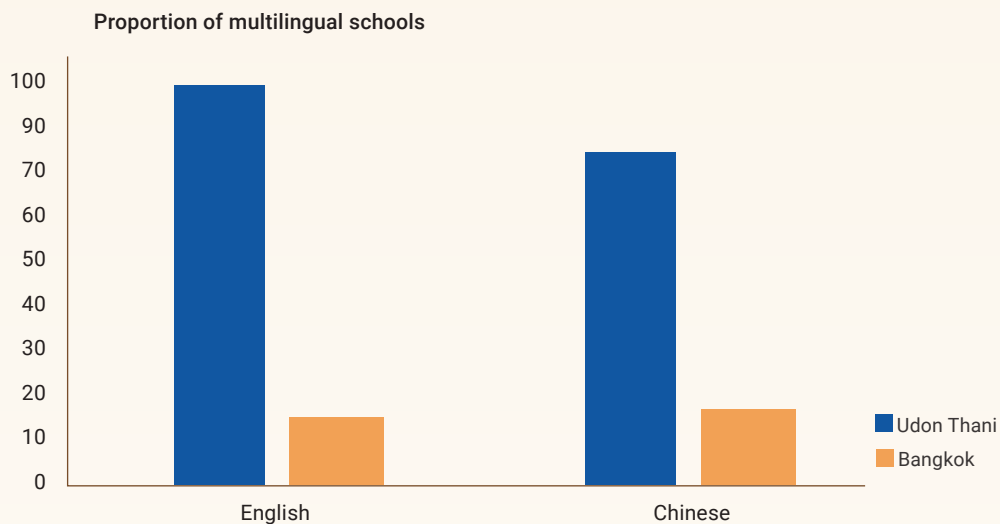
Figure 18 Proportion of multilingual schools under Udon Thani City (a, as of 2024) Municipality compared with Bangkok Metropolitan Administration (BMA) (b, as of 2023)

Life expectancy at birth

Life expectancy at birth of Udon Thani City Municipality shows a range between 71.56 – 81.89 years from 2020 to 2022 (Table 8). In 2022, a male has life expectancy of 71.56 years, while a female has life expectancy of 81.07 years. In terms of trend, male's life expectancy slightly decreases between 2020 – 2022 while female's fluctuates between 80.12 – 81.07 years. This difference highlights a common trend observed in many regions across the country, where females typically outlive males (Table 7).

Compared to Udon Thani Province, Udon Thani City Municipality has slightly higher life expectancy in both male and female. This fluctuation could be influenced by various factors, including lifestyle choices, and socio-economic conditions.

When compared to the broader Udon Thani Province and the national data, the city exhibits slightly higher life expectancy rates for both genders (Table 7). This difference suggests that residents of Udon Thani City Municipality may benefit from better healthcare services, living conditions that contribute to longevity. From the quality of life assessment, data on percentage of population satisfied with public healthcare facilities provided by the city can be found in Appendix E: Data from the Quality of Life Index.

Table 7 Life expectancy at birth in Udon Thani City Municipality (a) from 2020 to 2022 compared with Udon Thani Province (a) and national data (b)

Year	Male Udon Thani City	Male Province	Male National	Female Udon Thani City	Female Province	Female National
2020	73.64	73.6	73.2	80.12	80.7	80.3
2021	72.78	71.6	73.5	81.89	79.6	80.5
2022	71.56	71.2	73.6	81.07	79.83	80.7

Source: Udon Thani Provincial Public Health Office (public only)[a]
and National Statistical Office of Thailand[b]

Mortality rate (Diseases)

District level data is used as a proxy for Udon Thani City Municipality. This approach provides a broad perspective on the health status of the residents within the municipality. This indicator is measured as mortality rate attributed to cardiovascular disease, cancer, diabetes, or chronic respiratory disease.

Mueang Udon Thani District has less cancer per 100, 000 population between 117.36 – 125.82 between 2020 – 2022 which is slightly less than the national average of 127.9 – 129.5. However, there is no change in the trend (Figure 19).

Between 2021 and 2022, Mueang Udon Thani District had 11.73 – 15.76 gallbladder cancer cases per 100,000 population (Figure 20). The data also shows that the mortality caused by gallbladder cancer has been increasing from 2020 to 2022. There is no national average data because Gallbladder cancer is specific to the context of different daily food consumption in the Northeastern region. This specificity necessitates tailored public health strategies focusing on education about dietary risks and early detection programs within the district to address this localized health concern effectively. The city has preventive approaches to this specific disease, as mentioned in Chapter 4 (SDG3: Good Health and Well-Being) (Conduct screenings for gallbladder cancer).

For diabetes, Mueang Udon Thani District has 24.45 – 27.27 cases of diabetes per 100,000 population which is similar to the national average of 24.5 – 25.9 cases. However, the higher number of diabetes cases in 2022 at both the district and national levels indicates a growing health challenge. This increase underscores the urgent need for proactive and comprehensive efforts to manage and prevent diabetes. An additional data collection for quality of life assessment shows proportion of the population having non-communicable disease (NCD), which can be found in Appendix E: Data from the Quality of Life Index.

For stroke, Mueang Udon Thani District has 49.93 – 55.3 cases of stroke per 100,000 population which is lower than the national average of 52.8 – 58 cases. Despite the lower incidence, both the district and the national averages show an increasing trend in stroke cases. This rise highlights a growing health challenge that requires urgent attention.

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For STEMI (ST-Segment Elevation Myocardial Infarction), it remains around 14.51 – 18.22 cases per 100,000 population showing declining trend from 2020-2022, which is lower than the national average of 24.1-25.2 cases. Reducing the risk of STEMI involves lowering risk factors, such as smoking, drinking, controlling nutrition, cutting down on the intake of carbohydrates, fats, sugars, and sodium salt, reducing stress, and regularly increasing physical exercise. It could be assumed that proactive health measures in the city, such as promoting exercise activities (more detail in Chapter 4 (SDG3: Good Health and Well-Being), might contribute to the improvement.

Mortality rate from diseases (per 100,000 capital)

Figure 19 Mortality rate due to diseases (Cancers, diabetes, stroke, stemi)
of Mueng Udon Thani District (a) from 2020-2022 compared with national data (b)

Source: Udon Thani Provincial Public Health Office[a] and Ministry of Public Health[b]
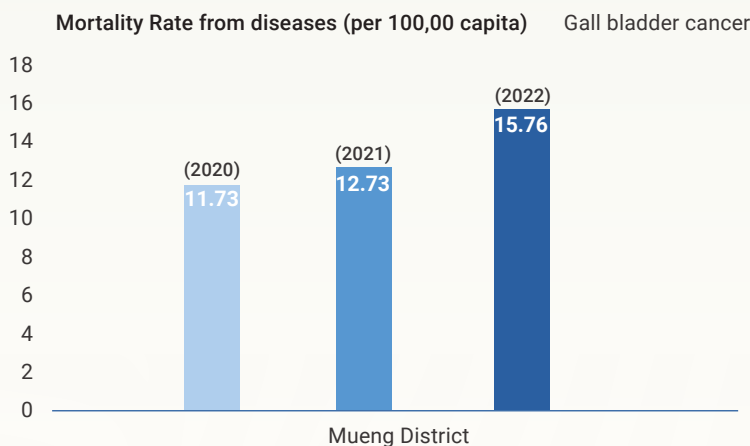
Figure 20 Mortality rate due to gallbladder cancer of Mueng Udon Thani District 2020-2022

Source: Udon Thani Provincial Public Health Office[a]

The health statistics of Mueang Udon Thani District illustrate a mixed scenario. Some rates, such as cancer and stroke, are slightly better than the national averages, while others, like diabetes, are aligned with national trends. However, the increasing trends in diabetes and stroke incidence, as well as the specific concern of gallbladder cancer in the Northeastern region, need focused health interventions.

Most health facilities in Udon Thani City are concentrated in the city center (Figure 21). Residents in the core urban areas have relatively easy access to healthcare services. However, residents living in outlying areas may find themselves further from these health services. Many of these communities are beyond an 800-meter radius of the nearest health facility. This distance can burden residents, particularly the elderly and those with limited mobility, increasing their travel time and expenses.

Health Facilities in Udon Thani City Municipality
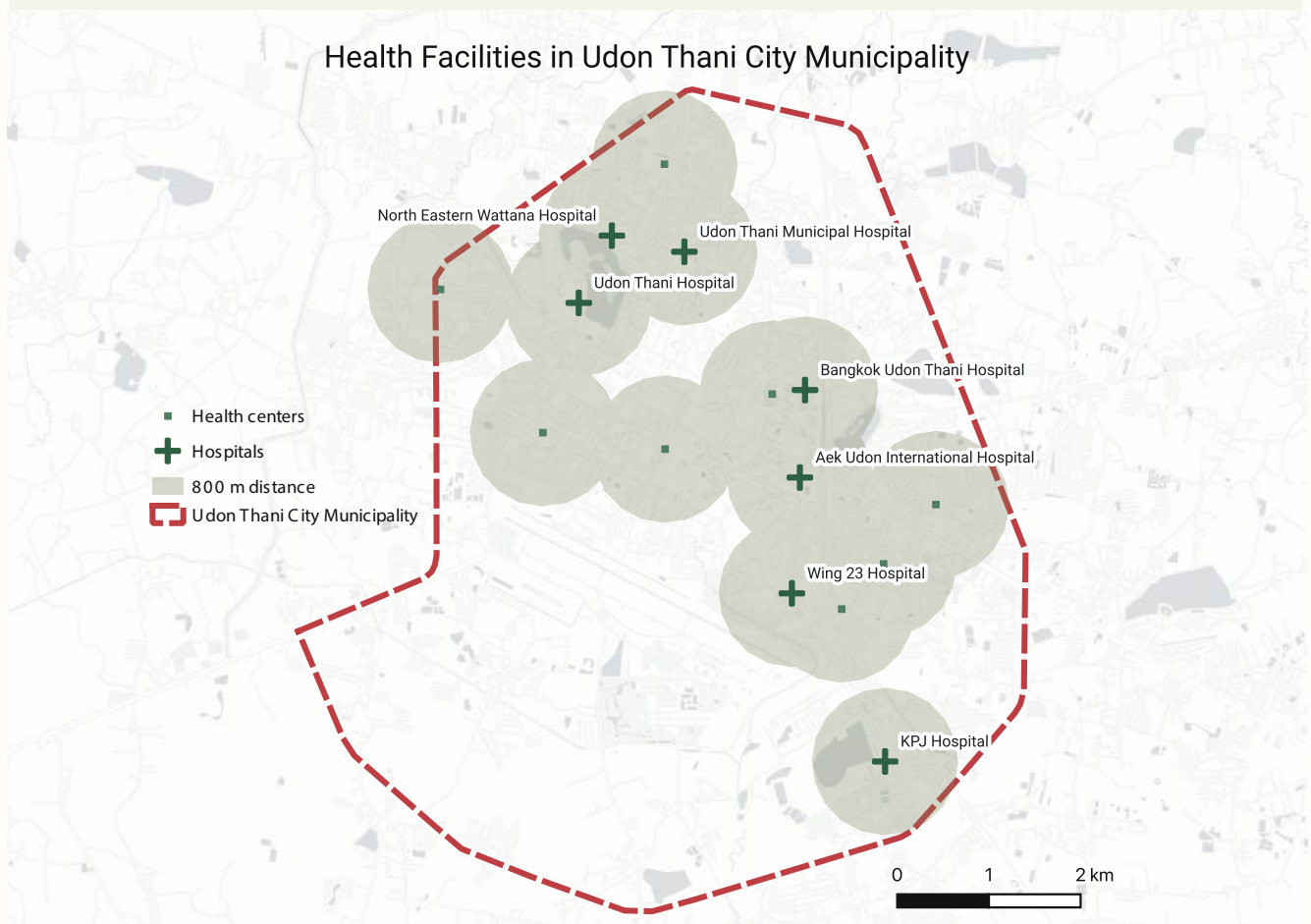
Figure 21 Map of health facilities in Udon Thani City Municipality (c)

Source: : Udon Thani Provincial Public Health Office[a], Ministry of Public Health[b], and Udon Thani City Municipality[c]

INDICATOR(S) | UMF 1.3.3 / SDG 3.4.1

Mortality Rate (Suicide)

Suicide rate data is collected at the provincial level. Thus, provincial statistics are used as a proxy for understanding the situation in Udon Thani City Municipality.

Suicide rate of Udon Thani Province range between 5.79 – 8.61 per 100,000 population between 2016 to 2020 (Figure 22). The trend is slightly increasing, except for a slight drop in 2019. Udon Thani Province has similar suicide rates when compared to the national average (ranging between 6.32 and 8.19). This parallel suggests that the province's challenges with suicide are reflective of broader national trends, indicating systemic issues that affect mental health across Thailand. Addressing this issue requires a comprehensive approach, including improving mental health services, increasing public awareness about mental health, and providing support systems for individuals at risk. Through the Quality of Life Initiative, survey data on average overall mental health rating, household relationships, and overall life satisfaction can be found in Appendix E: Data from the Quality of Life Index.

Mortality rate due to suicide (per 100,000 capita)
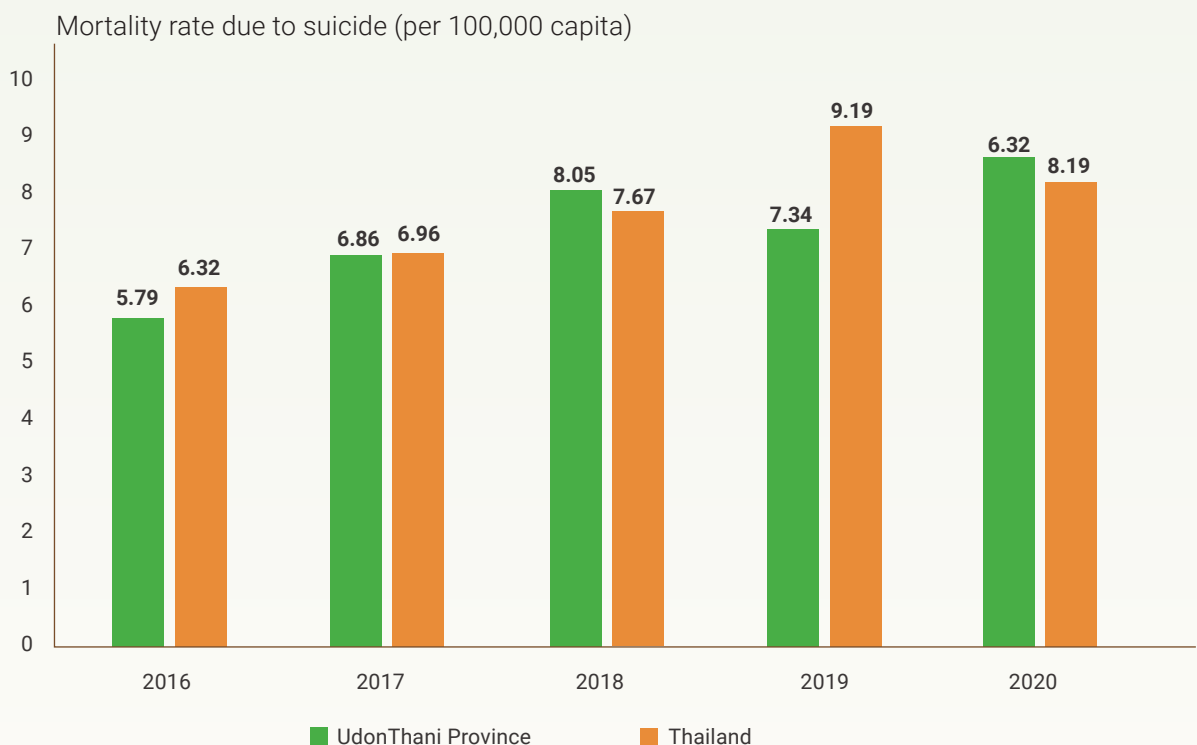
Figure 22 Mortality rate due to suicide of Udon Thani Province from 2016 - 2020 compared with the national data

Source: Provincial and Provincial-Cluster Development Index (NESDC)

INDICATOR(S) | UMF 1.3.4 / SDG 11.5.1

Population affected by hazardous events

Data on the population affected by hazardous events is collected at the provincial level. Thus, the provincial statistics is used as a proxy for Udon Thani City Municipality, provides insights into the region's vulnerability to natural disasters.

Between 2016 – 2020, 1,160 – 4,440 people per 100,000 population of Udon Thani Province' population has been affected by floods. Population was most affected by floods in 2017, with a share of 4,440 people per 100,000 population (Table 8). On the other hand, in 2018, no population was reported to be affected by floods, indicating variability in flood occurrences and the potential effectiveness of flood control measures implemented during that period.

Contrastingly, Udon Thani Province experienced no population impact from droughts between 2016 and 2020 (Table 8). This absence of drought-affected population highlights a distinct aspect of the region's climate resilience, possibly due to adequate water resource management and favorable climatic conditions during these years. A survey data shows proportion of population that are concern about impact of climate change to the city, which can be found in Appendix E: Data from the Quality of Life Index.

Table 8 Percentage of population who are affected by floods and droughts (people per 100,000 capita)

	2016	2017	2018	2019	2020
Floods					
Udon Thani Province	1,160	4,440	0	2,220	2,550
Thailand	0	780	180	1,510	2,010
Droughts					
Udon Thani Province	0	0	0	0	0
Thailand	0	0	0	0	0

Source: Provincial and Provincial-Cluster Development Index
(Office of the National Economic and Social Development Council)

From the latest flood event, a statistics of Sentinel-1 satellite images[6] over Udon Thani City from 3 – 22 September 2024 found that an area of about 15.81 km2 was flooded, of which 10.17 km2 was agriculture land. According to Worldpop population data, it is expected to affect 1,920 people.

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6. https://unosat-rm.cern.ch/floodai/apps/tha/

INDICATOR(S) | UMF 1.4.1 / SDG 11.1.1

Slum population

Udon Thani Province has 295 households residing in slum communities, accounting for 16% of the total households within the Upper-Northeastern Provincial Cluster (Table 9).

In terms of total population in poverty, 5,128 people or 46% of the total population in poverty in the Upper-Northeastern Provincial Cluster dwell in Udon Thani Province which is the highest number among the seven provinces. These communities are originally from rural areas living in public-owned land with temporary housing structure and doing informal work with no social security. The current settlers are the second or the third generation who moved to the city for work and likely to no longer have land in their original rural area[7]. The national government have been implementing a project called **"Ban Mankong"** to provide better housing conditions for them to stay and pay affordable monthly fee to the government. The number of slum settlers has continuously decreased.

The trend suggests that, although Udon Thani has a smaller slum population, it has a slightly higher overall poverty rate. This underscores the need for comprehensive poverty alleviation programs that address not only housing but also broader economic and social support systems. This can be explained by data on percentage of population living below the national poverty line, household income and proportion of low-income family that feel satisfied with their house condition, which can be found in Appendix E: Data from the Quality of Life Index.

Table 9 Population under poverty in the Upper Northeastern Region Provincial Cluster in 2022 (a)

Province	Households in slum communities	Households in urban poor communities	Households in suburban poor communities	Total households under poverty	Total population under poverty
Udon Thani	295	365	622	1,282	5,128
Loei	16	0	0	16	64
Nong Khai	16	0	0	16	64
Nong Bua Lam Phu	17	0	0	17	68
Khon Kaen	1,265	0	0	1,265	5,060
Roi Et	80	0	0	80	320
Mahasarakham	130	0	0	130	507
Total	1,819	365	622	2,806	11,211

Source: Report on Social Situation of Provincial Cluster (Ministry of Social Development and Human Security)

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7. https://web.codi.or.th/wp-content/uploads/2019/05/18_บ้านมั่นคงที่อุดร.pdf

Gini coefficient

The Gini coefficient is an index measuring income distribution (or consumption expenditure) among the population within an economic boundary[8]. A Gini coefficient of zero expresses perfect equality while one is the opposite. The Gini coefficient of Udon Thani Province has ranged between 0.4 and 0.5 over the past 10 years. Since 2017, it has shown a tendency to increase, remaining slightly higher than the national and regional averages (Figure 23). Udon Thani Province has made progress in reducing inequality among its citizens. In 2021, the province performed well compared to many other provinces, ranking 7th (out of 20 provinces) in the region and 25th (out of 78 provinces) in the country for the portion of the population living in poverty. Additionally, data on percentage of population living below the national poverty line can be found in Appendix E: Data from the Quality of Life Index.

National statistics comparing the Gini coefficient between populations living within municipalities (city municipality, town municipality, subdistrict municipality) and TAO (Tambon Administrative Organizations) found that there is less inequality in municipalities than in TAOs. However, a rapid declining trend in the Gini coefficient has occurred in municipalities, from 0.406 in 1998 to 0.333 in 202[9]. This reflects improvement in economic and social development across the country. However, reduction of economic and social inequality is still need continuous improvement. This issue might not be solely tackled by Udon Thani Province or Udon Thani City Municipality alone; the role of national government is key in addressing this issues and cooperation can enhance local actions.
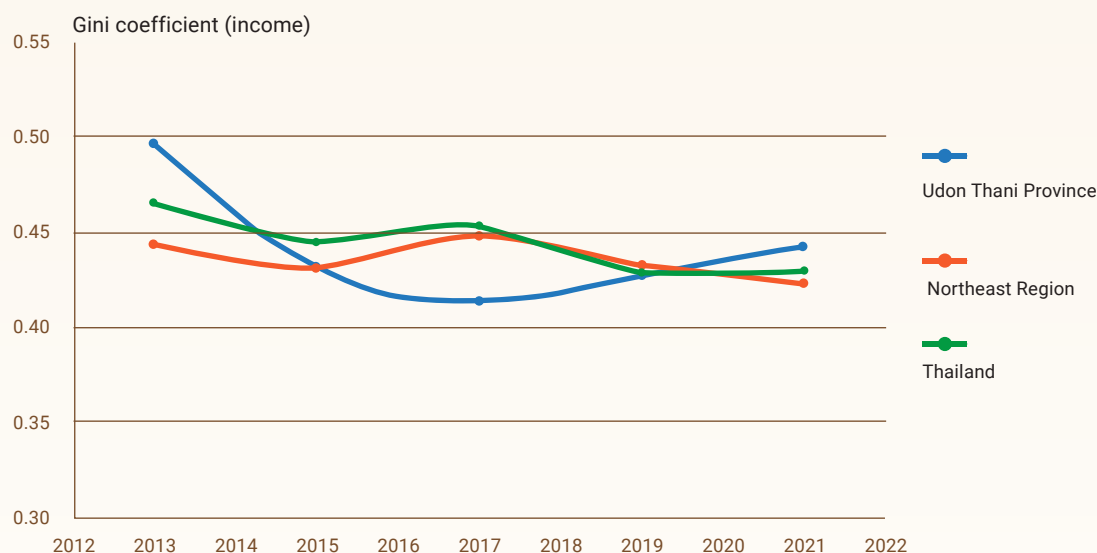
Figure 23 Gini coefficient of Udon Thani Province, Northeast Region and Thailand from 2012 to 2021

Source: opsmoac (https://www.opsmoac.go.th/udonthani-action_plan-files-451291791811)

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8. http://data.worldbank.org/indicator/SI.POV.GINI?page=5
9. https://data.go.th/en/dataset/os_08_00022

Implication for policy practices

The social progress of Udon Thani City Municipality reveals significant advancements and areas requiring further policy attention. This section examines key indicators such as healthcare infrastructure, neighborhood safety, adolescent birth rates, traffic fatalities, public transport, education completion rates, land and property ownership. The findings underscore the need for targeted policies to enhance healthcare services, improve safety and transport infrastructure, support youth and educational programs, and ensure secure property rights. Addressing these areas through comprehensive policy measures will further improve the well-being and quality of life for Udon Thani City Municipality's residents.

Healthcare Infrastructure

The consistent yet slightly below average rates of births in health facilities suggest a need for further investment in healthcare infrastructure and services to ensure that more births occur in safe, well-equipped facilities. Policies should aim to increase accessibility, affordability of maternal health services, and health facilities coverage.

Adolescent Birth Rate

The lower adolescent birth rate compared to national averages indicates successful youth health programs. However, continued efforts are needed to sustain and further reduce these rates. Policies should support comprehensive sexual education, access to contraceptives, and reproductive health services for adolescents.

Child Nutrition

The increasing prevalence of child overweight and wasting in Udon Thani City highlights the need for comprehensive and proactive policy interventions. Child overweight, resulting from the consumption of excess calories and characterized by high intake of ultraprocessed foods with high salt and sugar content, poses significant long-term health risks, including NCD. Similarly, the issue of child wasting presents another critical challenge. To address these issues, policies should focus on improving food security, access to nutritious food, and overall food quality. The city should enhance support for families with children under 5 years old through targeted nutritional programs and resources.

Neighborhood Safety

The high number of CCTV footage requests, particularly for traffic accidents, indicates a demand for improved traffic management and enhanced road safety measures. Policies should focus on increasing the coverage and efficiency of CCTV systems, improving road conditions, and implementing stricter traffic regulations.

Traffic Fatalities

The declining trend in traffic fatalities, though positive, highlights the need for targeted interventions to further reduce fatalities, especially among motorcycle riders and males aged 36-60. Policies should focus on promoting road safety education, enforcing helmet use, and enhancing motorcycle safety standards.

Public Transport

The extensive public transport system requires policies that support its expansion and integration. Ensuring public transport's affordability, reliability, and safety can increase its usage. Investment in infrastructure, such as bus and train stations, and promoting eco-friendly transport options are also crucial. Additionally, developing state-owned transportation services can help control prices, improve safety, and ensure coverage, particularly for residents facing economic challenges.

Education Completion Rates

The high education completion rates indicate strong educational support systems. Policies should aim to maintain these rates by addressing any potential barriers to education, such as economic constraints, and by enhancing the quality of education through teacher training and curriculum development.

Land and Property Ownership

The high percentage of land and property ownership by citizens suggests a stable property rights environment. However, policies should continue to support secure land tenure and address any issues related to land disputes or access to land for marginalized groups.

Economic inequality

To address economic inequality, policies should focus on strengthening local economies, expanding social safety nets, providing equitable education and training, and collaborating with the central government to develop policies targeting the equitable distribution of revenue, decision autonomy, and resources throughout the country. This could reduce income disparities, promote inclusive economic growth, and ensure a fairer distribution of wealth.

3.3 Economy Domain

Highlights

Udon Thani City Municipality has made notable strides in its economic development. The city supports SMEs and local businesses through skill development, improved product quality, and diversified marketing, aiming to reduce the wealth gap and boost household incomes. Its strategic location and vibrant multicultural environment enhance opportunities for investment and tourism, with policies promoting events and cultural tourism. Efforts to build economic resilience include adaptive capacity for SMEs against national tax policies and global crises. Overall, steady growth in GPP per capita and household incomes reflects the city's positive economic trajectory.

Review of targets

5 GENDER EQUALITY

INDICATOR(S) | UMF 2.1.2 / SDG 5.4.1

Time spent on unpaid domestic and care work

Data of time spent on unpaid domestic and care work is collected by a community survey distributed through 105 community leaders. The survey receives 52 responses across 37 communities. This survey aimed to capture the distribution of unpaid labor among different demographics, providing insights into the burden of domestic and care responsibilities within households.

Domestic work

32.89 hours or 20% of time per week is used for unpaid domestic work. By sex, females greatly spend more time than males. By age, those older than 65 are the group that spends the most time on unpaid domestic work, around 135 hours or 80% of the total time (Table 12). This reflects traditional gender roles where women are often expected to manage household work. Additionally, age plays a crucial role in the distribution of domestic work. It highlights the reliance on older adults for maintaining household duties, which could be due to retirement, where they have more available time.

Care work

The average time spent on unpaid care work is 23.38 hours per week, constituting 14% of the total time (Table 10). By sex, females spent slightly more time than males. By age, people 25 – 44 spend the most time on unpaid domestic work, around 37.33 hours, or 22% of the total time (Table 11). This age group is likely to be actively involved in childcare and caring for elderly relatives, balancing these responsibilities with their professional and personal lives. There is a need for supportive measures, such as accessible childcare services and eldercare support, to alleviate the burden on working adults.

Table 10 Proportion of time spent on unpaid domestic and care work by sex (% to total week time)

Work	Mean (M)	%	Mean (F)	%	Mean (total)	%
Domestic work	21.00	13%	34.74	21%	32.89	20%
Care work	20.57	12%	23.82	14%	23.38	14%

(N = 52: M = 7, F = 51)

Table 11 Proportion of time spent on unpaid domestic and care work by age (% to total week time)

Work	Mean 15 − 24	%	Mean 25 − 44	%	Mean 45 − 54	%	Mean 55 − 64	%	Mean > 65	%
Domestic work	22.00	13%	24.50	15%	14.25	8%	16.35	10%	135.07	80%
Care work	22.00	13%	37.33	22%	27.83	17%	18.65	11%	21.57	13%

(N = 52: <15 = 0, 15 − 24 = 1, 25 − 44 = 6, 45 − 54 = 12, 55 − 64 = 26, > 65 = 7)

Compared to data from East and Southeast Asia and global figures from UN Women, the gender disparity is evident, with women consistently spending more time on unpaid domestic and care work than men (Figure 24). Expanding access to affordable childcare and eldercare services can reduce the time burden on women, allowing them more opportunities to engage in paid employment and other activities.

Time spend on unpaid domestic and care work by gender (% to 24 hour)
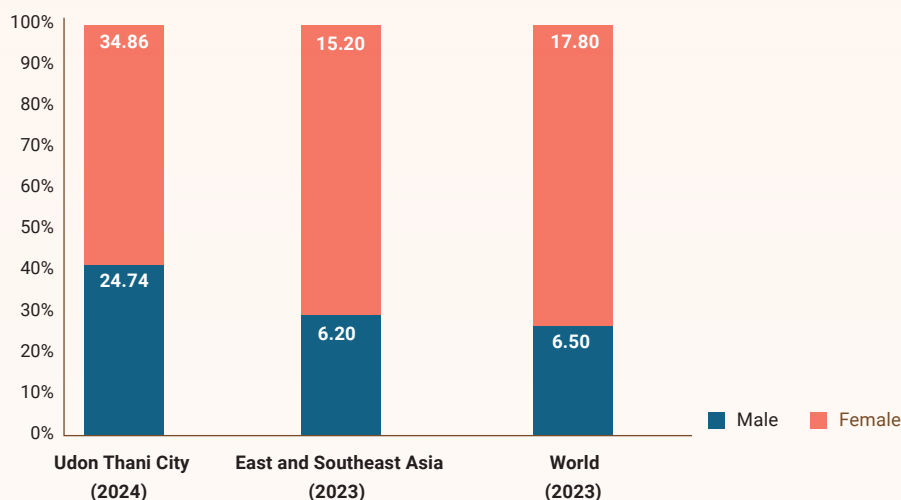
Figure 24 Proportion of time spend on unpaid domestic and care work by gender; Udon Thani City (a), East and Southeast Asia (b) and world (b)

Source: Community survey in Udon Thani City Municipality in 2024 (105 communities)[a] and UN Women[b]

Use of public transport

Udon Thani City Municipality has 2 intercity bus stations and 2 train stations. Both have multiple routes connecting the city with other cities and Bangkok. As of Fiscal Year 2021, there are 51,884 and 698 passengers using Udon Thani and Nong Khon Kwang stations accordingly (National Statistical Office). These passengers account for 72% of the total train passengers in Udon Thani Province. By air, there are an average of 33 flights daily to Bangkok, Phuket, Chiang Mai, and Hat Yai.

Within the city, there are four routes of minibus services covering the main roads. They are private sector receiving permit from the city. People also use a three-wheeler taxis (Figure 25) made by a local company in Udon Thani. The fares for these taxis are based on negotiation. Additionally, people can call regular taxis using Grab application. As mentioned earlier in the Social Domain, Udon Thani City Municipality should develop their own state-owned transportation services so that the city can control the prices, ensure safety, and expand coverage to better suit the needs of their residents, especially those facing economic challenges. This initiative would provide more affordable, reliable, and safe transportation options for all residents, contributing to a more inclusive and accessible urban environment. These recommendations can be supported by a survey data on the proportion of population that has convenience access to public transport and proportion of population satisfied with the quality of public transport in the city, which can be found in Appendix E: Data from the Quality of Life Index.

Figure 25 Three-wheeler taxi in Udon Thani City Municipality

CPI

Annual growth rate of GPP per capita

Gross Provincial Product (GPP) data is collected at the provincial level. Thus, the provincial statistics is used as a proxy to understand the economic performance of Udon Thani City Municipality.

Between 2015 to 2022, GPP per capita of Udon Thani Province increased significantly from 79,337 to 96,546 Baht, or around 22% increase over seven years (Table 12 and Figure 26). Compared to Northeastern region's Gross Regional Product (GRP) of 72,565 Baht per capita, Udon Thani has higher GPP per capita than the regional average, highlighting the province's relative economic strength within the region. However, Udon Thani's GPP per capita is still lower than the national GDP per capita of 202,152 Baht (Figure 26). This disparity suggests that both Udon Thani Province and the broader Northeastern region need to focus on creating more decent jobs to provide additional income sources for their populations. The majority of people in this region are farmers who face challenges such as low productivity and climate risks. This can be confirmed by survey data on the proportion of the population that feel that find it is easy to get a good job in Udon Thani City, which can be found in Appendix E: Data from the Quality of Life Index.

Additionally, many residents from this region migrate to industrial areas such as Bangkok, its surrounding areas, and the eastern region to earn a living. This migration results in people from Udon Thani and the Northeastern region contributing to economic development in other parts of the country, thereby leaving their home regions with fewer economic activities. This issue significantly impacts the local economy and underscores the need for national government intervention. Investing in agricultural innovation, diversifying the local economy, and developing sectors that can offer stable and higher-paying jobs are crucial steps. Addressing these issues can help retain the local workforce, boost economic activities, and improve the overall standard of living in Udon Thani Province and the Northeastern region.

Table 12 Gross Provincial Product (GPP) per Capita, Udon Thani Province (a)

Year	GPP per Capita (THB)
2015	79,337
2016	82,560
2017	85,963
2018	86,656
2019	88,608
2020	87,078
2021	91,456
2022	96,546

Gross Provincial Product (GPP) per Capita in 2022 (THB)
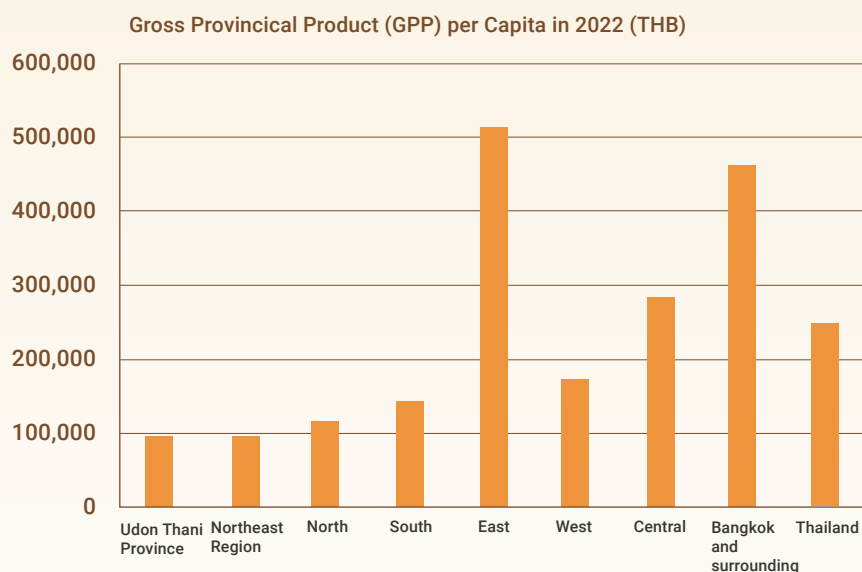
Figure 26 GPP per capita of Udon Thani Province and other regions and country average in 2022 (a)

Source: NESDC(a)

| CPI | INDICATOR(S) | UMF 2.4.2 / CPI |

Mean household income

The mean household income of Udon Thani City Municipality is 278,875 Baht per year, which is higher than the mean of Udon Thani Province (271,278 Bath per year) and the mean of the national level (259,049 Baht per year) (Figure 27). This indicates a relatively higher economic standing for households within the city municipality compared to the broader provincial and national contexts.

Within Udon Thani City Municipality, the mean household income by community ranges from 71,772 to 274,027 Baht per year. Communities located in the city center tend to have higher household incomes (Figure 28). This high gap in income generation requires focused strategies to enhance income-generating opportunities, improve access to education and skills training, and promote equitable economic growth across all communities within the municipality.

However, when looking into income per capita, Udon Thani City Municipality's mean income per capita in 2023 was 121,149 Baht per year. The City's mean income per capita is higher than that of Udon Thani Province (85,658 Baht) but lower than the national average (223,715 Baht). The number reflects the bigger family size of Udon Thani compared to the other provinces in Thailand. The larger family sizes may potentially impact the allocation of resources within households.
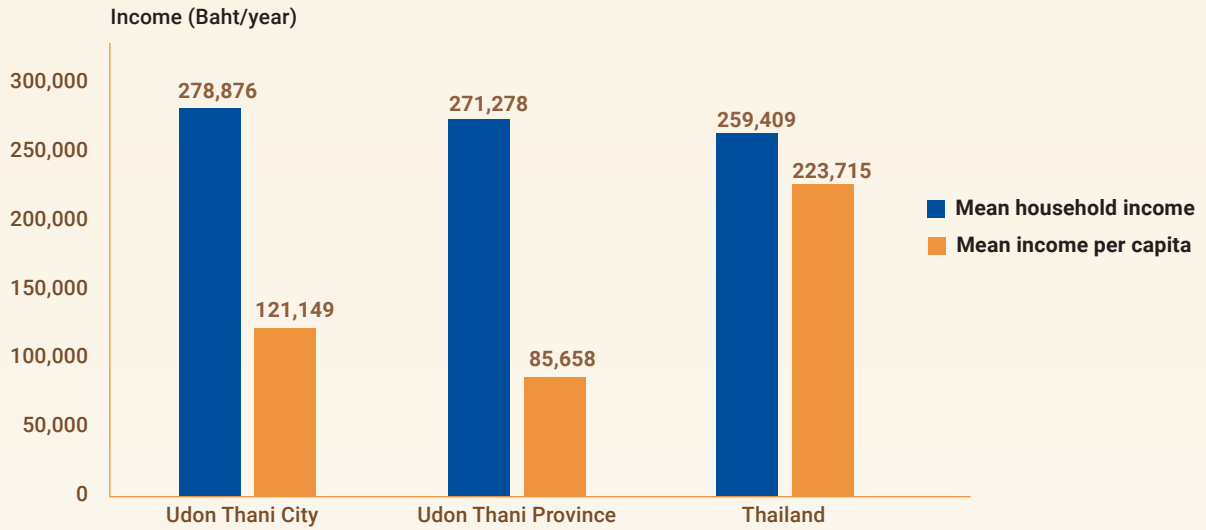
Figure 27 Mean household income and mean income per capita of Udon Thani City in 2023 (a), Udon Thani Province (b,c) and Thailand (d,e)
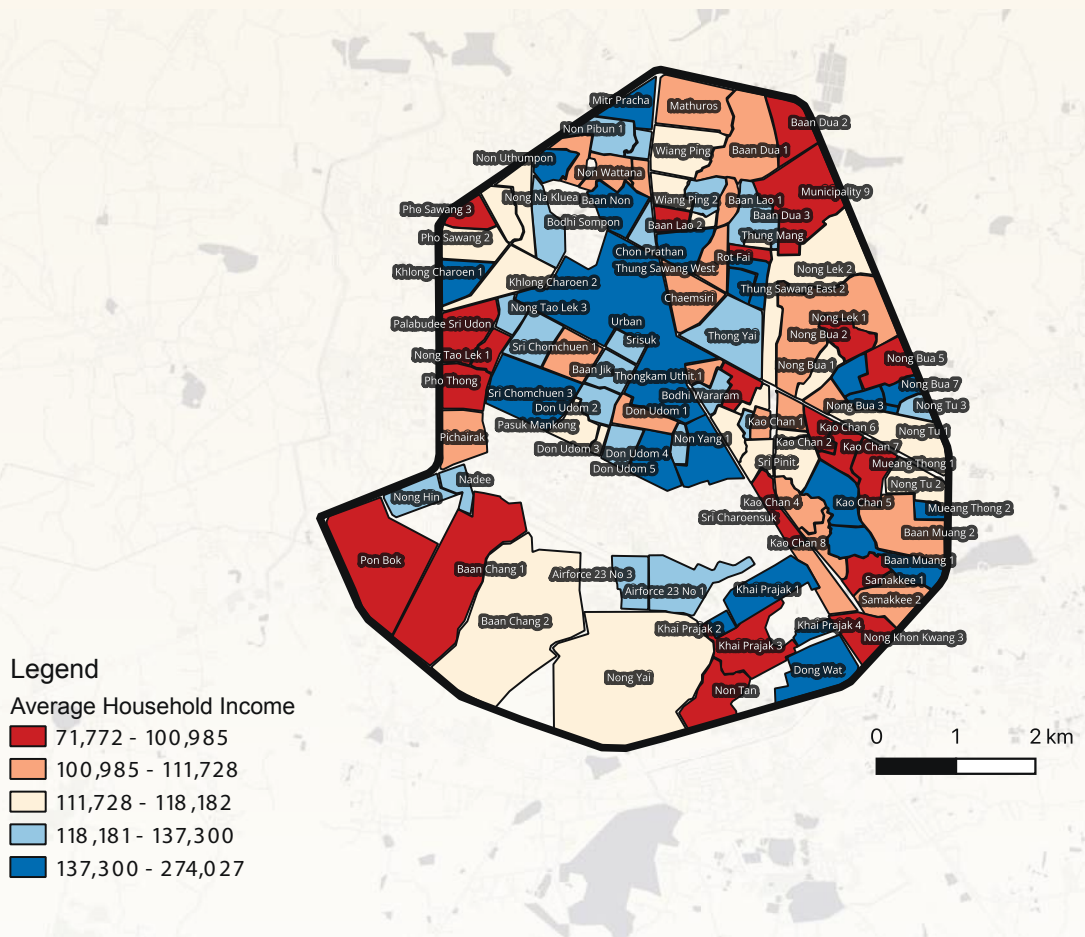
Figure 28 Map of household income of Udon Thani City

Source: Jorportor Survey [a], National Statistical Office of Thailand[b], NESD[c] Economic Report Q2 2023c and National Income of Thailand Report 2021[d]

Implication for policy practices

The economic progress of Udon Thani City Municipality highlights significant advancements and areas for further policy development. This section analyzes key economic indicators such as support for SMEs, investment and tourism, public transport infrastructure, economic resilience, and household income growth. The findings underscore the need for targeted policies to bolster local businesses, attract investment, enhance transport systems, and build economic resilience. Addressing these areas through comprehensive policy measures will strengthen Udon Thani City's economic foundation and improve the quality of life for its residents.

Support for SMEs and Local Businesses

The city's initiatives to promote skill development, enhance local product quality, and diversify marketing options are crucial for economic growth. Policies should continue to support SMEs through financial incentives, training programs, and infrastructure development to help narrow the wealth gap and increase household incomes.

Investment and Tourism

The strategic location of Udon Thani, combined with its vibrant multicultural environment, presents significant opportunities for investment and tourism. Policies should create attractive investment platforms, host national and international events, and promote cultural and eco-tourism to stimulate economic growth.

Public Transport Infrastructure

The robust public transport system, including inter-city buses, trains, and local taxis, needs further enhancement to ensure reliability, affordability, and safety. Investment in transport infrastructure and eco-friendly options can boost mobility and support economic activities. Enhancing public transport will also reduce traffic congestion and air pollution.

Economic Resilience

The city's efforts to build the adaptive capacity of SMEs and local businesses against national tax policies and global crises are essential. Policies should provide platforms and infrastructure to facilitate business operations, including zoning specific business types and supporting digital transformation to enhance economic resilience.

Household Income and GPP Growth

The steady growth of GPP per capita and mean household income highlights the positive economic trajectory of Udon Thani. Policies should aim to sustain this growth by encouraging diversified economic activities, improving education and training, and ensuring equitable distribution of wealth.

3.4 Environment Domain

Highlights

Udon Thani City Municipality has made significant strides in environmental management. The city boasts comprehensive wastewater treatment and solid waste management systems, ensuring 100% collection of municipal solid waste. Advanced technologies and a skilled workforce support these efforts, although there is a growing need for more green spaces. Air quality monitoring shows annual mean concentrations of PM2.5 and PM10, highlighting the importance of continued pollution control. The city has implemented successful hazardous waste collection initiatives and increased environmental awareness through national events. Udon Thani City Municipality also provides extensive open public spaces, including parks, urban forests, and outdoor marketplace, contributing to a high quality of life for residents. The city is committed to maintaining cleanliness and addressing environmental challenges posed by high immigration, visitors, and global issues like climate change and pandemics.

Review of targets

6 CLEAN WATER AND SANITATION

INDICATOR(S) | UMF 3.1.1 / SDG 6.3.1

Wastewater Safely Treated

Udon Thani Water Quality Treatment Facility serves as the main wastewater treatment plant for Udon Thani City Municipality. The system employs a stabilization pond (SP). This method involves using large, 2-3 meter depth ponds where wastewater undergoes natural biological processes to break down organic matter and remove contaminants. Treated wastewater is discharged to Huaymuk Canal, eventually flowing into the Mekong River.

In terms of service coverage, Udon Thani Water Quality Treatment Facility covers 8.30 sq.km. or 16.77% of the city's total area. The coverage area is lower than bigger cities such as Khon Kaen, Ubon Ratchathani, Chiang Mai, and Nakhon Si Thammarat (Figure 29). The limited coverage area indicates that a significant portion of Udon Thani City is not yet connected to the centralized wastewater treatment system. Expanding the facility's coverage would be beneficial in improving overall water quality and public health. To address this, strategic investments in infrastructure expansion, coupled with community education on the importance of wastewater treatment, are necessary. Enhancing the coverage can help accommodate the growing urban population and economic activities, as well as promoting sustainable urban development and environmental conservation.

Service coverage of wastewater treatment plant (% of total city area)

City	Value
Udon Thani City	17.40%
Khon Kaen City	78.26%
Ubon Ratchathani City	50.00%
Chiangmai City	67.13%
Nakhon Si Thammarat City	59.84%
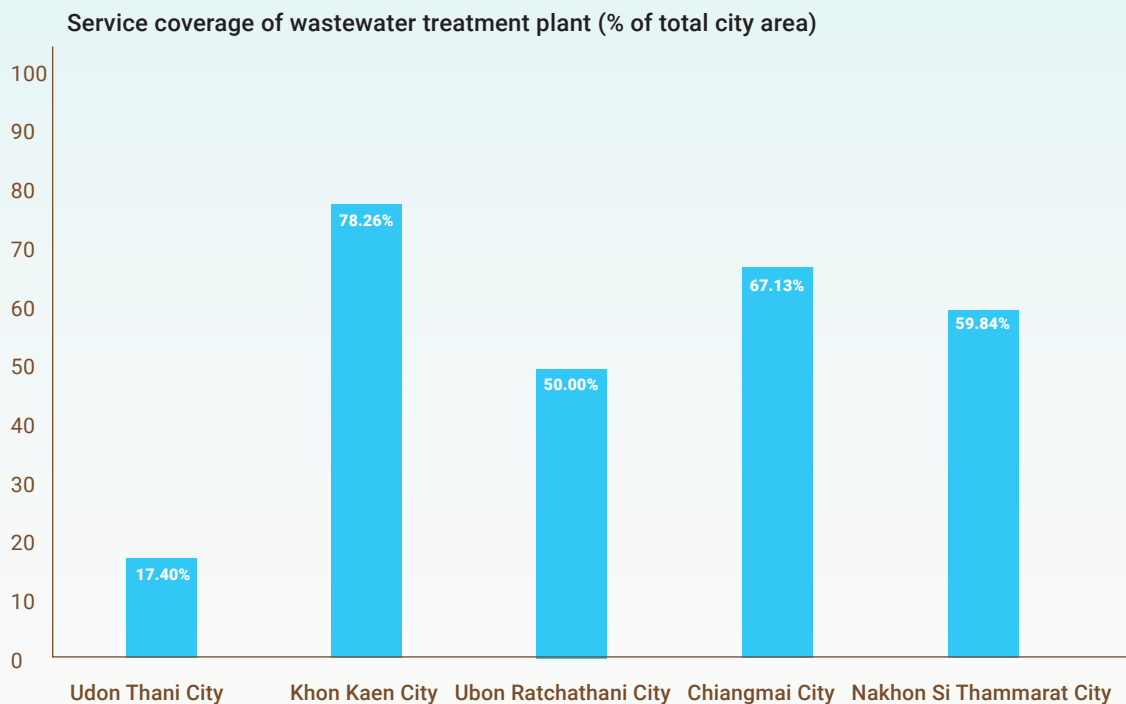
Figure 29 Coverage of wastewater treatment service of Udon Thani City compared with other cities (2023)
Source: Pollution Control Department (https://dspot.pcd.go.th)

INDICATOR(S) | UMF 3.1.2 / SDG 11.6.1

Solid Waste Collection and Disposal

Udon Thani City Municipality Landfill is the solid waste management facility for Udon Thani City Municipality. The facility is managed by the Municipality itself. The landfill has the total area of 296 Rai (approximately 117 acres) and can accept 365 tons of solid waste per day. The comprehensive management of the landfill by the municipality underscores its commitment to maintaining a clean and healthy urban environment.

From Table 13, the landfill employs several advanced waste management techniques to ensure efficient and environmentally friendly processing of solid waste. These techniques include Refuse-Derived Fuel (RDF), Mechanical Biological Treatment (MBT), and a semi-aerobic landfill system. RDF involves processing waste to produce fuel that can be used for energy generation, reducing the volume of waste that needs to be landfilled. MBT combines mechanical sorting and biological treatment to separate recyclable materials and treat organic waste. The semi-aerobic landfill system enhances the decomposition process, reducing the release of harmful gases and leachate. With 100% of the city's waste being collected and managed through these integrated solid waste management methods, Udon Thani City Municipality demonstrates a robust approach to waste management, contributing to sustainable urban living and environmental protection.

Table 13 Solid waste management system in Udon Thani City Municipality

MSW management facility	Udon Thani City Municipality Landfill, managed by Udon Thani City Municipality, Total area 296 Rai
MSW collected	100%
MSW managed in controlled facilities	100% (MSW intake 365 t/day in 2021)
MSW management system	RDF (120 t/day) MBT (160 t/day) Sanitary/semi aerobic landfill (85 t/day)

Figure 30 Udon Thani City Municipality Landfill

Source: Pollution Control Department (1) (2) (2023)

Air Quality

11 SUSTAINABLE CITIES AND COMMUNITIES

An official air quality monitor station is installed in Nong Prajak Park in Udon Thani City Municipality to provide accurate and timely data on air quality levels. This station plays a crucial role in assessing the presence of particulate matter (PM) and other pollutants in the air, which are vital indicators of environmental and public health.

The air quality of the city can be explained by Figure 31. The annual mean concentration of PM 2.5 (particulate matter with a diameter of less than 2.5 micrometers) has shown a slight increase from 13 µg/m³ in 2021 to 19 µg/m³ in 2022. This increase is concerning as it exceeds Thailand's standard of 15 µg/m³ and the World Health Organization (WHO) standard of 5 µg/m³. Elevated PM 2.5 levels pose significant health risks, including respiratory and cardiovascular diseases, as these fine particles can penetrate deep into the lungs and enter the bloodstream. The rising PM 2.5 levels in Udon Thani highlight the need for enhanced measures to reduce emissions from sources such as traffic, industrial activities, and open burning.

Similarly, the annual mean concentration of PM 10 (particulate matter with a diameter of less than 10 micrometers) increased from 24 µg/m³ in 2021 to 31 µg/m³ in 2022. Although these levels remain below Thailand's standard of 50 µg/m³ but they exceed the WHO standard of 15 µg/m³ (Figure 31), indicating that the air quality is still a concern. To assess the impact of air pollution on people's well-being, a number of complaints about air pollution (PM) can be found in Appendix E: Data from the Quality of Life Index.

Annual mean concentration of particulate matter (µg/m3)
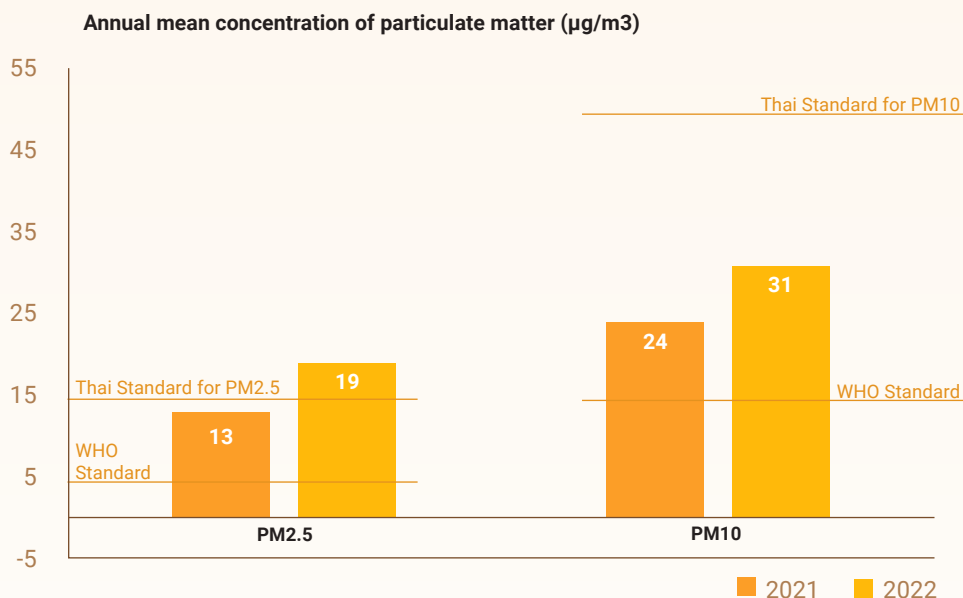
Figure 31 Annual mean concentration of PM2.5 and PM10 in Udon Thani City in 2021–2022

Source: Udon Thani City Municipality (2023) and Pollution Control Department (2023)

INDICATOR(S) | UMF 3.1.3 / SDG 11.6.2

Hazardous Waste

Between 2019 – 2023, Udon Thani City Municipality has hazardous waste collected per capita ranges between 0.00694 - 0.00931 kg/person/year or 0.011296 kg/person/year on average (Figure 32). This figure is notably low compared to the average hazardous waste generation in Thailand, which stands at approximately 10.23 kilograms per person per year, or 0.03 kilograms per person per day (Figure 33). This suggests that the hazardous waste collection rate in Udon Thani City is relatively low. It may result from the collection frequency. The municipality only collects waste from households once a year through an annual activity. If the collection is regular and more often, the amount collected would likely to increase accordingly. In 2021, after the resumption of gatherings following the COVID-19 pandemic, a large amount of hazardous waste was collected, but the quantity decreased in subsequent years. However, it is necessary to improve the hazardous waste collection system and raise public awareness to ensure that all hazardous waste is properly collected and managed at the household level. Nevertheless, after an inspection of the waste composition at community collection sites, no hazardous waste contamination was found. It is expected that the waste is kept at household and more frequent hazardous waste collection measures will lead to a higher collection rate.

This gap highlights the need for improved hazardous waste collection systems and public awareness initiatives to ensure that all hazardous waste is properly collected and managed at the house level.

Despite the low collection rate, Udon Thani City Municipality has achieved a commendable 100% treatment rate for the hazardous waste that is collected. This means that all hazardous waste gathered is appropriately treated and disposed of according to environmental regulations and safety protocols.

Hazardous waste collected per capita (kg/person/year)
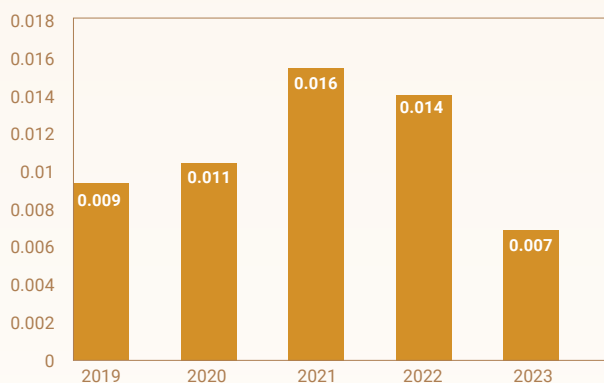
Figure 32 Hazardous waste collected rate of Udon Thani City in 2019 – 2023.

Hazardous waste collected per capita (kg/person/year)

Total annual hazardous waster generation rate in Thailand = 10.23 kg/person/year

Figure 33 Hazardous waste collection rate of Udon Thani City and Thailand in 2022.

Source: Udon Thani City Municipality and Pollution Control Department

Access to Open Public Spaces

11 SUSTAINABLE CITIES AND COMMUNITIES

Udon Thani City Municipality has created a variety of open public spaces that serve as vital communal areas for recreation, social interaction, and cultural activities covering in many parts of the city (Figure 35). These spaces include parks, urban forests, plazas, stadia, and temples (Table 14). Parks and urban forests provide green spaces where residents can enjoy outdoor activities, exercise, and relaxation. Plazas and public stadia serve as hubs for community events, sports, and gatherings, fostering a sense of community and active lifestyle and stimulating economic activities. Temples often function as cultural and social centers, where people can engage in traditional and social activities. The city has 1.98 m2 or 4% of its total area dedicated to open public spaces which consist of parks, urban forests, plazas and public stadia, and temples. It is slightly larger than open public spaces in Bangkok (Figure 34). This success can be confirmed by survey data on the percentage of the population satisfied with public sports and cultural facilities provided by the city, as detailed in Appendix E: Data from the Quality of Life Index.

Table 14 Open public spaces in Udon Thani City Municipality

Type of open public spaces	Area (sq.m.)
Parks	1,655,510
Urban forests	120,236
Plazas and stadia	181,547
Temples	19,256
Grand Total	1,976,548
Total area in sq.km.	1.98
% to total area	4%

Proportion of open public space (%)
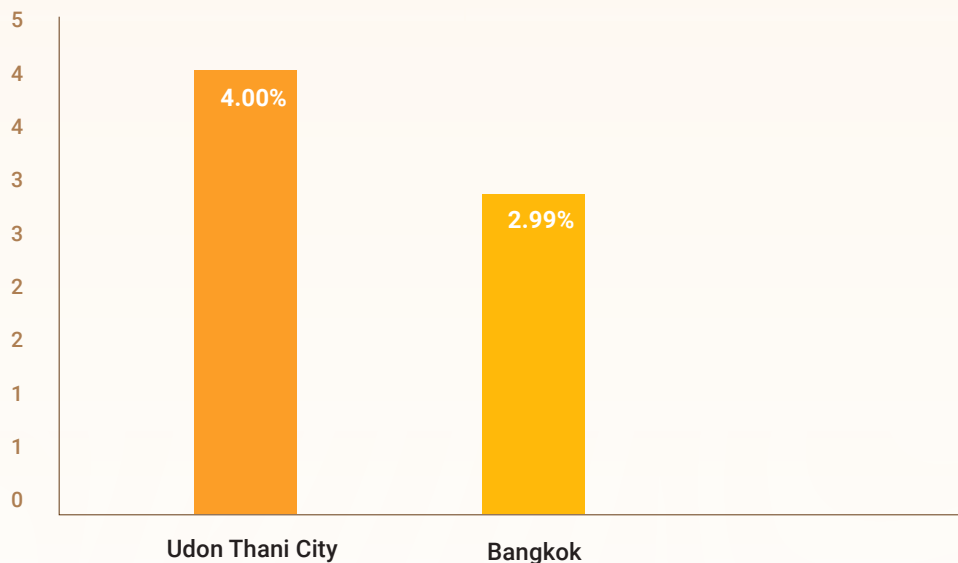
Figure 34 Proportion of open public space in Udon Thani City Municipality (a) and Bangkok (b) in 2024.

Source: Udon Thani City Municipality[a] and BMA[b]

Public Open Spaces in Udon Thani City Municipality
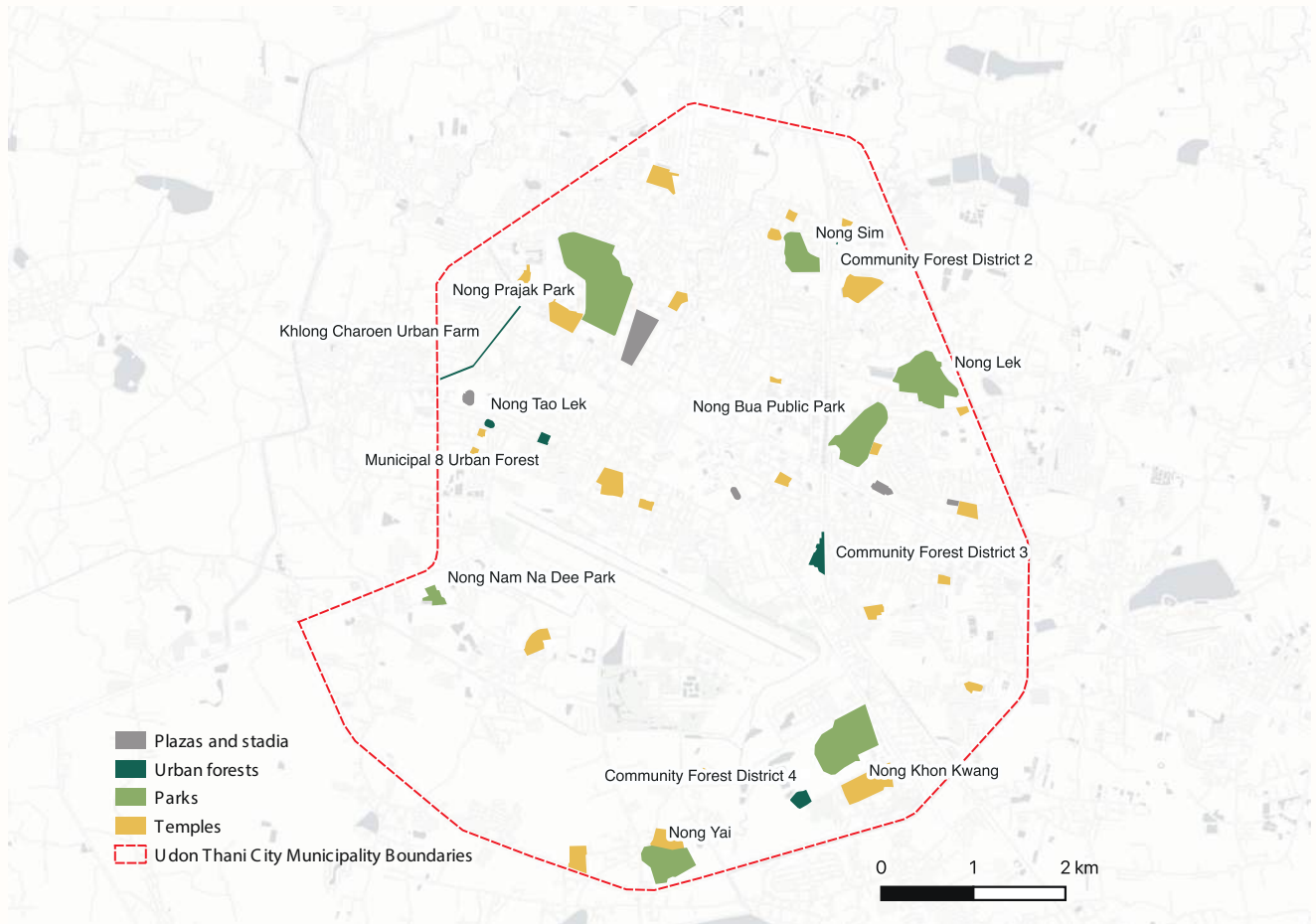
Figure 35 Map of open public spaces in Udon Thani City Municipality

Green Area per Capita

Udon Thani City Municipality has the total green space of 5,208,010.71 km^2, comprising narural areas, parks, green spaces along roads and streets, and others. The total green space accounts for 10.92% of the total municipal area, exceeding the Office of Natural Resources and Environmental Policy and Planning (ONEP)'s standard of 10%. This achievement reflects the municipality's commitment to preserving and enhancing its natural environment. The carbon sequestration of trees within these green spaces is 4,584.56 tCO$_2$e, as calculated by the Department of Climate Change and Environment (DCCE). These green spaces also play a crucial role in mitigating urban heat, improving air quality, and providing habitat for urban wildlife.

Udon Thani City Municipality's total green area per capita is 39.89 m^2 per person in 2024. The number is similar to Bangkok and higher than World Health Organization (WHO)'s minimum recommendation of 9.00 m^2/person, but lower than the recommended number of 50.00 m^2/person (Figure 36). This can be suggested that there is room for further expansion and enhancement of green areas.

In terms of accessibility (Figure 37 and Table 15), 44,329 people live within a walkable distance to parks, highlighting the importance of strategically located green spaces to ensure they are easily accessible to the community. This is about 37% of its total registered population (120,395 people). The distribution of green spaces is mainly in the northern area, while the southern area has fewer green spaces. This is because the southern area includes an airport and military-controlled zones. They are not under the jurisdiction of the city government. However, improving accessibility and increasing the overall green space can further enhance the quality of life for residents by promoting physical activity, mental well-being, and social interaction in natural settings. Additional data on percentage of households living within 15 minutes of public open space (by foot) and percentage of population satisfied with the green spaces can be found in Appendix E: Data from the Quality of Life Index.

Table 15 Green spaces in Udon Thani City Municipality

Total green area (sq.m.)	5,208,010.71 (Natural − 320,582.10; Parks− 1,021,447.03; Special − 3,412,057.57; Roads − 453,924.00)
Population (2024)	115,218
Total green area per capita (sq.m./person) * WHO'S minimum 9.00 sq.m./person, recommended 50.00 sq.m./person	39.89
Public green area per capita (sq.m./person) * City Municipalities' average 4.08 sq.m./person * ONEP's goal (2023 − 2027) 10.00 sq.m./person	8.86
Green area to total area (%) * City Municipality average 44.28% * ONEP's goal (2023 − 2027) 10.00%	10.92
Accessibility to green space Population within 500-m distance to parks * Average 2,000	44,329 (Nong Prajak and Thung Sri Mueang − 26,631; Nong Sim − 6,238; Nong Bua − 5,409; Municipal 8 Urban Forest − 6,051)
tCO_2e (Department of Climate Change and Environment, 2024)	4,584.56

Green space area per capita (m²/person)
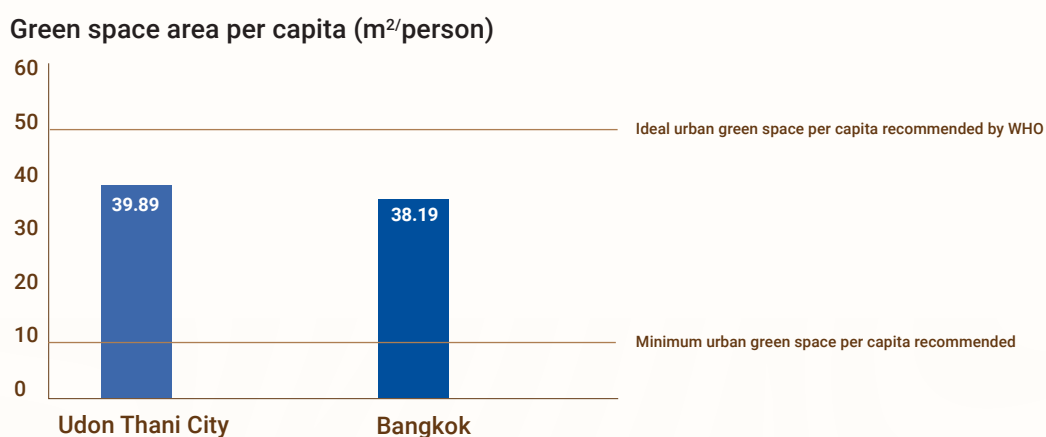
Figure 36 Green space per capita of Udon Thani City (a) and Bangkok (b) in 2024.
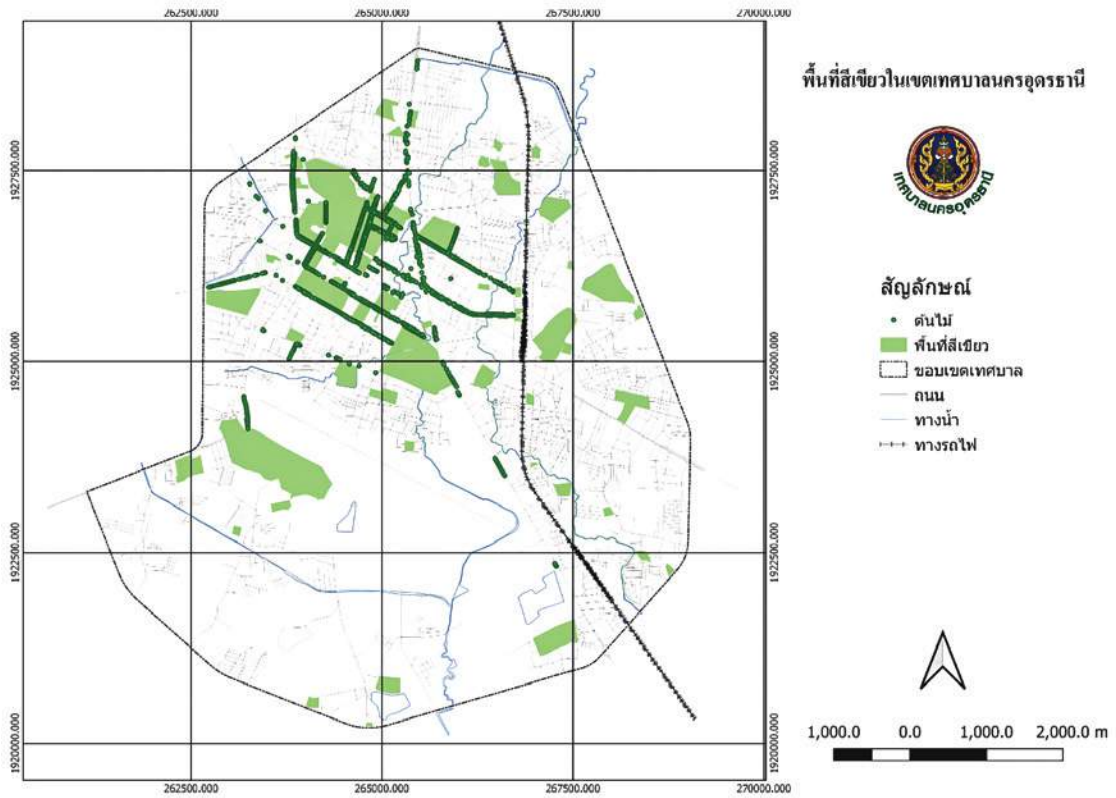
Figure 37 Map of green spaces in Udon Thani City Municipality (a)

Source: Udon Thani City Municipality[a] and BMA[b]

According to spatial data from Global Forest Watch, Udon Thani City Municipality has lost approximately 80,000 m² of tree cover from 2001 to 2023, representing a 31% decrease since 2000 (Figure 38). This loss indicates significant ecosystems and biodiversity degradation due to urban expansion, which can increase urban heat as fewer trees are available to cool the city. This situation also suggests a diminished capacity to address climate adaptation to heat and urban floods.
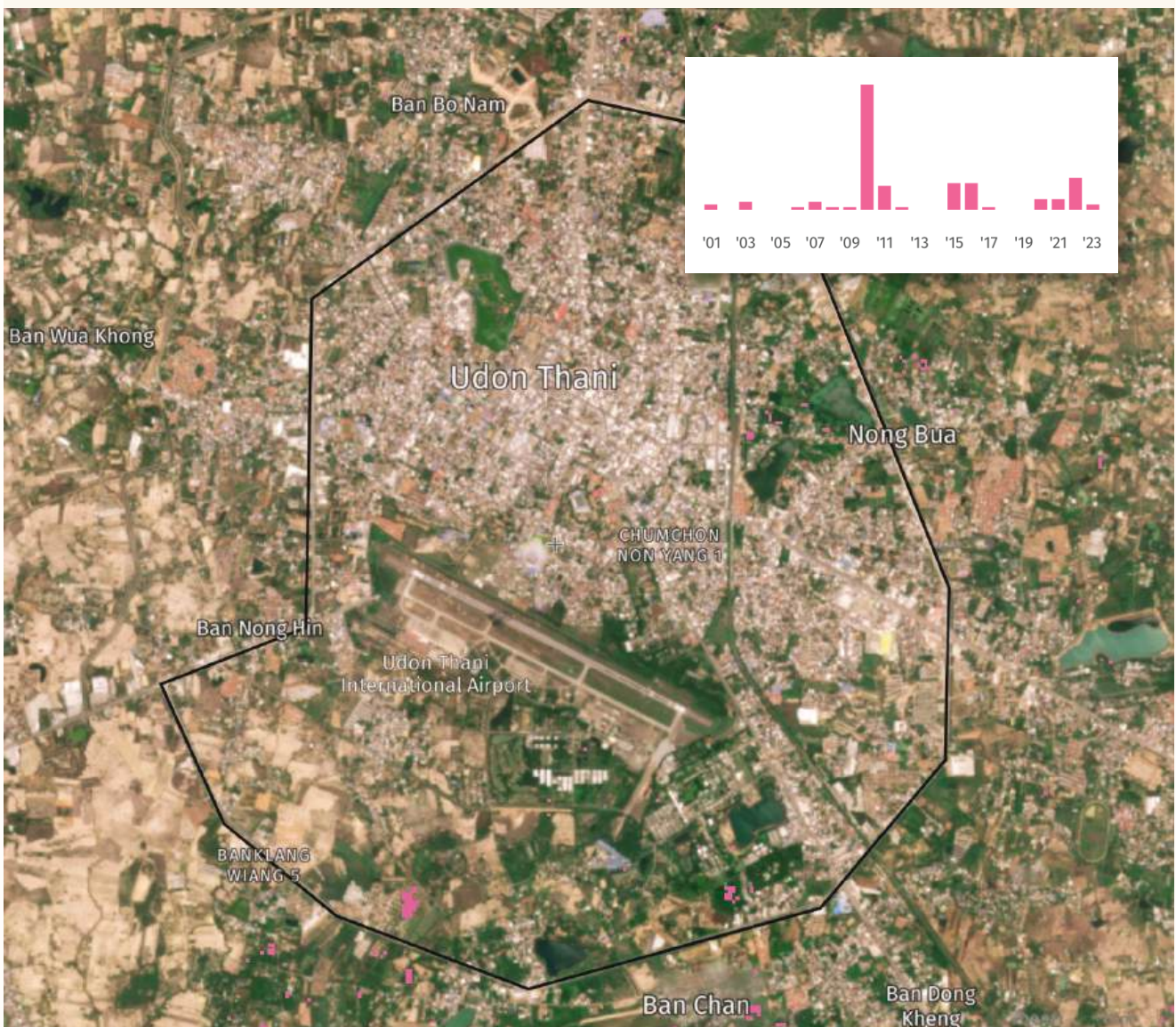
Figure 38 Change in tree coverage in Udon Thani City from 2001 to 2023

Source: https://www.globalforestwatch.org/

INDICATOR(S) | UMF 3.4.2/NUA

Budget on Climate Change Adaptation

In 2024, the Udon Thani Municipality allocated a total budget of 889,684,360 baht, of which 14% or 150,413,970 baht (Figure 39) was designated for initiatives aimed at strengthening the capacity of the local community. This budget supports various projects aimed at improving the overall quality of life for residents. Key measures include upgrading the drainage system to prevent flooding and enhancing waste management at the source to reduce environmental impacts. Additionally, the budget supports disaster preparedness efforts, along with initiatives to create income opportunities and empower women. Housing improvement projects are also included to ensure inclusive and equitable urban development.

However, the municipality does not have a specific plan for building climate adaptation capacity, or plan to conduct a risk assessment to develop targeted policies and budget allocations. Nevertheless, standard operations could potentially enhance the ability to adapt to climate change.

To effectively strengthen the community, the municipality should conduct a climate risk assessment, develop adaptation plans, and allocate specific budgets or propose additional projects for central government funding. For example, infrastructure development to prevent flooding should be based on risk assessments that consider social, environmental, and economic factors, as well as future rainfall projections under various scenarios.
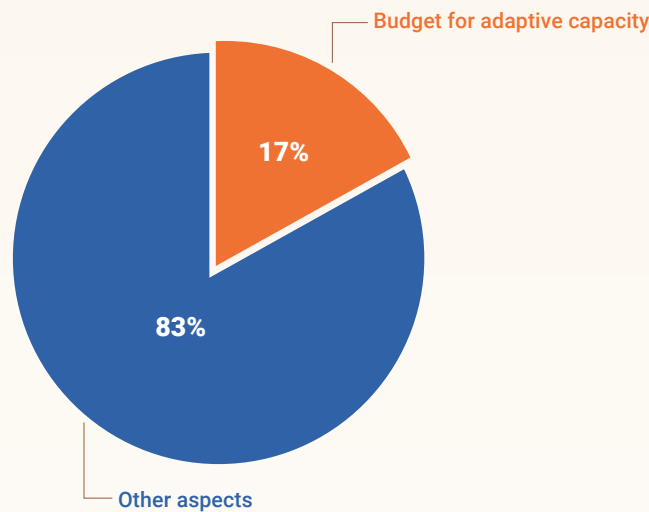
Figure 39 Budget allocation to support adaptive capacity of the people in fiscal year 2024

Source: Udon Thani City Municipality Development Plan (2024)

Implication for policy practices

The environmental progress of Udon Thani City Municipality demonstrates substantial advancements and highlights critical areas for further policy development. This section examines key environmental indicators such as wastewater treatment, solid waste management, air quality, hazardous waste collection, and public green spaces. The findings underscore the need for targeted policies to sustain and enhance these systems, improve pollution control, expand green spaces, and address environmental challenges posed by high immigration, visitors, and global issues like climate change. Addressing these areas through comprehensive policy measures will further improve the city's environmental sustainability and the quality of life for its residents.

Wastewater Treatment

The city's wastewater treatment coverage urges the importance of expanding its service, maintaining, and upgrading this infrastructure. Policies should focus on ensuring the sustainability of these systems and addressing any gaps in service coverage compared to other cities.

Solid Waste Management

Udon Thani's 100% collection and management of municipal solid waste through advanced systems highlight the city's commitment to effective waste management. Continued investment in waste to energy technology is essential. Policies should promote waste reduction, recycling, and sustainable disposal practices to manage increasing waste volumes.

Air Quality

Monitoring and managing air quality, specifically PM2.5 and PM10 levels, are critical for public health. Policies should enforce stricter emissions controls from open burning and smoke from vehicles, promote green transportation, and enhance air quality monitoring and warning systems to mitigate pollution and reduce health impacts.

Hazardous Waste

Effective hazardous waste disposal programs demonstrate the city's proactive approach to managing dangerous materials. Policies should support expanding these programs, increasing collection rate, ensuring safe disposal, and raising public awareness about hazardous waste handling. The city should encourage its residents through public engagement activities.

Public Green Spaces

The availability of extensive public green spaces, including parks, urban forests, and outdoor marketplace, significantly contributes to residents' quality of life. Policies should focus on increasing the amount of green space, ensuring equitable access, and integrating green areas into urban planning to meet the growing demand for recreational areas.

Tree coverage

This significant loss of tree coverage due to urban expansion could possibly increase urban heat and reflects reduced capacity to address climate change. The city should prioritize green infrastructure investments, such as green buildings, roofs, and sustainable drainage systems, to enhance climate resilience. By incorporating nature-based solutions and adding more trees that mimic natural processes to capture water and maintain evapotranspiration, Udon Thani can enhance its resilience to climate change.

Environmental Awareness and Challenges

Hosting national events to boost environmental awareness has proven effective. However, the city faces challenges due to high immigration and visitors, along with global issues like climate change and pandemics. Policies should emphasize public education, community involvement in environmental initiatives, and resilience planning to address these challenges.

3.5 Culture Domain

Highlight

Udon Thani City Municipality has made substantial progress in promoting its cultural heritage. Key initiatives include elevating the recognition of local wisdom, customs, and traditions to a national level through various cultural activities and the promotion of Udon Thani worship dance. The city addresses concerns about preserving local traditions among the younger generation by encouraging schools to host and organize cultural activities, and supporting educational programs on local traditions and culture. Udon Thani also invests in promoting local traditions to attract diverse visitors through food-related travel activities, traditional beliefs (Mutelu) tourism, and cultural events. Additionally, the city has implemented measures to enhance safety, such as the Udon Safety Zone, installing more CCTV cameras, and promoting community safeguard volunteers. These efforts reflect Udon Thani's commitment to preserving and promoting its rich cultural heritage while ensuring community safety and engagement.

Review of targets

C2030	INDICATOR(S) | UMF 4.1.2 / C2030-14 ## Cultural Knowledge

Udon Thani City Municipality compiles a list of folk philosophers who conserve and utilize folk wisdoms i.e., agriculture, agricultural product processing, food, handicrafts, music and dance, sculpture, medicine, and rituals (Table 16). The recognition and support of these folk philosophers are vital for preserving the unique cultural identity of Udon Thani and ensuring that traditional knowledge is passed down through generations. As of 2023, there are 38 folk philosophers from 21 communities in Udon Thani City Municipality , highlighting this cultural preservation effort's diverse and widespread nature. Their expertise in traditional practices not only helps maintain the historical and cultural heritage of the region but also promotes sustainable living practices that are rooted in local knowledge.

Table 16 Number of folk philosophers of Udon Thani City Municipality as of 2024

Type	Details	Number of philosophers
Agriculture	Organic vegetables, organic fertilizers, fishery, livestock, rice farming	3
Agricultural product	Herbal drinks, soap making, dishwashing detergent, sanitizing gel,	6
processing	shampoo and conditioner, rice cracker	4
Food	Pickled fish, salted egg, traditional deserts	9
Handicraft	Hats, socks, scarves, bags, fabric, glass, baskets	4
Music and dance	Morlam music, dance, Can (reed mouth organ)	2
Sculpture	Clay sculpturing, wood crafting	
Medicine	Traditional medicine, traditional massaging, balm, herb spray,herbal face scrub, herbal soap, facial and hand cream	6
Rituals	Traditional marriage, house warming, graduation, buddhist ordain, religious rituals	3

INDICATOR(S) | UMF 4.2.2 / C2030-21

Cultural Participation

Udon Thani City Municipality actively encourages cultural preservation and participation among its citizens by promoting various cultural events, programs, and institutions. In the fiscal Year 2023, the museum attracted 32,876 visitors, demonstrating significant local and international interest. Of these visitors, 93% were Thai, while 4% were foreigners. The total number of visitors represents 27% of the city's population, underscoring the museum's importance as a cultural cornerstone within the municipality (Figure 40).

Citizens of Udon Thani City Municipality usually participate in cultural events such as traditional festivals, local fairs, arts and crafts exhibitions, music and dance performances, and religious ceremonies. By engaging in these cultural activities like Songkran Festival (known for its water-splashing celebrations or Thai New Year), Loy Krathong Festival (where residents float decorated baskets on water to give respect to the water god), residents contribute to the vibrant cultural life of Udon Thani, ensuring the continuation of its unique traditions and fostering a cohesive, culturally rich community. However, limited participation from the younger generation is a concern, as highlighted by a survey data on the level of interest in local culture and tradition among the younger generation as well as their participation in local cultural events can be found in Appendix E: Data from the Quality of Life Index.

Proportion of visitors to museum in Udon Thani City (%)

Figure 40 Total number of visitors to Udon Thani Museum in fiscal year 2023

Source: Udon Thani City Municipality

Cultural Employment

In 2023, Udon Thani City Municipality employed 17 staff members at the Udon Thani Museum, comprising 1 curator, 1 assistant curator, 7 guides, and 8 supporting positions. The number accounts for 1% of the Municipality's total staff employment. The proportion is lower than EU's at 4% of the total employment (Figure 41). The disparity suggests that Udon Thani City may need to invest more in its cultural sector to align with international benchmarks and to enhance its cultural services and outreach further.

However, it has to be noted that the data does not cover cultural-related employment by other agencies and sectors in the city. Other organizations, including educational institutions, cultural centers, and private entities, contribute to the cultural landscape of Udon Thani. These entities employ additional staff involved in cultural preservation, education, and promotion. A broader assessment of cultural employment across all sectors would provide a more accurate picture of the city's investment in its cultural heritage and the economic benefits derived from this sector.

Proportion of total employment (%)
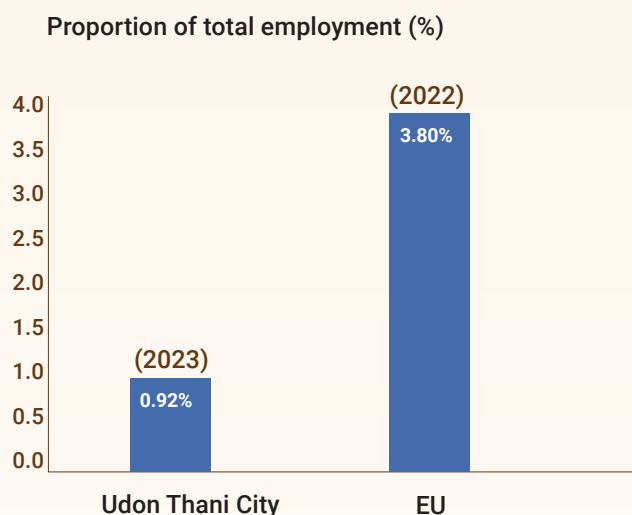
Figure 41 Proportion of cultural employment to the total employment of Udon Thani City Municipality (a) compared with EU (b)

Source: Udon Thani City Municipality[a] and Eurostat[b]

Open Spaces for Culture

Udon Thani City Municipality has 1.15 km² dedicated to open spaces for culture which comprise museums, plazas, places of worships, and cultural streets (Table 17). The city promotes spaces for multi-culturalism which is one of the major characteristics of the city i.e., Vietnamese, Islamic, Chinese and Buddhist Thai (Figure 42).

Vietnam Town

Udon Thani City Municipality works with the residents of Srisuk 2 Street, the majority of whom are Vietnamese descendants, with support from the government of Vietnam to develop the city's Vietnam Town. Shophouses are painted in Vietnamese colonial colour scheme, in consultation with Vietnamese architects. Vietnamese food and coffee are sold on street. It is considered the first official Vietnam town in the world. It has become a popular weekend destination for tourists, boosting economic activity within the Vietnamese community and fostering a sense of belonging among individuals of Vietnamese descent, who now see the city as part of their own.

International Muslim Food Street

While the size of Muslim community in the municipality is considered small, Udon Thani City Municipality works with the community to develop an International Muslim Food Street on Sri Chomchuen Street where Mueang Udon Thani Mosque is located. The objective is to promote culture while boosting economic activities in the community.

Dharma Street

Wat Banjig Temple, situated within the city, serves as a forest monastery and holds great importance in preserving Buddhist traditions. Each morning, a procession of monks line up to receive food offerings from the community, infusing the city with vibrancy and tranquility. For important Buddhist days, the street in front of the temple is closed for people to offer food to monks. The temple also offers opportunities for people of all ages to engage in religious activities, fostering a sense of unity and participation within the community.

Walking Street

Every weekend, the roads in front of the Provincial Office and Thung Sri Muang Plaza are closed for the weekend's walking street. There are stalls selling street food, products, and games for locals to shop.

Table 17 Summary of cultural open spaces in Udon Thani City Municipality

Type of cultural open spaces	Area (sq.m.)
Museums	26,138
Plazas	121,857
Places of worship	985,070
Cultural streets	18,326
Total area in sq.m.	1,151,392
Total area in sq.km.	1.15
% of total area (47.70 sq.km.)	2%

Cultural Open Spaces in Udon Thani City Municipality
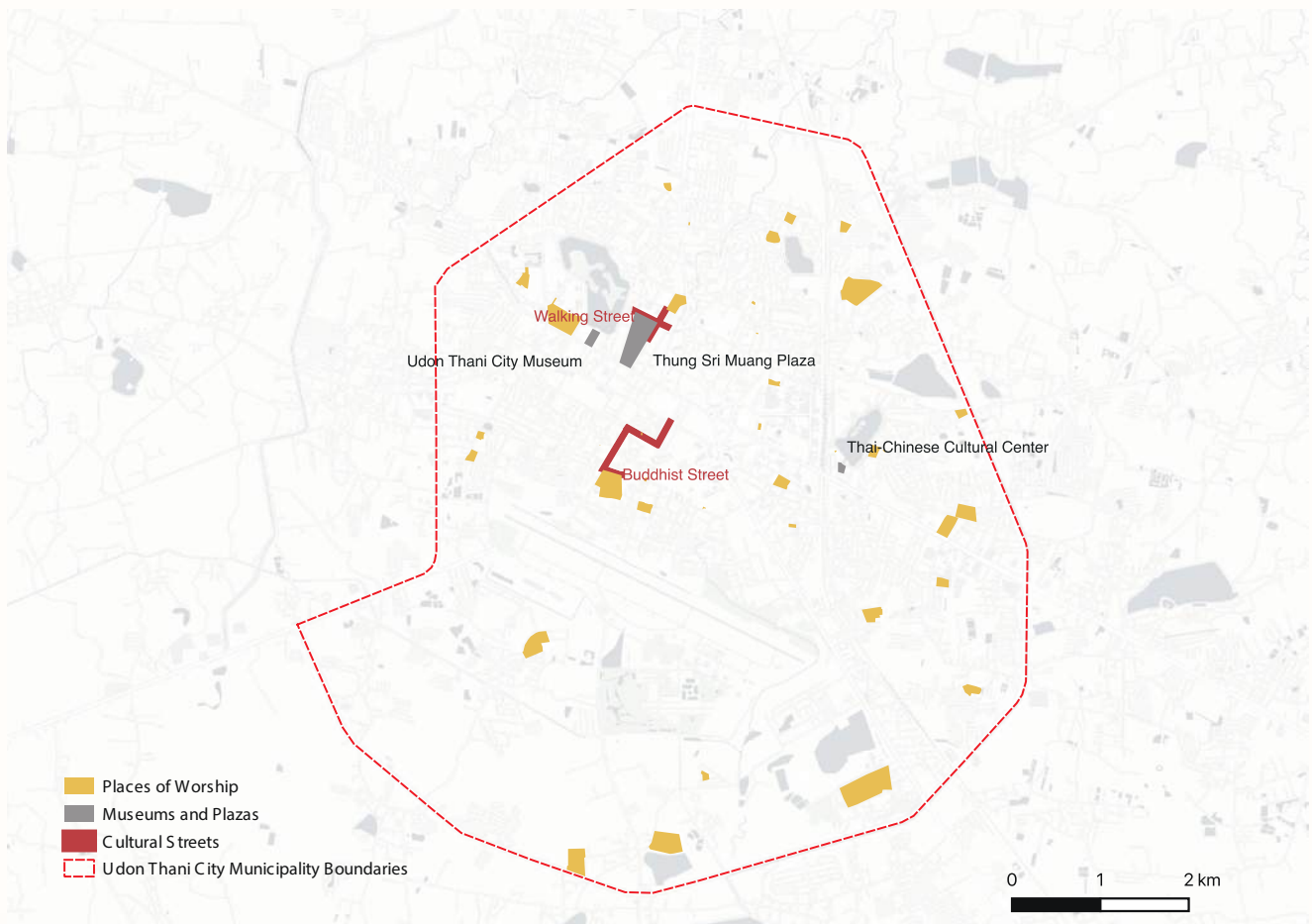
Figure 42 Map of cultural open spaces in Udon Thani City Municipality
Source: Working Group, Udon Thani City Municipality (2024)

Implication for policy practices

The cultural progress of Udon Thani City Municipality highlights significant advancements and areas for further policy development. This section examines key cultural indicators such as the promotion of local traditions, cultural education for youth, cultural tourism, community safety, and cultural employment. The findings underscore the need for targeted policies to preserve and promote the city's rich cultural heritage, enhance educational initiatives, develop tourism, ensure safety, and support cultural employment. Addressing these areas through comprehensive policy measures will strengthen Udon Thani City's cultural identity and improve the quality of life for its residents.

Promotion of Local Culture

The city's initiatives to promote local wisdom, customs, and traditions at a national level underscore the importance of cultural preservation and promotion. Policies should focus on expanding cultural activities, supporting local artists, and enhancing the visibility of Udon Thani's cultural heritage to attract national and international recognition.

Cultural Education for Youth

Addressing concerns about the preservation of local traditions among the younger generation is crucial. Policies should encourage schools to integrate cultural education into their curricula, support extracurricular cultural activities, and involve youth in community cultural events to foster a deeper understanding and appreciation of local heritage.

Cultural Tourism

The city's investment in promoting local traditions to attract diverse visitors highlights the potential for cultural tourism as an economic driver. Policies should develop and promote cultural tourism packages, improve infrastructure around cultural sites, and create marketing campaigns that showcase Udon Thani's unique cultural offerings.

Community Safety and Engagement

Enhancing community safety through initiatives like the Udon Safety Zone, installing more CCTV cameras, and promoting community safeguard volunteers is essential. Policies should focus on strengthening community policing, increasing public awareness of safety programs, and fostering community participation in safety initiatives.

Cultural Employment

The emphasis on cultural employment highlights the need for policies that support job creation in the cultural sector. This includes providing training programs for cultural practitioners, creating funding opportunities for cultural projects, and promoting cultural entrepreneurship to boost local employment and preserve cultural heritage.

3.6 Governance and Implementation Domain

Highlights

Udon Thani City Municipality has made notable progress in governance and implementation, focusing on improving work efficiency by adopting information technology (IT). The city is reducing work procedures and fostering interactions among personnel across different divisions. A Citizen Council has been established to promote public engagement and support the implementation of initiatives. Efforts to enhance transparency include implementing an open-data government approach and expanding communication channels to increase the visibility of projects. Additionally, the city is committed to protecting residents from misinformation by raising awareness about unreliable sources. These measures aim to strengthen governance, enhance public participation, and ensure effective implementation of city projects.

Review of targets

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

INDICATOR(S) | UMF 5.1.1 / SDG16.1

Victims of Intentional Homicide

In fiscal year 2022, 31 murder cases were reported to Udon Thani Police Station. 29 cases were arrested, accounting for 1.99 cases per 100,000 population. For manslaughter, 8 cases were reported while 8 cases were arrested, accounting for 0.51 cases per 100,000 population. For intentional homicide, 26 cases were reported while 25 cases were arrested, accounting for 0.51 cases per 100,000 population (Table 18). The high arrest rate for intentional homicides suggests a strong focus on addressing and effectively mitigating acts of violence within the city.

When compared to the total physical violence cases, reported murder, manslaughter, and intentional homicide cases account for 11.5% of the total reported physical violence cases. The data suggests that while the municipality has challenges related to severe violent crimes, it is crucial to address the underlying causes of all forms of physical violence to create a safer community.

Table 18 Number of cases of intentional homicide

Violence	Reported	Arrested	Per 100,000
Total physical violence cases	225	214	14.42
Murder	31	29	1.99
Manslaughter	8	8	0.51
Intentional homicide	26	25	1.67

Source: Udon Thani Police Station (Fiscal Year 2022)

INDICATOR(S) | UMF 5.1.2 / SDG16.1.1

Victims of Physical and Sexual Violence

In Fiscal Year 2022, there were 23 rape cases reported to Udon Thani Police Station. 21 cases were arrested, accounting for 1.47 cases per 100,000 population (Table 19). The high arrest rate demonstrates the effectiveness of the local law enforcement in addressing and resolving these serious offenses. However, the occurrence of these cases also highlights ongoing concerns about sexual violence in the community and the need for continuous efforts to prevent such crimes and support victims.

When compared to the total physical violence cases, rape cases account for 10.2% of the total reported physical violence cases. The data underscores the importance of targeted interventions and policies aimed at reducing sexual violence, increasing awareness and education around consent and personal safety, and providing robust support systems for survivors. Additionally, data on percentage of population that reports having confidence in local law enforcement institutions can be found in Appendix E: Data from the Quality of Life Index.

Table 19 Number of cases of physical and sexual violence

Violence	Reported	Arrested	Per 100,000
Total physical violence cases	225	214	14.42
Sexual (rape)	23	21	1.47

Source: Udon Thani Police Station (Fiscal Year 2022)

INDICATOR(S) | UMF 5.2.2 / NUA-75

Utilization of E-Governance and Digital Governance Tools

The survey received 52 responses from 37 communities. According to the survey, 46.2% of the respondents never used e-governance services provided by Udon Thani City Municipality. 38.5% sometimes use the services, while only 15.4% use the services often (Figure 43). The e-governance services used by the respondents are free wi-fi, the municipality's LINE official account, Jer-Jaeng-Job reporting channel, and the municipality's Facebook. These services are designed to enhance communication and service delivery. Yet, the relatively low frequent usage rate suggests barriers or a lack of awareness and engagement among the residents.

In terms of satisfaction, the average satisfaction score is 3.28 out of 5.00 (Figure 44), indicating a moderate level of satisfaction among users. Several key areas for improvement were identified through the survey feedback. Respondents highlighted the need for faster Wi-Fi speeds, more responsive communication from municipal officials, and timely updates on the progress of reported issues or requests. Enhancing these aspects of e-governance could significantly increase user engagement and satisfaction. This can be further supported by survey data on sathe tisfaction of people receiving public service and time c-nsuming intheork process of the city to deliver service to the people, as detailed in Appendix E: Data from the Quality of Life Index.

ท่านเคยใช้บริการดิจิทัลของเทศบาลนครอุดรธานีหรือไม่ เช่น สัญญานอินเตอร์เน็ท แอ็พพลิเคชั่น ไลน์ของเทศบาล (Have you ever used e-governance services provided by Udon Thani City Municipality?) 52 responses

- ไม่เคย (never): 46.2%
- เคยเป็นบางครั้ง (sometimes): 38.5%
- ใช้เป็นประจำ (oftenly): 15.4%
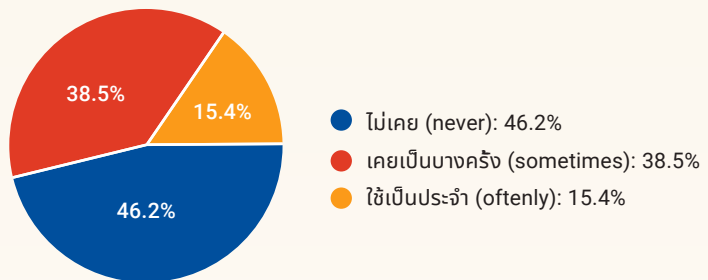
Figure 43 Community survey result on e-governance tools
(Have you ever used e-governance services provided by Udon Thani City Municipality?)

ระดับความพึงพอใจบริการ ดิจิทัลของเทศบาลนครอุดรธานี หากไม่เคยใช้โปรดข้ามคำถามข้อนี้ เช่น สัญญานอินเตอร์เน็ท แอ็พพลิเคชั่น ไลน์ของเทศบาล เป็น.... services provided by Udon Thani City Municipality) 39 responses
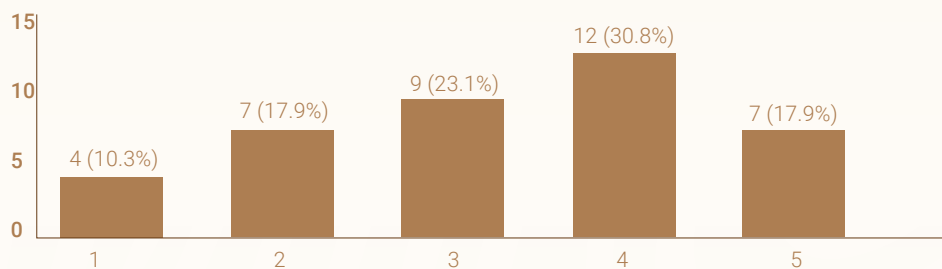
Figure 44 Community survey result on e-governance tools (What is your satisfaction level to e-governance services provided by Udon Thani City Municipality? 1 = lowest, 5 = highest)
Source: Udon Thani City Municipality's community survey (2024)

INDICATOR(S) | UMF 5.2.3 / SDG5.5.1 (b)

Proportion of Seats Held by Women in Subnational/Local Governments

In 2024, Udon Thani City Municipality's office has 723 females, or 49% of the total 1,480 staff (Figure 45). At the director level, 5 of 11 directors are females (45%). At the executive level (elected positions), 2 of 7 executives are females (29%). In the Municipal Council which is the Municipality's legislative body, 8 or 32.26% of 24 committee members are females (Figure 46). These figures show that while women have significant representation in various levels of the municipal government, there is still room for improvement, particularly in elected positions.

Compared to the national average, Udon Thani has higher proportions of females in managerial positions and females elected to the government. Udon Thani's performance in this area suggests a more progressive approach towards gender equality, potentially driven by local policies and cultural factors that support women's participation in governance.

Proportion of females in managerial and elected seats of total seats (%)
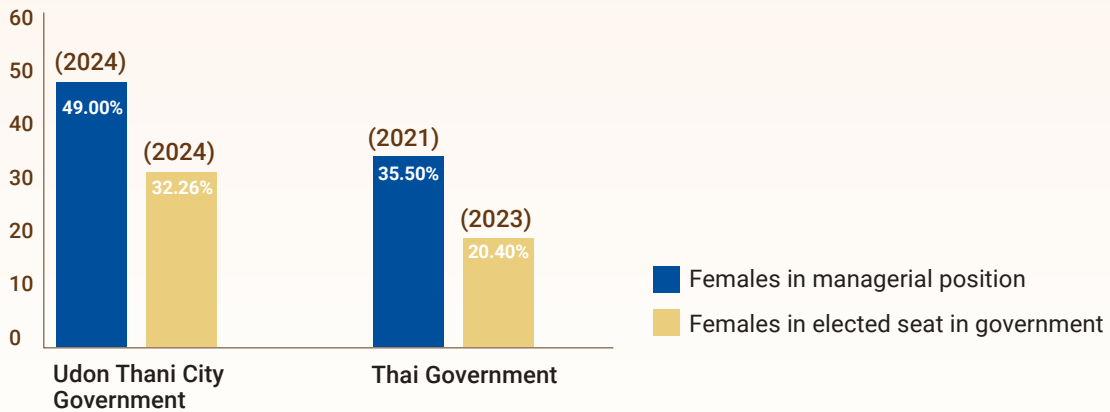
Figure 45 Proportion of females elected in Udon Thani City Government (a) and Thai Government (c)

Proportion of females elected in local government (%)
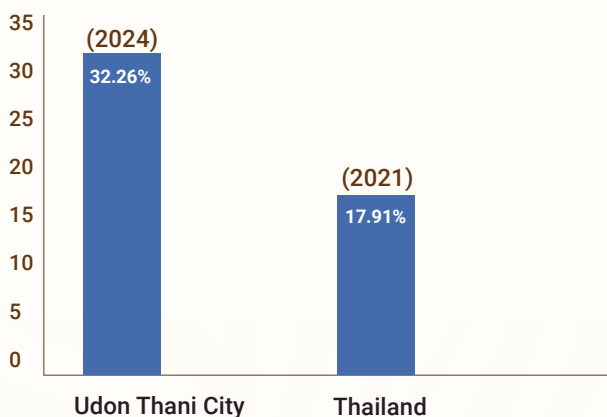
Figure 46 Proportion of females elected in local government on Udon Thani City (a) and national average (b)
Source: Udon Thani City Municipality[a], UN Woman[b], and UN ESCAP[c]

Own Source Revenue Collection

Between Fiscal Year 2021 – 2023, Udon Thani City Municipality's revenues ranged between 1.23 billion and 1.43 billion Baht. The municipality's own source of revenue accounts for 11.45 – 21.44% of the total revenues (Table 20).

In terms of trend, the proportion of own source of revenue increases from 11.45% in FY 2021 to 11.98% in FY 2022, and 21.44% in FY 2023. This significant growth in locally generated revenue is partly attributed to the municipality's recovery efforts following the COVID-19 pandemic. As economic activities resumed and businesses reopened, there was an increase in local tax collections and service fees, boosting the municipality's income.

Table 20 Breakdown of Udon Thani City Municipality's revenues between FY 2021 - 2023 in Thai Baht

Type	FY 2021	FY 2022	FY 2023
Taxes	46,106,659.03	44,344,830.79	184,418,101.52
Fees, fines, licenses	63,505,400.95	67,216,344.61	80,087,007.97
Properties	30,075,009.60	23,041,387.00	23,669,541.51
Utilities and businesses	4,606,657.24	3,970,713.44	3,012,143.20
Miscellaneous	14,149,115.10	9,285,315.95	16,390,246.48
Capital	-	-	51,000.00
Total own source of revenue	158,442,841.92	147,858,591.79	307,628,040.68
Total revenue	1,384,310,229.95	1,234,254,241.34	1,434,727,193.52
% own source of revenue to total revenue	**11.45**	**11.98**	**21.44**

Source: Udon Thani City Municipality

INDICATOR(S) | UMF 5.4.1 / SDG 16.9.1

Registered Births

Almost 100% of births in Udon Thani City Municipality are registered. Late birth registration better reflects the city's performance. This high registration rate underscores the municipality's effective administrative systems and public awareness about the importance of timely birth registration. Proper birth registration is crucial as it provides individuals with a legal identity, access to social services, and protection of rights.

Registered births in Udon Thani range between 5,103 – 6,848 annually between 2019 – 2023. Meanwhile, the late registered births are below 5, or less than 1% yearly (Table 21). This statistic further highlights the efficiency of Udon Thani's birth registration system.

Table 21 Registered births in Udon Thani City Municipality

Year	Registered births, in time	Registered births, late	% late register
2019	6,848	4	0.058
2020	6,245	5	0.080
2021	5,565	3	0.054
2022	5,103	0	0
2023	5,335	1	0.019

Source: Udon Thani City Municipality

INDICATOR(S) | UMF 5.4.2 / SDG 11.a.1

Presence of urban policies or regional development plan

Territorial planning in Udon Thani is formed by 2 plans – Local Development Plan which is prepared by Udon Thani City Municipality itself every 5 years and Udon Thani City Comprehensive Zoning which the latest one was prepared by Department of Public Work and Town and Country Planning (DPT) in 2010. The plans focus on urban development, addressing population dynamics, territorial growth, and systematic processes to ensure continuous improvement (Table 22). Their plan is well-aligned with both national and international demands for sustainable development. The detail is discussed in chapter 1.

Table 22 Presence of urban policies or regional development plans

	Udon Thani City Municipal Development Plan	Udon Thani City Comprehensive Zoning
Details	2023 – 2027	2010 – current Currently developing a new comprehensive plan
Responsible agency	Udon Thani City Municipality	Udon Thani Provincial Department of Civil Work and Town and Country Planning
Response to population dynamics	Population structure and change are explicitly discussed in the plan and taken into account in forming strategies and projects.	Population structure and change are analyzed in the process of developing the comprehensive zoning. The current plan was enacted in 2010 which might not fully reflect the population dynamics. However, the new plan is in the process of preparation and public hearings, considering population dynamics.
Balanced territorial development	The plan positions Udon Thani as a regional center of Mekong Subregion. It also balances between economic – social – environmental development to become a sustainable livable city.	Balance between economic – social – environmental development is considered. The plan also includes transportation development masterplan. The new plan, currently in preparation, will cover open spaces, public utility, public services, natural resources and environment, and water plans.
Increase of local fiscal space	The plan includes projects.	The plan focuses on comprehensive zoning, thus does not include fiscal aspects.

Implication for policy practices

The governance and implementation progress of Udon Thani City Municipality highlights significant advancements and areas for further policy development. This section examines key governance indicators such as the adoption of information technology (IT) for work efficiency, public engagement through a Citizen Council, transparency and communication enhancements, protection against misinformation, gender equality in governance, and financial autonomy. The findings highlight the need for targeted policies to support IT infrastructure, encourage community participation, promote transparency, combat misinformation, ensure gender equality, economic inclusive and enhance financial autonomy. Addressing these areas through comprehensive policy measures will strengthen Udon Thani City's governance and improve the effectiveness of its initiatives.

Improving Work Efficiency through IT Adoption

The city's commitment to enhancing work efficiency by adopting information technology (IT) is essential for modern governance. Policies should support the continuous upgrade of IT infrastructure, provide training for personnel to effectively use these technologies, and streamline work processes to reduce bureaucracy and improve service delivery.

Strengthening Public Engagement

Establishing a Citizen Council and Youth Council to support the implementation of initiatives underscores the importance of public engagement. Policies should focus on creating platforms for regular citizen and marginalize group feedback, encouraging community participation in decision-making processes, and ensuring that public concerns are addressed promptly.

Enhancing Transparency and Communication

The city's efforts to enhance transparency through open-data government approaches and expanded communication channels are vital. Policies should mandate the regular publication of government data, ensure easy public access to information, and promote transparency in all government dealings to build public trust.

Protecting Against Misinformation

Raising awareness about the dangers of misinformation and promoting reliable sources of information is critical. Policies should include public education campaigns on identifying trustworthy information, collaboration with media to ensure accurate reporting, and stringent measures against the spread of false information. Due to the variety of ethnic groups living in the city, the city's publications should be in multiple languages to convey the same information to other ethnicities.

Gender Equality in Governance

The focus on increasing the proportion of seats held by women in local government highlights the need for gender equality. Policies should support initiatives to encourage women's participation in politics, provide leadership training for women, and implement gender-sensitive policies to ensure equal opportunities.

Financial Autonomy and Revenue Collection

Enhancing the city's financial autonomy by improving own-source revenue collection is crucial for sustainable development. Policies should explore new revenue streams, and ensure efficient budget management to support autonomous decision-making and project implementation.

ACTION TOWARDS SDGs

4.1 Priority SDGs and actions

SDG3: Good Health and Well-Being

3 GOOD HEALTH AND WELL-BEING

City actions:
- Offer training programs for community health volunteers.
- Conduct screenings for gallbladder cancer.
- Encourage leaders to lead exercise activity in their community.

Training programme for community health volunteers

The city offers training to community health volunteers to enhance their understanding in all aspects of proactive health promotion, disease prevention, health care, rehabilitation, and foundational public health work in communities. The training includes lectures, recreational activities, and both pre-tests and post-tests. Community health volunteers have been established in Thailand since 1977, playing vital roles in laying a strong foundation for public health in the country. Volunteers played important roles during the COVID-19 pandemic by coordinating care for individuals with positive results at home and managing home isolation, which helped control the pandemic in the city. The volunteers provide aid in primary care to their community members, especially those with mobility challenges and limited income.

Conduct screenings for gallbladder cancer

The city promotes learning and behavioral changes in eating habits among its residents to proactively prevent gallbladder cancer caused by consuming uncooked food. Additionally, the city collaborates with research institutions to prevent and eradicate gallbladder cancer. This partnership involves promoting and supporting budgets for the development of screening innovations to ensure widespread access to public services. Furthermore, it advocates for gallbladder cancer curricula for children and youth. The ultrasound screening activities incorporate innovations from research, including the OV-RDT test kit for liver fluke screening.

Encourage leaders to lead exercise activities in their community

"Good health is not for sale;
it must be earned by oneself."

The project promotes exercise in the Udon Thani City area, specifically Basalop-style in communities, with the slogan, **"Good health is not for sale; it must be earned by oneself."** This project aims to provide the public with knowledge on promoting health independently and to develop leaders in Basalop-style exercise. This proactive measure is taken to encourage a healthy lifestyle among the population while also preserving their traditional dance, known as "Basalop."

SDG4: Quality Education

4 QUALITY EDUCATION

City actions:
- Excellence Learning Center
- Promoting online commerce skills
- Eco-schools and zero-waste schools
- Equal Education

Excellence Learning Center

From the curriculum aimed at enhancing the potential to excellence of students under local government organizations, Ministry of Interior of Thailand has developed a curriculum promoting student development according to their interest and skills. Udon Thani City Municipality has been implementing this program since May 17, 2014. The curriculum, focused on fostering excellence in football, is designed to intensively develop football skills and aptitudes alongside the basic educational curriculum. Currently, there are 90 students enrolled who receive specialized training in skills, physical and mental endurance, and discipline, preparing them for actual competition. Additionally, two students from the program have had the opportunity to train with the Leicester City International Academy in England. Students were selected for the FOX HUNT project. They also had the chance to participate in a training camp and compete with the Football Association of Thailand under Royal Patronage (Chang Suek team). Furthermore, two batches of students who completed the program were selected for higher education studies, affirming the tangible success of the curriculum. The Udon Thani City Municipality continues to develop and manage educational programs with an Excellence Learning Center policy, focusing on student-centered learning tailored to their interests, backgrounds, or talents in sports such as football, volleyball, and boxing, nurturing seeds that will grow into saplings and mighty trees on the path to professional athletics.

"Udon Thani's Football Excellence Program develops student athletes for national and international success."

Promoting online commerce skills

The current economic situation has directly impacted the livelihoods of the people, affecting the economy, society, and environment. This has resulted in insufficient income for the population, increased unemployment rates, higher expenses, and mounting debt, all of which have negatively affected the local community economy. Udon Thani City Municipality recognizes the importance of the quality of life and well-being of its citizens, focusing on promoting and developing job skills based on the needs of the people to create opportunities, employment, and self-reliance, thereby improving their quality of life. The city has organized a short-term vocational training course titled **"Digital Marketing Strategy Development"** as part of an online commerce training project. This aims to equip interested citizens with knowledge and skills in online commerce, encouraging them to use their free time productively. Participants can use the knowledge gained to start a primary or supplementary career, providing options for the unemployed to find new employment opportunities.
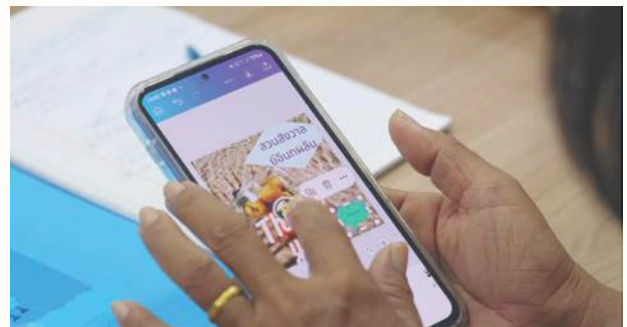
Eco-schools and zero-waste schools

Udon Thani City Municipality has joined the initiative of the Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment, to launch the Zero Waste School Project for the year 2023. This initiative aims to raise awareness, promote knowledge, and understand the methods of reducing waste, segregating waste, and utilizing waste effectively. It also focuses on the proper collection and disposal of waste within educational networks.

The project strengthens educational institutions nationwide, providing them with opportunities to develop teaching and management of natural resources and the environment. The activities are designed to be youth-centered, with the active participation of teachers, students, and surrounding communities. The goal is to establish an efficient waste management system at Municipal School 7 Rotfai Songkhro and Municipal School 1 Posri School. This fosters a positive attitude towards participation in recycling waste management among students, teachers, and educational personnel, creating added value and income from recycled waste. Additionally, it aims to instill the culture of waste separation and saving among students, teachers, and educational personnel.

Equal education

In the context of globalization, mastering languages is crucial for the future success of the younger generation. To support this, the city allocates funds to its public schools, enabling them to employ professional English teachers for each school, and Chinese teachers for 80 per cent of the schools. This funding is part of the city's development strategy, outlined in Mission 2: **"Improve quality of life and social capital to create a happy society, a city owned by all citizens, and inclusive in development"**, and Strategy 4: **"Elevate the quality of life and social capital to foster a caring society and create a city of well-being"**. The goal is to enhance, support and develop the educational process to meet high standards. For the 2024 fiscal year, 9.93 million Baht has been dedicated to this effort, representing 6 per cent of the Bureau of Education's total operational budget.

Typically, in Thailand, schools offering multiple languages charge high tuition fees. This situation restricts access to language education for families with moderate incomes, as schools need to charge additional fees to compensate professional teachers. By ensuring that language learning is accessible to all, students in Udon Thani City will face fewer obstacles and have access to quality education, thereby enhancing their opportunities for success in life.

"Udon Thani ensures equal access to quality language education and support for underprivileged children."

The city prioritizes not only formal education but also places significant importance on non-formal education, especially for underprivileged children who are outside the education system. Udon Thani City Municipal Education Office, by teachers teaching underprivileged children, has conducted field surveys of underprivileged children who have dropped out of the education system or have never received education at all, aged between 2 and 25 years, in the Udon Thani City area. This initiative received cooperation from the leaders of all 105 communities in conducting field surveys, searching, categorizing, and collecting data on the background of underprivileged children and the factors causing their situation. The aim is to compile this data to aid underprivileged children in a manner that is appropriate and tailored to the potential of each individual.

SDG8: Decent Work and Economic Growth

8 DECENT WORK AND ECONOMIC GROWTH

City actions:
- Promoting community-based tourism
- Promoting cultural street
- Digital Transformation in Udonthani "Udon Thani Walking Street Mobile Application"

Promoting community-based tourism

Udon Thani Province is a popular tourist destination, especially within Udon Thani City Municipality, due to its status as a transportation hub and its numerous cultural activities and attractions. Recognizing the importance of preparing to welcome tourists, Udon Thani City Municipality has launched a local guide program. This initiative aims to train and develop local guides, community scholars, and storytellers with potential, preparing them to welcome tourists who will visit Udon Thani Province in the near future. This activity not only promotes career opportunities for local residents but also supports and preserves local culture, transforming cultural heritage into a source of income.

Udon Thani City Multi-Cultural Street Development

Udon Thani City Municipality has revitalized the Ban Jik community area on Naresuan Road, which houses Wat Pa Ban Jik or Wat Pa Thipphayaratnimit, into a cultural and food street. This area is known for its variety of restaurants and as a cultural street where, every morning, locals participate in offering alms to monks, a traditional practice of forest temples. The project to improve and develop residential areas for Thai citizens of Vietnamese descent is part of the initiative to enhance Udon Thani into a livable city with diverse cultural communities, including Thai, Chinese, Muslim, Vietnamese, and Western residents. The city also developed the residential area for Thai citizens of Vietnamese descent on Sri Suk Alley to reflect a Vietnamese atmosphere. Future plans include the development of nearby Muslim neighborhoods, the Thai-Chinese Cultural Center, and the Pu-Ya Shrine by Nong Bua Lake, a revered site for Chinese people both domestically and internationally.

"Udon Thani promotes community-based tourism and preserves cultural heritage."

Digital Transformation in Udon Thani "Udon Thani Walking Street Mobile Application"

Udon Thani City Municipality has developed a mobile application named "Udon Thani Walking Street" for managing market stall fees. This initiative aims to enhance service efficiency and provide convenience for the public. The application allows vendors to book stalls for selling their goods on both a monthly and a daily basis. This technological advancement not only speeds up the process but also ensures transparency in management. The **"Udon Thani Walking Street"** application streamlines the stall booking process, making it more accessible and user-friendly for vendors. By leveraging digital tools, the municipality aims to reduce the time and effort required for manual bookings and paperwork, thereby improving overall service delivery. The transparency provided by the application helps build trust among vendors and the public, as it reduces opportunities for mismanagement and ensures fair allocation of market spaces. This initiative reflects the municipality's commitment to integrating technology into public services to enhance operational efficiency and foster a more transparent and accountable administrative process.

"Udon Thani Walking Street Mobile Application"
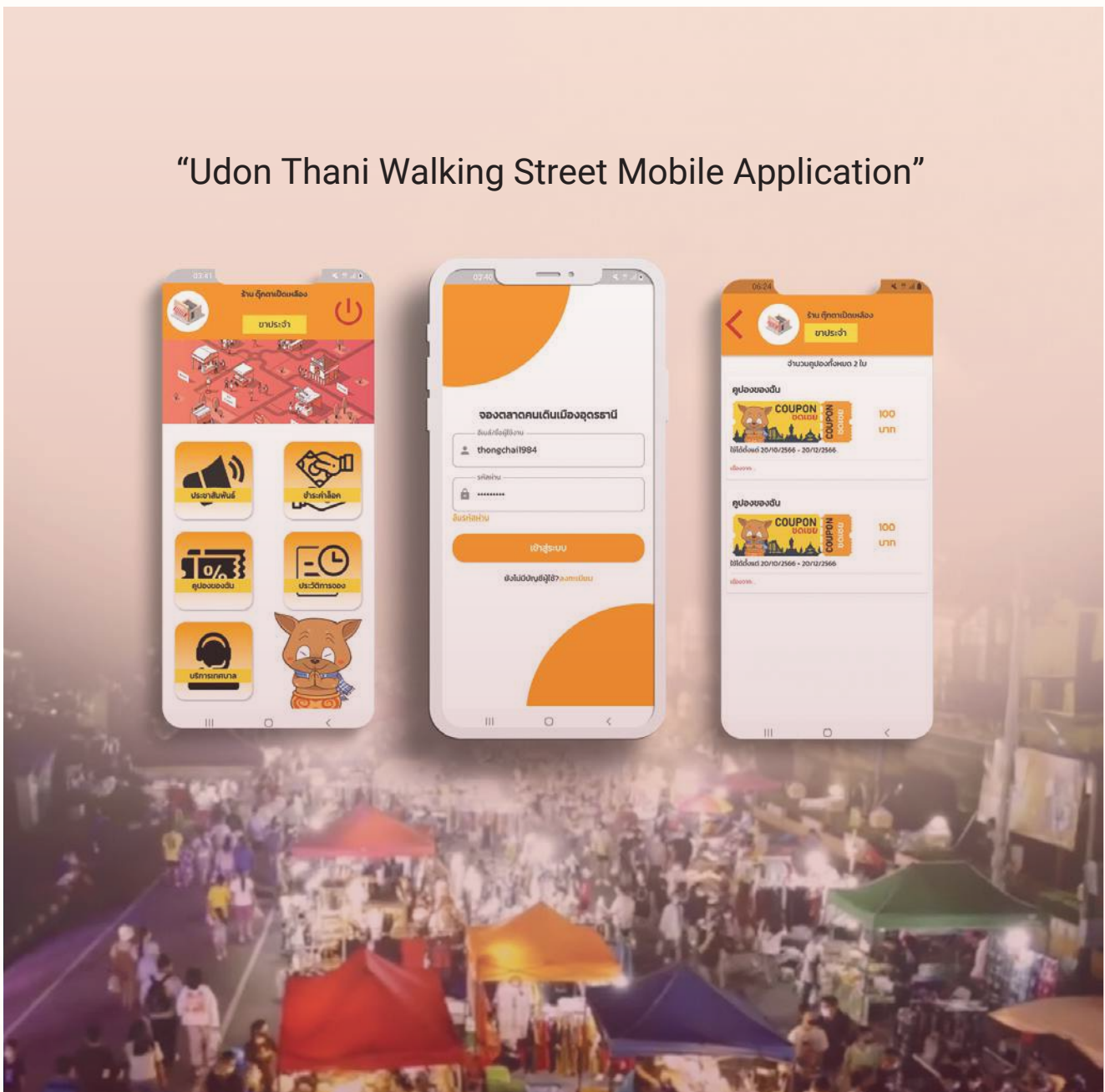
SDG11: Sustainable Cities and Communities

11 SUSTAINABLE CITIES AND COMMUNITIES

City actions:
- Waste to Energy
- Cultural Street

Waste to Energy

In the past, the management of municipal waste through landfill methods resulted in the accumulation of over 1 million tons of waste, leading to significant greenhouse gas emissions. Currently, there has been an advancement in waste management practices with the introduction of waste separation and the opportunity for private sector involvement in building facilities to convert waste into Refuse Derived Fuel (RDF). These facilities are capable of processing up to 300 tons of waste per day, handling both newly generated waste and the existing waste buried in landfills. This method effectively reduces the amount of waste in existing landfills and also decreases carbon emissions. Furthermore, the carbon reduction achieved can be calculated into carbon credits every six months, enhancing environmental management and contributing to sustainability efforts.

> "Udon Thani's waste-to-energy initiative
> reduces landfill waste and carbon emissions,
> contributing to sustainability."

Cultural Street

Udon Thani is considered a city of high cultural diversity, due to the settlement of various ethnic groups and the legacy of global culture from the Vietnam War era. However, these cultures are beginning to fade, so the Udon Thani Municipality is trying to leverage this cultural diversity as a tourist attraction. They aim to showcase the stories and lifestyles of people from diverse cultures living together. Consequently, markets within the municipal area have been upgraded to become cultural tourism destinations and routes for trading various foods, including Thai-Chinese, Vietnamese, and Muslim cultures. Additionally, there have been improvements to religious and cultural sites in the municipality, such as stupas, temples, shrines, and museums.

"Udon Thani leverages its cultural diversity
to promote tourism
and preserve heritage sites."

SDG13: Climate Action

City actions:
- Carbon Credits - Thailand Voluntary Emission Reduction Program: T-VER

Following the success in waste management using waste-to-energy incinerator technology, the municipality has leveraged the resulting carbon reduction to participate in the Thailand Voluntary Emission Reduction Program (T-VER), in collaboration with the Thailand Greenhouse Gas Management Organization (TGO). It has become one of the local government organizations in Thailand with the highest accumulated carbon credits. The Udon Thani City Municipality has already sold its first batch of carbon credits, totaling 37,783 tons of carbon dioxide, to a foundation from Germany. This sale was made at a price higher than the market rate, at 8 euros per ton, amounting to a total of 11.7 million baht. Besides this first batch, the municipality has registered an additional 36,151 tons of carbon credits and is considering the terms of sale to maximize returns. The **"Green City"** policy aims to make Udon Thani a low-carbon or **"Low Carbon City,"** with various projects planned to utilize the proceeds from carbon credit sales, such as installing solar panels within municipal offices to reduce energy consumption, purchasing organic waste processors for community use, installing solar-powered lighting systems at municipal sports facilities, and improving water quality at various water sources. Additionally, efforts to transform the city into a walkable one with universally designed sidewalks to promote reduced vehicular use are underway. In the future, the reduction in carbon dioxide from decreased vehicle use could also be calculated as carbon credits. Carbon credits are a starting point that allows both public and private sectors in Thailand to participate in the international effort to mitigate global warming through a significant future carbon market. The city not only plays a small part in combating global warming but also uses the proceeds from carbon credit sales to fund new projects and drive various dimensions of urban development.

"Udon Thani Municipality sold 37,783 tons of carbon credits
for 11.7 million baht through the T-VER Program.
The "**Green City**" policy funds low-carbon projects,
including solar panels and organic waste processors."

SDG16: Peace, Justice and Strong Institutions

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

City actions:
- Smart Safety Zone 4.0
- Stateless people registration
- Transparent governance

Smart Safety Zone 4.0

Udon Thani Municipality, in collaboration with Udon Thani City Police Station, is one of the 15 pilot stations implementing the Smart Safety Zone 4.0 system, creating a city free from crime with the people at its core. This initiative is part of the SMART SAFETY ZONE project by the Royal Thai Police, and involves collaboration from various governmental, private, and local agencies to establish a network for crime prevention and proactive crime control plans. This includes area adjustments and the use of technology to enhance crime prevention in public areas.

In Udon Thani Municipality, more than 1,300 CCTV cameras have been installed along main roads, parks, and communities covering all four districts to monitor and ensure city safety. The system also includes speed detection, license plate recognition, and intelligent vehicle classification, along with emergency notification points and speed detection data distribution for vehicles entering and exiting the city, blind spots, and obscured areas. The CCTV footage is directly accessible to police officers for monitoring, enabling rapid response to any incidents.

The municipality has also implemented a comprehensive safety framework which includes trimming trees and branches, enhancing street lighting throughout the city, improving traffic signals, and clearly marking pedestrian crossings. Additionally, there is a Disaster Prevention and Mitigation Department and a 199 hotline available 24 hours a day to assist the public and reduce the workload on police officers.

The Smart City policy of Udon Thani Municipality aligns with the Royal Thai Police's Smart Safety Zone policy, which selects safety zone areas based on three principles: 1. Economic areas, 2. Provincial landmarks, and 3. High-risk crime areas. The areas chosen by Udon Thani City Police and the municipality include Watthananuwong Road, Thong Yai Road, Railway Road, Thikathananont Road, and Prachaksinlapakhom Road, which are key economic zones with several shopping centers. Beyond these areas, the municipality has expanded the safety framework to cover a 47.70 square kilometer area under its jurisdiction, ensuring the city is safe and crime-free in preparation for welcoming international tourists during the World Horticultural Expo in 2026, making them feel secure, impressed, and eager to revisit Udon Thani.
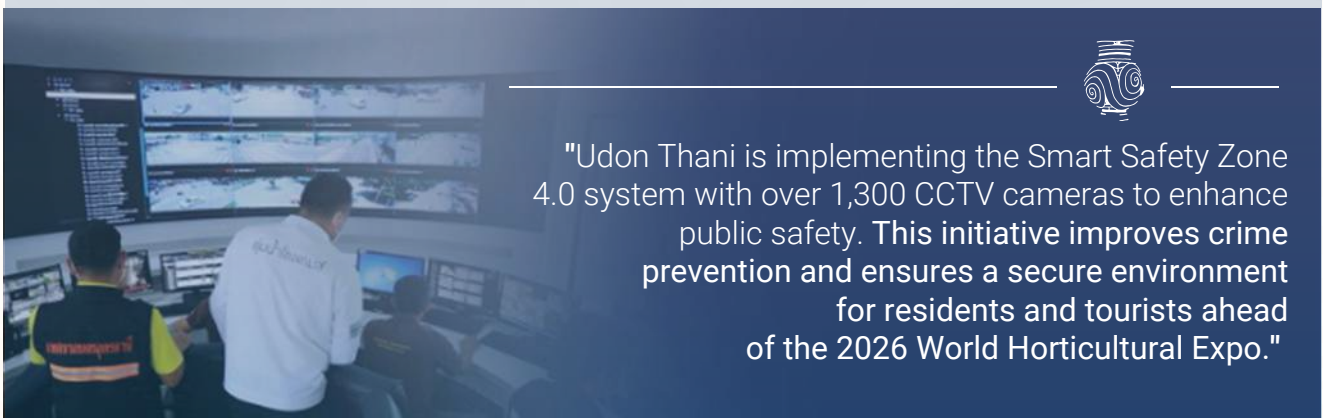
"Udon Thani is implementing the Smart Safety Zone 4.0 system with over 1,300 CCTV cameras to enhance public safety. This initiative improves crime prevention and ensures a secure environment for residents and tourists ahead of the 2026 World Horticultural Expo."

Stateless people registration

To elaborate on the success of the assistance provided to stateless individuals and those lacking legal status mentioned in section 3.2 on SDG16, this initiative directly aligns with the core concept of the SDGs: **"Leaving No One Behind."**

The continuous economic growth of the Udon Thani City Municipality has attracted people from less economically developed areas to move to Udon Thani Province, especially to the city area. This includes both Thai nationals and foreigners, particularly migrant workers from neighboring countries. Their children, who were born in Thailand, often end up stateless and without registration status, not even being registered at birth. This leads to a lack of opportunities in various areas, such as legal right, health-care services, employment and labor protection, and education. A project to address the issue of statelessness and lack of registration status was initiated to provide these individuals with the opportunity to access basic life foundations. Previously, there were about 1,255 people in this situation. If unaddressed, it could have long-term national security implications, social issues, and even lead to human trafficking, exacerbating existing problems.

Community leaders have been appointed as volunteers for registration and identification to survey and verify stateless and unregistered individuals within the communities, covering the entire municipal area. Priority is given to vulnerable populations, such as children, women, the disabled, and the elderly. This involves public participation and collaboration with other entities like the Udon Thani Provincial Justice Office, Khon Kaen University, the Ministry of Foreign Affairs, schools in the municipality, hospitals nationwide, national registration offices, and the Social Welfare Department.

The benefits at the individual level include the elimination of statelessness and unregistered status within the Udon Thani City Municipality, allowing these individuals to access basic rights such as the ability to travel outside their residence, mobility rights, the right to legally establish a family, and property rights. This leads to employment opportunities and income to support themselves and their families. Community-level benefits include fostering public participation and opportunities for communities to engage in solving municipal issues, strengthening communities, and eliminating homelessness. On a national or international level, it helps reduce risks associated with human trafficking, including sexual exploitation, forced labor or services, slavery, and servitude, addressing an international issue.

Addressing the issue of statelessness and the lack of official registration status in the Udon Thani City Municipality, the city has undertaken initiatives to resolve the problems faced by stateless individuals and those without registration status from 2008. These efforts are grounded in the principles of good governance, particularly responsibility, participation, and transparency. This has enabled stateless persons to register in the national registration database, obtain identification cards, and access basic rights essential for almost all aspects of life. Until now, the city has provided assistance to a total of 1,527 stateless and unregistered individuals. This includes 622 males and 905 females. Most of these individuals are children aged between 0-15 years old.

"Udon Thani Municipality has helped 1,527 stateless individuals gain legal status and accessing basic rights, reducing risks of human trafficking and fostering community support for vulnerable groups."

Transparent governance

The Udon Thani Municipality has initiated a project to develop the potential of the Udon Thani Municipality Community Committee by organizing training courses to promote participation in community development. These courses aim to enhance communication skills, develop personal attributes, and build the necessary knowledge for working with the community. These community committees serve as a crucial mechanism for advancing municipal policies into community practices. Enhancing the capabilities of these personnel is considered very important for effectively driving municipal policies.

"Udon Thani Municipality is training its Community Committee
to improve skills and effectively implement municipal policies."

CONCLUSION
AND NEXT STEPS

5.1 Benefits of Action-Oriented VLR

Policy coherence (to national plan and SDGs)

The focus in Udon Thani Province is on enhancing SDG localization, where the key to success lies in increasing the knowledge and engagement of both local officials and the public with SDG principles and initiatives. A significant challenge lies in bridging the knowledge gap on SDGs among these groups, necessitating targeted educational and awareness-raising efforts to promote sustainable development effectively.

Udon Thani Province prioritizes the **"People Pillar"** of the SDGs, aiming to tackle poverty, hunger, health, education, water, sanitation, and gender equality. However, there are limited personnel and financial resources. The work performed at the grass-roots level is heavily dependent on local volunteers. With this financial challenge, it poses challenges to these efforts. Thus, lesser grass-roots level progress than expected resulting in delaying in achieving the national and global goals. Currently, volunteers often work for little or no pay. They need extensive training and reasonable remuneration to support SDG-related projects effectively.

Economic-wise, Udon Thani City's strategy to become a MICE hub has been in progress, enhancing business, trade and tourism in connection with the Greater Mekong Subregion, with notable efforts from the city's municipality. VLRs are instrumental for local governments to track their SDG progress and assess the impact of their policies. Similarly, Voluntary Sub-national Reviews (VSRs) could offer a means to evaluate SDG achievements on a regional scale, providing a comprehensive view of sustainable development efforts.

"Udon Thani Province prioritizes the **"People Pillar"** of the SDGs, aiming to tackle **poverty, hunger, health, education, water, sanitation, and gender equality."**

Strengthened multilevel governance

The process of developing VLR for Udon Thani City Municipality emphasizes the importance of strengthened multilevel governance to drive sustainable development and ensure effective SDG implementation. Through the VNR-VLR Studio Workshop, the city presented its VLR and benefits from the action-oriented VLR process to the subnational and national governments. Udon Thani City's VLR is a good showcase of how a city can benefit from VLR and how VLR can address gaps in multilevel governance.

This altered the dialogue among the multilevel government agencies on how to strengthen multilevel governance through VLR and how to encourage other city governments and subnational governments throughout the country to develop their own VLR or VSR.

Enhanced data environments

From the development of the VLR through the collection of statistical data to track progress toward achieving SDGs and guiding the country toward sustainability, it was found that statistical data disaggregated by gender, age, income level, and other key social indicators at the local level is highly important. Without quality, reliable, and categorized data, in-depth data analysis becomes difficult or may lead to inaccuracies, which could hinder understanding of the problems, issues requiring attention, and target groups in need of assistance.

During the VNR-VLR Studio Workshop, data from the VLR report and limitations in data, which prevented full explanation of the context, challenges, and progress of municipalities, were presented. The National Statistical Office (NSO) acknowledged these issues and agreed that a system for collecting more detailed and in-depth statistical data at the municipal level should be established. Although some municipal data has been collected, it lacks systematic organization and has not been adequately analyzed to support more targeted policymaking.

In summary, the development of the VLR report for Udon Thani Municipality highlighted the importance of systematic data collection and analysis. Like national-level statistics, municipal data should be sufficiently detailed to facilitate more proactive and targeted policymaking.
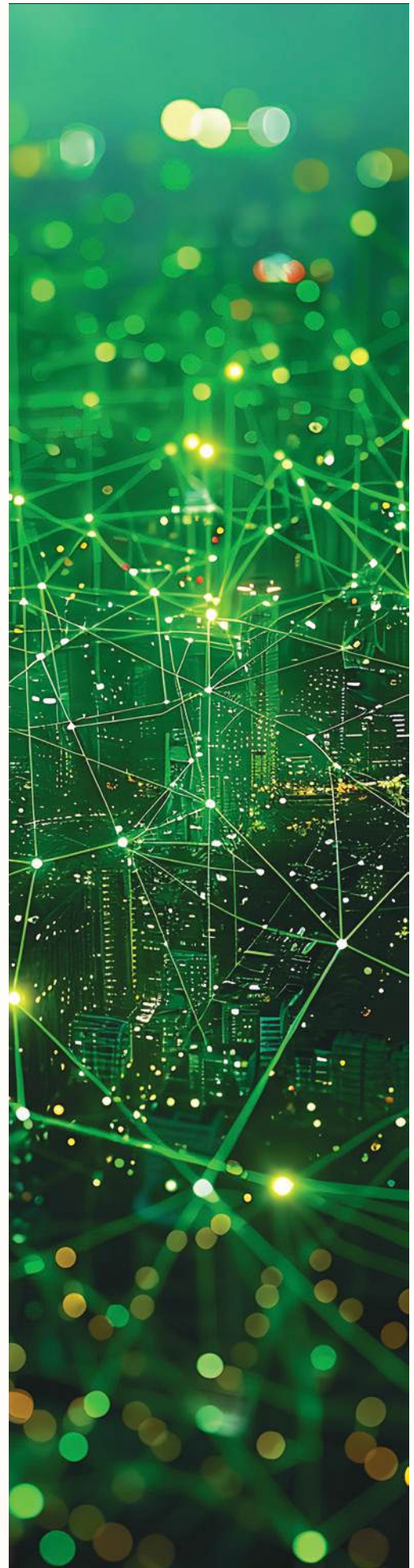
International positioning

The VLR process also fostered connections with other cities committed to sustainable development regionally and globally. SDG conferences were key moments to network and learn from peers.

Asia-Pacific Urban Forum 8 (APUF-8)

The **"Towards Health and Wellbeing in Cities for People and Planet: Engaging Urban Stakeholders"** session at the Asia-Pacific Urban Forum 8 (APUF-8), held on 23 October 2023, at the Suwon Convention Center in Korea, focused on integrating health and well-being in urban development, particularly in secondary cities. The event, organized by Stockholm Environment Institute (SEI) Asia, Thammasat University's School of Architecture and Planning, and Udon Thani City Municipality, highlighted the importance of natural environments for mental health and urban climate adaptation. Deputy Mayor Mr. Nitat Noichanad and Deputy Mayor Mr. Phoonkiat Phuttharak of Udon Thani City Municipality contributed significantly by presenting their city's vision for urban health and well-being, emphasizing the role of green spaces, and showcasing collaborative projects aimed at achieving safe, resilient, inclusive and sustainable cities.

Asia-Pacific Forum on Sustainable Development 2024 (APFSD)

Udon Thani City Municipality represented itself in the Asia-Pacific Forum on Sustainable Development 2024 (APFSD) in Bangkok, Thailand, from 20 to 22 February 2024. On 22 February 2024, during a side event titled **"The Rise of New and Emerging Cities in Asia: Leveraging VLRs for a Sustainable Urban Future,"** organized by ESCAP, ADB, the United Nations Resident Coordinator Office Indonesia, UCLG ASPAC, IGES and UNDESA; Udon Thani City Municipality presented its experience with the VLR process to approximately 40 participants. The city representative shared insights on the city's motivations for developing a VLR, its role in evaluating progress, addressing local challenges, enhancing policy coherence, fostering multistakeholder engagement, and the benefits of data collection and analysis in aligning city initiatives with SDGs 3, 4, 8, 11 and 16. She also outlined future commitments to addressing identified gaps and securing additional funding for sustainable development. [the Global VLR exchanges could be added]: technical meeting to share VLR progress, challenges and opportunities with cities that were in the process of preparing a VLR or that had concluded it recently. The session was divided into three segments, (1) data; (2) stakeholder engagement; (3) Strategic Action and next steps. Ms. Siriwarang Homepirome, Secretary to the Mayor of Udon Thani, presented on the data track.

5.2 Administrative structural issues

Administrative structural issues impact the implementation of Udon Thani City's SDGs. Several key challenges and areas require attention. Issues such as operational, financial, and strategic planning hinder the city's efforts to achieve the SDGs effectively.

Resource Constraints

The municipality faces significant limitations in both human and financial resources. This challenge impacts its ability to implement projects and initiatives aimed at achieving the priority SDGs. With limited staff and financial resources, the capacity to implement, monitor, and sustain their projects is somehow constrained.

Reliance on Volunteers

Many of the projects depend heavily on the work of local volunteers. These volunteers often receive little to no financial support, which can affect motivation and sustainability.

Multi-level Coordination

A significant challenge is the lack of effective communication and coordination between local, sub-national, and national levels of government. Projects often follow a top-down approach, which may not adequately address the unique problems and needs of local communities. This disconnect can lead to inefficiencies and missed opportunities for tailored, impactful interventions.

Limited Budget for Tailored Policies

The local government's limited budget restricts its ability to develop and implement policies that are specifically tailored to the unique needs of its population. This limitation affects the municipality's ability to respond flexibly and effectively to local challenges, making it harder to achieve the SDGs in a way that reflects the community's specific context and needs.

5.3 Means of implementation

Strategic action

The Udon Thani City Development Plan aligns with national and subnational policies, ensuring synergy with broader development agendas. This alignment facilitates the support and integration of local initiatives with larger-scale projects. The goals adopted from the global SDGs are tailored to fit the local context within Udon Thani City Municipality, ensuring that global priorities are reflected in local actions.

Data collection

Udon Thani City Municipality has achieved significant progress in various development initiatives. However, the data collection process to measure the achievement of specific goals is not systematically designed, leading to a deficiency in data necessary for thorough analysis and continuous improvement. Measuring progress in implementing the SDGs is challenging, as the success of infrastructure development does not always reflect quality of life indicators. Many relevant metrics are unavailable at the city level. To address this, the city's action plans need to systematically define project outcomes, performance indicators, and data collection methods to ensure accurate tracking of progress and identification of areas needing improvement.

Multi-stakeholder engagement

The city engaged various stakeholders, including the Udon Thani City Municipality Civil Council and the Children and Youth Council, to gather input and address community concerns. This participatory approach ensures that development initiatives reflect the needs and priorities of the local population. However, multi-stakeholder engagement should be strengthened, and marginalized groups should be encouraged to raise their concerns and make suggestions to the city government.

Technology and innovation

The city emphasizes the use of technology to enhance governance and service delivery. Adoption of IT infrastructure aims to improve efficiency and transparency in municipal operations. Strategic use of technology supports data-driven policy-making and facilitates the monitoring and evaluation of development projects.

Advocacy and visibility

Advocacy efforts focus on promoting sustainable development goals through public awareness campaigns and international forums. Udon Thani City Municipality actively participates in events such as the Asia-Pacific Urban Forum and the Asia-Pacific Forum on Sustainable Development to share insights and experiences, enhancing the city's visibility and commitment to sustainable development.

Financing

Financing strategies could explore new revenue streams to enhance the city's financial autonomy. Efficient budget management supports autonomous decision-making and the implementation of sustainable development projects. The sale of carbon credits is one innovative approach to generating revenue, which is reinvested in environmental and infrastructure projects to further urban development.

5.4 Beyond VLR

Future projects

By addressing the root cause of the city's concern through incorporating Quality of Life Initiative into VLR, the future actions toward social issues like drugs, marginalization, wastewater treatment coverage, air pollution, governance, debt, local economy and cultural awareness among the young generation can be more focused.

Social problems among the young generation

The issue of drug abuse is a significant problem among youth, which stems from weak family relationships, limited access to education, and societal rejection. The municipality has analyzed the root causes and developed solutions, which include promoting strong community, using modern technology for monitoring and preventing youth from forming harmful groups, establishing a hotline for quick reporting, and conducting strict drug testing in schools and entertainment venues.

As for the declining interest among youth in local culture, the municipality plans to collaborate with educational institutions to attract more youth participation in local cultural activities. The city will create platforms for community scholars to share their knowledge, improve public transportation to make cultural sites more accessible, offer more skill training in arts related to local culture, and organize competitions that blend local and modern cultures, such as cooking, fashion, and singing, with the winners showcased at the International Horticultural Expo which will be held in Udon Thani City in 2026.

Marginalized groups

For marginalized groups, the municipality plans to work with community leaders to ensure that these groups receive comprehensive and fair access to government welfare. This includes providing educational scholarships and promoting proactive healthcare. At the same time, efforts will be made to identify individuals at risk of engaging in violence, guiding them toward a more positive attitude and peaceful integration into society. The city also plans to establish shelters and promote vocational opportunities for marginalized individuals. Additionally, this group includes migrant workers who may have entered the country illegally. The municipality will encourage employers to comply with the law.

Environmental pollution

The municipality's primary environmental issue is the limited coverage of the wastewater treatment system, which has led to the pollution of natural water sources within the municipality and negatively impacted the scenic beauty. The municipality plans to use the information from the VLR report to request funding from the national government to expand the wastewater treatment system's coverage area. This will help restore the aquatic ecosystem and make the city cleaner.

Another issue is waste disposal in public areas. To address this, the municipality plans to install CCTV cameras and connect them to the system of law enforcement authorities for prompt action. Additionally, raising public awareness is crucial. The municipality will use a variety of social media platforms and other channels to reach all groups of the population.

Air pollution is another challenge, which may be difficult for the municipality to fully control since most of the dust comes from agricultural activities outside the municipal area. Acknowledging the health impacts, the municipality plans to implement a health warning system for vulnerable groups and the general public, using communication methods that can reach all citizens.

Governance

Developing the foreign language communication skills of municipal employees is important because there is a population of foreign residents within the municipality who require English for communication when receiving various services from the city. Therefore, the city aims to enhance its employees' English communication abilities and measure the satisfaction of foreign residents who use municipal services. In addition to communication, providing efficient, fast, and transparent services is also crucial. The municipality plans to incorporate more IT solutions to facilitate services and improve transparency. This approach will increase public trust among the people toward the city's operations.

In terms of promoting public participation, the municipality already has a civil council and a youth council in place. However, it is necessary to increase their involvement as well as enhancing the participation of civil society organizations in gathering public opinions and in developing municipal policies.

Household income

Debt is a significant problem among the public. The municipality has plans to promote SMEs to meet standards, especially SMEs that produce community products. They aim to promote tourism routes within the municipality alongside the sale of unique local products. The municipality will encourage community product sales events in the Mekong River region, expand online sales courses to be taught in schools, and promote the creation of innovative production methods that can make products that meet customer needs. They will also support alternative occupations for low-income individuals.

The municipality is proposing the campaign **"Udon Makes, Udon Uses, Udon Prospers"** to encourage people to use local products.

Monitoring and Evaluation

From the process of collecting statistical data to analyze the effectiveness of the municipality's policies, it has become evident that systematic data collection and analysis are crucial for designing policies that address existing issues and align with the municipality's goals of creating a sustainable city. The optimal use of this data will be achieved by following the Plan-Do-Check-Act (PDCA) process, ensuring data is collected regularly to monitor long-term progress. This data should be continuously analyzed to reflect and improve the effectiveness of actions.

APPENDIX

APPENDIX A
National and regional plans

20-year National Strategy (2018–2037)

The 20-year National Strategy (2018–2037) for Thailand encompasses a comprehensive road map aimed at securing the nation's future across several key dimensions. It emphasizes enhancing national security, boosting competitive capabilities, fostering human potential development, and ensuring equitable social opportunities and equality. The strategy also prioritizes environmentally sustainable quality of life growth and seeks to balance and improve the governance system. Through these focus areas, the strategy aims to navigate Thailand towards sustainable development, resilience, and inclusive prosperity.

Thirteenth National Economic and Social Development Plan

The 13th National Economic and Social Development Plan, covering the years 2023 to 2027, is designed with a clear focus and specific development goals that outline the country's direction for the next five years. This plan aims to navigate various challenges to achieve **"a stable, prosperous, and sustainably developed Thailand,"** guided by the philosophy of the sufficiency economy, which aligns with national strategic goals. It prioritizes reinforcing this philosophy, enhancing the resilience of citizens in all aspects. Additionally, the plan aligns with the United Nations' SDGs, adopting the principle of **"leaving no one behind"** to enhance the quality of life for all citizens. From an economy perspective, it targets the growth of the bio-economy, circular economy, and green economy, stressing the use of modern scientific knowledge, technology and innovation to create economic value. This approach aims to balance the conservation and utilization of natural resources and biodiversity, and to adapt production, service and consumption patterns to minimize environmental impact.

Northeastern Development Strategy

The Northeastern Development Strategy (2023-2027) aims at sustainable economic growth and improved quality of life through effective water management, ensuring sufficient resources for both economic development and livelihoods. It addresses poverty, aiming to enhance the living standards of the low-income population and reduce social disparities. The strategy focuses on strengthening the internal economic base while addressing natural resource and environmental issues. Integrated tourism development is a key aspect, improving transport and logistics networks that connect with the central economic regions and the Eastern Economic Corridor (EEC) to foster urban and new economic area development within the region. Furthermore, the strategy emphasizes developing cooperation and leveraging agreements with neighboring countries to stimulate economic activities along border areas and economic corridors. It presents a holistic approach to addressing the challenges and opportunities in the Northeastern region of Thailand.

Provincial Development Strategy

The Provincial Development Strategy (2023-2027) emphasizes enhancing trade and investment capabilities to boost competitiveness within the Mekong sub-region. It promotes the development of the agro-industry, aiming to elevate standards for environmentally friendly agriculture and organic farming practices. A key focus is on improving quality of life to strengthen societal resilience against changes. Another important strategy is to develop the MICE and tourism industry within the province through advancing geographical and logistical advantages. The strategy includes sustainable management of natural resources and environmental protection. Additionally, it aims to promote security and safety for the people and properties. This highlights a comprehensive approach towards sustainable development and societal well-being in the Northeastern region. The City Development Plan aligns with these priorities, ensuring that Udon Thani City Municipality contributes to the province's development goals.

Udon Thani Province's Strategic Plan for Local Administration Organizations

Udon Thani Province's Strategic Plan for Local Administration Organizations (2018-2022) focuses on promoting competitiveness in the Mekong sub-region, promoting agro-industrial development, with a focus on safe and organic agricultural practices. It aims to improve the quality of life, ensuring a resilient society and adaptable economy, diverse cultural activities, and technological innovation. The strategy aims at promoting MICE. It includes sustainable management of natural resources and the environment, bolstering security and safety for the community's life and property. Integral to these efforts is the adoption of integrated management practices, ensuring a comprehensive approach to development and governance within Udon Thani Province.

APPENDIX B
VLR preparation methodology

Step I: Planning and Institutionalization

Project kickoff

The project kicked off with a virtual inception meeting on 27 June 2023, bringing together 36 representatives from nine different entities from international, national, provincial and local levels, namely, Udon Thani City Municipality, the Udon Thani Provincial Office, NESDC, UN-Habitat's Bangkok Programme Office, UN-Habitat Headquarters, UN ESCAP, and UNDP (Figure B1). The project was introduced, followed by an initial workplan. Udon Thani City Municipality affirmed its commitment to develop a VLR.

During the meeting, Udon Thani City Municipality shared insights about its current challenges, achievements and actions being taken that could inform the development of the VLR. With regard to stakeholder engagement, the city proposed using the Citizen's Council as a mechanism to encourage community engagement in the VLR development process. NESDC committed to aiding the municipality with the data gathering phase.
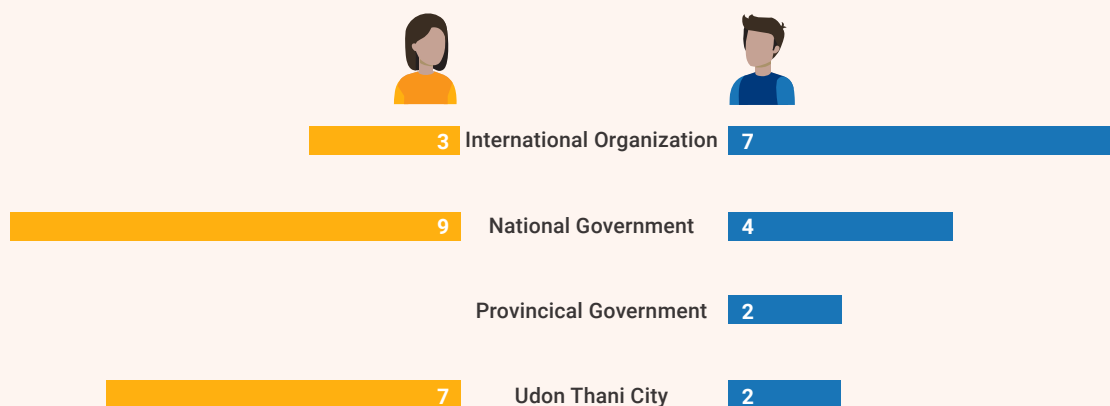
Figure B 1 Number of participants by sector and gender at the inception meeting

Signing of Letter of Intent

A Letter of Intent between Udon Thani City Municipality and UN-Habitat was signed on 16 October 2023. The ceremony was held in the presence of Udon Thani Provincial Office, NESDC. Number of participants by agencies is as Figure B3.

Figure B2 Signing of Letter of Intent between Udon Thani City Municipality and UN-Habitat, in the presence of Udon Thani Provincial Office and NESDC

	Female	Sector	Male
Youth	5		7
CSO			2
Private sector			2
Education	8		13
Community	17		9
Local council	6		8
Local government officers	52		26
Provincial government officer	6		8

Figure B3 Number of participants by sector and gender at the training workshop and stakeholder consultation workshop

Step II: Definition of VLR and SDGs

Review of national and local plans

After the initial step, the process continued with reviewing the Udon Thani City Development Plan, along with national and provincial plans, as listed in the 1.1 Udon Thani City Municipality's Vision (Chapter 1). UN-Habitat's VLR data tool was also used to align national plans and the local plan to SDG and UMF indicators. Policies and actions listed in the city development plan are aligned to SDG targets and indicators, and also UMF indicators.

VLR DATA TOOL

This VLR Data Tool was developed by the SDG Localization and Local Governments Team of UN-Habitat to support the VLR Process. In particular, it assists with the VLR Phase 'Situation Analysis' and the corresponding Data Track.

The tool guides links the Global Urban Monitoring Frameworks (UMF) with the VLR process. It looks at the stocktaking of relevant national/local strategic plans and their priorities and indicators, the alignment of these with the SDGs and the UMF, the selection of relevant indicators for the VLR, and the assessment of available data sources, before initiating a Gap-Analysis of the current selection allowing for subsequent adjustments. Finally, it offers the opportunity to outline plans for own data collection and stakeholder engagement to collect data on indicators for which official sources are unavailable.

The outcome are two lists of indicators for the VLR (one complemented with official data sources; one with plans for own data gathering) that are neatly aligned with the SDGs and the UMF ready for data collection and analysis.

We have included small info boxes within the file but it is recommendable to read the full instructions that have been sent alongside the tool, before using it to understand all functionalities. For questions and queries, please do not hesitate to reach out to:
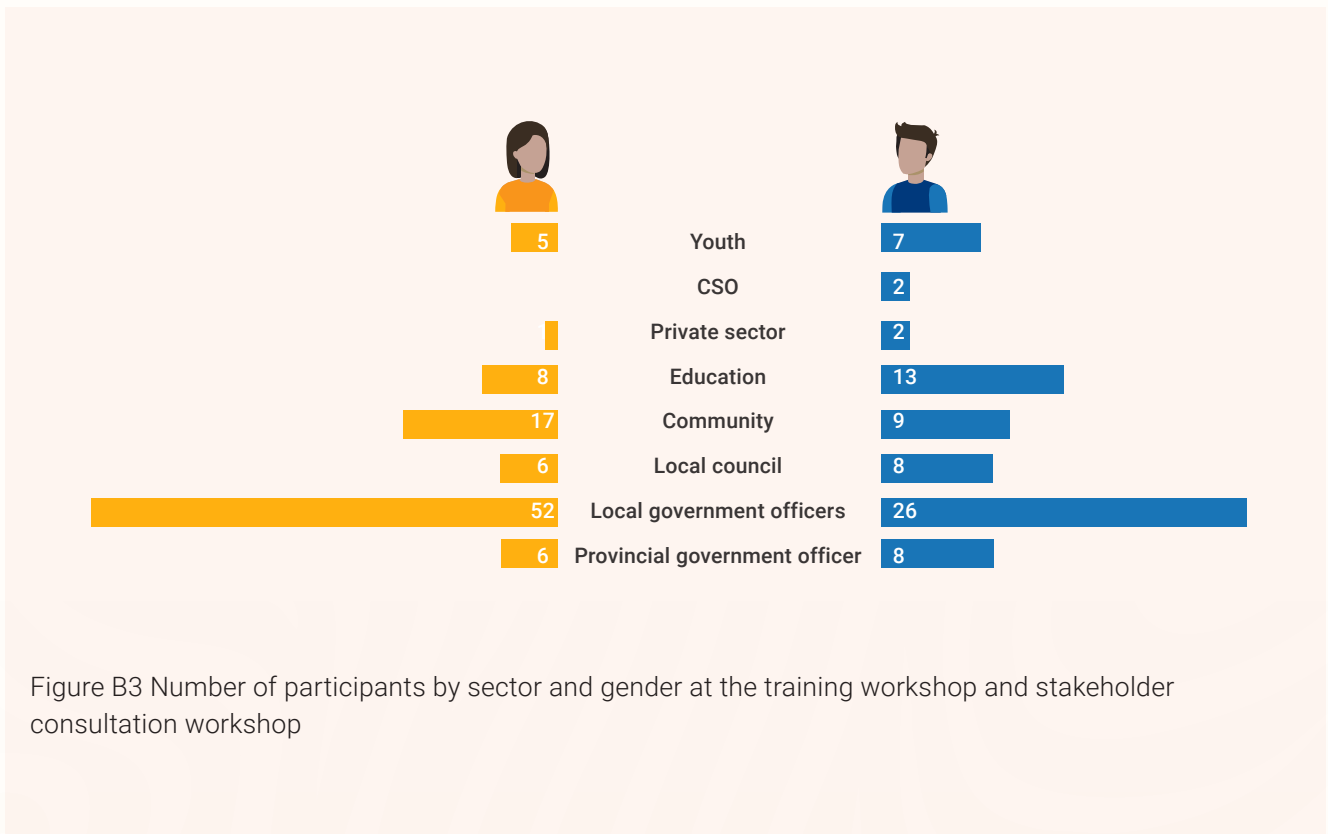
sdglocalization.unhabitat@un.org or caroline.kienast-vonheim@un.org

Sustainable Development Goal 4 Quality Education		Urban Monitoring Framework		National Level Plan(s)	Local Level Plan(s)	Wish to include in the review?	Data available?	Data source	Scale	Year
SDG Target	SDG Indicator	UMF Indicator:	UMF Domain:							
4.1: By 2030, ensure that all girls and boys complete free, equitable, and quality primary and secondary education leading to relevant and effective learning outcomes.	4.1.1: Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex									
	4.1.2: Completion rate (primary education, lower secondary education, upper secondary education)	1.2.3 [UMF-11] Education completion rate	Society Inclusive		Education completion rate					

Alignment of city's plan and actions to SDGs

From the desktop review of the city development plan and the outcomes of the training workshop, the alignment of the city development plan to SDGs was discussed. The SDGs and targets are well reflected in the Local Development Plan, which encompasses six strategies involving respective actors from divisions and bureaus within the city office. The Udon Thani City Development Plan 2024 and other city initiatives cover 15 goals: SDG1, SDG2, SDG3, SDG4, SDG5, SDG6, SDG7, SDG8, SDG9, SDG10, SDG11, SDG13, SDG15, SDG16 and SDG17 (Table 2). The city's approach to each goal is comprehensive, featuring multiple actors collaborating on the same goals.

For example, under Strategy 4, titled **"Elevate the quality of life and social capital to foster a caring society and create a city of well-being,"** two bureaus, four divisions, and one office are collaborating to fulfill 12 SDGs. An adequate budget was planned and allocated to a number of projects under each strategy, with set objectives, details of activities, and timeframes. The annual reporting serves as the platform for the monitoring and evaluation system. The city's policy considers three dimensions of sustainable development: economic, social, and environmental.

Desk review on data

Udon Thani City Municipality's data was preliminarily reviewed during June – October 2023. 77 UMF indicators were categorized into 4 groups: (1) data is available, (2) data is available at other level (district/province), (3) similar data is available (proxy), and (4) data is not available. Data is also aligned to Udon Thani City Development Plan's strategies. If data is not available, suggestions on data collection are made.

The desk review on data for Udon Thani City Municipality's VLR process involved a structured methodology to ensure comprehensive data collection and analysis. The process began with the working group, under the technical guidance of UN-Habitat, reviewing the available municipality statistical data. If city-level data was not available, the group looked for data at the subdistrict level, as it closely reflects the city's context. In cases where subdistrict data was insufficient, district-level data was considered. When neither city, subdistrict, nor district data was available, provincial data was utilized. The collected data was then benchmarked against relevant comparisons, such as provincial or national averages, or international guidelines, to provide a robust analysis of Udon Thani's progress in alignment with the SDGs.

Identifying city's priority issues and goals

Strengths Weaknesses Opportunities Threats (SWOT) exercise was organized to understand Udon Thani City Municipality's priority issues and goals in the 2-day training workshop on 16–17 October 2023. The workshop aimed to provide participants with comprehensive knowledge of the SDGs and UMF. It also emphasized the alignment of local development plans with provincial and national strategic plans and the SDGs. Key activities included a SWOT analysis of the city, identification of priority issues and SDGs, assessment of data availability and alignment with the UMF, stakeholder mapping.

The attendees represented diverse sectors are the Municipal Council, Udon Thani Provincial Office, NESDC, Udon Thani Provincial Statistical Office, Udon Thani Rajabhat University, community committee, youth council, the private sector, and Udon Thani City Municipality (Mayor, Deputy Mayor, Office of the Municipal Clerk, Bureau of Education, Bureau of Public Works, Bureau of Public Health and Environment, Bureau of Finance, Division of Social Welfare, Division of Strategy and Budget, Division of Civil Registration and Identification Card, Division of Personnel, Division of Medical Service, Division of Tourism, and Division of Taxation Mapping Information and Property Registration).

The SWOT analysis of Udon Thani City Municipality reveals several strengths across different domains, including strong public participation, collaboration with community groups, good infrastructure, diverse external funding sources, a variety of SMEs, and effective environmental policies. Weaknesses include areas used for unlawful activities, economic disparities, insufficient personnel for environmental management, and budget constraints in cultural preservation. Opportunities identified are the influx of workforce and tourists, strategic location for trade, national government support for environmental management, and development of high-speed railways. However, threats such as drug inflow, homelessness, economic vulnerability, and the impact of modern trends on local culture pose significant challenges. Additionally, governance faces issues with coordination and insufficient expertise but benefits from advanced technology and active community engagement.

Identifying city's priority SDGs

Priority SDGs were preliminarily identified from Udon Thani City Municipality's Local Development Plan (2024) where SDGs are well discussed. They were further selected in the SWOT analysis exercise. Priority SDGs for Udon Thani City Municipality are SDG 3, 4, 8, 11, 16. The city has prioritized various initiatives across multiple UMF domains to address identified weaknesses and threats while leveraging strengths and opportunities. In the social domain, efforts focus on enhancing community leadership (SDG11), safety (SDG11), good health (SDG3) and eco-based tourism (SDG8). Economically, the city aims to support SMEs, promote local products (SDG8), and attract investment and tourism (SDG8). Environmental priorities include increasing green spaces (SDG11), raising awareness, and managing pollution (SDG8). Culturally, Udon Thani is promoting local traditions (SDG8) and educational activities for youth (SDG4). Governance improvements target efficiency through IT (SDG16), public engagement (SDG16), transparency (SDG16), and combating misinformation (SDG4). These comprehensive efforts aim to foster a safer, economically vibrant, and culturally rich environment while addressing key challenges. Details and related actions are discussed in the Appendix C.

Identifying city's priority projects

Udon Thani City Municipality has identified priority projects in response to its SWOT analysis across various UMF domains. In the social domain, projects like Capacity Building for Community Leaders and eco-based tourism promotion aim to enhance public participation and address safety concerns. Economically, the city focuses on promoting local products, supporting SMEs, and attracting investment through initiatives like the Upgrade and Improving Uniqueness of Local Products Project and developing platforms for investors. Environmental priorities include increasing green spaces and raising awareness through projects like Volunteer for Clean Community. In the cultural domain, the city aims to promote local traditions and educate the youth with initiatives such as promoting Udon Thani worship dance and supporting schools in organizing cultural activities. Governance efforts concentrate on improving efficiency with IT, fostering public engagement, and enhancing transparency through open-data approaches and expanded communication channels. Detail of the city's priority projects is shown in the Appendix C.

Create the sense of ownership of SDG and VLR

In addition to a Training Workshop on 16 – 17 October 2023, another multi stakeholder consultation workshop was conducted on 26 January 2024 at Udon Thani City Municipality's office with 43 participants from various sectors, including youth, community members, primary and secondary schools, university, civil society organizations (CSOs), and the private sector. The objective of the consultation is to strengthen public participation of the VLR process, also, to create the sense of ownership of achieving SDG for Udon Thani City Municipality's residents.

Participants were divided into groups, according to their sector-specific interests to identify particular challenges related to each SDG. The primary focus of the discussions revolved around social issues concerning the community. Topics such as drug abuse, homelessness, and neglectful families were raised and discussed by all stakeholders.

The session fostered concentrated discussions, allowing each sector to thoroughly explore the SDGs most relevant to its area of interest. Through this sector-based examination of the SDGs, participants leveraged their unique insights and expertise to spotlight distinct problems, obstacles, and possible approaches for tackling the goals within the framework of their local community. This approach promoted a detailed evaluation of the goals, creating a cooperative space where stakeholders from various backgrounds could contribute to a comprehensive understanding and pinpoint precise actions for achieving sustainable development.

Figure B5 Stakeholder consultation at Udon Thani City Municipality

During a multistakeholder consultation, various public concerns related to the SDGs were identified. Community and civil society organizations (CSOs) emphasized the need to address poverty (SDG 1), improve healthcare quality and coverage (SDG 3), create decent jobs (SDG 8), reduce economic inequality (SDG 10), and solve issues related to drainage, youth drug problems, climate change, water quality, and community safety (SDGs 11, 13, 15, 16). The education and private sectors highlighted concerns about teen pregnancy, family problems, mental health, LGBTQ+ understanding, and infrastructure improvements to attract tourism and investment (SDGs 3, 5, 8, 9). Youth concerns included food security, equitable education, extracurricular activities, water supply, fair market practices, wastewater control, plastic reduction, access to justice, and international partnerships (SDGs 2, 4, 5, 6, 8, 11, 12, 15, 16, 17)

Figure B 6 Youth group in stakeholder consultation

	Female		Male
Youth	3		4
CSO	0		2
Private sector	1		2
Education	7		11
Community	8		5
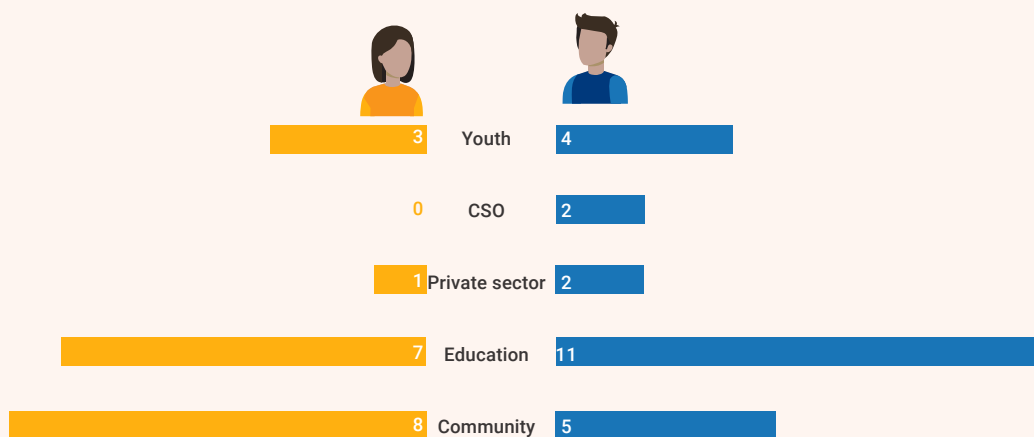
Figure B7 Number of participants by sector and gender at the training workshop and stakeholder consultation workshop

Step III: Gathering inputs and data

Indicator selection exercise

The preliminary review was presented and discussed in the training workshop on 17 October 2023 by 85 participants from Udon Thani City Municipality, Udon Thani Provincial Office, Udon Thani Provincial Statistical Office, NESDC, Udon Thani Municipal Council, and community leaders.

In the activity, participants were broken out into five groups based on UMF domains. Each group discussed on the relevance and importance, the data availability, and the possible data source(s) of each indicator. They also voted on the relevance and importance of each indicator by putting a sticker over the indicators that they think are important. The selection was based on relevance and importance of the indicator, data availability, data source(s), balance of indicators in each UMF domain and city objective, and localized indicators. 39 UMF indicators were selected accounting for 50.7% of overall number of UMF indicators. The distribution of the selected indicator across five domains and four objectives is shown in Table B1.

Proxy indicators are considered when data is not available for key indicators. However, the proxy indicators must meet the SMART criteria. Among 16 indicators in the social domain, 10 are proxies from Udon Thani Mueng District (four indicators) and Udon Thani Province (six indicators), while one proxy among four indicators of the economy domain is from Udon Thani Province. The economy domain takes one proxy from provincial data. The environment, culture and governance and implementation do not use proxy.

Table B1 Selected UMF indicators by domain and objective

Domain	Objective	Indicator	Type of indicator
Social	Safe & Peaceful	1.1.5 Proportion of births in health facilities	Proxy (Mueng District)
		1.1.6 Neighbourhood safety	Localized and proxy (Province)
		1.1.7 Adolescent birth rate	Proxy (Province)
		1.1.8 Traffic fatalities	Proxy (Province)
	Inclusive	1.2.2 Access to public transport	Localized
		1.2.3 Education completion rate	Localized
		1.2.4 Secure tenure rights to land	Localized
		1.2.5a Prevalence of overweight among children under 5 years of age	Proxy (Mueng District)
		1.2.5b Prevalence of wasting among children under 5 years of age	Proxy (Mueng District)
		1.2.8 Secure multilingual education	Localized
	Resilient	1.3.1 Life expectancy at birth	Localized
		1.3.2 Mortality rate (Diseases)	Proxy (Mueng District)
		1.3.3 Mortality Rate (Suicide)	Proxy (Province)
		1.3.4 Population affected by hazardous events	Proxy (Province)
	Sustainable	1.4.1 Slum population	Proxy (Province)
		1.4.2 Gini coefficient	Proxy (Province)
Economy	Safe & Peaceful	2.1.2 Time spent on unpaid domestic and care work	Localized
	Inclusive	2.2.3 Use of public transport	Localized
	Resilient	2.3.1 Annual growth rate of GPP per capita	Proxy (Province)
	Sustainable	2.4.2 Mean household income	Localized
Environment	Safe & Peaceful	3.1.1 Wastewater Safely Treated	Localized
		3.1.2 Solid Waste Collection and Disposal	Localized
		3.1.3 Air Quality	Localized
		3.1.4 Hazardous Waste	Localized
	Inclusive	3.2.1 Access to Open Public Spaces	Localized
	Resilient	3.3.2 Green Area per Capita	Localized
		3.3.3 Change in tree cover	Localized
	Sustainable	3.4.3 Budget on Climate Change Adaptation	Localized
Culture	Safe & Peaceful	4.1.2 Cultural Knowledge	Localized
	Inclusive	4.2.2 Cultural Participation	Localized
	Resilient	4.3.1 Cultural Employment	Localized
	Sustainable	4.4.3 Open Spaces for Culture	Localized
Governance and implementation	Safe & Peaceful	5.1.1 Victims of Intentional Homicide	Localized
		5.1.2 Victims of Physical and Sexual Violence	Localized
	Inclusive	5.2.2 Utilization of E-Governance and Digital Governance Tools	Localized
		5.2.3 Proportion of Seats Held by Women in Subnational/Local Governments	Localized
	Resilient		
	Sustainable	5.3.1 Own Source Revenue Collection	Localized
		5.4.1 Registered Births	Localized
		5.4.2 Presence of urban policies or regional development plan	Localized

Figure B8 Indicator selection exercise

Working group setup

Working group was set up after the Training Workshop in October 2023, comprising 13 Udon Thani City Municipality's staff representing different divisions (Table D1). The main objectives are to discuss the project and to follow up on data collection. Each division is assigned for data collection for the related UMF indicators and reports the status of data collection in the follow-up meeting organized every two weeks.

Data collection

Information was gathered via a combination of online surveys and in-person workshops. Qualitative information was obtained through a comprehensive desktop analysis, field inspections, interviews with key informants, and discussions with all pertinent parties. An in-person workshop on 25 January 2024 facilitated the validation of data by the working group. VLR drafting process is shown as Figure 5.

Figure B9 Working group meeting on data collection

Alignment of city's plan and actions to UMF

city's initiatives were then mapped with UMF indicators, domains, and objectives to understand how the city makes progress according to UMF.

Addressing data challenges and gaps

Data challenges and gaps were discussed in the indicator selection exercise, and the follow-up meetings.

A lot of data is collected at the provincial level because there is no system to collect data at the city level. Data such as Gross Provincial Product (GPP), GINI coefficient, and unemployment rate are not required to be collected at the city level. Health-related data are also collected by the Udon Thani Provincial Public Health Office at the district level (Mueang Udon Thani District). In this case, supplementary data should be included in addition to the provincial-level data. For some UMF indicators, Udon Thani City Municipality already collects data with the same objective as the indicator, but in a different manner. In cases where a local indicator is better aligned with their city development plan, they proposed local indicators and identified the sources of relevant data. However, some indicators are collected by other responsible agencies. The municipality can regularly request this data for use in the VLR and Local Development Plan processes.

VNR-VLR Integration

The VNR-VLR Studio Workshop discussion focuses on advancing SDG implementation through local action using Udon Thani City's VLR as a showcase to facilitate the discussion among multilevel government agencies. The workshop, organized by UN-Habitat, highlighted the progress of VLR of Udon Thani City and its significance in aligning local development plans with the Sustainable Development Goals (SDGs). The workshop included key stakeholders from various sectors, including national and regional government agencies, UN organizations, and local municipalities.

Key insights include integrating national, regional, and local plans, the value of data driven policymaking, and the need for continuous stakeholder engagement. Udon Thani City VLR is a model for other cities in Thailand, showcasing the city's efforts to tackle challenges. The workshop also underscored the role of VLRs in supporting national-level SDG tracking through Voluntary National Reviews (VNRs), fostering collaboration across government levels, and addressing local needs with tailored solutions. The next steps involve expanding SDG Localization efforts to more cities and improving areas identified in the Udon Thani City VLR, such as wastewater management.

Figure B10 VNR-VLR Studio Workshop

Figure B11 Number of participants by gender and organization

APPENDIX C
Data reference

SWOT Analysis

Table C1 SWOT analysis focusing on the social domain

Strengths
- Strong public participation.
- Strong collaboration with community members such as the Children and Youth Council
- Villager Health Volunteers, Citizen Council, Fitness Club, and Work Skills of Civil Defense Volunteers.
- Providing opportunities for Youth to show their skills and performance.
- Having good infrastructure for safety concerns such as CCTV, lighting system
- Having recreation and exercise space for the elderly people.
- Having a good platform to provide effective communication with timely responses.

Weaknesses
- Having places that people gather for unlawful purposes.
- Having many nights life business creating noise disturbances to the local community.

Opportunities
- Having Diverse funding sources supporting city development.
- Having influx of a significant number of workforces migrating to the city.
- Having high number of tourists contributing to increased income for local businesses.
- Having a multicultural environment where coexist in harmony.
- Having access to advanced technology supporting city development.

Threats
- Inflow of drugs from surrounding areas.
- Migration of homeless from other cities.
- Influx of Iriminal activity from people outside the city.
- Outbreak of pandemics from other areas.

Table C2 SWOT analysis focusing on the economic domain.

Strengths
- A variety of small and medium-sized enterprises (SMEs) in the city.
- Located along the Thai-Lao transportation route.
- Diverse income-generating activities influenced by the multicultural environment.
- Having tourist activities relating to local customs and beliefs (Mutelu).
- Strong and well-developed infrastructure.
- A variety of food options, including Chinese, Vietnamese, and Laos food.

Weaknesses
- Weakness in SMEs sector.
- High gap in economic status among the population.
- Low levels of income of the population.
- Concentration of wealth within a small segment of the population.
- Limited access to technological knowledge, increasing vulnerability to exploitation.

Opportunities
- Having industrial estate in the province.
- Attractiveness to tourists, providing opportunities to promote local SMEs connected to cultural and traditional communities.
- Strategic location near Laos, China, and Vietnam, leading to increased trade, investment, and tourism, resulting in higher income for the population.
- A national policy promoting Udon Thani as a city for Meetings, Incentives, Conferences, and Exhibitions (MICE).Selected to host a horticultural exposition.

Threats
- Lack of investment control.
- Vulnerability to global economic crises and wars.
- Drugs-related activities leading to illegal income generation.
- Business tax might discourage economic expansion.

Table C3 SWOT analysis focusing on the environment domain.

Strengths
- Implementation of clear and effective environmental policies.
- Access to advanced technologies for pollution control.
- Abundance of natural resources, including water and green spaces.
- Sufficient budget allocation for environmental management.
- A centralized authority responsible for environmental management.

Weaknesses
- Insufficient personnel responsible for environmental management.
- Lack of priority to increase green space.

Opportunities
- Availability of better technologies for pollution control and management.
- Government support for environmental management.
- Increasing environmental awareness among the citizens.
- Opportunities to host international guests as Udon Thani serve as the regional hub.

Threats
- Limited environmental awareness among visitors and immigrants.
- Outbreak of pandemics from other areas.
- Impact of climate change.
- Pollution in local communities due to immigration.

Table C4 SWOT analysis focusing on the culture domain.

Strengths
- The preservation of local wisdom, custom, and tradition
- The presence of local experts capable of preserving and passing on local wisdom to the next generation.

Weaknesses
- Budget constraints.
- Insufficient understanding of traditions among the younger generation.
- A shortage of knowledgeable personnel responsible for promoting tradition and culture.
- Despite the diversity of cultures, the absence of an appealing cultural identity that showcases the city's uniqueness.
- Inadequate preservation of certain local traditions and performances.
- A transportation system that does not cover the entire city, resulting in disconnection.

Opportunities
- Receiving support from the Vietnamese Government to establish the world's first **"Vietnam Town."**
- Anticipated opportunities for local businesses and the tourism industry, driven by an upcoming horticultural exposition.
- The development of a high-speed railway to Udon Thani, enhancing the city's appeal to investors and tourists.
- The presence of an international airport, ensuring easy accessibility to Udon Thani.

Threats
- The existence of natural disasters, pandemics, drugs, crime, and the impact of social media.
- The influence of international trends like K-Pop that could divert the attention of the younger generation away from local traditions and arts.
- Potential challenges arising from global economic crises and conflicts.

Table C5 SWOT analysis focusing on the governance domain.

Strengths
- Competent and visionary local government executives.
- Skilled staff and receive training for further development.
- Having access to advanced technology enhances work efficiency.
- The office is in the center city making it easier to connect to other organizations

Weaknesses
- Large and complex organization settings causing time consuming for coordination.
- Lack of collaboration skill.
- Lack of harmonization among teams or bureau/division.
- Insufficient personnel with expertise in specific issues.
- Limited proficiency in English communication skill.

Opportunities
- Active community engagement.
- Adequate budget allocation for technology development.
- Establishment of Memoranda of Understanding (MOUs) with national and international agencies.
- Tendency to strengthen decentralization to benefit local government.

Threats
- Often change in laws and regulations with unclear regarding enforcement.
- National government assigning additional responsibilities to local government without sufficient manpower and budget.
- Stringent budget inspection.
- Challenges in building citizen trust due to fake news targeting the municipality.
- Negative external interventions affecting operations.

The city priority

Table C6 Priority areas of Udon Thani City Municipality

Social domain
Strengths: Due to strong public participation, the city is concentrating its efforts on empowering community leaders and committees, with the aim of enhancing their leadership roles. This strategy is expected to promote broader public participation in local initiatives, by promoting the following initiatives: • Capacity Building for Community Leaders Project. (SDG11)
Weaknesses: From the concern over unlawful activities, the city is taking proactive steps to create a safer environment and enhance awareness among its residents through the following initiatives: • Dhamma on Tour Project. (SDG16) • Safety Watch Project. (SDG16) • Learning Center for Safe and Drug-free Community Project. (SDG11, 16)
Opportunities: With the potential of being a tourist attraction, the city is actively promoting eco-based tourism. Additionally, the city is creating career opportunities for elderly, disabled, and underprivileged individuals through the implementation of the following initiatives: • Eco-based Tourism Promotion Project. (SDG8) • Career Promotion for Elderly, Disabled, and Underprivileged People Project. (SDG4, 8)
Threats: To address the influx of drug, the city encourage its citizens to focus on sport and other productive activities by implementing the following initiative: • Promotion of Sport against Drugs Project. (SDG3,11, 16)

Table C6 Priority areas of Udon Thani City Municipality

Economic domain

- **Strengths:** Responding to its strengths, including a multicultural environment, being a tourist attraction, offering a variety of food, and having local businesses, the city is determined to promote skill development for income generation, enhance the quality of local products, diversify marketing options, allocate a larger budget for advertising local products, create investment platforms, and organize events related to local products, tourism, and culture. The city's prioritized initiatives include:
- Upgrade and Improving Uniqueness of Local Products Project. (SDG8)
- Increase Accessible Channels for Marketing Project. (SDG8)
- Promote Local Product Project. (SDG8)
- Develop Platform for Investor in the Province. (SDG8)
- Host National Product Expo. (SDG8, 11)
- Host Tourism and Culture Promotion Event. (SDG8, 11)

- **Weaknesses:** The city is targeting increasing household incomes and reinforcing the capacity of small and medium-sized enterprises (SMEs) to narrow the wealth gap. Priority areas for this initiative include:
- Promote Household Income Generation Project. (SDG8)
- Upgrade and Improving Uniqueness of Local Products Project. (SDG8)
- Increase Accessible Channels for Marketing Project. (SDG8)
- Promote Local Product Project. (SDG8)

- **Opportunities:** Enhancing the vibrant multicultural environment that attracts investment and tourism, the city is committed to strengthen its opportunities by allocating budget resources to promote tourist activities and stimulate further investment and business growth, particularly among SMEs. The key projects in this endeavor are:
- Promote Local Product Project. (SDG8)
- Develop Platform for Investor in the Province. (SDG8)
- Host National Product Expo. (SDG8, 11)
- Host Tourism and Culture Promotion Event. (SDG8, 11)

- **Threats:** Due to national tax policy, and global crises, the city is actively contributing to building the adaptive capacity of SMEs and local businesses. This is achieved by providing platforms and infrastructure to facilitate their business activities, including:
- Zoning business type with specific support. (SDG8, 9)
- Develop Platform for Investor in the Province. (SDG8, 9)

Environment domain

- **Strengths:** The city is well-equipped with advanced technologies for environmental management and pollution treatment. Additionally, its skilled workforce dedicated to maintaining balance between urban development and environmental protection.

- **Weaknesses:** However, given the city's scale, there is still a shortage of skilled workforce, and to meet the well-being needs of the people, there is a growing demand for more green spaces.

- **Opportunities:** The opportunity to host a national event has set an agenda for the city to maintain cleanliness and create a positive impression for future visitors. This, in turn, has led to an increase in environmental awareness among its population.

- **Threats:** since high number of immigrant and visitor, this might cause environmental problem. The city faces potential environmental challenges due to a high number of immigrants and visitors. Furthermore, global issues such as climate change and pandemics pose significant, unavoidable challenges to environmental protection efforts.
- The initiative to address these SWOT involves creating awareness and implementing waste separation at source.
- Volunteer for Clean Community Project. (SDG11)

Culture domain

- **Strengths:** The city is striving to elevate the recognition of Udon Thani's local wisdom, customs, and traditions to a national level through the implementation of the following initiatives:
- Promoting cultural activities in Udon Thani to gain recognition among the Thai people. (SDG8, 11)
- Promoting Udon Thani worship dance to be well-known in the country. (SDG8, 11)

- **Weaknesses:** To address concerns about the preservation of local traditions and culture among the next generation, the city is committed to raising awareness and promoting a better understanding of these cultural aspects among young people. To support this, the city is encouraging schools to host and organize tradition and culture-related activities. The key future initiatives include:
- Educating Young Generation on Local Tradition and Culture. (SDG11)
- Support Schools to organize Local Tradition-related Activities. (SDG11)
- Promote Local Performance Events in Schools. (SDG11)

- **Opportunities:** To embrace the existing opportunities, the city is making investments in the promotion of local traditions and culture to attract a diverse range of visitors. This includes initiatives such as:
- Food-related travel activities. (SDG8)
- Local customs and beliefs (Mutelu) related travel activities. (SDG8)
- Tradition-related travel activities. (SDG8)

- **Threats:** In response to issues related to crimes, drugs, and accidents, the city is implementing the following initiatives:
- Udon Safety Zone (SDG11, 16)
- Installation more CCTV Cameras (SDG9,11, 16)
- Promote Community Safeguard Volunteers (SDG11, 16, 17)

Governance domain

- **Strengths:** With strength of its leaders and personnel, the city is dedicated to improving work efficiency through the adoption of information technology (IT). (SDG9)

- **Weaknesses:** To address the complexity of its organization and accelerate collaboration, the city is reducing work procedures using IT. Additionally, events are organized to facilitate interactions among personnel from different bureaus/divisions. (SDG9)

- **Opportunities:** Capitalizing on strong public engagement, the city has established a Citizen Council to support and promote the implementation of its initiatives and foster the integration of work practices. (SDG11,17)

- **Threats:** To mitigate potential threats, the city is enhancing transparency by implementing an open-data government approach. It is also expanding communication channels to increase the visibility of the city's project implementations. Furthermore, the city is committed to protecting its residents from misinformation by raising awareness about sharing information from unreliable sources. (SDG4,11,17)

Multi-stakeholder consultation

Table C7 Public concerns towards SDGs identified during multistakeholder consultation of Udon Thani City Municipality

Stakeholder	Concerns	SDGs
Community and CSOs	Poverty	SDG 1
	Good quality and coverage health-care services	SDG 3
	Create decent jobs to the people	SDG 8
	Create jobs for unemployed people	SDG 8
	Reduce inequality in terms of household economic status	SDG 8
	Non-registered permanent population should be registered to get access to public services	SDG 10
	Improve drainage system	
	Solve drug problem among youth	SDG 11
	Mitigate climate change impacts	SDGs 11,16
	Improve water quality of cannels	SDG 13
	Creating peace and safety of communities	SDG 15
		SDG 16
Education and private sector	Teen pregnancy	
	Family problems and mental health	SDG 3
	Promote understanding on LGBTQ+	SDG 3
	Improve infrastructure to attract tourists and investment	SDG 5
		SDGs 8,9
Youth	Food security and nutrition	SDG 2
	Promote extracurricular activities with respect to individual interest	SDG 4
	Promote equitable education	SDG 4
	Promote understanding on LGBTQ+ issues	SDG 5
	Good and reliable water supply	SDG 6
	Control fair market share between farmers, middleman and end producers	SDG 8
	Prevent wastewater discharging to natural water ways	SDGs 11,15
	Reduce consumption of plastic	
	Right and equal access to justice	SDG 12
	Develop international partnership to share experiences and improve the lives of people in Udon Thani	SDG 16
		SDG 17

APPENDIX D

Table D 1 List of Udon Thani City Municipality's VLR working group

Name	Position and Section	Domain
Ms. Siriwarang Homepirom	Secretary to the Mayor	
Ms. Tanyong Tissarak	Division Director, Strategy Department	
Ms. Nantiya Nantasen	Division Director, Bureau of Education	Culture
Mr. Lapsombat Namprai	Division Director, Bureau of Tourism	Culture
Mr. Jeerapas Saengtawong	Community Developer, Department of Social Welfare	Culture
Ms. Pafan Prahensorn	Educational Supervisor, Bureau of Education	Environment
Ms. Kittiya Pongthai	Sanitary Officer, Bureau of Sanitary Work	Environment
Mr. Metheepot Chatameteekul	Director, Bureau of Public Health	Social
Ms Nawalai Kue-tan	Nurse, Bureau of Public Health	Social
Ms. Natrinee Arom	IT Specialist, Tax Department	Economy
Ms. Apinan Papotinang	Budgeting Division Director, Stategy Department	Governance
Mr. Kanyanat Chankham	ID Division Director, Civil Registration Department	Governance
Ms. Ramida Srichaimoon	Division Director, HR Department	Governance