

An aerial photograph of Dawei, Myanmar, showing a dense urban area with numerous buildings and a large market area in the foreground. The town is surrounded by green fields and distant mountains under a hazy sky. A semi-transparent white box is overlaid on the center of the image, containing the title text.

URBAN SUSTAINABILITY REVIEW AND STRATEGY 2030

DAWEI

Dawei Urban Sustainability Review and Strategy 2030
June 2020

DISCLAIMER

The data does not necessarily reflect the views of SKL International and its affiliated organizations, or those of the staff of SKL International. This report is supported by financial assistance from Sida. The views expressed herein should in no way be taken to reflect the official opinion of the donor.

ACKNOWLEDGEMENTS

The Urban Sustainability Review and Strategy for Dawei builds on the work and developed material by a large number of participants during the SymbioCity Capacity Building Programme from various authorities, departments, organisations, academia and civil society. Experts involved during the training sessions in Dawei represented Yangon Heritage Trust and One Map Myanmar.

This summary report was developed by the following team:

Main authors: Helena Ohlsson (SKL International) and Vishnu Prasad (SKL International)

Contributors: Björn Ekelund (SKL International)

Reviewers: Daw Sabe Puy Lwin (URDI) and Zaw Myo Oo (URDI)

Cover photo: One Map Myanmar

Design of maps and illustrations: Sylvia Platteeuw and Kailun Sun (Warm in the Winter)

Layout: Hein Thu

URBAN SUSTAINABILITY
REVIEW AND STRATEGY 2030

DAWEI



Swedish Association
of Local Authorities
and Regions

SymbioCity



CONTENTS

Foreword DUHD	5
Foreword URDI	6
Foreword Dawei	7
Executive Summary	8
1. Background	9
1.1 What is an Urban Sustainability Review and Strategy?	9
1.2 The SymbioCity	10
1.3 SymbioCity Myanmar	11
2. Understanding Dawei	13
2.1 Spatial dimensions	13
2.2 Institutional dimensions	14
2.3 Socio-cultural dimensions of Dawei	16
2.4 Economic dimensions of Dawei	17
2.5 Environmental dimensions	18
3. Sustainability analysis of Dawei	19
3.1 Key sustainability issues	19
3.2 Key challenges and assets	19
4. Strategy for Dawei	22
4.1 Vision and objectives	22
4.2 Prioritised development for Dawei 2030	23
5. Strategy for Kannar Lane	28
5.1 Background	28
5.2 Vision and objectives	28
5.3 Challenges and opportunities Kannar Lane	29
5.4 Overall development proposal	32
5.5 Landscape and public space	33
5.6 Infrastructure	36
5.7 Sustainable mobility	39
5.8 Market and trade	41
6. Strategy for implementation	44
7. Recommendations from the Dawei SymbioCity Programme	45
7.1 Integration of SymbioCity in Dawei	45
7.2 Town Plan	45
7.3 Implementation of the National Urban Policy	47
8. Reference projects	48
8.1 The Rose Garden Corridor (Rosengårdsstråket)	48
8.2 Blue-green connectivity corridor	49
8.3 Kalvebod Waves	50

FOREWORD

DUHD

The urban population in Myanmar is growing faster than the country's population as a whole which put a large pressure on existing urban services and infrastructure. There is an urgent need for support to sustainable urban planning, development and management in Myanmar. The task of promoting more sustainable urban areas is shared between a number of stakeholders, where there is a need to strengthen capacity institutionally, organizationally as well as by strengthening individual capacities.

The Department of Urban and Housing Development (DUHD) of the Ministry of Construction (MOC), is the responsible government agency for urban and housing sector development in Myanmar. During the last years, there has been a strong focus to develop new priority programmes to ensure the achievement of a sustainable urban future in Myanmar. These include the Million Houses Programme, the development of the National Urban Policy, a new Urban and Regional Development Planning Law, Housing Development Law, Guidelines for Urban–Rural Linkages and better connectivity and Guidelines for Mainstreaming of Climate Change into the development agenda.

As a response to the great needs to address the issue of urban development in Myanmar including the need to capacitate key functions in the urban sector, MOC established the Urban Research Development Institute (URDI) by the support of UN-Habitat. Based on the platform of URDI, the SymbioCity Capacity Building Programme has been implemented since 2017 through the collaboration between SKL International, DUHD and MOC. The 3-year program funded by Sida, has been successfully implemented in the cities of Dawei, Kalay and Kalaw, in the states/regions of Tanintharyi, Sagaing and Shan, cities with different opportunities, potential and challenges.

The programme was specifically designed to support the capacity enhancement aiming to build a capacity of stakeholders at both national and local level, for better sustainable urban development with strong focus on social inclusion and participation. The programme has provided around 200 participants with hands-on “learning by doing” training experiences and initiated a cross disciplinary approach to urban planning and development that can function as ‘good model for urban planning’ for further spreading in Myanmar. The Town Planning process has been enriched by the SymbioCity Programme and its inclusive and sustainable approach to urban planning. Participants in the programme have had great achievements of understanding the SymbioCity Approach and acknowledge integrated spatial, environmental, socio-cultural, and economic development. Core group participants from each city and high level officials have had the great opportunity to study visits to projects in Sweden to learn about integrated spatial and institutional solutions including aspects of e.g. the Swedish Municipal system and administration, development of public spaces and green spaces, participatory processes, public housing, social inclusion, cultural heritage, urban agriculture, flood management, sustainable mobility and urban transformation.

On behalf of DUHD of MOC I would like to express my gratitude to the Swedish Government, Sida, SKL International, Experts from Malmö Municipality, Sigtuna Municipality, Umeå Municipality, Uppsala Municipality, City of Stockholm, Yangon Heritage Trust, the Remote Sensing and GIS Research Center at Yangon Technological University, One Map Myanmar and all stakeholders who have been involved. We look forward to further strong cooperation and a sustainable and socio-economic development of cities in Myanmar.



AYE AYE MYINT

Deputy Director General
Department of Urban and Housing Development
Ministry of Construction
The Republic of Union of Myanmar

FOREWORD

URDI

The Urban Research and Development Institute (URDI) was established as a response to the great need to address the issue of urban development in Myanmar, including the need to capacitate key functions in the urban sector. The long-term ambition of URDI is to become the main hub for research and capacity building in the urban sector in Myanmar.

The SymbioCity Approach is an integrated and holistic approach to sustainable urban development, based on extensive experience in Sweden and developing countries. It considers different functions and systems in relation to one another, and involves all relevant stakeholders, in order to achieve synergies. Cities and towns include various systems and functions that are of crucial importance for socially, economically and ecologically sustainable urban development. Synergetic solutions that solve several problems at once are often more cost-effective and sustainable. The SymbioCity Capacity Building Programme has addressed critical capacity and institutional gaps that currently constrain the Department for Urban and Housing Development (DUHD) and the Urban Research and Development Institute (URDI) from effectively managing growth.

Since the SymbioCity Capacity Building Programme encourage and support multidisciplinary cooperation among stakeholders and an integrated approach, it builds a mutual sharing of knowledge and experience, primarily at local government level. It has also served as a basis for dialogue and cooperation between stakeholders at not only local level but also regional and national institutions, town planners and trainees are now able to guide urban sustainability reviews at different levels, using a combined multidisciplinary and sector approach. the SymbioCity Capacity Building Programme includes study visit to Sweden for core members in each township. It is thematically oriented towards introducing the Swedish governing system and the municipal responsibility of planning sustainable and inclusive cities. The study visits included aspects of the Swedish Municipal system and administration, development of public spaces and green spaces, participatory processes, social inclusion, cultural heritage, urban agriculture, sustainable mobility and urban transformation.

In summary, the SymbioCity Capacity Building Programme has been an opportunity for us to learn about good international practices. The programme is considered a key success factor for integrated development of urban sustainability and is required at all levels. This program has had a strong impact at the national level and regional level urban practices in Myanmar, supporting cities and towns to plan practical and integrated system solutions for sustainable urban development.



DR. SABE PYU LWIN

Deputy Director

Urban Research and Development Institute (URDI)

Department of Urban and Housing Development (DUHD)

Ministry of Construction

FOREWORD

DAWEI TEAM

The Department of Urban and Housing Development (DUHD), Urban Research and Development Institute (URDI) and SKL International jointly implemented the SymbioCity Capacity Development Program in Dawei, Taninthayi Region. As one part of the program, three weeks training workshops in Dawei and one week training workshop and study visit in Sweden were conducted. I had got a chance to join these trainings together with other participants from government departments and civil society organizations.

During those workshops, the participants could learn, step by step, the SymbioCity methodologies which have been applied for urban development in Sweden, good examples of urban development projects in Sweden as well as other countries and tools to meet the challenges faced in urban planning, development and management in Myanmar. We can put the knowledge, skills and experiences gained from the programme into practice in urban development of Dawei by adapting them as appropriate. For instance, the Kannar Lane Development Proposal to be implemented in Dawei could be revised and improved into a more sustainable development by incorporating the solutions from the conducted work. Another value of the programme has been how to improve collaboration and coordination among key stakeholders such as residents, government departments and agencies and civil society organizations. This is a result of us, as participants, working together during group work and group assignments during the implementing period of the programme. Based on the learnings and experiences we gained from the programme, we can see urban development in a new perspective and are equipped with good methodologies and tools to handle the issues and challenges we faced in our work.

If this kind of program can be implemented on a continuous basis, it can make a great contribution to human resource development and of urban and housing development at local level in Myanmar. On behalf of all the Dawei participants, I would like to extend my sincere thanks to SKL International, the Department of Urban and Housing Development, and Urban Research and Development Institute for their considerable efforts and strong cooperation to organize and implement this useful programme in Dawei.



DAW WIN LEI LEI KHINE
Staff Officer
Department of Highways
Ministry of Construction

EXECUTIVE SUMMARY

This document brings together the work conducted during the SymbioCity Capacity Building Programme and provides a knowledge base and strategy for future development of Dawei. The programme focused on improved capacity for urban planning, urban design, urban development and urban management with broad participation of stakeholders from local, state/region and union level.

The multi-sectoral core team of the programme with representatives from local, regional and national authorities has been working together to jointly define the existing situation, aspirations and the way forward for a more inclusive and sustainable urban development.

The report identifies the current situation through sustainability challenges and opportunities, aspirations for the future through vision and objectives as well as the way forward through project proposal for the

strategy period of 2030. The identified vision aims to create a sustainable development with increased employment opportunities, improved public spaces and a greener city available for all groups in society. Overall, the participants have used various tools and methodologies throughout the programme to analyse the existing situation and develop a clear strategy for the development of Dawei.

A specific proposal for 2025 has been developed for the area of Kannar Lane riverfront. It focuses on multiple aspects including economic, environmental, and social sustainability. The concrete proposal included aspects of public space development, upgrading of the Kannar Market, including improvements for ventilation and lightning, adequate sanitation facilities for the vendors, childcare facilities, waste management and parking space, safety, mobility, cultural and built heritage.

1. BACKGROUND

The political and institutional changes in Myanmar in recent years has stimulated urbanization and the number of people now moving from rural to urban areas is growing rapidly. This increases the pressure on existing urban services, infrastructure and socio-economic aspects, as well as the institutional mechanism and planning capacity for sustainable urban development in the country. Many sectors of the urban environment already suffer from poor infrastructure and management inefficiencies, such as water supply, sanitation, drainage, wastewater and solid waste management. Myanmar is also vulnerable to natural disasters which calls for resilience measures in urban environments. In addition, conflict sensitive urban planning can contribute both to the democratic development as well as peacebuilding in the country. While capacity constraints will continue to impact the functioning of the local level, several examples from around the world suggest that greater political decentralisation leads to better governance outcomes in cities which is a strong reason to continue the capacity building and infrastructure investment support to local level. To address the urban challenge,

there is a need to develop solutions which will tackle the numerous urban problems in an integrated, sustainable and holistic approach.

SKL international manages the SymbioCity Approach 2.0 Programme, funded by SIDA, lasting from December 2015 to December 2020. One component of the programme is the Capacity Building Programme in Myanmar. The Programme has been implemented in three townships in Myanmar – Dawei, Kalay, and Kalaw. In collaboration with the Urban Research and Development Institute (URDI) of the Ministry of Construction, the programme aims to build capacity towards sustainable and inclusive urban development.

This document presents the result of the programme in Dawei and is a joint work between all stakeholders involved throughout the process. The capacity building activities of the programme in Dawei were conducted during the period of 9th October 2017 to 1st of June 2018.

1.1 What is an Urban Sustainability Review and Strategy?

An Urban Sustainability Review (USR) is both a process and a product. It is a process for jointly exploring urban areas from a holistic perspective; an inclusive way of selecting and describing key issues which the town needs to address in development strategies, and key assets and opportunities, which should be leveraged in development projects and actions. It provides a platform for open and transparent discussions and consultations on matters of local attention by several stakeholders, as well as relations to global policies such as the Sustainable Development Goals (SDGs) and the New Urban Agenda (NUA). This report presents the findings and conclusions of the process. In addition, the report sets out the Strategy for a more sustainable future in Dawei through a 10-years perspective while making use of existing assets. For specific information from each training session, see the workshop documentation document.



Figure 1: The conceptual model of SymbioCity, integrating the perspectives of socio-cultural, environmental and economic sustainability through improved urban systems, developed institutions and spatial improvements.

1.2 The SymbioCity

The SymbioCity is a concept for sustainable urban development with emphasis on improving living conditions for citizens, through the involvement of various actors and disciplines. It integrates economic, environmental and socio-cultural dimensions; it includes a gender perspective and promotes synergistic relations. It is a way of working with urban development and provides guidance and tools to support sustainable urban development processes.

The SymbioCity does not provide ready-made solutions to all urban challenges. Instead it offers a holistic, inclusive and integrated methodology for successfully working with sustainable urban development with broad stakeholder involvement and is a way of moving from ideas into action.

SymbioCity supports cities and urban areas in developing in a more sustainable and inclusive way and put people in the centre of development. To improve the health, safety, comfort and quality of life for the people who live there, e.g. to provide urban services like waste management, mobility and water more effectively. And to capture the economic and ecological potential that urbanisation brings while protecting the urban environment.

The approach works from visions and strategies, through integrated urban planning to urban improvements, innovative solutions and strengthened management of urban areas.

SDGs and NUA

Both the Sustainable Development Goals (SDGs) of Agenda 2030 and the New Urban Agenda (NUA) recognize the significance and potential of urbanization for a sustainable future by stressing the importance of a holistic, integrated and inclusive approach to urban development. The importance of local authorities in coordinating holistic planning and finding systemic urban solutions together with public, private and academic actors is thus crucial for the achievement of the SDGs. SymbioCity aims to support this development by providing tools that move from displaying what needs to be done to show how to move into action and achieve the goals, without compromising a strong foundation on local realities and pre-requisites. The core focus of the approach is to support implementation of SDG 11 Sustainable cities and communities: Make cities and human settlements inclusive, safe, resilient & sustainable. A pre-requisite in any urban planning process is to ensure establishment of strong local institutions that enables accountable, responsive and inclusive decision making processes through participation of stakeholders and partnerships with public, private and academic actors. SDG 16 Peace, justice and strong institutions and 17 Partnerships for the goals are therefore integral as institutional components in all SymbioCity projects. To acknowledge urban complexity, the procedure includes local assessments of urban thematic and perspectives including poverty reduction (SDG 1), gender equality (SDG 5), clean water and sanitation (SDG 6), affordable and clean energy (SDG 7), industry, innovation and infrastructure (SDG 9), reduced inequalities (SDG 10), responsible consumption and productions (SDG 12), climate action (SDG 13), life below water (SDG 14) and life on land (SDG 15).



Figure 2: The SymbioCity integrates several of the Sustainable Development Goals into the working process.

1.3 SymbioCity Myanmar

The SymbioCity Myanmar Capacity Building Programme in Myanmar targeted a critical mass of stakeholders at Union, State/Region and Township levels, building capacity through trainings, workshops and exposure visits. The capacity building activities were structured around existing challenges and opportunities, and provided hands-on experiences of different approaches to urban planning, development and management. In total, each township underwent four rounds of one-week-training including an exposure visit to Sweden. The initiative has been anchored within the Ministry of Construction (MoC), Myanmar. The MoC has developed a 5-year plan for urban capacity building in Myanmar that takes its point of departure from the Urban and Regional Planning Law. Operationally, the programme was implemented with the Urban Research and Development Institute (URDI) as its main platform. URDI, housed within the Department of Urban and Housing Development (DUHD) has been developed as a response to the great need to address the issue of urban development in Myanmar, including the need to capacitate key functions in the urban sector. The work in each township has been strongly linked to the Town Planning process. Under the current administrative structure, the town plan is meant to be the document that guides the sustainable urban development of a city.

Project Organisation

In Dawei a core team of 20 participants have been leading the work and participating throughout the Capacity Building Programme. The trainings have been led by international and national SymbioCity facilitators. Additional participants from civil society, academia, private sector or other relevant institution and experts have been engaged in different parts of the programme. The core team has continually engaged stakeholders through secondary data collection, field visits, participatory events, group discussions and interviews with various key informants. During session 2, Daw Moe Moe Lwin, Yangon Heritage Trust, was invited to give a guest lecture on heritage preservation and conservation. In addition, OneMap Myanmar gave a presentation and live demonstration on GIS, spatial mapping and drone photography.

Core Team Dawei			
1	U Win Min Htut	Director	High Way Department, MoC
2	Daw Khin Mi Mi Htwe	Director	DUHD (Dawei)
3	U Yan Naing Maung	Assistant Director	General Administration Department
4	U Myint Zaw	Assistant Director	General Administration Department
5	U Kyaw Soe Paing	Assistant Director	Planning Department
6	Daw Sein Mot Mot Tun	Assistant Director	DUHD (Nay Pyi Taw)
7	Daw Win Lae Lae Khine	Staff Officer	Department of Highways, MoC
8	Daw Su Su Htwe	Staff Officer	DUHD (Dawei)
9	U Kyaw Myint Tun	Staff Officer	Department of Environmental Conservation Development
10	U Than Htike	Deputy Township Education Officer	Department of Basic Education
11	U Naing Naing Win	Health Assistant	Department of Public Health
12	U Aung Kyaw Naing	Deputy Ranger	Forest Department
13	U Htet Myat Thu	Assistant Researcher	Department of Archaeology
14	U Myint Ko Ko	Junior Executive Officer	Department of Agricultural Land Management and Statistic
15	Daw Htet Htet May Oo	Junior Executive Officer	DUHD (Dawei)
16	U Khin Maung Zaw	Junior Engineer	Department of Highways, MoC
17	Daw Kay Khine Soe	Junior Engineer	City Development Committee
18	Daw Pyeit Hsu Lwin	Junior Engineer	City Development Committee
19	U Zaw Moe Htet	Junior Engineer	DUHD (Nay Pyi Taw)
20	Daw Hnaung Thiri	Junior Engineer	DUHD (Nay Pyi Taw)
Facilitating Team			
1	U Zaw Zaw Aye	Deputy Director	DUHD
2	Daw Sabe Pyu Lwin	Deputy Director	URDI
3	Zaw Myo Oo	Staff Officer	URDI
4	Helena Ohlsson	Programme Manager and Urban Specialist	SKL International
5	Vishnu Prasad	International programme coordinator	SKL International
6	Björn Ekelund	SymbioCity Trainer	SKL International
7	Daw Mya Mya Thet	Translator	SKL International

Methodology and Programme Setup in Dawei

The situation in the specific town has been the point of departure for the trainings, to open up for the possibility to work with specific ongoing development in Dawei. Principles of sustainability, poverty reduction, gender equality, public participation and transparency/ accountability have been included aspects. The programme builds on analysis and data collection for improved decision making and informed decisions. The following image shows the division of work and thematic aspects in each of the 4 training sessions including work in between.

Opening Ceremony TRAINING SESSION 1 9 - 13 October 2017	TRAINING SESSION 2 11 – 15 December 2017	TRAINING SESSION 3 Study trip to Sweden 25 April - 2 May 2018	TRAINING SESSION 4 Closing ceremony 28 May - 1 June 2018
Theory: <ul style="list-style-type: none"> - SymbioCity Process - Sustainable development Practical Work: <ul style="list-style-type: none"> - Challenges and opportunities - Stakeholder mapping - Vision and objectives - Development scenarios - Overall development proposals - Strategy for implementation 	Theory: <ul style="list-style-type: none"> - Urban planning and policy - Ecological sustainability - Municipal finance and LED - Social sustainability and gender equality - Public Participation - Heritage and conservation - GIS and data analysis Practical Work: <ul style="list-style-type: none"> - Institutional analysis and development - Walk through evaluations - GIS mapping - Gender and heritage analysis - Integrated projects and policies 	Study visits in Malmö, Copenhagen and Stockholm Public space, Sustainable mobility, Urban Design, Social integration, City District redevelopment, Eco-city, Waterfront development and access, Integrated planning, Blue-green strategy, Bicycle strategy, Girls development of public space, Public participation, Political leadership and strategic planning, Swedish Municipal Planning, Local democracy, Public housing, Waste management, Storm-water management, Renewable energy. Practical Work: <ul style="list-style-type: none"> - Challenges and opportunities Kannar Lane - Vision and objectives Kannar Lane - Inclusive proposal for Kannar Market - Development scenarios Kannar Lane - Development proposal Kannar Lane - Sustainability and impact assessment 	Theory: <ul style="list-style-type: none"> - Environmental and social impact assessments - Urban Management - Financial mechanisms Practical Work: <ul style="list-style-type: none"> - Revision Vision and objectives Kannar Lane - Integrated solutions for urbansystems - Thematic study, mapping and interviews Kannar Market - Development proposal Kannar Lane - Impact Assessment - Stakeholder strategy - Financing options Kannar Lane - Implementation strategy Kannar Lane

Core team: Change management/deeper studies/use of tools and methodologies



Figure 3: Multi-stakeholder collaboration has been a key throughout the programme.



Figure 4: Various consultations were held to develop integrated solutions for upgrading of the market in Dawei, including meetings with the market committee.



Figure 5: Introduction on how GIS can be useful for urban and municipal town planning, creating spatial and cadastral databases.

The following tools have been used in each session:

S1 Toolbox	S2 Toolbox	S3 Toolbox	S4 Toolbox
<ul style="list-style-type: none"> Local interpretation of sustainability SWOT- analysis Sustainability challenges and opportunities Stakeholder analysis Key issues Key objectives Vision statement Scenariomatrix and impact assessment of scenarios Future image (map) Backcasting 	<ul style="list-style-type: none"> Links/delinks Problem tree analysis Walk through evaluation Have/have not-grid analysis Change diagram 	<ul style="list-style-type: none"> Definition of invisible group affected by Kannar Lane redevelopment project Assessing needs, assets, opportunities and risks for stakeholders Design scenarios for Kannar Lane Market Thematic development areas for Kannar lane Scenariomatrix for Kannar Lane and impact evaluation of scenarios Final proposal for Kannar Lane redevelopment Sustainability rose 	<ul style="list-style-type: none"> Objectives for Kannar Lane Vision statement for Kannar Lane Integrated solutions for urban systems Lace visit and thematic interview study at Kannar Market Mapping assets and opportunities Kannar lane Development of thematic proposals for Kannar Lane Impact assessment for Kannar lane proposals Integration of SymbioCity in future work Financial mechanisms for Kannar Lane project Backcasting model – action plan and timeline

2. UNDERSTANDING DAWEI

2.1 Spatial dimensions

International and national connections

Dawei's unique location confers on it substantial economic advantage and has made it a hub of international investment interest. Dawei sits at the head of the envisioned Greater Meking Sub region Southern Economic Corridor, connecting Dawei in the Andaman Sea to Ho Chi Minh City, via Bangkok and Phnom Penh. According to the envisioned plans, Dawei will be connected by road to the international border with Thailand (located less than 150 km away) and approximately, 300 km from Bangkok.

Dawei is connected to the rest of Myanmar by road, rail, and air transportation. Dawei is located approximately 600 km from Yangon and 300 km from Mawlamyine, the capital of Mon State. Dawei is located on the eastern bank of the Dawei River and is separated from the Andaman Sea by a hill range. Its favourable location and connectivity has also made Dawei a burgeoning tourist destination.

Dawei's location on the river causes regular tidal flooding of its bank, especially during the monsoon season.

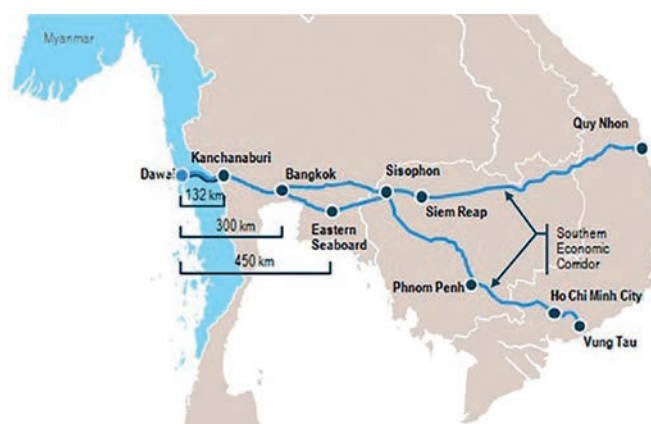


Figure 6: New road connections being planned as part of the Greater Meking Sub region Southern Economic Corridor

Dawei Township

The township of Dawei, spanning both urban wards and rural village tracts, covers an area of 4,268 km². The population of 140 000 is largely urban with about 36% of the township's population being classified as rural. The township's rapid urbanisation and the foreign investment potential of the city has led to expansion of the urban area's boundaries and the densification of existing urban areas.

Rural parts of Dawei and the broader Tanintharyi Region have witnessed an expansion in the rubber and oil palm plantation sectors. This expansion has, in part, been aided by the changes in legislation governing land in Myanmar, particularly the Farmland Law (2012) and the Vacant, Fallow and Virgin Lands Management Law (2012); and Foreign Investment Law (2012)¹. The former two laws have created an institutional framework for formalising property rights with an eye to encouraging investment in land. As many observers have argued, this has exerted considerable pressure on Myanmar's rural population, particularly in Dawei, where there has been civil society mobilisation around issues of displacement, dispossession, and environmental degradation².



Figure 7: Dawei Township

2.2 Institutional dimensions

The 2008 constitution established agencies to administer the urban wards in a township- called Development Affairs Organisations (DAOs), these agencies represent the only genuinely decentralised layer of governance in Myanmar . DAOs report directly to the State/Regional Governments and significantly, are almost entirely self-funded through own revenue sources. DAOs enjoy a wide mandate to cover urban planning, urban services including water supply, street lighting, and solid waste management, and disaster management, among other responsibilities. Furthermore, they oversee local economic development through the grant of business licences, operation and licensing of slaughterhouses and markets, apart from collecting taxes, fees, and fines.

While DAOs administer the urban wards of the township, village tracts, characterised by low density of population and agricultural land use, are administered by the Department of Rural Development. The General Administration Department (GAD), within the Ministry of the Office of the Union Government, forms the backbone of administration in Myanmar's townships. From administrators at the ward and village tract level to officers at the Union level, GAD's responsibilities range from tax collection to administration of land management to myriad registration and certification processes .

While examining the working of the government at the municipal level, it is important to differentiate between municipal bodies that have their own sources of funding and government departments that are dependent on the state/regional, or union levels for funding. An example of the former would be the Development Affairs Organisations (DAOs) who have substantial powers to collect taxes and user charges from citizens. The Dawei DAO functions with relative autonomy and is free to make budgetary decisions regarding their annual expenditure. They report to the Ministry of Development Affairs at the state/regional level and function almost entirely out of the purview of the central or federal government. On the other hand, departments that report to respective line ministries both at the center and the state level are much more dependent on upper tiers both financially and administratively. These set of institutions are examined below.

¹ <https://www.tni.org/en/publication/land-confiscations-and-collective-action-in-myanmars-dawei-special-economic-zone-area>

² Aung, G. (2018). *Postcolonial Capitalism and the Politics of Dispossession: Political Trajectories in Southern Myanmar*. *European Journal of East Asian Studies*, 17(2), 193-227.

³ <https://asiafoundation.org/publication/state-and-region-governments-in-myanmar-new-edition-2018/>

⁴ Ibid

A key policy document for the planning and administration of the city is the Town Plan, prepared usually by the Ministry of Construction. The process of creating a town plan can be divided into two significant components. One, the various departments at the municipal level in charge of functions such as land use, road construction, highways, or water supply create an annual plan that consists of both a list of projects that the department aims to undertake along with a proposed budgetary expenditure. The list of projects could include both new projects proposed at the township level and continuing projects from previous years. In other words, each contingent activity at the municipal level entails the creation of its own plan. These plans are then sent along the relevant line ministry to the state/regional level where a decision is taken on its approval, modification, and financing. Once this draft budget has been approved by the relevant line ministry, it is sent to the state parliaments for approval. If approved at the State/Region, the proposals are then forwarded to the relevant line ministry at the Union level. The same process as in the state/region level is repeated before the draft plan and budget is sent to the Union Parliament for final approval. Plans, thus approved, are then overseen by the state/regional government.

The second process involves the creation of a more comprehensive town plan that brings together aspects under the jurisdiction of different line ministries/departments including land records, economic activity, planning and budget, and other infrastructure services. For the town of Dawei, this process is currently headed by the Ministry of Construction at the union level. A request to make a comprehensive town plan can begin from either the state/region or union level. The role of the township officials in the making of this process seems to be confined to providing assistance to the union officials and/or providing data and statistics. A draft plan, such as the one for Dawei, may cover several dimensions of urban planning including transportation, economic activity, population, immigration, construction, and involves consultations with several stakeholders at line ministries at both state/regional and union levels. In other words, it combines several aspects of the individual line ministry plans described earlier. The draft comprehensive plan needs to be approved by the Ministry of Construction at the union level before it is sent to the Union Parliament for a final stamp of approval.

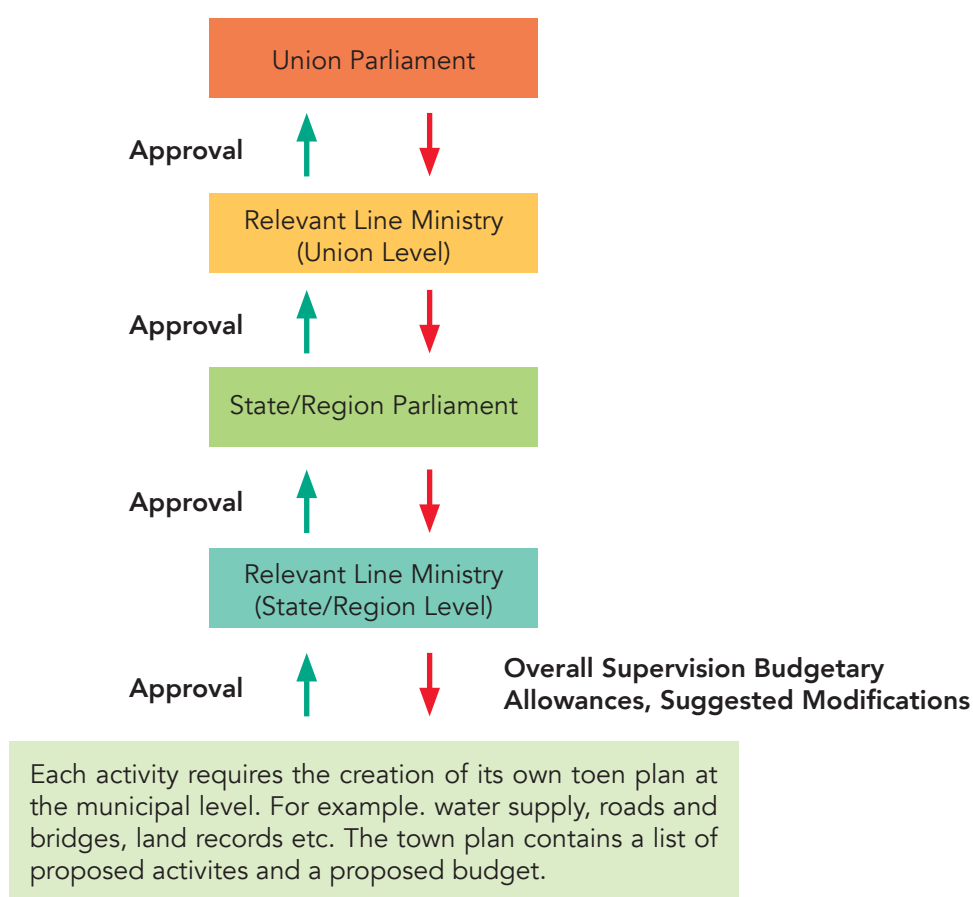


Figure 8: Institutions and planning process of Myanmar.

2.3 Socio-cultural dimensions of Dawei

Education

Literacy rates in Dawei Township remains quite high, 95.1 percent of those aged 15 and above are classified as literate. This compares favourably to both the average for Tanintharyi Region and the all-Myanmar average, which are at 92 percent and 89.5 percent respectively. As the figure below shows, among the urban population of Dawei, approximately 95 percent of the population has at least attended primary school, this includes 18.2% of the population that has completed high school. However, education beyond the primary level particularly rates of secondary and tertiary educational attainment remain low with 16 percent of the population above 25 years having attended a university or college. Dawei is home to at least four higher educational institutions including the Dawei Education College; Dawei University which serves the broader Tanintharyi Region; Technology University, Dawei; and Computer University, Dawei.

Percentage of population above 25 years by highest educational attainment in urban Dawei

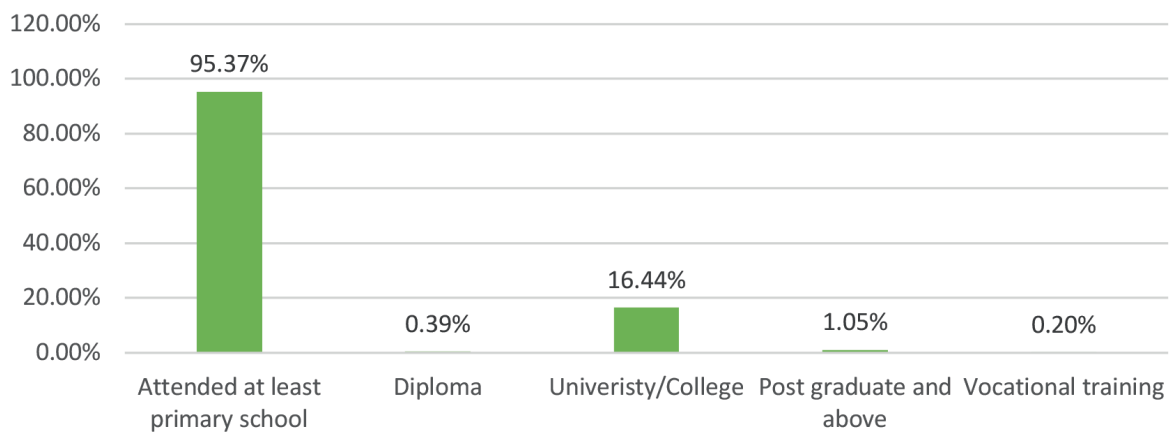


Figure 9: Percentage of educational attainment

Health

Life expectancy at birth in the Tanintharyi Region is 65.5 years which tails the national average of 64.7 years. The infant mortality rate for Dawei Township is 34 deaths per 1000 live births which is lower than both the regional (71 deaths per 1000 live births) and national averages (62 deaths per 1000 live births). This trend is seen to hold in the under 5 mortality rate which is 40 deaths per 1000 births for Dawei Township. Creating a healthy city with improved healthcare outcomes remains a priority for the city and city is well-poised to benefit from the advantages of a public health approach to urban planning. 21 percent of the population in Tanintharyi are deemed to not have access to health care⁵.

Gender

Gender-disaggregated data remains scarce for the Tanintharyi Region. Dawei Township retains a positive sex ratio of 92 males per 100 females. In terms of educational attainment. The literacy rate for youth aged 15-24 is 97.0 per cent with 97.4 per cent for females and 96.7 percent for males. However, it is seen that school attendance rates drop significantly for men after the age of 11 while for women, the drop begins, on average, at the age of 9. The proportion of women aged 25 and above who have never attended school remains 2.2 percent higher than the proportion of men, indicating that more needs to be done in terms of improving educational attainment outcomes for women in the region. The labour force participation rate of females is 48.5 percent and is much lower than that of their male counterparts which is 82.2 per cent. Furthermore, the unemployment rate for young females aged 15-24 is 11.3 per cent. Data indicates that a majority of the women in the labour force (39.4 per cent) are engaged in services and sales work.

⁵ https://www.undp.org/content/dam/myanmar/docs/FA1MMRPovertyProfile_Eng.pdf

Conservation of cultural and natural heritage

Dawei city is home to several unique historical and architectural heritage including traditional wooden homes with sloping roofs to protect against the heavy monsoon showers; religious heritage including pagodas, wooden churches, and mosques with distinct architecture; and natural heritage including mangroves along the river, lush hills that surround the city, beaches and palm trees that are ubiquitous. Dawei is also renowned for its distinct food which the city has identified as an important facet of the city's cultural heritage. City officials identified the loss of cultural and built heritage including the loss of traditional homes and buildings, and the loss of environmental assets as an important concern to address for the sustainable urban development of the city. With the prospect of large economic development projects (including the Special Economic Zone to the north of the city) being planned around the city, officials have underlined the importance of balancing economic growth with protection of the city's valuable heritage.

2.4 Economic dimensions of Dawei

Industrial development

Agriculture and agro-based industries are the primary sources of livelihood and economic activity in Dawei Township, as is the case in the larger Tanintharyi Region. The area remains one of the most important for the fishing industry in Myanmar, next only to the Ayeyarwady Region. Prawn and fish farms as well as processing plants for the industry are common in the area⁶. Large agro-industry plantations, chiefly rubber and oil palm plantations, are a large economic actor in the state. The figure below of the top five industries by percentage of labour force employed in Dawei Township attests that agriculture and allied activities remain the economic mainstay. Wholesale repair, construction, hotel and food services, and transportation and storage logistics are the other major employers in the township.

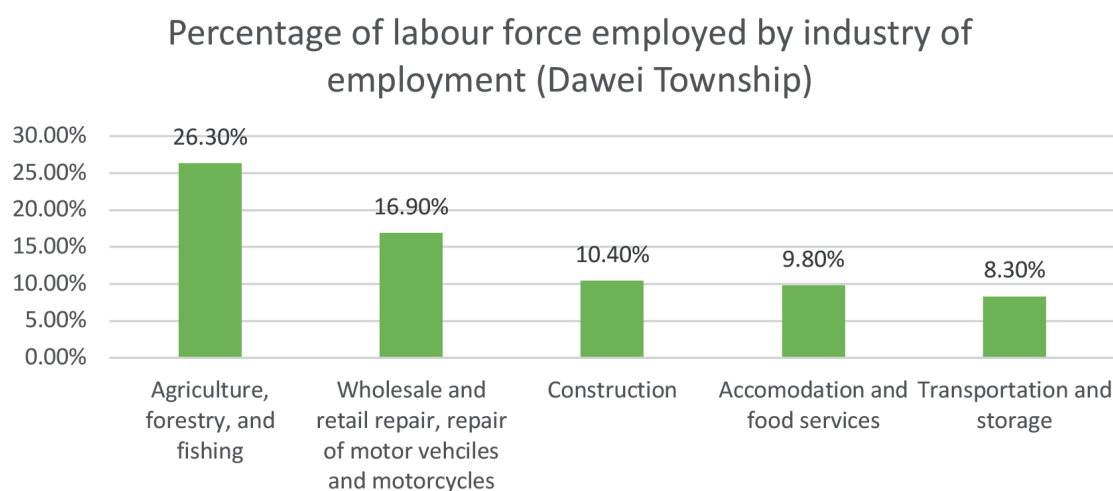


Figure 10: Percentage of labour force

The Dawei deep-sea port and special economic zone (SEZ) project aims to transform the area into one of south-east Asia's largest industrial zones. Originally planned to cover an area of 250 km², the project envisaged a deep sea port, a thermal power plant, petro-based industries, and export processing zones. While the project has been delayed, it is widely expected to generate jobs in the region. Due to its proximity to the international border with Thailand, Dawei witnesses large out-migration to industries located in Thailand, where wage rates are often higher than in Myanmar. One of the touted benefits of the mega-SEZ project is to stem the tide of migration and to generate employment opportunities in the region.

While the economic prospects of Dawei town and the larger region look favourable, it has not been without its share of challenges. A defining feature of foreign investments in the region has been disputes over land, and displacement of existing communities. These challenges are true of the planned Dawei SEZ where disputes over displacement and terms of compensation and rehabilitation have seen civil society mobilisation. Large-scale land acquisition for economic activities tend to have an adverse impact on the region's ethnic communities. Due to civil war and the lack of legal basis for customary land tenure, these communities can often be left with tenuous land security arrangements.

⁶ UNHCR. Tanintharyi Region Profile. June 2014. Available at: <http://data.unhcr.org/thailand/download.php?id=221>

Poverty

The Tanintharyi region has the second lowest poverty rate in Myanmar of 13.2 (Mandalay and Yangon have 13.2 and 13.7 percent respectively). The poverty gap is one of the lowest in Myanmar, reaching the level of 2,5 compared to the union average of 5,2 (2,3 in urban areas). Tanintharyi's isolation from much of Myanmar, its coastal terrain and more than 800 islands present obstacles to the provision of public services. Much of mainland Tanintharyi also remains remote. Tanintharyi has the second highest share of households that own or co-own a non-farm enterprise (43 percent), after Yangon (51 percent). In 2017, Tanintharyi had the second highest GDP per capita among all states/regions of Myanmar.⁷

2.5 Environmental dimensions

Dawei River

The Dawei River forms an important node for the city, both in terms of its eco-system services and for economic reasons, particularly access to the port and transportation of goods. The city has identified the need to protect and respect the river and the services it provides, particularly the protection of existing green zones along the river and the creation of new ones. Although Dawei is a very green and lush city, the streetscape of Dawei is largely devoid of trees and green spaces. The pollution of the river and release of effluents into the river is a major threat.

Green structure

There have been concerns about the impact of development projects in the wider Tanintharyi state. As mentioned earlier, large scale rubber and oil palm plantations are prevalent in the region. Civil society organisations have raised concerns about poor land use planning that has led to the clearing of valuable forest areas and the encroachment on customary land of indigenous communities in the area. Concerns have also been raised about the environmental degradation caused by extractive industries in the region. Communities have been affected by the high levels of arsenic and lead toxicity in water sources caused by the presence of a tin mine⁸. A proposed dam project on the Tanintharyi river, one of the major water sources in the region, have raised the issue of its environmental impacts including the destruction of rich aquatic habitats and the flooding of pristine forest land⁹. Local civil society organisations and ethnic nationalities in the region have protested the environmental damage that would be caused by the SEZ projects, particularly threat to marine life from the presence of petro-chemical industries and the clearing of forests for the proposed highway to Thailand. The need to combine enhancing environmental conservation and eco-system services with making the city's green spaces friendly and inclusive for the residents of the city has been highlighted by the participants during the programme.

Waste management

All the solid waste in Dawei end up in one single landfill near the airport. About 30 independent workers collect primarily plastic waste and sell them by the pound to a company that then transports the waste to Yangon, which is about 9-10 hours away by road. This happens twice a week, every week. Once a year, the landfill is burned and cleared by the municipality. The fires last up to a month and the smoke covers the area constantly during that time. This causes severe health hazards to families that live around the area.

City officials identified the lack of proper waste management facilities, particularly around the city's markets, and the disposal of solid waste into the city's numerous creeks and rivulets. The accumulation of solid waste along the river could for instance reduce the flow of water along the rivers and lead to instances



Figure 11: Dawei landfill

of flooding in the inner city areas. The problem was seen to be particularly acute in the city's main market, the Kannar Lane Zay Women's market where large quantities of organic waste and food refuse were seen to agglomerate.

⁷ <https://www.undp.org/content/dam/myanmar/docs/Publications/PovRedu/undp-mm-mlcs-poverty-report.pdf>

⁸ <https://frontiermyanmar.net/en/tanintharyi-villagers-keep-up-fight-against-tin-mine>

⁹ <https://drive.google.com/file/d/177bigTd07JG6OLgHmAwQsFaj3sa5Se3/view>

Traffic

The intersection of Yay Road and Arzarni Road, one of the busiest in Dawei, has been identified as having significant risks for pedestrians, especially school children who use it to cross the road to the public school. The city has also called for the need to slow down the traffic in general.

3. SUSTAINABILITY ANALYSIS OF DAWEI

3.1 Key sustainability issues

The participants of Dawei has developed a triad of key sustainability issues, describing what sustainability means in a local Dawei context. This description is defined in accordance to the three core topics of sustainable development: Social sustainability, Economic sustainability and Environmental sustainability. The definition of Sustainability gives the direction on what to focus on for future development but also a local definition of a local interpretation of the otherwise too widely described topic, thus making it both contextual and engaging.

- **SOCIAL SUSTAINABILITY**
Heritage, Education, Safety, Health and Integration.
- **ECONOMIC SUSTAINABILITY**
Production and distribution systems, Urban and rural development, Job opportunities
- **ENVIRONMENTAL SUSTAINABILITY**
Transportation, Drainage and water, Waste and recycling, Natural preservation

3.2 Key challenges and assets

Overall Key Challenges	Overall Key Assets
<ul style="list-style-type: none"> • Low technology Supply of Electricity • Lack of public Participation • Local employment opportunities for youth • Waste Management • Road Safety • Income Inequality/Poverty • Education (Vocational Training) • Housing • Environmental Degradation • Over Extraction of Natural Resources • Drainage System • Lack of Parks, Playgrounds and Public Spaces • Lack of Public Space along the river • Natural Hazards- Floods, landslides and Soil Erosion • Healthcare • Quality of roads • Clean Water • Imbalanced Trade • Land speculation and land disputes 	<ul style="list-style-type: none"> • Foreign Investment Potential Rich Natural Environment • Tourism • Local Products • Marine products and fisheries • Dawei Port • Public Recreation amenities • Trade and Export sector • Beach and nature • Local Markets (Small and Medium Enterprises) • Move towards processed finished goods • Traditional Culture and Identity • Historical building and pagodas • Mineral resources • Fertile Soil • Involvement of CSOs and NGOs • Transportation Sector • Renewable Energy Resources

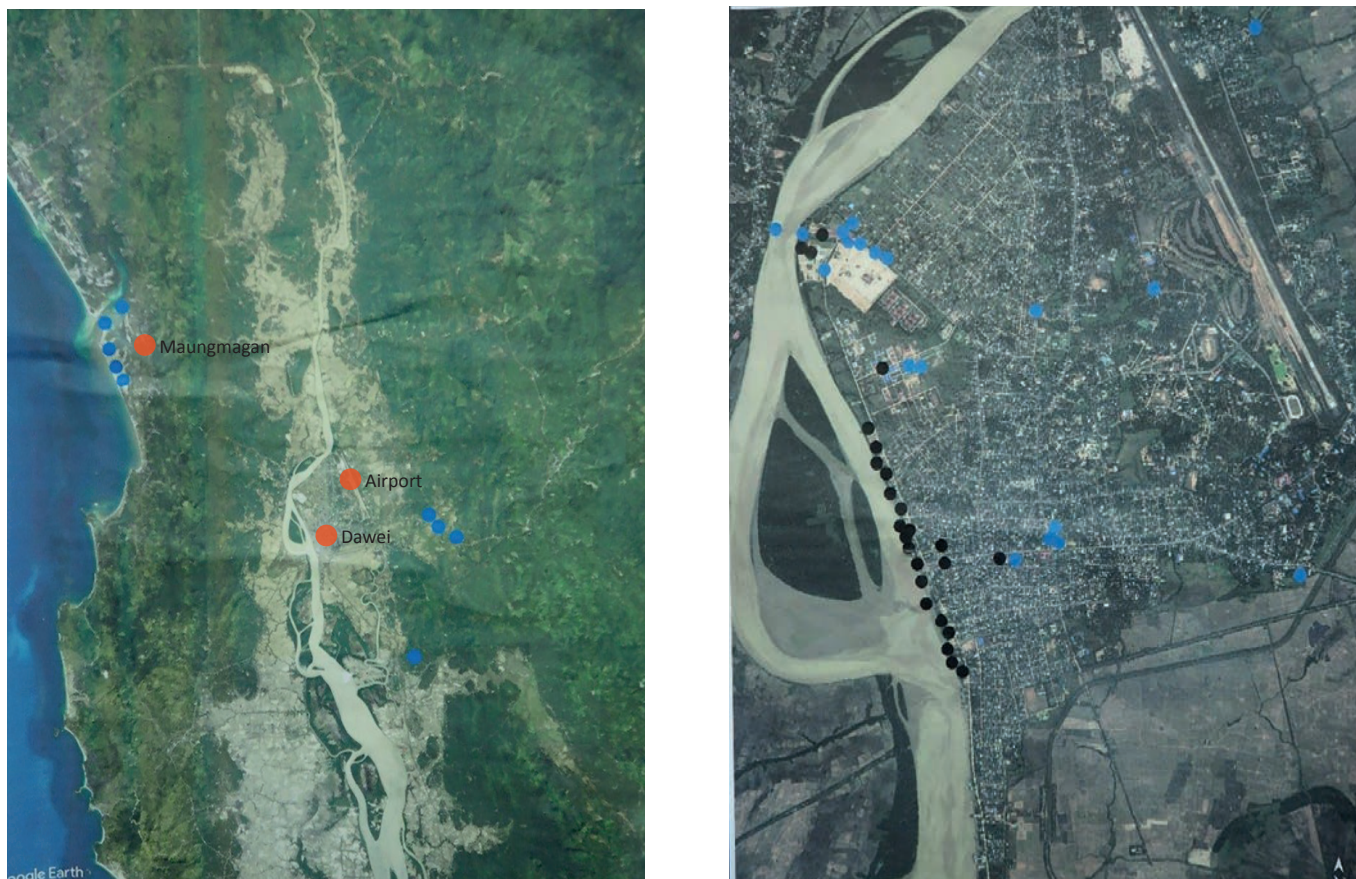


Figure 12: Opportunities (blue) and challenges (black) on regional scale and in Dawei town. Specific areas of opportunity included Maungmagan beach, Hospital and Pagodas. Areas of challenge included the road along the Dawei River, Kannar lane and Kamyawkin Bridge. DDPC Shopping Centre and night market was marked both as an opportunity and a challenge.

Gender and youth

Problems

- Narcotic use and trade among youth
- Lack of job opportunities for youth
- Child rape
- Fees related to education lead to children dropping out of school
- Child labour
- Harassment of children
- Weak education system
- Poor maternal health care
- Inequality between men and women in university entrance examinations, job opportunities and domestic discrimination

Opportunities

- Labour force
- Human resource development
- Creating safe and secure areas in the for women
- Youth who can lead the country towards future
- Proactive and local benefits for youth organisations
- Care of the elderly in society

Problems

- Child marriages
- Rape of children
- Child soldiers
- Societies and organisations going against the process of development
- Bars and nightclubs

To strive for

- Gender equality
- Recognition of LGBT rights
- Expanding gender studies in Schools and Universities
- Educational opportunities for both men and women
- Support to work seeking women
- Policies and law enabling gender equality and youth empowerment
- Free education and higher educational accessibility for youth
- Rehabilitation for youth addicted to drugs
- Improved access to health care for children and youth
- Sufficient sports material in schools

Urban systems

Problems <ul style="list-style-type: none"> • Unpleasant climatic conditions as a result of environmental degradation • Poor quality of infrastructure • Lack of public spaces, gardens and playgrounds for recreation • Natural disasters • Poor waste disposal system • Direct disposing of wastewater into streams and rivers • Air pollution from motorised vehicles • Traffic accidents • Land disputes • Slums and squatter areas • Sprawl • Increased relocation to overpopulated areas in the city 	Opportunities <ul style="list-style-type: none"> • Upgraded drainage system • Upgraded water supply and distribution system • Improve waste disposal system • Upgraded road networks • Planting of trees that provide more shade • Large amount of organic waste in the markets of the city 	Avoid <ul style="list-style-type: none"> • Illegal migration • Industries and economic activity that can be harmful to the public and natural environment • Rapid urban development without proper planning of infrastructure • Religious Crisis • Change of existing public space into other land use
To strive for <ul style="list-style-type: none"> • Good transportation systems without traffic congestion • Green city environment • Public transportation • School ferry system that ensures student safety • Good quality sidewalks • Recreation and playing spaces for children • Modernisation of the urban construction sector • Safe and more accessible public and recreational spaces • Increase renewable energy for less impact on the natural environment • Separated waste disposal system and more recycling • Good quality drainage • Improved air quality • Sustainable water supply system • Systematic development of urban areas • Strong rules and regulations and law concerning town plan and land utilisation • Wi-Fi accessibility throughout the city 		

Heritage

Problems <ul style="list-style-type: none"> • Destruction of original, valuable heritage of the city • New buildings extensions • Gradual reduction traditional houses • Painting and renovation of ancient buildings • Blocking of important view lines • Waste dumping near pagodas • Stealing of ancient material and building parts • Construction of high rise buildings are not built in conformity with existing building patterns and block views of heritage buildings • Traditional arts and handicrafts cannot survive commercially without economic support 	Opportunities <ul style="list-style-type: none"> • Old wooden buildings with high heritage value • Future generations that want to preserve heritage • Religious buildings, pagodas and traditional houses • Local raw materials • Traditional handicrafts and cultural activities • Traditional food • Municipal market • Specific iconic buildings of Dawei • Unique opportunity to conserve the rich heritage by trying to monetize it for the tourism industry • Retain identity and unique cultural space. 	Avoid <ul style="list-style-type: none"> • Chemical industries and charcoal factories that can cause harm to heritage buildings • Devastation of old heritage structures • Illegal marketing of ancient materials • New development in conflict with heritage values
To strive for <ul style="list-style-type: none"> • Financial solutions for maintaining historical sites and heritage buildings in the city • Preservation of religious buildings like pagodas • Identification of a heritage zone in Dawei • Conversion of heritage buildings into cafes and restaurants • Heritage conservations laws • Exhibition of Dawei traditional housing • Entrance fees for foreigners 		

4. STRATEGY FOR DAWEI

4.1 Vision and objectives

The vision for a sustainable development of Dawei developed by the multi-sectoral working group:

“The vision for Dawei 2030 is to provide necessary, inclusive and accurate urban systems and policies in the region. The development will respond to the city’s and villages’ specific characteristics without compromising the cultural heritage and natural resources. The development will facilitate the creation of local job opportunities and boost the tourism sector. It will also provide safer and more secure public spaces, and improve the socio-economic standard as well as accessibility for everyone.”

The following objectives are developed as a response to the sustainability challenges identified to fulfil the vision of Dawei 2030.

1

Create sustainable, inclusive, and resilient infrastructure including roads, bridges, power supply, water supply, drainage, medical facilities and other public amenities in accordance with the population growth of the Dawei region.

2

Ensure job opportunities for all in Dawei.

3

Ensure a socially inclusive community through public participation

4

Develop a green and healthy town through 10 per cent of the city area for recreation, public spaces, and green areas.

5

Ensure improved land management and compact living systems accordance with urban characteristics through specific land laws and regulations to solve land disputes.

6

Sustainable and attractive development of the tourism sector including conservation and development of cultural heritage.

4.2 Prioritised development for Dawei 2030



Figure 13: Overall proposal of Dawei 2030

The overall strategy for a sustainable development in Dawei is broad in scope and has been considering both physical, financial, organisational and institutional solutions. The proposal is presented in thematic development areas down.

Proposed development of strategic plans and policies

Defined improvement projects on strategic level:

- Blue-green infrastructure strategy, including risk assessment
- Public transportation strategy
- Dawei waste management plan
- Mobility strategy for improvement of roads and intersections including bike lanes and improved walkability
- Legal framework for heritage preservation
- Heritage strategy, including risk assessment
- Create a Dawei Heritage Preservation Board that will create better laws, rules, and regulations for conservation of heritage
- Financial support from government for maintenance of traditional buildings with high heritage value
- Trade and market policy
- Taxi policy

Sustainable mobility

Identified as important for the vision of 2030 are improvements for developing Dawei into a city that is friendly and accessible for non-motorised forms of transport, especially walking and bicycling. Several streets and intersections in the city have been identified as unsafe and highly prone to accidents. The traffic congestion in the city has reportedly worsened since 2010 and to tackle this issue a comprehensive plan for upgradation of roads is proposed to slow down the traffic in the city. The proposal includes an upgraded street network and design of intersections for improved safety for all modes of transport and particularly for elderly and children.

Specific improvement projects:

- Improved road network including width and lanes for pedestrians and cyclists.
- Improved accessibility to public transport, especially along the Kannar Lane corridor.
- Development of a new train station.
- Disabled-friendly mobility improvements and walkways.
- Improved port infrastructure.
- Water bus/taxi system, connected to Kannar Lane.
- Increased number of walkways, pedestrian connections and crossings in the city, specifically from the city to the river.
- Taxi spaces in the city that are more convenient for costumers, especially close to market entrances and other key public areas.

Public Space

Improved quality and access to public space are important for the future of Dawei. Development of new public spaces in dense environments of Dawei as well as along the Kannar river are a priority. The proposal has specifically three aspects when it comes to the development of public spaces; (i) Possibility for recreation and social activities with functions such as resting areas, playgrounds and outdoor gyms; (ii) Improved local climate providing both sunlight and shade possibilities; (iii) Providing access to vistas and important views, for example along the riverfront.

Specific improvement projects:

- Improved safety and accessibility to recreational public spaces, specifically for women, kids and disabled.
- Lighting through lamp posts
- Prioritise landscaping and design of gardens in development of new public space projects
- Public Restrooms
- Public Recreation Centre
- Public space development that improve street life activities with shops, markets, restaurants and scenes for cultural activities.
- Have enough lifts, escalators and fire exits in public areas

Gender

Specific improvements in the city that improves the situation for women has been highlighted in the proposal. City officials in Dawei pointed out adequate public spaces for women in the city and the inclusivity in the design and access of current spaces. Public spaces in Dawei that are accessible and safe for women and children, especially in village tracts that are within the boundaries of the township, was pointed out. Women in village tracts and villages surrounding Dawei have to come into the city to access recreational facilities including playgrounds and cinema.

Specific improvement projects:

- Safe public spaces with lightning and good access.
- Public participation in the development of new public spaces to ensure women's perspective is included in the design.
- Public transportation facilities for women as women in Dawei are heavily dependent on private transport for mobility.
- Incorporate gender curriculums in schools and universities.
- Increased access to higher education for women
- Equal job opportunities for men and women.
- Technological courses and vocational training.

Youth

Engagement of youth in the development of Dawei is highlighted in the proposal from both social, economic and environmental perspectives. Some specific areas of improvements in Dawei has been identified for youth.

Specific improvement projects:

- More recreational facilities for children.
- Establish a Youth Training Centre and Youth Sports Centre.
- Sport facilities in close location to schools.
- Rehabilitation Centre for drug afflicted youth.
- Day-care centres and playgrounds for children
- Public participation in development projects of Dawei to include the youth perspective.
- Improved job opportunities by providing skills and experience.
- Vocational training for youth.
- Local benefits for youth organisations.

Heritage

Both natural, historical and architectural heritage is highly prioritised in the development of Dawei. One of the most important principles in heritage preservation is to ensure that the value of the property is not diminished in time, including pagodas, trees, water resources, forests, rivers and oceans. The development and preservation of heritage provides both significant economic, social and cultural advantages. Arzarni Road has a specifically rich collection of buildings of great historical value and the road used to be the main entrance to Dawei. The legal control of land has a great influence on the possibilities of heritage classification and preservation. With the prospect of large economic development projects (including a large Special Economic Zone to the north of the city) being planned around the city, the importance of balancing economic growth with protection of the city's valuable heritage is highlighted.

Specific improvement projects:

- Create a record of heritage buildings through systematic data collection
- Use new technologies for conservation of heritage
- Commemorate important buildings like municipal office, markets, government offices, and pagodas
- Develop a heritage conservation zone and heritage plan to handle new development in relation to heritage
- Develop excavation of old cities and find undiscovered heritage areas
- Maintain traditional housing architecture
- Ensure long term sustainability of cultural heritage
- Upgrade of the municipal market
- Local and traditional food restaurants
- Promote historical pagodas such as Shin Koe Shin
- Open a Dawei Traditional Housing Exhibition and heritage museum
- Convert ancient buildings into commercial hotels and coffee shops
- Protect the natural heritage, wildlife and ecosystems
- Create institutions that want to preserve cultural heritage and education centres for public awareness
- Financial means for heritage conservation

Housing

Housing was identified as one of the key challenges in Dawei and the provision and housing development is put forward in the proposal for 2030.

Specific improvement projects:

- Development of low-cost housing options in Dawei.
- New housing development, recommended mainly in the north-west part of the city.
- Mixed-used housing combined with shops and commercial facilities in ground floor.
- Housing development with good infrastructure and services.
- Housing Development Committees for cleaning and management.
- Regular collection of house rental fee from staff housing complexes.

Local Economy

A vibrant local economy is part of the vision 2030 of Dawei. The tourism sector and local entrepreneurship provides good opportunities for socio-economic improvements and economic growth.

Specific improvement projects:

- Higher quality of local products.
- Development of sustainable tourist attractions, for example along the river area or important heritage sites.
- Improve warehouses and distribution centres
- Develop possibilities from street markets, night market and small stalls.
- Develop the identity of Dawei.
- Cultural and musical events.
- Formal registration of enterprises and informal workers.
- Increased job opportunities.
- To attract tourists by improving the identity of the town, and by highlighting its traditional culture
- Activity wise investment and technology invitation
- Industrial development
- Encourage local food products and reduce dependence on imports
- Use of solar energy especially for prawn processing industry
- Use of technology in fishing and fish processing

Green-blue strategy

The green-blue strategy aims to connect green public spaces in the city with the management of storm and waste water. The improvement of this key infrastructure has been identified as crucial as it is critical to have a comprehensive blue-structure planning due to the heavy monsoon rains that the city receives and its proximity to the river. Natural storm water management systems are promoted including planting of mangroves on the riverside which will also improve resilience of the river front road, residences, and businesses. Parks or public spaces connected to each other through green corridors that prioritise non-motorised traffic and good infiltration also creates possibility for flood management and improved ecosystems. Flood water can be more effectively channelled to areas that are better placed to act as reservoirs. Existing storm water and waste water drains were identified as being clogged with waste, in a state of disrepair, or were poorly built. Several drains in the city are uncovered and this posed both a safety hazard for pedestrians and a health risk, with an unpleasant smell emanating from several of the city's drains.

Specific improvement projects:

- Upgrading the existing water distribution system
- Systematic and clean food centre in Dawei
- Aquarium and Botanical gardens
- Comprehensive and upgraded drainage system with good quality
- Water treatment plant
- Systematic and sustainable water distribution
- Waste water disposal and drainage networks
- Public drinking water taps
- Accessibility to pure drinking water
- Ecosystem services
- Flood water management
- Information and education about climate change and extreme weather
- Eco-friendly buildings

- Protection of existing green areas and wildlife
- Green parking places
- Build storm shelters for increased resilience
- Establish a natural disaster management committee
- Green structure also on public and, now mainly on private.
- Mangrove protection area
- Increased number of trees and plants along roads and in public spaces for improved air quality.

Energy

Specific improvement projects:

- Energy from renewable sources
- Power plant that converts waste into energy
- Connection to the national grid

Waste Management

The proposal includes an innovative approach to tackling the problem of waste management by integrate both waste treatment and drainage with landscape design. The waste water for instance can be locally treated using a small scale water treatment plant and re-supplied for other uses including agriculture. Large accumulation of garbage and solid waste along the river's water has been identified as a critical issue. The accumulation of solid waste along the river could for instance reduce the flow of water along the rivers and lead to instances of flooding in the inner city areas. In addition, the importance of waste management is specifically important around the market areas in Dawei.

Specific improvement projects:

- Waste management system for the city built on the aspects of reduce, reuse and recycle.
- Integration of waste treatment and drainage with landscape design.
- Wastewater treatment plant
- Installation of garbage bins and garbage drop points along the city's roads in order to prevent indiscriminate disposal of trash.
- Waste clean-up of the river.
- Reduce the burning of garbage.
- Upgradation of waste water disposal system and prevention of water stagnation in inner city roads.
- Create awareness among public for rubbish disposal in line with public health measures.

Public Services

Specific improvement projects:

- Develop good communication services.
- Hygiene Services.
- Security Services.
- Place notice boards, information and pamphlets in public areas
- Day care centres
- Health care centre
- Schools for persons with disability

Institutional aspects

Some specific institutional perspectives were brought up as part of realising the vision.

- Have strong rules, regulations, and laws for land utilisation under the town plan
- Include government departments and local community in budget process
- To create more public participation through creating more public awareness schemes.
- Increase local revenue by increasing the percentage of tax and people paying local taxes annually
- Coordination between public and their representatives in Parliament
- Improve collaboration between public and City Development Committee and other municipal staff.
- Collaboration between Union and Regional Government and respective government departments.
- Use fact based analysis including GPS data from government department
- Multi sector and inclusive participation including departments, organisation, civil society organisations, farming committees (leading committees, working committees and sub committees)

Sustainability evaluation of proposal

The evaluation of the proposal showed an increased sustainability specifically high when it comes to social and ecological perspectives. This is mainly because it gives possibility for improved social activities and access to a new green public space in the city. The landscaping and blue-green system enables environmental improvements and mitigation of flooding. In particular the perspectives of recreation, reduced air pollution, biodiversity, gender equality, healthy lifestyle, meeting places and walkability were ranked high.

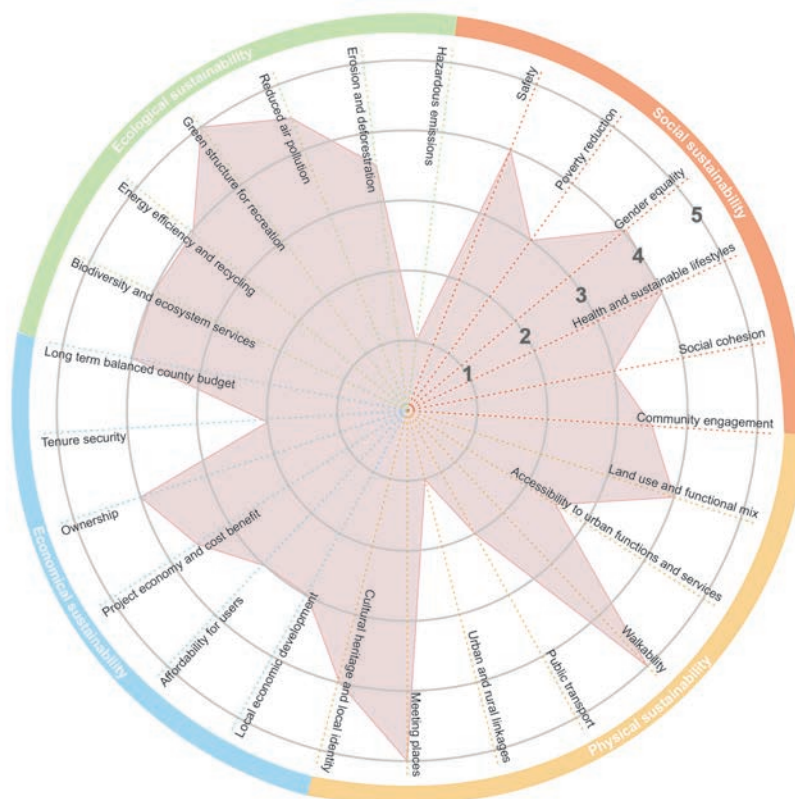


Figure 14: Sustainability evaluation of proposal

5. STRATEGY FOR KANNAR LANE

5.1 Background

Kannar Lane or Strand Road occupies a central position in Dawei and have a big importance socially and economically. It is connecting the city's main boat jetty to Kamyagan Bridge, hosting the women's market (Kannar Lane Zay), and serving as an important thoroughfare for the city. The city of Dawei is undertaking an ambitious project to redevelop the riverfront space along Kannar Lane.

Considering the centrality of the Kannar Lane redevelopment project, the project offers several avenues for intervention. This section will take an integrated approach towards the redevelopment of Kannar Lane that takes into consideration aspects including design of public space, mobility, financing instruments, the gender dimensions of public space use especially along Kannar Lane Zay, heritage conservation, environmental planning and urban greening.

The project, which will be implemented in phases and aims to cover riverfront space that runs for a length of approximately 3.5 km. In the first phase, the Township DAO office aims to create expanded public recreational space, space for commercial economic activity, a boat jetty, urban green space, and a motorway spanning a length of approximately 1500 feet. The project will be funded by the Tanintharyi Regional Government.

5.2 Vision and objectives

In line with the vision and objectives for Dawei, described above, the city has formulated the specific vision for the Kannar Lane area:

By 2025, Kannar Lane Market will be a safe, urban, green area with parks and recreational spaces that incorporate blue-green infrastructure; sustainable transportation with bicycle and pedestrian lanes, and public transport; waste management; and a vibrant economic area creating jobs for the town of Dawei.

Thematic development areas	Objectives
Public Space	<ul style="list-style-type: none"> Develop the space along the waterfront to be vibrant with good service possibilities and access by vendors and buyers. Build a multi-functional space along the Kannar river to be used for playgrounds, parks and green space. Ensure that the public space is used for recreation by the public. Ensure that the public space is safe for kids. The public space should enable green-blue integration including drainage, flood preventative measures and green development.
Waste and Water	<ul style="list-style-type: none"> Waste management system through 'reduce, reuse, and recycle' is developed including production of fertilizer for agriculture and biogas as a source of fuel and renewable energy. Proper waste disposal and management system is established in the residential areas around the Market area.
Sustainable Mobility	<ul style="list-style-type: none"> Development of safe and reliable transportation system including walk and bicycle lanes. A public transport network which is reliable and accessible to all citizens. Walkability- 50 % of people must be able to walk and ride bicycle by 2030, improve pavements, provide a safe environment for walking, develop street lights along the Strand road.
Job Creation	<ul style="list-style-type: none"> 35% of the people in Dawei can get jobs at Kannar Market Create 5,000 new job opportunities at the new Kannar Market by 2025
Economic Growth	<ul style="list-style-type: none"> Upgrade the existing market to become a modern market with separate sections for groceries, meat and fish with good working environment including security measures, fire safety, information, child friendly space, etc. Increase domestic/foreign tourism in Dawei by 50% Increase the income from selling traditional handicrafts and foods by 75%

The development of vision and objectives builds on a broad analysis of existing challenges and opportunities in Kannar Lane.

5.3 Challenges and opportunities Kannar Lane

Challenges	Opportunities
Trade and Market	
Goods and commodity	
<ul style="list-style-type: none"> Different forms of goods and production in the same area. Overcrowded inside and outside the market All commodities are mixed and not ordered Lack of good hygiene conditions, vegetables, meat and fish should be kept at separate parts of the market area 	<ul style="list-style-type: none"> Flow of goods including export and import Vendors and shops forms a big part of trade and commodity exchange The area can supply more job opportunities Large variety of groceries, fish, vegetables, fruits and meat
Kannar Market	
<ul style="list-style-type: none"> Vendors are mixed and not placed in a systematic way Insufficient infrastructure for shops and stalls Vendors are too spread out on the roads The market building is very low in height, has poor ventilation, poor lightning and the roof is leaking The vending space is too small for the vendors. The market lack proper internal directions in terms of signboards or signals to make the shopping experience easier Inner lanes of the market are narrow and congested Inadequate preparation for fire mitigation, existing water is not sufficient in case of fire and space is restricted. The customers have no trolleys or shopping carts to carry their purchased commodities with ease. 	<ul style="list-style-type: none"> People from all ages and parts of Dawei shop at the market Long opening hours, 24 hours a day Knowledge, technology and collaboration are needed for better, cleaner (more beautiful) usage of markets and roads Very accessible location for local residents The Market committee <p>Several issues of key concern to the Kannar Lane Zay Women's market were identified: the lack of ventilation and light in the market, the lack of adequate sanitation facilities for the vendors in the market, lack of childcare facilities, issues of waste management and lack of adequate parking space for customers coming in vehicles.</p>

Challenges	Opportunities
Infrastructure	
Waste Management	
<ul style="list-style-type: none"> No proper collection, disposal or waste management Waste pollution in Kannar Lane and the river Insufficient dustbins and garbage bins around the market and along Kannar Lane The accumulation of waste creates foul smell in the area Rampant littering in the area The provision of services including waste collection in the market area has been sub-contracted to a private agent. From the interviews, it seems like the sub-contractor has not delivered on the services promised. Irregular collection of solid waste from the market, interviews showed that waste collection does not occur daily. No definite place to dispose waste easily and no dust-bins inside the Kannar Market. 	<ul style="list-style-type: none"> Improved waste management, reuse, recycling and separation of waste such as fish waste, green vegetables, organic matter, plastics etc. can reduce the overall waste being moved to the Dawei landfill. The market committee could organize themselves to undertake waste management through a small fee from the vendors
Drainage and water supply	
<ul style="list-style-type: none"> Lack of proper drainage system in the Kannar Lane area Clogged drains in the Kannar Lane area The drainage system inside the Kannar Market is inadequate. Drains in the market are clogged by waste which cause problems during the monsoons and heavy rains. Insufficient water supply in the Kannar Market area 	
Sanitation	
<ul style="list-style-type: none"> Lack of proper sanitation system in the Kannar Market area Vendors and their families do not have sufficient access to sanitation facilities, only one public toilet exists with small capacity. 	<ul style="list-style-type: none"> Existing toilet area can be upgraded for improved sanitation facility
Lightning and electricity	
<ul style="list-style-type: none"> Lack of lighting in the area Supply of electricity to the market is irregular. Most vendors use the light of the street lights and paraffin lamps to open the shop at dawn. 	
Sustainable mobility	
Transportation and road	
<ul style="list-style-type: none"> Traffic congestion at Kannar Lane especially in early mornings and evenings. The junction of Arzarni Road and Kannar Lane remains congested and is a hazard to pedestrians. Lack of parking space for cars, taxis, logistic transport, motorcycles and bikes. Narrow roads and streets No separate lanes for bicycles Better organization outside the market, parking, production, stalls, vendors etc can make the access to the market more efficient. The taxi drivers lack a proper system including lack of uniforms, no queueing system and remain unorganized in their operation. Uncovered pavements and drains creates problem for children and elderly. 	<ul style="list-style-type: none"> Good connection point to other parts of the city for transportation of goods. Important transport node in the city. Street is wide enough for including proper lanes and walkways. Trade activities creates activity along the street. Both water and road can be used for transport Easily accessible location for citizens
Walkability	
<ul style="list-style-type: none"> No walkway for pedestrians Lack of pedestrian crossings Conflict of space between vendors, buyers and passing by pedestrians No arrangements for disabled 	<ul style="list-style-type: none"> Walkable distance to many other parts in town.

Challenges	Opportunities
Public space and landscape	
Public space	
<ul style="list-style-type: none"> • Lack of green areas and trees. • Lack of public space near Kannar Market. • Few green areas in Dawei town. • Lack of shade. • Unsafe area. • Bad integration of urban systems such as solutions for waste, drainage, mobility and energy in connection to public spaces. • Messy area with different activities and billboards. 	<ul style="list-style-type: none"> • The area can be made more attractive if there is more green space along the river. • Easily accessible location and activities could create a vibrant public space along the water. • Sufficient space along the waterfront to develop a green public space. • The view from the waterfront is beautiful, sunset. • Existing funding for development.
Environment	
<ul style="list-style-type: none"> • Foul smell due to waste accumulation • No systematic management for green environment • Public health hazard • Air pollution caused by congestion and traffic. • No flood prevention in the area. 	<ul style="list-style-type: none"> • Fresh air by the river.



Figure 15: Challenges in the market area today is mainly lack of space, lack of waste management, pollution, insufficient infrastructure and storage for vendors.

5.4 Overall development proposal



River bank park

Multifunctional public space including walkways, playground, green-blue integration, facilities for exercise, pier into the water and public water taps and toilets.

Market area

Upgrade of Kannar Lane Market, including improved roofing with solar panels, upgrading drainage system and integrating with landscape design, waste management, public toilet, increased accessibility and better conditions for informal vendors.

City street

City street integrated in the urban fabric with greenery, lightning, several safe pedestrian crossings, food stalls, accessibility to public transport, lanes for buses, pedestrians and bicyclists. Street section under 5.8 Market and trade

Secondary street

Secondary street including greenery, lightning, bus traffic, bike lanes and sidewalks for pedestrians. Street section under 5.7 Sustainable mobility

Inner street

Internal streets in and around the market area with walkway and bicycle lane. Street section for under 5.7 Sustainable mobility

Market street

Pedestrian streets inside the market

Figure 16: Illustration plan for the overall development proposal of Kannar Lane and Market.

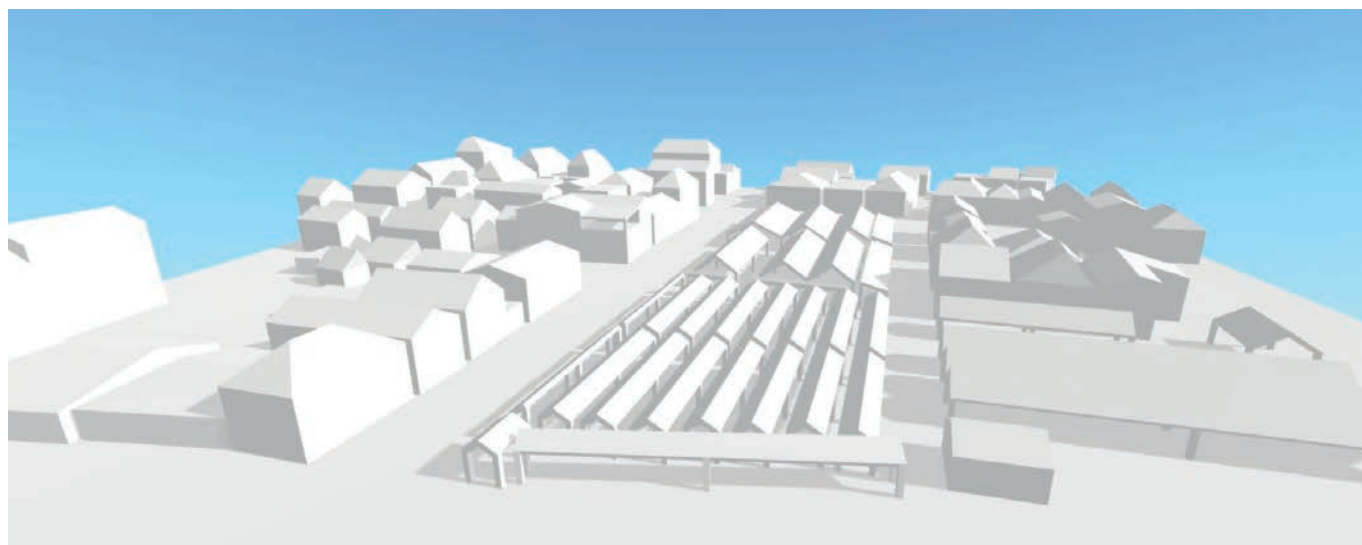


Figure 17: Perspective of the existing Kannar Lane Market, looking from the riverside, west.

5.5 Landscape and public space

Kannar Lane is proposed to be created as a corridor for increased biodiversity and public access. The green corridor will be supplemented by a tree planting strategy. This is of importance since the market is adjacent to a residential area and the corridor will serve as a separation between the commercial and residential area. In a significant boost to green-blue infrastructure in the area, the plan will also integrate flood prevention with green space and social amenities. Mangrove plantations will be promoted as socio-ecological system that improve resilience and provide environmental services. In order to improve the public character of the riverfront, a park, playground, street vending with traditional food and snacks, and walkway along the river will be constructed. One important consideration for the design of public spaces is how accessible it will be for the city's residents, especially women, children, the elderly, and the disabled. It is proposed that the design of the new public space will be developed in a participatory manner with wide-ranging consultations with the communities and inclusion of all groups of stakeholders. The redevelopment offers an opportunity to touch upon several wide-ranging aspects of urban planning and can be used to create a truly inclusive and sustainable space.

The project along Kannar Lane will be built as an infill project and is proposed to raise the height of the land along the river by approximately 2 feet (0,61 m). In addition, an embankment along the river is planned that will serve to mitigate threats of flooding. The Dawei River is prone to both increase in tidal water levels and flooding during the monsoon season. The project offers an opportunity to create long term solutions to the flooding of land adjacent to the river through several solutions including the creation of green infrastructure along the proposed redevelopment. The vision includes the use of the public recreational area as a blue-green integration project and replanting of mangroves to serve as ecological barriers against tidal flooding.

Key solutions for the development of sustainable landscape and public space along Kannar Lane:

- The green loop of Kannar Lane as being part of corridor for increased biodiversity
- Tree planting strategy
- Combined buffer and ecosystem services
- Local natural storm-water system
- Integration of flood prevention with green space and social amenities
- Mangrove plantations as socio-ecological system
- Park, playground, gym and walkway along the river
- Facilities for disabled people
- Facility for sports and physical exercise
- Wheelchair lane inside the park
- A green corridor that connects the park in the market with the park on the riverbank
- A pier into the river
- Safe environment for children
- Shadowed seating places for senior residents.
- Public toilets and water taps
 - Community centre
 - Open theatre for cultural shows



Figure 18: Street section to provide space for landscape and storm water management.

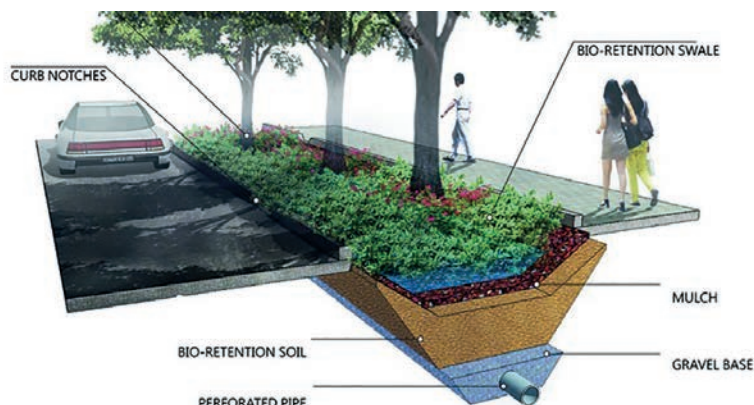


Figure 19: Integrated drainage and landscape design in accordance to developed section.

Figure 20: Example of drainage system and landscaping from the study trip to Malmö and the area of Augustenborg.

Integrated solutions

One of the core ideas of SCA is that the efficiency of integrated solutions can create synergies among urban systems in order to reduce both impacts and costs. All urban systems planning should consider both strategies and integrated solutions based on inter-system synergies, to enhance efficiency, increased sustainability and reduce costs. Some specific ideas for more integrated solutions, connecting the different urban systems in the public space development were proposed:

- Biogas/energy production from waste (material/waste, Energy)
- Fertiliser from organic waste (material/waste, landscape/ecosystems)
- Pond as retention and aquaponics. (public space, landscape/ecosystems)
- Library and community centre for elderly including quiet area and mobile connection (urban function, ICT)
- Street light with solar panels (energy, public space)
- Increased green area including irrigation and integrated drainage system (public space, landscape/ecosystems, sanitation/water)



Figure 21: Illustration of the way different urban systems are connected in the proposal for landscape and public space.

IMPACT ASSESSMENT OF PROPOSAL – Landscape and public space					
Type of Impact	Target Group	Positive Outcomes	Negative Outcomes	Short/Medium/Long Term	Measures to max. positive & min negative impacts
Play & learning	<ul style="list-style-type: none"> Boys Girls Infants 	<ul style="list-style-type: none"> Better Environment Movement/sport Education 	<ul style="list-style-type: none"> Potential accident 	Long Term	<ul style="list-style-type: none"> Regular maintenance & upgrade Learning centre
Accessibility	<ul style="list-style-type: none"> Senior Citizens Disabled groups 	<ul style="list-style-type: none"> Area for exercises Fresh air Meeting place 	<ul style="list-style-type: none"> Potential accident 	Long term	<ul style="list-style-type: none"> Regular maintenance & upgrade Provision of ramps and railings.
Socio-Economic Impact	<ul style="list-style-type: none"> Vendors Consumers Residents 	<ul style="list-style-type: none"> Possibilities for new stalls and shops Improved local economic development 	<ul style="list-style-type: none"> Move of some stalls along the Kanner Lane 	Short term for some vendors Long term for consumers and residents	<ul style="list-style-type: none"> Plan new location for vendors Inclusion of stakeholders in planning process Announcement
Ecosystem	<ul style="list-style-type: none"> Animals (Aquatic, birds, bees), Flora Citizens 	<ul style="list-style-type: none"> Area for biodiversity Improved air quality Increase in trees and plants Mitigation of heat-island effects Vegetation provides shade and food Coastal protection and prevention of erosion through mangrove Mangrove improves marine environment 	<ul style="list-style-type: none"> Pollution from visitors New spices 	Long term	<ul style="list-style-type: none"> Maintenance Large variety of plants Not introduce non-native species Waste management
Urban Landscape	<ul style="list-style-type: none"> Tourists Citizens 	<ul style="list-style-type: none"> Natural heritage such as rivers and mountains are kept and visible. Built heritage is respected and guidelines for new development set. Positive health aspects as improvements include walkability. Economic development through increased sustainable tourism development. 	<ul style="list-style-type: none"> Restrictions in height of new buildings can impact investors and shopkeepers interest and preferences. 	Long term	<ul style="list-style-type: none"> Include the perspective of lightning in heritage impact analysis. Recommendations for building design, height and location of new development.

Financial

Potential sources of funding were Identified as: internal revenue including taxes and user charges, external financing from public banks and PPP projects as well as devolved revenue from the regional government.

5.6 Infrastructure

Integrated solutions for infrastructure such as drainage, electricity, waste management are included in the design proposal as integral parts of both landscape and market development. Some specific key issues for infrastructure have been highlighted for a more sustainable development. In order to spread awareness on the importance of waste management an educational centre for waste management and biogas production is proposed to be established at the market. The space is proposed to also be used for organisation of separation and recycling bins for improved waste management. For easy access, bicycle and pedestrian lanes is proposed. The city aims to work specifically with the market in order to solve the waste management challenges as the market was a major source of waste production in the city, specifically organic and food refuse. In addition, accumulation of solid waste along the river, influencing flooding in the city inner areas, is a high priority. The main aim of the waste management is to minimise the amount of waste going to the landfill site in the city.

Key solutions for the development of infrastructure along Kannar Lane:

- New roofing of solar panels making the market as net energy producer.
- Buoys for tidal energy production.
- Install of garbage bins and garbage drop points along the city's roads in order to prevent indiscriminate disposal of trash, with divider for different kind of waste.
- Integrate drainage solutions with landscape design.
- Local small-scale water treatment plant
- Natural storm water management.
- Material separation/recycling and educational centre for waste management and biogas production.
- Internal organisation of recycling bins for improved waste management in the Kannar Market.
- Public phones and phone charging stations.
- Provision of Wifi in the market area.
- Public toilets in public spaces and in Kannar Market.
- Fire station and police station near the market.
- Day care centre near the market.
- A separate recycling point for processing waste material in the market

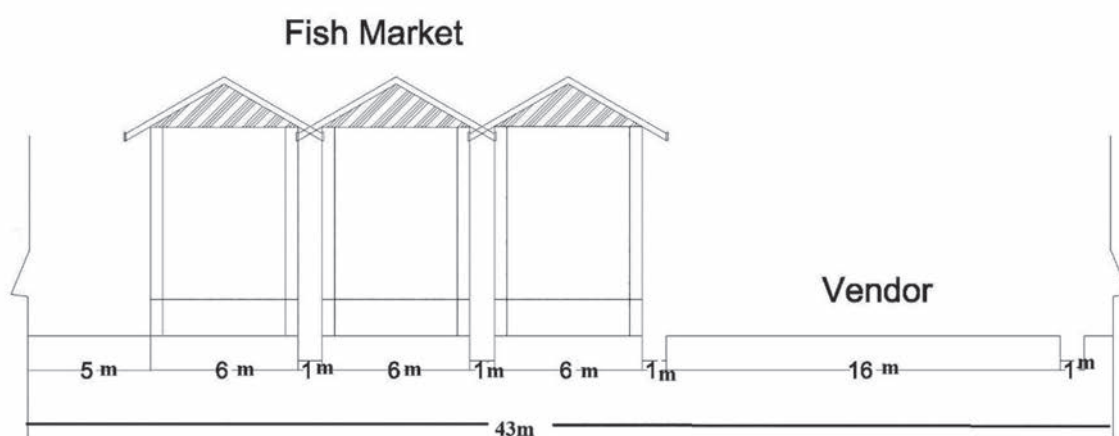


Figure 22: Section showing clean and healthy places for vendors and open drainage system next to vendor space.



Figure 23: Recycle and Educational Centre



Figure 24: Solar photovoltaics roof making Kannar Market a net energy producer



Figure 25: Schematic illustration of integrated solutions in thematic of Energy, Waste, and Drainage.

Integrated solutions

Some specific ideas for more integrated solutions, connecting the different urban systems in the public space development were proposed:

- Free wifi in public space (ICT and public space)
- Solar energy on buildings, light poles (Energy, buildings and urban functions)
- E-bikes with solar panel for rent on mobile phone (Energy, mobility and ICT)
- Storm water drainage integrated in landscape design (landscape/eco-systems and water)
- Plastic products gallery for information campaign on plastic pollution (waste and public space)
- Organic waste from market to livestock, agriculture and plantation (waste and landscape)
- Green bugger zone to develop and prevent and absorb methane and CO₂ (landscape/ecosystems and public space)
- Garbage bins that separate different waste for recycle and reuse (waste and energy)
- Organic waste used for biogas for public transport and renewable energy (waste, energy and mobility)
- Public transport and water taxi schedule on app (mobility and ICT)

IMPACT ASSESSMENT OF PROPOSAL – Infrastructure

Type of Impact	Target Group	Positive Outcomes	Negative Outcomes	Short/Medium/Long Term	Measures to max. positive & min negative impacts
Landscape integration	<ul style="list-style-type: none"> • Vendors and consumers • Residents • Visitors 	<ul style="list-style-type: none"> • Increased recreational places • More peaceful surrounding • Landmark and innovation for Dawei 		Long Term	<ul style="list-style-type: none"> • Raise awareness through campaigns and collaboration of responsible organizations and target groups
Water quality	<ul style="list-style-type: none"> • Residents • Vendors and consumers 	<ul style="list-style-type: none"> • Improved drainage system • Assess to education for the children • Minimised flooding and unhygienic condition of water bodies • Systematic wastewater disposal • Less pollution 		Long term	<ul style="list-style-type: none"> • Systematic maintenance of waste and drainage system
Biodiversity	<ul style="list-style-type: none"> • Fauna • Residents • Visitors 	<ul style="list-style-type: none"> • Bio-species can better survive • Eco- system services including flood regulation, food supply and water purification • Improved air quality and health 		Long term	<ul style="list-style-type: none"> • To provide the necessary amenities. • Maintenance • Planning and implementation with a systematic sustainability perspective.
Air condition or smell	<ul style="list-style-type: none"> • Residents • Vendors and consumers • Visitors 	<ul style="list-style-type: none"> • Improved air quality • Less bad smell from drains and river • More healthy environment 		Long term	<ul style="list-style-type: none"> • Improved collaboration between authorities and responsible organisations.
Education	<ul style="list-style-type: none"> • Children and students • Residents 	<ul style="list-style-type: none"> • Children can explore practical learnings on waste management, renewable energy and drainage solutions. • Encouraging environment and public space for the students to visit. 		Long term	<ul style="list-style-type: none"> • Encourage schools for practical learning. • Information of systems and solutions. • Management
Economy	<ul style="list-style-type: none"> • Residents • Vendors and costumers 	<ul style="list-style-type: none"> • Solar panels can generate cheaper electricity. • Revenue from different forms of collaborations and fees. 	<ul style="list-style-type: none"> • Management and installation costs 	Long term	<ul style="list-style-type: none"> • Maintenance • Technical expertise involved through the project implementation

Financing options

Possible sources for funding was identified as: taxes, user fees, auctions, and budgetary allocation from the regional government.

5.7 Sustainable mobility

The proposal for Kannar Lane includes a more detailed study of the possibilities for an improved mobility strategy in Dawei. Instead of constructing a motorway along Kannar Lane (as in the original plan for development) the working group proposes to develop a city street with integrated lanes for public transport, biking and walking. The street expects to ease access between the boat jetties, the market and public space along the water. In addition, improved possibilities for transportation of goods and market logistics have been included. Currently, car ownership in Dawei remains low and it is possible for the city to plan a sustainable future that keeps non-motorised transport at the heart of its mobility plan.

Key solutions for development of sustainable mobility of Kanner Lane and Market:

- Improved road conditions and widths for pedestrians and bicyclists, with walkways on each side of the road and separate bicycle lanes.
- Increased number of safe pedestrian connections to river.
- Bus route on Kannar Lane with good accessibility to stops.
- Bus stop on Yay Road.
- Improve road signs and safer crossings.
- Logistics centre to prevent local bulky deliveries.
- Organisation of taxi spaces close to entrances.
- Parking stands for bicycles and motorbikes.
- Parking for cars available further away from the market to avoid traffic congestion.
- Jetty with stop for water transportations.
- Internal market trolley system.

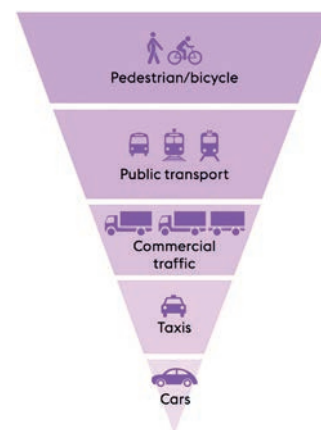


Figure 26: The mobility strategy builds on the logic to prioritise non-motorised transport in Dawei.

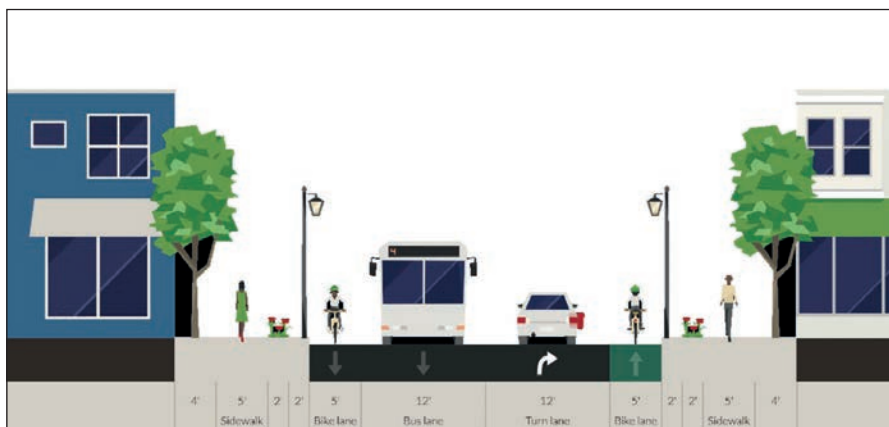


Figure 27: Section for the development of secondary streets close by the market area.



Figure 28: Section for the development of internal streets on the backside of the market. Prioritizing both bikes and pedestrians

Integrated solutions

Some specific ideas for more integrated solutions, connecting the different urban systems in the public space development were proposed:

- Solar energy on lampposts (energy and public space)
- Biogas from waste for public transportation (mobility, energy, waste)
- GPS system and mobile app for public transportation (ICT, mobility)
- Bicycle and walk lanes with trees, vegetation, integrated landscape design and drainage system (landscape/ecosystems, mobility, public space)
- Bus stands along the Kannar lane public space with access for all ages and gender (ICT, public space, urban functions)
- Online function for renting and selling of housing (ICT, Building)



Figure 29: Schematic illustration of integrated solutions in thematic of Sustainable Mobility

IMPACT ASSESSMENT OF PROPOSAL – Sustainable mobility					
Type of Impact	Target Group	Positive Outcomes	Negative Outcomes	Short/Medium/ Long Term	Measures to max. positive & min negative impacts
Air pollution	<ul style="list-style-type: none"> • Citizens • Vendors • Taxi drivers • Visitors 	<ul style="list-style-type: none"> • Health • Improved air quality 		Long Term	<ul style="list-style-type: none"> • Restrict car & tri-bikes • Improved walkability • Prioritisation of non-motorised transportation
Noise	<ul style="list-style-type: none"> • Passengers • Vendors and consumers • Visitors 	<ul style="list-style-type: none"> • Safety • Improved environment for recreation 		Long term	<ul style="list-style-type: none"> • Increased vegetation • Restricted vehicles
Traffic	<ul style="list-style-type: none"> • Shoppers • Vendors • Visitors • Taxi drivers 	<ul style="list-style-type: none"> • Less accidents close to market area • Easier access for different groups 		Short, medium and long term	<ul style="list-style-type: none"> • Improved crossings • Traffic lights • Proper sight • Proper lanes and walkways for all modes of transportation
Security/safety	<ul style="list-style-type: none"> • Passengers • Vendors • Children • Disabled • Women • Elder persons 	<ul style="list-style-type: none"> • Reduced crime • Easily access • Reduce in accidents • Comfortable and easy 		Medium and long term	<ul style="list-style-type: none"> • Provision of ramps and flat surfaces for better access for disabled • Lightning • ICT System for security

Financing

User charges for waste collection, entry charges, and tax on businesses was identified as possible financing options.

5.8 Market and trade

Kannar Lane Market forms an integral part of the redevelopment zone. A current proposal under development aims to upgrade the market by converting the market into a multi-storey complex with parking space occupying the ground level. Discussions with vendors at the market have highlighted how relocating vendors to upper storeys will negatively impact their livelihood. The plan for the market is therefore recommended to be developed through a community-led process that involves the vendors themselves as key participants and stakeholders in the development process. The upgrade of the market provides an important opportunity to undertake an inclusive process that will keep the key stakeholders, the women of the market, at the centre of the redevelopment. The proposal for the market area is focused on improve cleanliness, ventilation, sanitary services in order to improve the economic competitiveness of local business.

The proposal is to divide the market into two sections, one, for dry goods and wares, and two, a wet market for meat and fish products. A warehouse is proposed to be built near the market in order to handle goods coming in trucks from Mawlamyine and Thailand. The proposal also aims to connect the warehousing to the market in an effective manner. In a move that will foster more ownership and decentralisation, the market committee is propose to be in charge and responsible for local management and maintenance of the market. The market committee can connect with local banks in order to bridge the financing problems of vendors in the market. This could serve as a model for other markets in Myanmar.

Solar panel roof is proposed to meet the demand of electricity in the market. Public toilet and other amenities for vendors is further included. In a move that departs from previously proposed multi-storeyed plans for the market, it is proposed that vending will continue only at the ground level in accordance with the wishes of the vendors themselves and for improved accessibility.

The city has identified the following marginalised groups within the market area. The proposal is to integrate them into the planning process by creating a social inclusion policy that will incorporate their needs into the design and implementation of the market redevelopment:

- Vendors inside the market versus vendors outside the market, both primarily women workers
- Transportation workers who drive taxis, motorbikes, and tuk-tuks, primarily rural migrants to Dawei
- Waste pickers who pick up plastic bottles and other recyclable waste, mostly workers from different ethnic backgrounds
- Labourers in restaurants and cafes around the market
- Porters who help with the loading and unloading of cargo coming into the market
- Security and gate keepers of the market
- Elderly consumers who visit the market

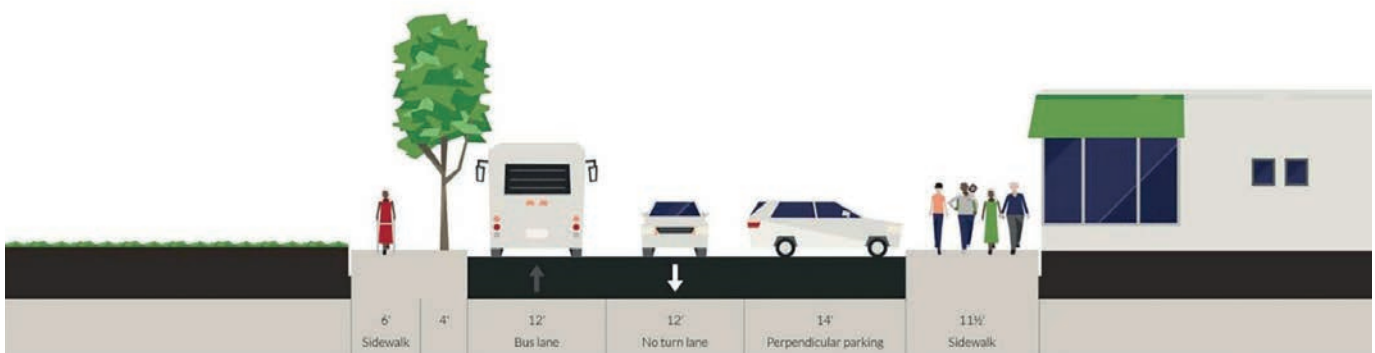


Figure 30: Street section for Kannar Lane, looking towards north.

Key solutions for the development of sustainable trade and market space:

- Wholesale warehouse for better buying/selling conditions
- Rental vending fees according is reflecting the amount of space
- Improved roofing with solar panels
- Drainage and waste management system inside the market
- Better conditions for informal vendors
- Expansion of the market to the north and the south to increase job opportunities
- Public toilet and other amenities for vendors
- Increased connectivity/accessibility to vendors both inside and outside the market
- Vending only at ground level
- Develop a long-term management plan for the market



Figure 31: Schematic illustration of integrated solutions in thematic of Trade and Market.

Integrated solutions

Some specific ideas for more integrated solutions, connecting the different urban systems in the public space development were proposed:

- Information centre (ICT, urban functions)
- Money transfer mobile app (ICT, urban functions)
- Public space upgrade including solar panel lampposts, computer centre
- Organic waste used for biogas and fertiliser (energy, landscape/ecosystems, waste/material)
- Improved facilities in market area including fire system, medical centre (urban function, public space)

IMPACT ASSESSMENT OF PROPOSAL – Market and trade					
Type of Impact	Target Group	Positive Outcomes	Negative Outcomes	Short/Medium/Long Term	Measures to max. positive & min negative impacts
Economic	<ul style="list-style-type: none"> • Shopkeepers • Customers • Residents 	<ul style="list-style-type: none"> • Job opportunities • Increased income • High revenue 	<ul style="list-style-type: none"> • High competition • High investment • High tax 	Long Term	<ul style="list-style-type: none"> • Storage facilities • Microfinance
Social	<ul style="list-style-type: none"> • Shopkeepers • Customers • Residents 	<ul style="list-style-type: none"> • Improved living standards • Access to education for the children of vendors • Health care • Inclusive process 	<ul style="list-style-type: none"> • Conflicts between shopkeepers • Health effects 	Long term	<ul style="list-style-type: none"> • Inclusive and collaborative upgrade of market • Market committee responsible for maintenance • Improved public services • Quality control of goods
Environmental	<ul style="list-style-type: none"> • Local people • Shopkeepers 	<ul style="list-style-type: none"> • Better sanitation and cleanliness • Reduced air pollution • Reduce bad smell 	<ul style="list-style-type: none"> • Noise, bad smell, health • Feel hot and uncomfortable 	Medium term	<ul style="list-style-type: none"> • Fees for pollution of river • PPP
Market	<ul style="list-style-type: none"> • Shopkeepers • Customers 	<ul style="list-style-type: none"> • More space • Easy access for customers • Easy to buy goods • Improved hygiene 	<ul style="list-style-type: none"> • Increased rental fees • Corruption 	Long term	<ul style="list-style-type: none"> • Inclusive and quality technical design of market space and stalls • Management • Institutional setup
Heritage	<ul style="list-style-type: none"> • Tourists • Local people • Domestic and international 	<ul style="list-style-type: none"> • Foreign income • Increased income 	<ul style="list-style-type: none"> • Depend on import • Tourism exploitation 	Medium term	<ul style="list-style-type: none"> • Encourage local products • Control and sustainable tourism development
Transportation	<ul style="list-style-type: none"> • Local people (shopkeepers) • Taxi drivers, • Bus drivers 	<ul style="list-style-type: none"> • Good logistical transportation • Easy access • Job opportunities 	<ul style="list-style-type: none"> • More shops, more transports • Larger distribution area of goods might be needed 	Medium and long term	<ul style="list-style-type: none"> • Good organisation of taxi parking and logistical transports • More bus stops • Traffic lights • Good organisation within the market area and space for storage.

Financing options

Taxes from parking, fees from ship owners, multi-lateral aid and loan as well as budget from the regional government were identified as financial options for the Kannar lane redevelopment project.

6. STRATEGY FOR IMPLEMENTATION

The working group proposed the following organisational structure for the implementation of the Kannar Lane project:

Advising role	<ul style="list-style-type: none"> • Public Representative • Businesspersons • Foreign Technicians • Related Government & nongovernmental organizations 	Monthly
Decision making	<ul style="list-style-type: none"> • Related Government • Organizations • Department organizations 	Depending on decision
Multi-disciplinary working group – development of strand road	<ul style="list-style-type: none"> • Township Households • Development Dept. • Ministry of Forestry • Municipal • General Administration Dept. • Land Records • Port Authorities • Ministry of Planning & Finance • Road Administration • Ministry of Electricity • Environmental Maintenance Dept. • Public Representative • Township • Ministry of Sports and Health 	Bi-monthly
Development committee	<ul style="list-style-type: none"> • ECD General Administration • Department, Municipal, River & Coastal Authorities, Roads • Authorities, Forests, Environment, Trade & Commerce 	Monthly
Consultation group	<ul style="list-style-type: none"> • Police Force, Traffic Police, Market representatives, Fire station, Real Estate, Heritage professionals 	Weekly

7. RECOMMENDATIONS FROM THE DAWEI SYMBIOCIITY PROGRAMME

The SymbioCity Capacity Building programme has provided new knowledge and competence in urban sustainability. The interdisciplinary core team with representatives from local, regional and national level have given opportunities for new collaborations, tools, methods and solutions for the future. The aim of the training sessions have been to improve capacity for urban planning, urban design, urban development and urban management. Stakeholder collaboration and public participation were mainstreamed throughout the activities, along with poverty reduction, gender equality, economic and environmental sustainability. The implementation of the programme has given lessons learnt and knowledge that can be useful to scale up in the future, in Dawei as well as on national level.

7.1 Integration of SymbioCity in Dawei

The core team identified important aspects that can be brought into future projects and processes in Dawei.

- As the government officers and staff members from local government agencies and local organizations joined the program, the participants got the chance to get to know each other, which led to strengthened coordination among these organizations in urban development activities. In the future it will support the achievement of increased coordination among departments through collaborative work and use of the SymbioCity tools and methods.
- Continuation of the close work between regional government, professionals, parliament representatives, local departments, residents, academia and civil society will improve the development of Dawei. Integration of tools for more participatory processes and involvement of different groups and citizens will give better knowledge of the needs of people.
- Awareness of the fact that urbanization would increase globally in the future and the population growth in Myanmar further emphasise the importance sustainable growth, tourism industry, development of infrastructure and service provision in the city of Dawei.
- There is a need for technology, finance, social and urban planning as well as coordinated processes to handle challenges to create sustainable and integrated solutions for environmentally, economically, socially, culturally and spatially sustainable cities.
- To take an holistic approach to urban systems, considering public health, public safety, water supply, energy, transportation and traffic management, waste management, telecommunications, green areas and public space gives improved sustainability and financial efficiency in project implementation.
- Important aspects of good urban governance, rule of law, transparency, social accountability and participation of civil society are important factors in urban development to serve the best interest of citizens. Laws and policy are also an important institutional aspect to take into consideration to bring about necessary changes in urban governance and management.
- Ways forward for the best use of land in both urban and rural areas are through effective legal framework, town plans and urban designs, integrating open space, communal land, public space and urban landscape.
- Improved decision making need data reliability this can be done through i.e. mapping, GIS analysis and data collection. Jointly identified challenges and opportunities, vision and development strategy can guide new projects and developments.

7.2 Town Plan

Based on the work and strategy of Dawei 2030, recommendations for the development and revision of the Town Plan has been identified.

The Dawei town plan is recommended to include the following key thematic plans:

1. a blue-green infrastructure strategy;
2. a mobility strategy that encompasses public transportation, non-motorised modes of transportation, and a uniform taxi policy for the city;
3. a waste management plan,
4. a heritage strategy,
5. a local economic development policy.

Make the town plan process more inclusive and inter-disciplinary:

The current town plan process mimics the institutional structure of urban planning and governance in Myanmar. The process remains highly centralised and does not effectively include the vast array of stakeholders that make up the socio-cultural tapestry of a city like Dawei. The town plan process is recommended to include two key elements:

- The process includes a meaningful level of public participation where stakeholders from civil society, the private sector, and most importantly, concerned citizens are provided an avenue to voice their concerns, provide critical feedback, and jointly participate in the creation of a vision for their city.
- The process includes both elements of greater horizontal cooperation, between departments, ministries, and agencies at the same level of governance, and greater vertical streamlining between stakeholders at the township, state/region, and union levels.

Take issues of poverty and gender in urban planning into account when developing the town plan:

In order to develop inclusive and sustainable that takes consideration of our different needs, independently of gender or socio-economic group, it is important that we recognize that different groups have different needs and perceptions. In Dawei, key stakeholder interviews, consultations and analysis by the core team gave clear indications on differences in access to space, resources and services between different groups, marginalized communities as well as between informal and formal sector. To strengthen these perspectives in the new town plan would ensure an improved situation for all citizens in Dawei.

Pay attention to issues of social inclusion:

Issues of social inclusion of marginalized groups as well as people living with disabilities was highlighted by the core team during the programme. Planning with different types of abilities and disabilities in mind will make cities more inclusive and functional to more people. This is linked to for example design of and access to markets, roads, public transport, seating places.

The town plan must rely on more accurate data for planning:

Local data is a crucial component in understanding the reality of the town and making informed planning decisions based on knowledge and facts. Improved tools for data collection, analysis and joint decision making is recommended for the future town planning process. Several participants highlighted the importance of new tools such as GPS mapping, walk through evaluations, primary data collection, traffic analysis as important means for future planning.

Include integrated planning solutions that can create synergies:

Integrated planning solutions can create synergies among urban systems in order to reduce both impacts and costs. All urban systems planning in Dawei should consider both strategies and integrated solutions based on inter-system synergies, to enhance efficiency and reduce costs. Institutional arrangements that support inter-functional collaboration should be developed. In the strategy and proposal for Kanner Lane integrated solutions are developed that connect the specific thematic areas to a set of environmental, economic, and socio-cultural factors. These factors are: buildings, urban functions, public space, landscape & ecosystems, waste and materials, water and sanitation, energy and ICT.



Figure 32: Integration of solutions for urban systems

7.3 Implementation of the National Urban Policy

The National Urban Policy for Myanmar is under development and will act as an umbrella policy to existing or proposed national policies and will form direct policies to address specificities within the urban sector. Based on the lessons learnt from the implementation of the SymbioCity Programme in Dawei, the following recommendations have been developed for the implementation of the NUP:

1. Small and medium cities/towns

Apart from the three big cities of Yangon, Mandalay, and Nay Pyi Taw, most of the country's urban population lives in small towns. The challenges, opportunities, and capacities of small towns are often markedly different from bigger cities in the country which demands a recognition of tiered solutions. This regards the aspect of balanced regional growth, economic development and infrastructure provision.

2. Large rural population residing within "city" jurisdictions

The majority of "urban" centres in Myanmar, still contain a predominant rural population, however the development indicates that these townships will be the core of future urbanisation processes. Significant emphasis must be placed on understanding the urban-rural linkages within townships and the potential conflicts, challenges, and opportunities that arise with urban growth.

3. Gender and urban planning

Gender representation is acutely missing from the political and administrative systems of Myanmar. For instance, a recent Asia Foundation study finds that only 101 of the 16,829 Ward/Village Tract Administrators are women. The work and analysis in Dawei shows serious inadequacies in the existence of and access to public space, access to services, and safety and security of women. The different needs of women and other gender minorities will therefore be important to address with growing urbanisation.

4. Democratic participation

Participatory process involving citizens and local communities must be made a mandatory part of the town planning process and in the development of other urban projects. In addition, increased transparency and openness in urban development projects is crucial. The current status of environmental and social impact assessments is crucial to analyse for improved processes and results and to make the process of urban growth as transparent, democratic, and equitable as possible.

5. Decentralisation of governance

A roadmap for greater decentralisation of power to the townships, both fiscal devolution and devolution of responsibilities under the constitution is important. In the longer term, this roadmap must seek to transfer power completely to an elected body at the township level. TDC/CDCs have come to occupy central positions in urban governance and development and must be further empowered and capacitated to take on a larger role and fully redeem their constitutional potential. The implementation of the NUP should build on the promise of cities that are democratically governed and managed.

6. Informal settlements

The challenges of informal settlements are needed to be addressed by pointing to sustainable solutions including participatory in-situ upgradation, increased provision of affordable housing, and public housing solutions that are affordable for citizens. The rights of the citizens to the city should be in the centre of development.

8. REFERENCE PROJECTS

During the Capacity building programme in Dawei, some specific projects of reference from the study trip to Malmö and Copenhagen were pointed out as important references by the core team for the future development of Dawei.

8.1 The Rose Garden Corridor (Rosengårdsstråket)

Rosengårdsstråket (Rose Garden Corridor) is a walking and cycling route that stretches between Rosengård and Station Triangeln, which is linked to cycle paths that lead both to Västra Hamnen and to Malmö's eastern outermost regions. A very important part of the process was an intense dialogue with and participation from inhabitants, organisations and businesses interested in developing Rosengård in a sustainable way, both ecologically, socially and economically. New places along the track have been built to increase the security and opportunities for Malmö residents to choose Rosengårdsstråket as a meeting place and as a transport link. Next to the Bennet Bazaar, a previous parking lot has been converted to what is today Örtagårdstorget. It works both as a daily meeting place and as a market and event venue on special occasions. The walkways have been widened to give more space to pedestrians and the various businesses. There is a seating area with various board games and places for smaller events. The square also has new trees and plantings, and new lighting according to the wishes of residents in the area.

Another spot along the path is Rosens Red Carpet. It is an activity area built together with local youth, mostly girls. The site was opened in Sept 2013 and has since been the scene for a number of arrangements of various kinds. Young people from Rosengård, primarily women, have been essential in planning an activity space on an existing parking space along the pathway. This will now be designed for dance, music and family activities. Empowering young women in the neighbourhood and inspire them to take local ownership of public places may also lead to a changed atmosphere in an otherwise male dominated public environment. Interesting results are already seen, such as the establishment of a new female network with the aim to influence the development of Malmö and an increase in the proportion of girls visiting the nearby youth centre.

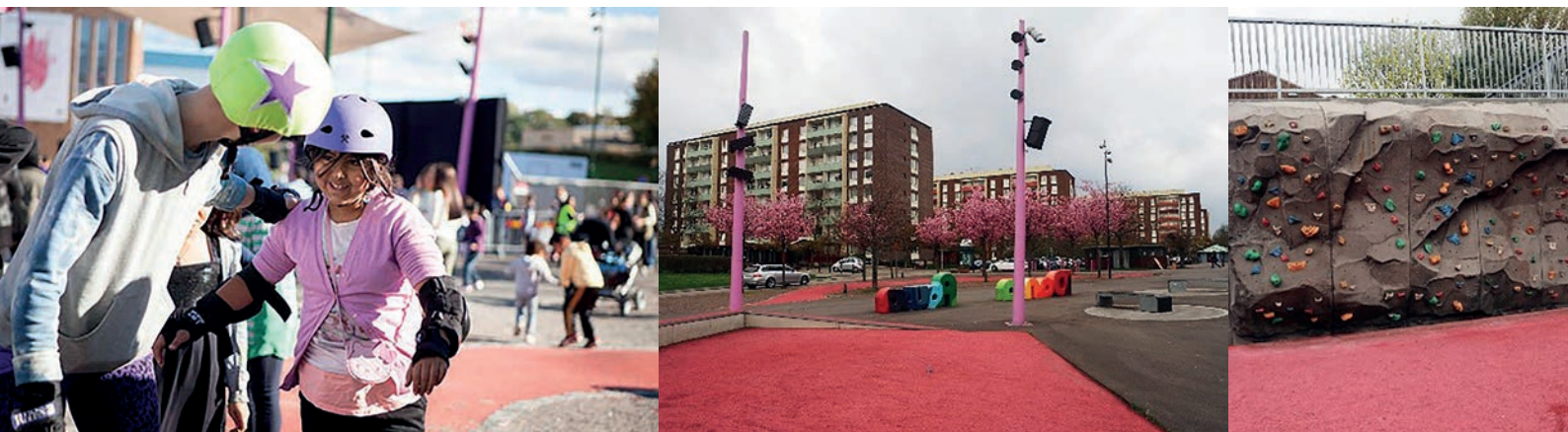
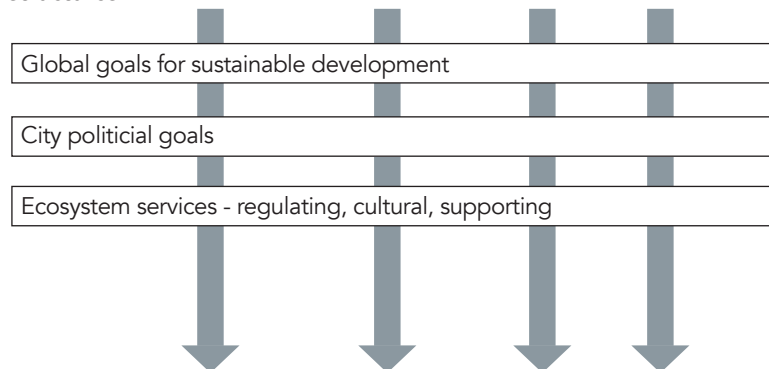


Figure 33: Rosens red carpet

8.2 Blue-green connectivity corridor

The green-blue planning strategy in Malmö is focusing especially on aspects of grey-green integration, integrated planning, multi-functionality, social inclusion, and integration of goals within planning. The city's focus on integrated planning enables the fulfilment of multiple goals including public health, climate adaptation, biodiversity, and public participation in the creation of public spaces. Major parks or public spaces are connected to each other through green corridors that prioritise non-motorised traffic. This creates a more holistic experience for the residents and enables the city to undertake more comprehensive blue structure planning. For instance, flood water can be now more effectively channelled to areas that are better placed to act as reservoirs. The city has placed particular emphasis on combining pathways for pedestrians and cyclists with green spaces like parks and lawns which also double up as natural reservoirs in the event of sudden cloud bursts. The move towards establishing better green-blue structures plays a vital part in enhancing the city's ability to manage these disaster events by reducing the strain on the city's drainage infrastructure and creating alternate channels for mitigating flooding events. Public spaces have also been developed multi-functional by design to enable a better use of space. A green structure like a public park which enhances the public well-being and health of the citizens could in that way also be used as a blue structure which enables the city to mitigate flooding and water logging. This forms the core idea of creating blue-green structures. Social sustainability forms an important component of the blue-green structure. Strategy and the city seeks to create public spaces for people from different national backgrounds, age, gender, and social groups. The nature of this integration is best described in the figure below, which shows that the comprehensive plan is well integrated with its component plans including the nature conservation plan, the storm water management plan, and the cloudburst plan. Instead of placing these plans in isolation, the city aims to leverage the benefits of implementing them in parallel and enhancing the interlinkages between them.

Starting point: Comprehensive plan- goals related to green and blue structures



Goals: Health and well-being - climate adaptation - Biodiversity - Participation

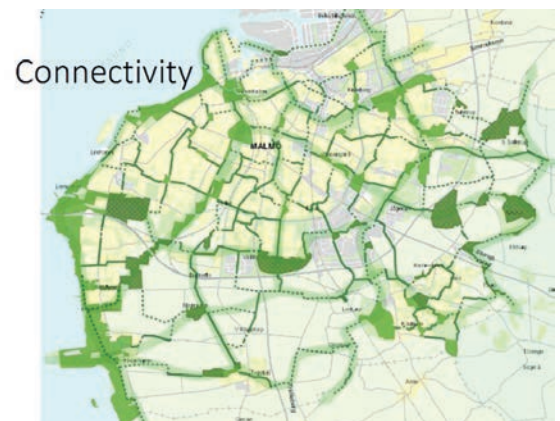


Figure 34: Malmö's green-blue strategy integrates different planning tools, political goals and connects different green areas in the city.

8.3 Kalvebod Waves

The Copenhagen's waterfront harbour area has witnessed a transformation from being a defunct and decrepit industrial area into one of the city's foremost districts with thriving businesses and ample public spaces. One corrective intervention to this has been the Klavebod Waves Waterfront Park, an open and public strip of ramp that opens out into the water. Kalvebod Waves mixes a variety of activities including a kayak club, a docking island in the basin, resting areas, and gyms for public use. This intervention has been an important way in which the city has reclaimed the harbour for public use from a formerly private and enclosed area. Three aspects of the design of the public space stood out. First, the design focused on urban continuity in form and provides a stark contrast to the mono-programmed buildings that dot the harbour. Second, the structure has been designed to maximise the amount of sunlight that users can get, especially in the afternoon. Third, the undulating strips of the structure provide the users with multiple vistas and views to enjoy the harbour's view. Planners in Dawei have decided to create a similar ramp on the river front Kannar Lane Redevelopment so that public access to the riverfront can be improved.

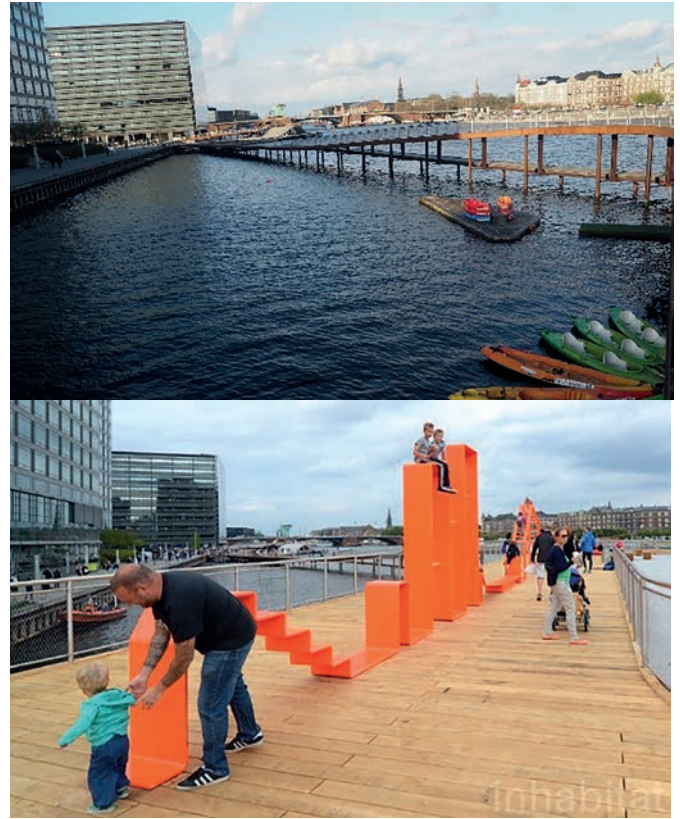


Figure 35: Kalvebod Waves and waterfront park provides a new type of floating space in Copenhagen.



Figure 36: The Dawei core team at Kalvebod waves.



Swedish Association
of Local Authorities
and Regions

SymbioCity



Sweden
Sverige