



Davao City

Infrastructure Development Plan
and Capacity Building Project



Message

Competitive. Progressive. Resilient. Consistent. This is Davao's mega city vision for 2045 which shall be guided by the Davao City Infrastructure Development Plan and Capacity Building Project- Infrastructure Modernization for Davao City (IM4Davao) Development Plan.

Taking infrastructure to the next level without disregard of other development sectors identified under the Comprehensive Land Use Plan and Zoning Ordinance of Davao City 2013-2022 is the core of the IM4Davao Plan. In driving along the arterial road to a sustainable future, the City Government of Davao traverses a bilateral partnership with Japan International Cooperation Agency (JICA) and in multilateral collaboration with various government agencies, the private stakeholders, and the local communities.

With the IM4Davao Development Plan, we expect a clearer path toward the transformation of Davao City into a premier city in Mindanao. It will serve as a blueprint that will guide government leaders, the private sector, and our development partners in steering Davao into a future as a green city where modern and effective infrastructure provides everyone the opportunity to pursue growth and productivity.




HON. SARA Z. DUTERTE
City Mayor

Background and Scope

Davao City formulated its Comprehensive Land Use Plan (CLUP) 2013-2022. However, it has not firmly guided urban development activities toward the given land use plan. Therefore, the NEDA requested JICA to update Davao City's CLUP and prepare its urban infrastructure development plan.

The project objectives are (i) to develop an urban infrastructure development plan for Davao City which will ultimately improve the city's competitiveness, safety from disasters, and general urban conditions and (ii) to support the planning and implementation of infrastructure development effectively and efficiently through capacity enhancement of NEDA and the City Government of Davao.



Davao City Infrastructure Development Plan and Capacity Building Project

**Infrastructure Modernization for Davao City 2045
(IM4Davao 2045)**

Development Framework for Davao City 2045

What will Davao City look like in 2045? Its urban features after 27 years were projected in terms of 1) population, 2) economic activities, 3) employment, and 4) urban land availability.

Urbanization

The Regional Physical Framework Plan formulated by NEDA XI for 2015 to 2045 took stock of the growth situation of Davao City and other provinces in the region. The projected population of Davao City in 2025 of 2,058,190 is estimated to reach 3,285,400 in 2045, an increase by 60%.

Using the "strategic growth management plan (SGMP)" method coupled with the development of a strategic transport network to affect urban development of Davao City, the SGMP scenario realistically spreads the population in the urbanizing barangays, with developers already pursuing in-filling developments by easing up highly dense areas and setting proper land uses in other barangays.

Economic Activities

The development of Davao City's districts necessarily considers the differences of the areas in terms of demography, economic features, and their respective roles and contributions in the current and future economy of the city. Being the highly urbanized and densely populated areas, Poblacion and Talomo (in District I) as well as Agdao, Buhangin and Bunawan (in District II) should focus on strengthening their roles as the commercial, business, finance, logistics and urban tourism hubs of the city.

Sustaining such roles will entail a careful balance of further expanding the urban service facilities (e.g., ICT, MICE, tourist accommodations, education and training, transport and logistics, etc.) while at the same time controlling urban sprawl, traffic congestion, and pollution. The promotion of a low-carbon society in these highly urbanized areas is an important goal. The rest of the districts are still predominantly agricultural areas, including Paquibato (in District II) and the whole of District III (Baguio, Calinan, Marilog, Toril and Tugbok).

The focus of the development plans for these districts is on expanding production volumes, organizing the small producers and improving their productivity, and providing them technical, financial, marketing and infrastructure support. Some districts like Calinan, Marilog, Toril and Tugbok have a rich pre-war history and legacy. They are also homes to various farms and nature resorts. Toril and Marilog also have large IP communities. They will participate in the tourism development program of Davao City's history and agriculture which will include a farm/ agro-tourism circuit tour package, Little Tokyo in Mintal, a cultural village in Toril, travelers' facilities in Tugbok, and historical pioneer museum in Calinan.

Capacity Building Programs and Activities

Capacity Building Programs in Davao City

The main beneficiaries of capacity building (CB) activities were the various offices of the Davao City Government, NEDA RO-XI, and NEDA CO. Indirectly, other regional government agencies as well as local private sector, NGOs and the academe also benefited from their involvement in the project's multisectoral forums and consultation meetings.

The CB program utilized the “learning-by-doing” approach and aimed to enhance and strengthen the existing knowledge and skills of the counterpart agencies in formulating and implementing a multisectoral and comprehensive infrastructure development plan for Davao City. The CB activities consisted of training seminars, workshops, roundtable discussions, invitation programs, consultation meetings, technical advisory services, etc. The CB component provided the fundamentals to trigger further activities.

Davao City, with support from NEDA and other sector agencies, needs to establish mechanisms that will sustain the gains and momentum created by the project especially in its implementation of the IM4Davao Development Plan.

Capacity Building and Workshops



1st Stakeholder Consultation Meeting (February 20, 2017)



Workshop on the Interim Report (October 11-12, 2017)



2nd District Meeting (November 10, 14, 16, 2017)

1st Invitation Program in Japan



2nd Invitation Program in Japan

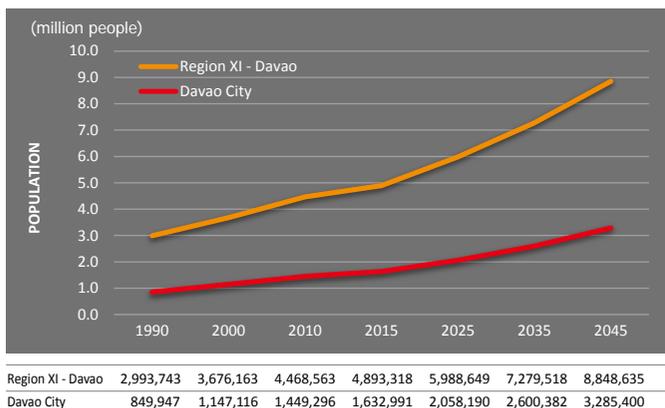


Invitation Programs

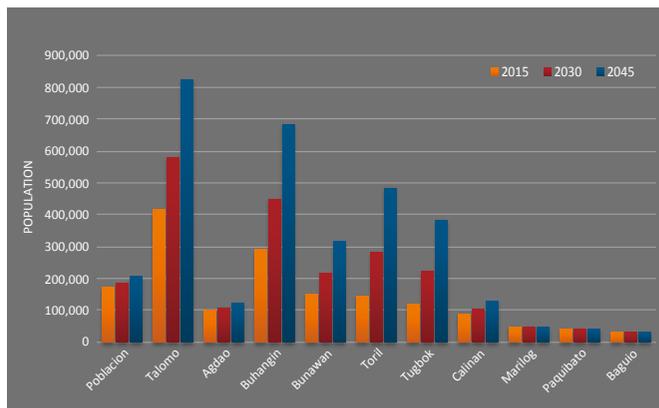
A special component of the CB program looked at the Kitakyushu Model to derive lessons for Davao City that can be learned from the experience of Kitakyushu City in Japan, which shares similar features and experiences with Davao City. During its industrialization, Kitakyushu experienced serious environmental pollution. It embarked on a program to address this and over the years until today, has successfully overcome environmental issues and has become a model of sustainable green development in Asia. The Kitakyushu Model was developed as a tool to strengthen local governments' practical skills for designing and planning works and to extend technical cooperation on green infrastructure systems with Asian cities.

As part of the CB program, the IM4Davao Project organized two separate invitation programs for officials of Davao City counterpart organizations to Tokyo, Osaka and Kitakyushu in May 2017 and to Tokyo, Tsukuba and Kitakyushu in April 2018.

Population Projection for Davao Region and Davao City, 2045



Distribution of Future Population by District



Employment

By 2045, Davao City will have approximately 57% or 1.9 million of its population employed. The services sector will continue to prosper and dominate employment. Under the scenario, there is a structural shift in employment where the share of primary sector workers will dip from 32% of employed population in 2015 to 18% in 2045. Secondary and tertiary sector workers, on the other hand, will increase their share of the total employed population from 16% to 49% and 23% to 59%, respectively.

The top three districts that will generate the highest employment in the agriculture, fishery and forestry sector are Paquibato, Marilog and Calinan. Talomo, Buhangin and Toril will employ the most number of workers both in the manufacturing and services sectors. Bunawan will also be a significant generator of manufacturing employment while Poblacion will be another major services sector employer.

Projections of Employment by Sector in Davao City, 2045

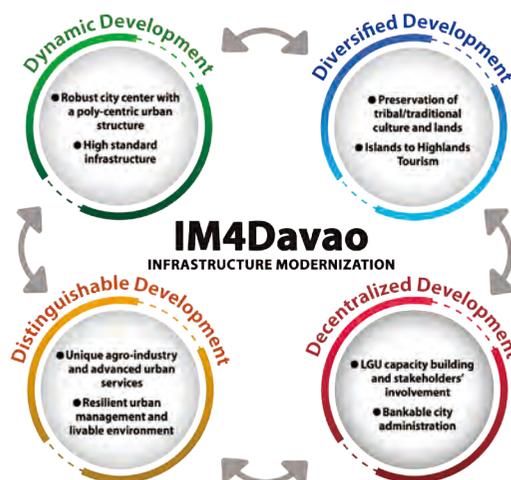
Administrative District	Population	Total Employed	Employment Rate (%)	Workers at Residence Place			Workers at Work Place		
				Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
Agdao	124,773	70,746	56.7	0	21,224	49,522	0	16,611	43,353
Poblacion	208,729	118,349	56.7	0	35,505	82,844	0	20,943	100,452
Tugbok	381,553	212,396	55.7	70,362	34,803	107,230	29,008	21,887	81,766
Toril	485,011	275,001	56.7	28,537	71,418	175,046	28,697	94,702	131,660
Talomo	823,671	471,572	57.3	42,972	123,102	305,498	8,900	101,335	384,216
Paquibato	44,800	25,402	56.7	16,511	2,032	6,858	109,177	1,085	1,237
Marilog	52,200	29,597	56.7	19,238	2,368	7,991	90,183	2,289	42,193
Calinan	130,706	74,110	56.7	41,396	7,284	25,431	43,547	6,381	9,291
Bunawan	317,397	179,964	56.7	54,773	30,546	94,645	9,693	60,940	50,072
Buhangin	682,660	387,068	56.7	49,311	94,316	243,442	13,097	95,883	257,105
Baguio	33,900	19,221	56.7	12,494	1,538	5,190	3,292	2,079	2,354
Total	3,285,400	1,863,426	56.7	335,593	424,135	1,103,699	335,593	424,135	1,103,699
Share (%)		100.0		18.0	22.8	59.2	18.0	22.8	59.2

Development Strategies

Davao City is a strategically important city that is expected to perform key regional, national and international roles. It is the center for Davao Region's government administration and is a premier hub for education, industry, commerce, trade, services, tourism and recreation, and investments in the region and in Mindanao. The city is also seen as a major international gateway and an economic center of the East ASEAN Growth Area (EAGA) for manufacturing and service industries.

In order to satisfy these roles, Davao City needs to prioritize infrastructure development as a driver of urban development to guide investments in housing, commercial, business, manufacturing and tourism. The IM4Davao Project proposed the 4D Strategy to achieve the city's ultimate goal of infrastructure modernization. Guided by this strategy, the project developed an urban infrastructure development plan covering 8 sectors, namely: (1) environment/ land use, (2) road transport, (3) public transport, (4) traffic management, (5) water supply, (6) sewerage, (7) solid

waste, and (8) industrial development. A set of proposed projects have been identified in each sector for implementation in the short (until 2022), medium (2023-2030), and long (2031-2045) term.

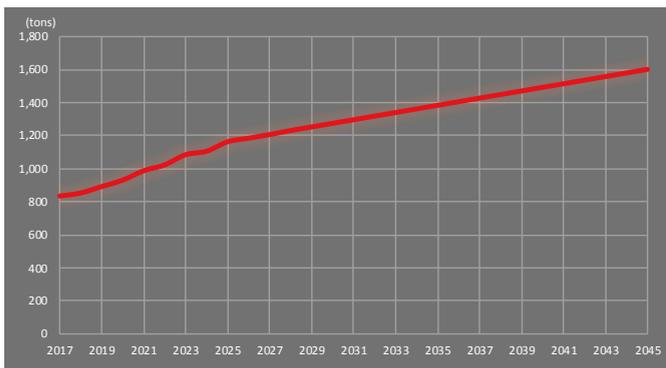


Development Plan for Solid Waste Management

Davao City has been strengthening street sweeping and continuous waste collection with efforts from the citizens. The city has also initiated waste source segregation, waste composting at MRFs, 3R promotion, biodiesel fuel production from edible oil and the preparation of Waste-to-Energy project in order to reduce the amount of waste to be treated.

In the IM4Davao Project, the solid waste management plan is formulated on a long-term perspective. Daily generated waste amount is calculated to be 1,602 tons in 2045, and almost all waste will be collected by CENRO.

Projected Municipal Solid Waste Amount in Davao City



Components of the Waste Treatment

- Disposal of waste in current and new landfill
- Waste-to-Energy (WtE)
- MRF and other waste recycling
- Waste Eco Park

Conceptual Image of Davao City Waste Eco Park



Development Plan

SHORT TERM	<ul style="list-style-type: none"> Rehabilitation of New Carmen Sanitary Landfill Site Basic Design of A New Sanitary Landfill Site Preparation of Davao City Waste Eco Park
MID TERM	<ul style="list-style-type: none"> WTE plant initial operation New sanitary landfill site in operation MRF (middle class capacity) in operation Operationalization of Davao City Waste Eco Park
LONG TERM	<ul style="list-style-type: none"> WTE plant initial operation New sanitary landfill site in operation MRF (middle class capacity) in operation Operationalization of Davao City Waste Eco Park

Development Plan for Water Supply

The major provider of potable water in Davao City is the Davao City Water District (DCWD), which services 61% of the city's population. Those outside its water supply service area are serviced by Barangay Water and Sanitation Associations (BAWASA) and private associations.



Main Reservoir of Tibuloy



Water Pipes Connected to the Spring



Existing reservoir

Reservoir under construction

Current Issues Faced by Water Providers

DCWD

- Insufficient water quantity
- Poor water quality
- Non-revenue water (NRW) is about 30% as of 2016

Rural Water Supply

- Limited water supply in some areas
- Unpredictable water supply during drought or sustained hot weather
- Non-potable water in some areas and non-compliance with regular water testing
- Non-payment of water bills by some members
- Lack of regular training and monitoring

Development Plan

SHORT TERM	<ul style="list-style-type: none"> Commencement of surface water supply from Tamugan weir to almost all DCWD service areas Establishment of SCADA system for all water supply system in DCWD Capacity building and training for NRW reduction management
MID TERM	<ul style="list-style-type: none"> Capacity building and training for rural water supply system management
LONG TERM	<ul style="list-style-type: none"> Development of new water source, surface water and deep well, in order to keep the sustainable water supply system Expansion of the water supply system to the unserved area in order to increase the population served ratio up to 75%

Development Plan for Wastewater Management

Davao City has no sewerage system for domestic water installed yet. In many cases, night soil from the toilet is put into septic tank. Treated water from septic tanks is discharged into the roadside ditch and/or rainwater drainage with gray water.

If this situation does not change in the future, the quality of public water will deteriorate with the increase in population.

The plan supports with the development of DCWD's septage services and proposes the development of a new sewerage system.

Development Plan

SHORT TERM	<ul style="list-style-type: none"> • Commencement of septage management program • Conduct of Sewerage system master plan and its FS for priority project • Preparation of sewerage system development (Area A)
MID TERM	<ul style="list-style-type: none"> • Completion of septage management program (until 2025) • Construction of sewerage system (Area A) • Preparation and construction of sewerage system (Area B) • Preparation of sewerage system (Area C)
LONG TERM	<ul style="list-style-type: none"> • Construction of sewerage system (Area C) • Preparation and construction of sewerage system (Area D,E,F)



Roadside Ditch



Roadside Ditch to storm water pipe

Sewerage Treatment Area

The treatment area is set based on the distribution of population density and ground surface gradient. As a result, it is appropriate to set six treatment areas (i.e., Areas A to F).

Conceptual Image of Sewerage Treatment Plant

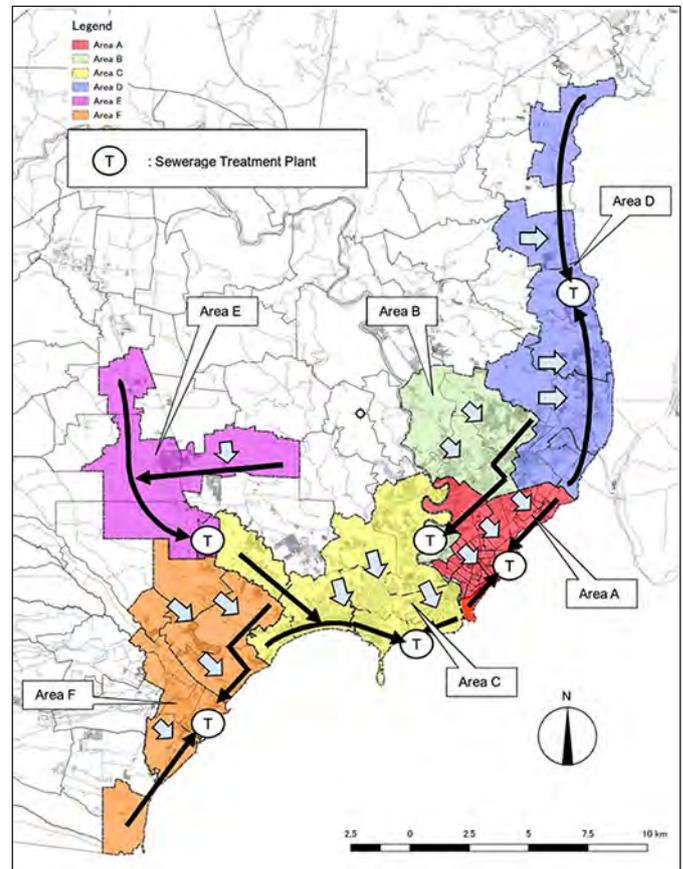


Image of Magsaysay Park



Cross Section of Magsaysay Park

Sewerage System Development Plan



Development Plan for Economy, Industry and Investment

Priority Industry Sectors

1. Agriculture and Agro-industry: Davao City should continue capitalizing on its strength and competitive advantage of having huge tracts of fertile land and the right climate suitable for agriculture. Aside from its traditional crops, the city also has promising prospects to continue developing its industries for initially the following agribusiness subsectors: Cacao, Cardava banana, Cassava, Abaca, and Rubber.

2. Information and Communications Technology (ICT): The ICT sector is expected to continue growing in the coming years although some argue that traditional and labor-intensive call centers may become obsolete in the future and, instead, the non-voice and Knowledge Process Outsourcing (KPO) sector, which fully utilizes robots and artificial intelligence (AI), would be dominant by the mid-2020s.

3. Tourism: In the short to medium term, Davao City should strengthen its “Islands to Highlands” tourism program by further developing a variety of destinations that highlight its land and marine natural resource endowments, agri-based industries, rich history and ethnic cultures, and historical and cultural ties with neighboring countries. It should continue efforts to attract investments in world-class accommodation and MICE facilities, parks, museums, cultural village, health and wellness facilities, education and sports, as well as tourism infrastructure.

4. Industries to Promote a Low-Carbon Society: The city envisions to sustain its development by striving to become a low-carbon society in the near future by attracting environmental industries that utilize state-of-the-art technologies and intensifying promotion of 3R (Reduce, Reuse, Recycle) and Renewable Energy (RE) measures.

5. Industries to Facilitate Transport Mobility and Logistics: The transport and logistics sectors play a major role in Davao City's economy and environment and generate a great number of employment. However, since outmoded technologies and poor management have imposed a large load on the environment, it is proposed that new modes of sustainable and environment-friendly transport mobility and logistics services should be introduced in the city.

Development Plan

SHORT TERM	<ul style="list-style-type: none"> • Completion of Davao Agricultural Trading Center (DATC) • Development of Davao Food Complex • Development of Integrated Agro-Servicing Complex • Development of Farm/ Agro-Industrial Mobile Cable System • Development of Cacao Processing Center and Chocolate Processing Zone • Development of Cardava Banana Flour Processing Plant • Development of Abaca Processing Center • Establishment of Consortium of Agricultural Equipment Fabricators • Development of IT Parks/Centers • Development of Multi-Lingual ICT Training Facilities • Development of AI Education for Young ICT Engineers and Students • Establishment of Farm/ Agro-Tourism Circuit • Construction of Davao Pioneer Museum • Construction of Madayaw Travelers' Station
MID TERM	<ul style="list-style-type: none"> • Development of Little Tokyo • Development of Kadayawan Cultural Village • Redevelopment of Davao Chinatown

Proposed Projects on Tourism Development Corridor Featuring Davao's History and Agriculture

Davao City has given priority to tourism development and made efforts to develop a tourism program unique to the city. The Davao Project proposes developing a tourism corridor on Davao's history and agriculture, the core of which will be Toril District. The route from the District extends to Calinan District and the foot of Mt. Apo. The following five major facilities are proposed along the corridor:

1. Farm/ Agro-Tourism Circuit
2. Little Tokyo
3. Davao Pioneer Museum
4. Madayaw Travelers' Facility
5. Kadayawan Cultural Village

Location Map of Tourism Development Corridor



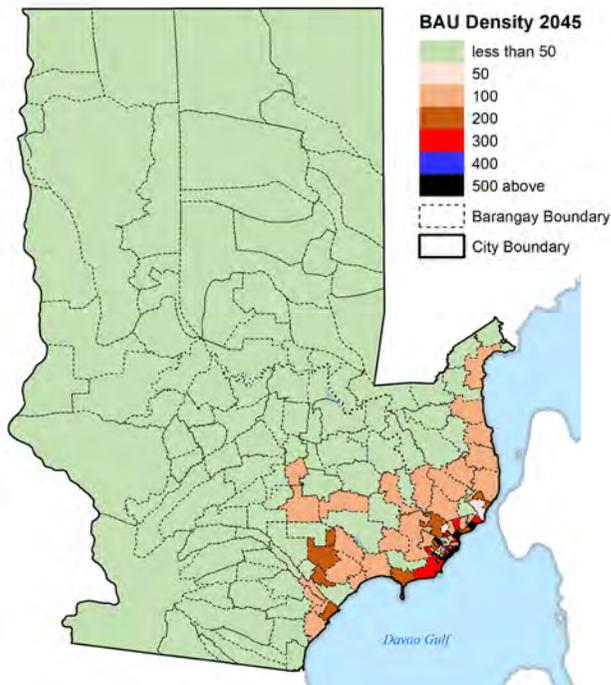
Urban Structure and Land Use 2045

Future Urban Population and Land Use

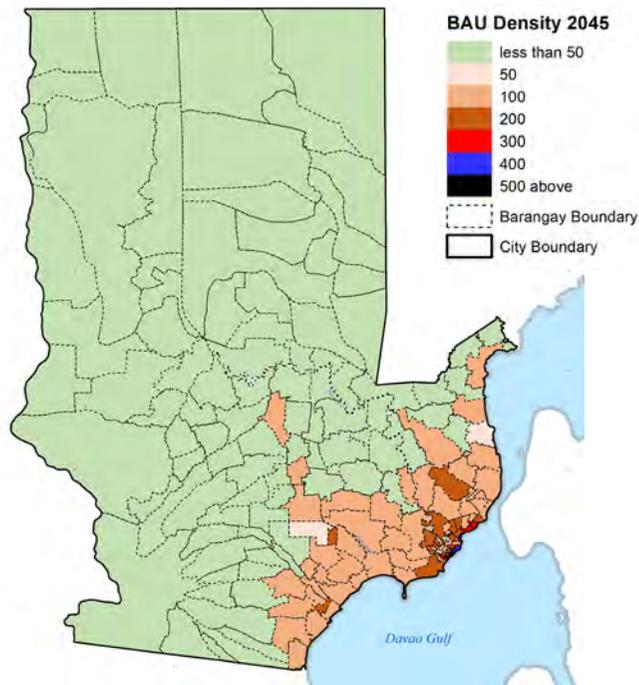
Davao City will have to accommodate an additional 1.7 million people in 2045. There are basically two options to distribute this forecasted population: (i) Business-as-Usual with the present mono-centric urban growth trend, or (ii) Strategic growth management for a poly-centric urban development of urban areas.

Adhering to the poly-centric spatial development strategy of the city, an integrated land use and infrastructure development plan for 2045 has been produced by the IM4Davao Project to reflect 8 urban districts with their own centers well connected to the rest of the city with prime transport infrastructure.

Mono-centric 2045 Urban Society



Poly-centric 2045 Urban Society

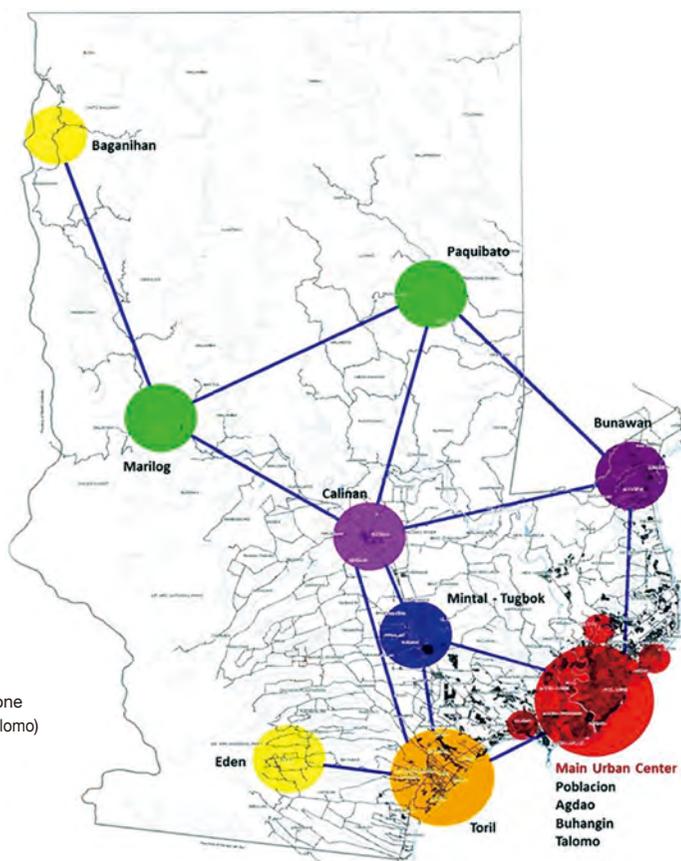


Urban Structure

The city has taken on a typical mono-centric urban structure, with the Poblacion laid out as its urban core. Today, the city center has expanded to encompass the districts of Agdao, Buhangin and Talomo. The city now intends to realize a multi-nodal spatial development which will transform the present mono-centric to a poly-centric urban structure. This will promote a balanced development to downplay the negative effects of urban development. Designated subcenters will have to attract a higher daytime population by providing more places for work, schools, commerce, business and entertainment. Great care will be paid to control urbanization from encroaching into protected areas.

Davao City's urban structure towards 2045 is to be led by transport infrastructure development integrated with its land use plan. Considerations will be given to strong land use controls and urban growth management with density control and strengthened urban functions. The transport network will be planned to direct growth of the city.

Development Cluster



Spatial Development Strategy

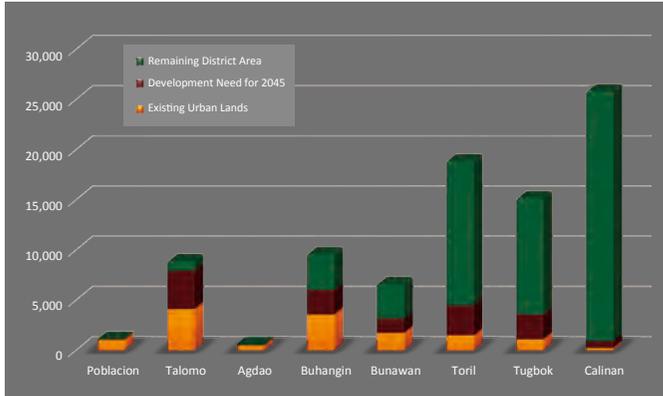
- Bunawan Sub-Urban Center
- Calinan Sub-Urban Center
- Eden-Catigan-Tagurano Tourism Development Zone
- Main Urban Center (Poblacion, Agdao, Buhangin, Talomo)
- Marilog-Paquibato Economic Zone
- Mintal-Tugbok Sub-Urban Center
- Toril Sub-Urban Center
- Baganihan Tourism Development Zone

Characteristics of Urban Cluster

Davao City has 182 barangays that are grouped into 11 administrative districts and 3 political districts. The administrative districts will be developed as urban and rural clusters.

For future development, lands for residential, infrastructure and daytime activity use (i.e., work, schools, commercial and entertainment areas) were estimated based on proximity to urban centers and future trunk roads. Some development constraints were also considered such as water bodies and forest lands. An additional 14,000 ha. will be needed to accommodate the growing population and activities of the city in 2045.

Urban Land Development Need for 2045



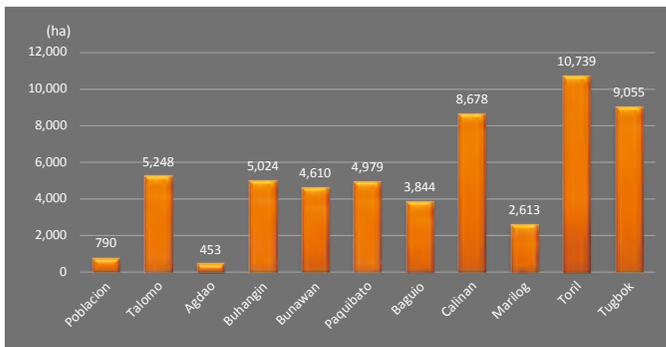
Cong'l District	Admin District	Role and Function
1	Poblacion	<ul style="list-style-type: none"> City administrative center Regional financial center Regional advanced medical care center
	Talomo	<ul style="list-style-type: none"> New central business district
2	Agdao	<ul style="list-style-type: none"> Center for meetings, incentives, conferences and events (MICE) Financial center
	Buhangin	<ul style="list-style-type: none"> Global gateway and regional logistics hub Commuter town
	Bunawan	<ul style="list-style-type: none"> Industrial center
	Paquibato	<ul style="list-style-type: none"> Rural development cluster
3	Baguio	<ul style="list-style-type: none"> Rural development cluster
	Calinan	<ul style="list-style-type: none"> Suburban center linking the urban and rural areas Tourism center
	Marilog	<ul style="list-style-type: none"> Rural development cluster
	Toril	<ul style="list-style-type: none"> Agro-industrial center Tourism center
	Tugbok	<ul style="list-style-type: none"> Regional government center Science center

Available Urban Land for Development

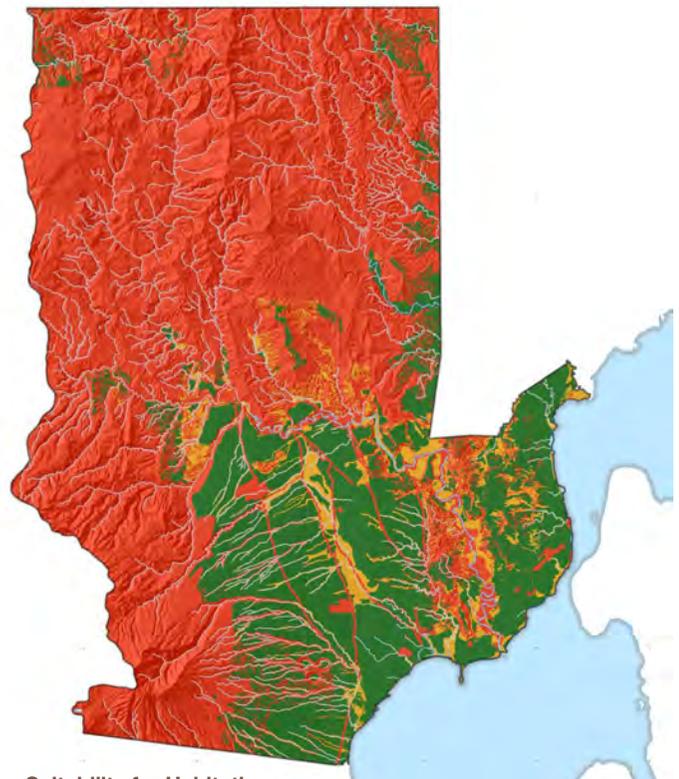
An analysis on available land for urban development took into account areas that are habitable such as those with slopes less than 18%, not prone to disasters, not along water bodies, not within protected areas and land not already occupied by large-scale public and institutional facilities. Davao City has a vast land area but only 23% has been classified as habitable and another 5% would need disaster countermeasures in order to be habitable. About 71% of the city's area is either protected land or non-habitable. With its current population of 1.6 million, only 7% of its total land is urbanized.

The administrative districts of Toril, Tugbok and Calinan have more land that are habitable while Agdao and the Poblacion have the least but are more dense in population.

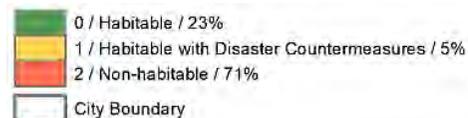
Habitable Land by District

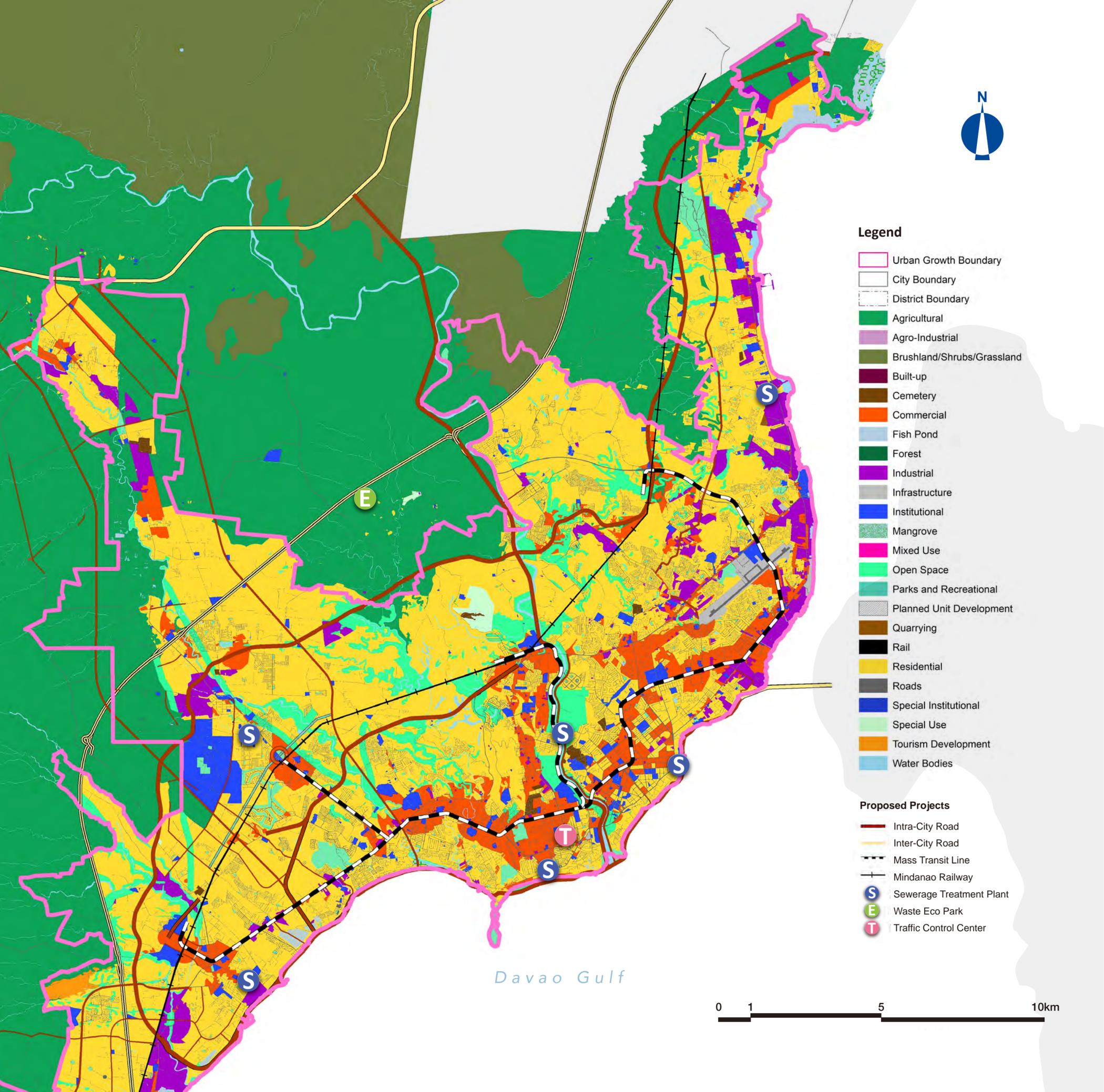


Habitable Area



Suitability for Habitation





Land Use Plan 2045 with Proposed Projects

In order to enhance and facilitate the implementation of this plan, the following actions are recommended:

- Integrate the proposed urban centers and sub-centers in the Davao City CLUP and CDP, and ensure the allocation of appropriate funds for the related capital investment projects through the Local Development Investment Plan (LDIP) and Annual Investment Plan (AIP).
- More detailed land use plans and explicit development guidelines should be prepared for each of the identified urban centers and sub-centers.
- Each of the aforementioned detailed plans and guidelines should include an explicit implementation strategy and timeline, including especially the funding or financing of the necessary capital investment projects.
- The attractiveness of the identified urban centers and sub-centers to investors and business locators can be significantly enhanced if the Davao City Investment Incentives Code is aligned with the plans and implementation strategies.
- The detailed plans should also include the appropriate network of secondary or collector roads to ensure connectivity among the individual privately owned land parcels, as well as provide the public right-of-way for the drainage and other utility trunk-lines.
- The inclusion of affordable housing in the identified urban centers and sub-centers should be considered, linking this with the resettlement of the informal settler families presently occupying hazard prone and other high-risk areas.
- The preparation of the detailed plans and development guidelines is best undertaken with the involvement and participation of the private landowners concerned.

Image of Davao River Boulevard

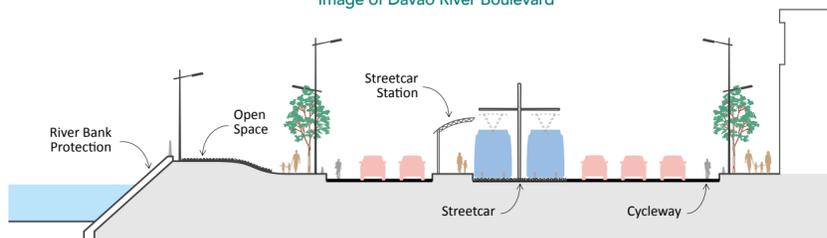


Image of Kagayawan Cultural Village



Image of Visitors Center at Davao City Waste Eco Park



Development Plan for Transport and Traffic Management

It is possible to delineate an urban structure by providing primary transport infrastructure. The future transport network of Davao City will be composed of inter-city roads, intra-city roads, inter-city railway and urban railways.

Future Road Network

In order to promote the sustainable urban development of Davao City, the current incomplete ladder pattern of road network should be developed as triple ladder pattern.

Currently, two trunk road projects are under different development stages, namely the Davao City Bypass Road (28.8 km) and the Coastal Road (18.3 km). Together with these projects, the Davao City Diversion Road Extension and Davao Riverside Boulevard are proposed to decongest the existing roads to realize a triple-ladder pattern of the city road network.

Public Transport

It is imperative to replace the Public Utility Vehicles (PUVs) consisting of jeepneys and multicabs with more modern, safe, comfortable and efficient Public Utility Buses (PUBs) as the main actor of road-based public transport in Davao City. Taking both growing population and registered vehicles into account, impact of the modal shift within road transport may not be dynamic in changing urban structure and personal movement.

Rail network service will be able to take a more important role in the city's transport system in the integration of the transport system with urban development, particularly with the new urban centers. Japan's and other countries' experiences show that a Transit-Oriented Development (TOD) is a practical way to foster new urban centers together with trunk road network development.

In Davao City, the Mindanao Railway project is ongoing to provide inter-city rail service. Likewise, the Davao City Mass Transit Line project, a new intra-urban railway, is proposed to provide fast and scheduled urban transport service within the city.

Mass Transit Line

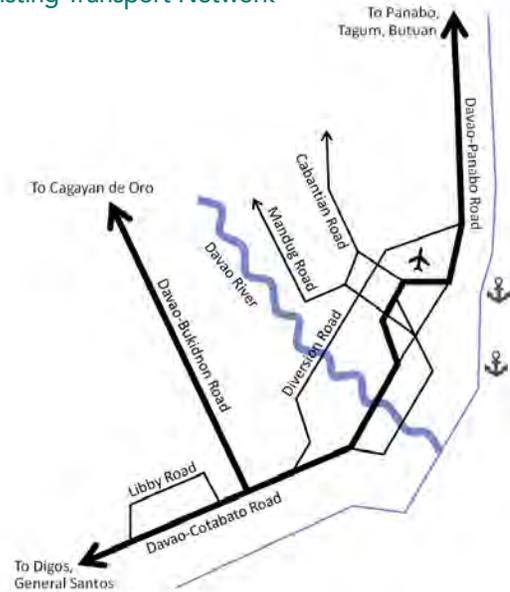
The Mass Transit Line will consist of a main line (18 stations, 25.8km) and branch lines (9 stations, 16.4km). Phase 1 of the main line will target to operate by 2024.

Image of Mass Transit Line

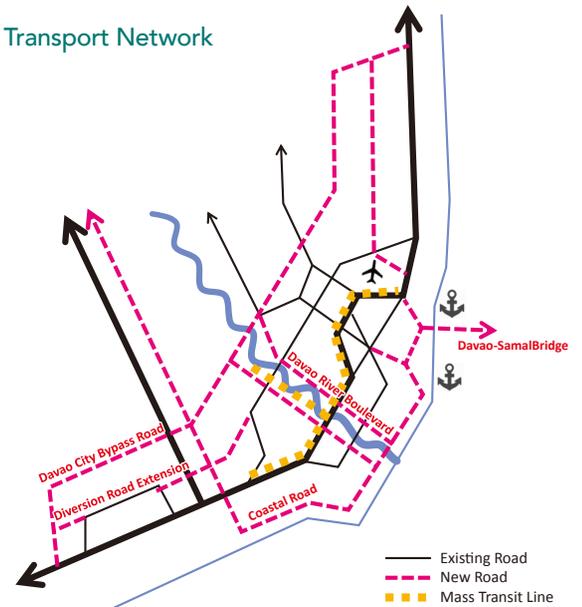


Yokohama Municipal Subway

Existing Transport Network



Future Transport Network



Proposed Mass Transit Network



Legend
 - Mass Transit Line (Phase 1)
 - Mass Transit Line (Phase 2)
 - Branch Line
 - Mindanao Railway
 © 2018 Google
 Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Transport and Traffic Management

With its serious traffic congestion, Davao City placed “Transport Plan and Traffic Management” as an important agenda in the city’s development plan. CTTMO has decided to establish a traffic

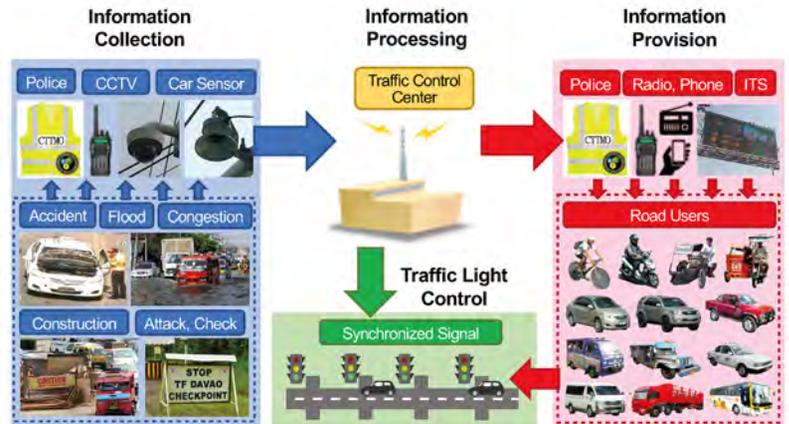
control center (TCC). To ensure the sustainable and effective operation of the TCC, the present traffic system will be upgraded and a new TCC will be built.

Components of Transport and Traffic Management

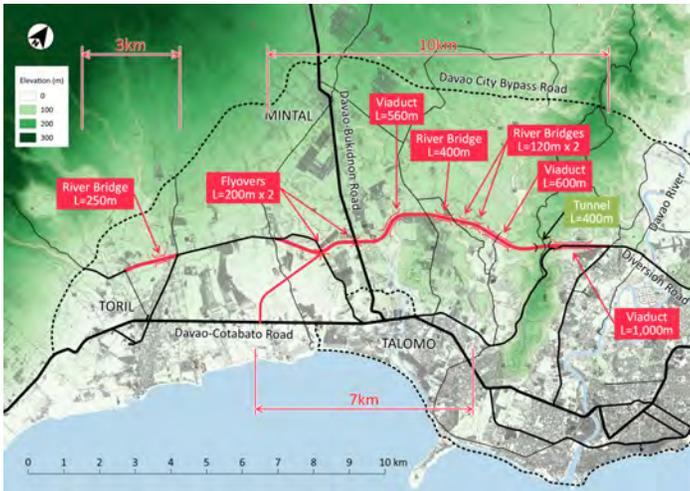


Tokyo Traffic Control Center

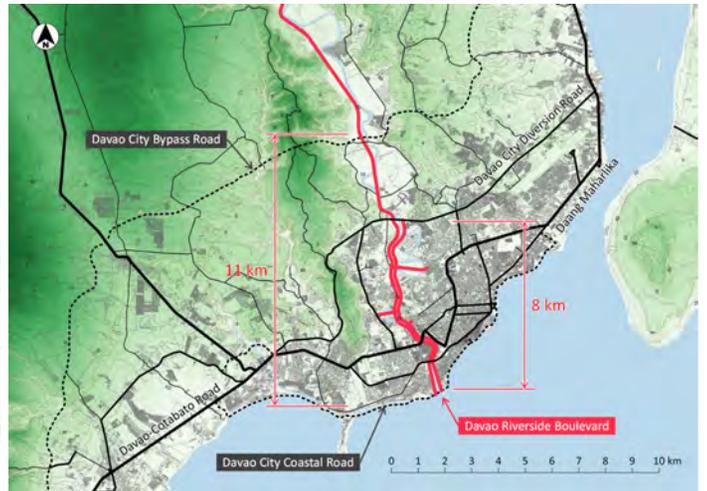
Proposed Traffic Control System



Davao Diversion Road Extension



Davao Riverside Boulevard



Development Plan

SHORT TERM	<ul style="list-style-type: none"> • Completion of Davao City Bypass Road • Completion of Davao City Coastal Road • Secondary routes between Davao City Bypass Road and Davao City Diversion Road • Establishment and operationalization of Davao City Traffic Control Center • Modernization of Road-based Public Transport • Construction of Davao City Mass Transit Main Line Phase 1 (Talomo - JP Laurel, 15km)
MID TERM	<ul style="list-style-type: none"> • Extension of Davao City Diversion Road to Toril • Construction of Davao Riverside Boulevard together with river improvement • Secondary roads to serve newly urbanized areas • Operationalization of Davao City Mass Transit Main Line Phase 1 (Talomo - JP Laurel, 15km) • Construction of Davao City Mass Transit Main Line Phase 2 (Toril - Talomo, 6.6 km)
LONG TERM	<ul style="list-style-type: none"> • Construction of Buhangin - Bunawan Bypass Road • Construction of Talomo - Calinan Bypass Road • Continuous secondary road development • Operationalization of Davao City Mass Transit Main Line Phase 2 (Toril - Talomo, 6.6 km) • Construction and Operationalization of Davao City Mass Transit Branch Lines - Airport to Mudiang, Davao Riverside to Davao Terminal St., Bukidnon Road to Mintal) depending on demand

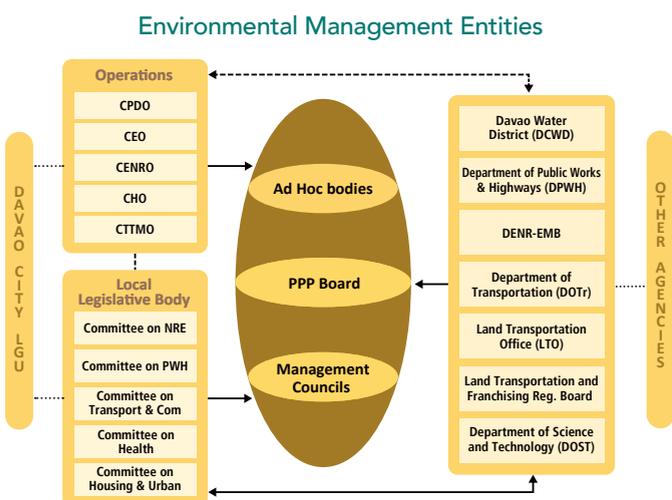
Environmental Management Plan

Environmental Management Entities

For any and all infrastructure undertakings in the city, the function for addressing environment issues in the city rests with the City Government of Davao, the national government agencies charged with protecting the environment, the project implementing agencies and other relevant bodies. These entities, depending on the type of project, would converge as part of the ad hoc bodies, the PPP board and management councils, among others. Hence, the identification of the project stakeholders would depend on the type of planned infrastructure project.

Social consideration is another aspect for critical attention of any infrastructure project since most of the development projects in Davao City must deal with resettlement issues, particularly of the informal settlers. The city government has created the Infrastructure Monitoring Advisory Group (IMAG), which requires all affected barangays to be part of the IMAG when addressing issues on the right-of-way (ROW) and informal settlers during project implementation. A practical IMAG operation is desirable.

For effective environment management, capacity development of individual organizations and close coordination among them are highly necessary.



Environmental Management Plan

The environment management plan for Davao City is structured with the goal to 'ensure ecological integrity, clean and healthy environment'. The four strategies of the plan are: (i) the effective coordination and strict law enforcement, (ii) maintaining and improving environmental quality, (iii) enhancing natural resource conservation, and (iv) environment friendly infrastructure.

One institutional approach is to guide all public and private investments for urban development towards green development by way of a green infrastructure code and a green building code using green technologies. A green infrastructure code may include permeable paving systems on road sidewalk and ground car parking, greenery shaded bus/jeepney stops and any infrastructure which must be designed with planting. A green building code may encourage any public buildings and large-scale private buildings to use green building designs in compliance with the BERDE and/or LEED as well as other international standards.

Proposed Programs/Activities

SHORT TERM	<ul style="list-style-type: none"> Facilitating detailed GIS mapping to clarify the zoning boundary and present land use Mobilizing non-government human resources as guards on environment Approving and implementing the Green Infrastructure Ordinance and the Green Building Ordinance Setting up Environment Museum Collecting air and water pollution source information and computerizing to electronic inventory Good maintenance of the air monitoring equipment and increasing the number of air monitoring station Construction of sewerage treatment system and septage treatment system Construction of waste management facility Strengthening enforcement such as increasing forest guards Expansion of the national greening program Clarifying the border of area and zoning on GIS map Implementing environmental management plan in project construction and operation stage
LONG TERM	<ul style="list-style-type: none"> Establish forest land use plan Monitoring environmental performance of buildings

Environmental Management Plan

Goal	Ensuring Ecological Integrity, Clean and Healthy Environment Act for Beautiful and Clean Davao (ABCD)			
Strategies	Effective coordination and strict law enforcement	Maintain and improve environmental quality	Enhanced natural resource conservation	Environment friendly infrastructure
Programs/ Activities	<ul style="list-style-type: none"> Coordination through participation Strengthening enforcement Budget support and resource allocation Setting up in stitution Awareness and Information sharing 	<ul style="list-style-type: none"> Clean air Clean water Wastewater management Waste management Climate change 	<ul style="list-style-type: none"> Biodiversity and protected area Forestry and greening Zoning management Coastal resources 	<ul style="list-style-type: none"> Environment friendly infrastructure Green buildings Adaptation to climate change