

Issues and Challenges on Transport Modernization: The Case of Davao City, Philippines

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Abstract:

Part of the City's holistic development is transportation modernization and its infrastructure support. Progress is good, but unmanaged resources, unavailability of funds released which may affect the proposed master plan and slack implementation of the law can lead to urban sprawl and traffic congestion. The study was conducted to determine the transportation and infrastructure challenges in Davao City and how Public-Private Partnership (PPP) contributes towards attaining sustainability. A total of 60 participants including commuters, drivers, and car owners, were served as key respondents. A descriptive evaluative research design was utilized in the study wherein the data is collected using open-ended interviews, secondary data, and observations. The study found that Davao City's main issues and problems in infrastructure and transportation are the results of inadequate investment in road development and maintenance and poor management. Thus, researchers suggested reforms, recommendations and building up of PPP programs in order to make public transport provision in Davao City more effective and efficient.

(Key words: investment, management, modernization, traffic congestion, urban sprawl)

I. INTRODUCTION

On the pursuit of development, a city should take into consideration its infrastructure modernization and transportation plan to lessen the effects of congestion and increase the mobility of economic activities, its people and services. Davao City is cited as one of fast-growing cities in terms of population, geography and economic condition in the Philippines and

in Southeast Asia. It is the most populous and highly urbanized city in Mindanao. Based on the 2015 census, the city had boomed to 1,632,991 in population with a land area of 2,444 square kilometers – the largest in the country.

The lack of transportation due to the swelling of population growth, traffic and road were increasingly being seen as a threat to Davao's economic efficiency, time, safety and quality of life of the commuters. The city currently has a total of 15,115 public transport vehicles, of which 13,985 busy city routes while only 1,130 cover regional routes. Of the total number of public utility vehicles in the city, 7,278 are jeepneys, 3,602 are taxi cabs and 2,105 are motorized tricycles (Carillo, 2014).

Due to rapid urbanization, Davao City's mobility difficulties is highly expected. The economic development of City has brought upscale on the volume of the vehicle, which results in traffic congestion during peak hours along major thoroughfares (Lirios H., 2004).

According to the East Asia and Pacific Economic Update report released recently by World Bank, the government needs to ramp up its spending in order to sustain the country's economic momentum. Infrastructure spending and development, in particular, are essential in order to support economic growth, calling the projects under the public-private partnership program as "new sources of growth". PPP program also offers the private sectors an opportunity to finance, construct, maintain, or rehabilitate facilities.

This paper aims to rationalize the transportation and infrastructure demands of the city and provide recommendations for the city's policy makers, planners, and developers. It summarizes the contributions and roles of the PPP program in transportation and infrastructure development towards attaining a sustainable Davao City. Furthermore, researchers' scrutinized widespread or common issues and problems linked to transportation and infrastructure that Davaoenos have experienced.

II. METHODOLOGY

The study uses descriptive evaluative research design. It is a collection of data describing some phenomenon that may or may not be qualified such as close-ended scales, open-ended survey questions, observation, and interviews. This is to evaluate the results against some known or hypothesized standards. This study also employs a qualitative research method to allow information from individual subjective perspectives to be included in the assessment.

The study utilized both secondary and primary data. Sources of secondary data include documents such as related studies conducted, project reports, journals, online researches and articles, and other reading materials. An interview schedule was utilized with the research objectives as the guiding parameters. The interview schedule relates to the respondents' transportation problems and infrastructure necessities in Davao City and how they foresee possible resolution. The data gathered was collated and was consolidated per themes.

The study was conducted in Davao City, Philippines with sixty (60) respondents who were commuters, drivers, and car owners. The study was completed December 2018.

III. RESULTS AND DISCUSSIONS

I. *Davao City's Rapid Urbanization*

Located in Region XI, Davao City is in south-east Mindanao. The third largest city in the Philippines, in terms of population, and is one of the country's 'highly urbanized' cities. The 2015 enumeration reported, the city had 1,632,991 in population. With land area of 2,444 square kilometers, it is the largest in the country in terms of land area. It is surrounded by the provinces of Davao Del Sur, to the south, Davao Del Norte, to the north and east, and Cotabato, to the west. Most of the development is in the south and east of the city on land bordering the Gulf of Davao, and on either side of the Davao River. The remaining areas further north and west are either reserved for agriculture (67%) or forest/conservation (18%). The main commercial heart of the city (the CBD or Poblacion District) is located on the east bank of the Davao River.

However, in recent times, other sub-urban centers have begun to develop in Toril (to the south-west), Calinan (to the north-west) and Bunawan (to the north-east) – leading to an increasingly multi-polar urban structure. In the selected twenty barangays of Davao City and Matina Crossing, 27-C, Agdao, and PacianoBangoy are the highest Commercial Zones ranging to 37-62 area that is rounded to the nearest tense. While the highest residential areas are in Bucana followed by Talomo, Buhangin, and Poblacion. These are composed of subdivisions, villages, informal settlers, and housings in the vicinity of the district I and II. Elsewhere, much of the urban area is given over to large, sprawling low-rise residential developments of the type that is particularly difficult to serve effectively with public transport (ADB, 2013).

II. *Current Issues on Infrastructure*

1. *Underinvestment and Delays*

According to the latest survey in the World Economic Global Competitiveness Report from 2013 to 2014, the Philippines ranks a very poor 98 in the overall quality infrastructure compared to its Asian neighboring countries. The major gaps in the country's roads, ports, airports, urban mass transit, water, and energy have been the cumulative result of years of underinvestment and delays in implementing public capital expenditures, fiscal constraints, and weak institutions for governance (KMPG, 2015).

Since the government wants transparency, there is a tendency that the proposed project through the abrupt planning will not serve its very purpose.

2. *Road-Right-of-Way*

The right-of-way issue is generally recognized as being crucial in infrastructure development. Poor right-of-way, management, and enforcement leads to inefficient public transport operations and reduces the impact of investment in associated infrastructure improvements. Widening the right-of-way for Bus Rapid Transit (BRT) system is not considered feasible, because there is extensive commercial frontage along Davao City's main roads, which is likely to be difficult to acquire (ADB, 2013).

Some of the landowners would not cooperate and/or contradict to the proposed road widening. Usually, landowners wanted a high compensation.

3. *Poorly Develop Road Network*

Stated in the 2013 report of the Asian Development Bank for Davao Sustainable Urban Transport Project, some parts of urban road network in Davao City are poorly developed and maintained. Main roads are subject to occasional flooding, some roads are of gravel construction or concrete surface is badly broken, and many are too narrow to accommodate larger public transport.

Inadequate road width and lack of fund for the proposed bypass road increases the volume of vehicles that pass through the main road.

4. *Unsystematic Road Network*

The study on infrastructure development in Mindanao last 2017 claimed that, the road network development in Davao City has not been developed in any kind of systematic fashion, leaving it a chaotically intertwined complex of roads lacking any continuity. Chronic congestion has plagued in downtown area in recent years given a sudden increase in car traffic.

5. *Lack of Parking Spaces*

Limited parking space encourages drivers to park on the streets, making it another delimiting factor reducing road capacity paralyzing the day to day activities, especially during peak hours.

6. *Housing Problems*

Densely populated area like Davao City which is due to rural-urban migration, is bound to exacerbate the housing problem. This problem is evident in the proliferation of slums and informal settlements in the city that is characterized by unsanitary conditions, congestion, and limited access to basic services. Resettlement and relocation programs have been implemented. However, these residents moved back to the city because sometimes the program attained limited success in providing employment, livelihood opportunities, and adequate services.

More businesses and investments are coming in and more people want to live in the city. Davao City has become the center of trade and commerce in the region, a hub for information technology, education, and tourism.

7. *Critical Financial Condition*

The World Bank stated that, such underperformance in infrastructure stems from poor business environment, unsatisfactory performance in long-term infrastructure planning and coordination and in mobilization. Moreover, each of these constraints is further exacerbated by the critical fiscal situation. Efforts by the government to provide infrastructure have often been a reactive response to crises rather than a proactive input into effective long-term infrastructure planning. Thus, a combination of insufficient

central oversight, lapses in coordination among agency plans and projects, and failure to insulate infrastructure planning, prioritization, and implementation are hampering infrastructure development.

III. Transportation Problems

Currently, the Davao City has a total of 15,115 registered public utility vehicles (PUVs), a majority of which at 13,985 are city routes while only 1,130 cover regional routes (Business world online, 2015). The types of transportation are Taxi Cab, Jeepneys, Tricycles, Trucks, Private vehicles and Buses. However, due to the increasing number of these transportation models, congestions, air pollution and worse, global warming arise. The number of vehicle miles travelled by passenger cars and light-duty trucks increased 35% from 1990 to 2013 (Transportation, 2014).

Traffic Congestion

Matina McArthur Highway is considered an area with a constant traffic especially during rush hours in the morning and afternoon. During the rainy season, this area experiences floods due to heavy rainfall and because it is near to a river. Due to this, traffic congestion is inevitable. Aside from this, Matina McArthur Highway served as the main road for travellers from the Del Sur side going to Downtown and vice versa. The usual vehicles in this area are jeepneys, private vehicles, taxis, buses and trucks that tend to cover huge spaces on the road and causes delay. People in this area is frequent that also cause congestion. This traffic congestion is ranging all the way to Ulas. ElpidioQuirino Avenue Traffic area has a long-stretched highway which covers from BankoSentralngPilipinas area to near San Pedro Extension Crossing. Because of its long coverage, it has minor roads and streets from different inside villages and barangays that lead to the main road. These minor streets are all the way to Bankerohan area. A lot of tricycles and other vehicles came out from these which causes traffic. The Traffic Congestion in Davao City is located in the National highway, primary Roads and Secondary Roads of Davao City (Buladaco, 2018).

According to Asian Development Bank's Davao Sustainable Urban Transport Project report in 2013, the following were the findings of the study:

1. Inadequate Network Coverage

While the jeepney and filcab network has a reasonable coverage in and around the city center and coastal highway, many areas further inland are either poorly served or are not served at all. In all, there are 51 barangays affected, about one third of the population of the planned urbanised area or more than 412,000 people.

2. Barangays Poorly Served by Public Transport Routes

Little or no attention appears to have been given to the public transport needs of newly forming communities. A situation which has been observed in many of the outer areas of the route network where jeepney and Filcab service are lacking, their place is filled by motorised tricycles or motor cycles for hire, many of which are informal and unregulated.

The result is often an inadequate and unsafe system which is fraught with social consequences.

3. *Complex Route Network*

The overall picture is one of overlapping routes converging on the City Center, with services progressively joining others along the way. In the City Centre itself, this often leads to congestion caused by the large number of public transport vehicles that accumulate. Other issues that have been noted in relation to the existing route structure includes: many routes are just short extensions of other routes at their outer extremities, leading to unnecessary duplication and complexity; and while the system of one-way loops around city center streets may be convenient for operators, it is likely to be very inconvenient for the majority of passengers. In addition, there are 91 motorised tricycle routes or areas, some of which encroach onto jeepney or Filcab routes.

4. *Highly Fragmented Transport Industry*

Further analysis of the jeepney and Filcab route data indicates that 51 (or 39%) of the routes were operated with less than 15 vehicles – the minimum number considered necessary by the DOTC to provide a viable level of service – whereas 21 (or 16%) of the routes were operated with more than 100 vehicles³. Of the routes operated by a small number of vehicles, many were operating between specific sub-divisions and the City Center. The average number of vehicles per route is 54, overall, but this rises to 86 if the smaller routes are excluded. When it is considered that the number of franchises (6,724) is almost as high as the number of units (7,278), and franchises place no obligation on operators to provide a given level of service, the result is a highly fragmented transport industry, which cannot be guaranteed to provide a reliable service to the travelling public. For the motorised tricycles, individual franchises are granted to each of the more than 3,000 vehicles. As a result, the emphasis is almost always on the ‘livelihood’ of individual driver/operators, or drivers who hire their vehicles from an operator, rather than on co-operative working aimed at delivery of a ‘public service’.

5. *Weak Planning and Regulatory Framework*

Many of the difficulties that are being experienced by the existing public transport system in Davao City can also be traced to the weak planning and regulatory framework covering this sector. In particular:

- responsibility for transport-related matters is spread across several national and local government agencies, without always being well coordinated; even within the city government, there is not a single office with overall responsibility for such matters;
- there is a general lack of local government involvement in planning, commissioning and regulating comprehensive public transport services that meet the social and economic needs of citizens, and encourage sustained economic growth; apart from motorised tricycles, which are regulated by the city government, the planning and regulation of public transport services is often seen as the responsibility of national government – to be undertaken by the DOTC and the LTFRB;

- existing public transport franchising mechanisms do not specify the exact level of service to be provided, leading to widespread irregularities and shortcomings in transport provision; and
- there is a distinct lack of enforcement in the regulation of public transport operations, both because the LTFRB does not have its own enforcement arm (this role is taken on by the LTO), and because there is often more emphasis on traffic management than on managing public transport operations.

6. *Inadequate Infrastructure Support*

Similar weakness are apparent in the provision and management of the basic infrastructure required to support public transport infrastructure; sidewalks, stops, waiting sheds, terminals and other essential components of a modern, efficient public transport system are absent from many parts of the existing network. Moreover, some parts of the urban road network are poorly developed and maintained. In the city center even main roads are subject to occasional flooding; in outer areas some roads are of gravel construction or their concrete surface is badly broken, and many are too narrow to accommodate larger public transport vehicles.

IV. RESULTS OF INTERVIEW

The data were gathered from commuters and drivers of Davao City and was conducted November 2018. The following results were consolidated in matrix form.

SECTOR	GOOD PRACTICES	NEEDS IMPROVEMENT	RECOMMENDATIONS
TRANSPORTATION	Evident of improved transportation servicethrough road widening, installation of more yellow boxes, additional utility vehicles (vans as PUV) and constructions of overpass, pedestrian lanes, new bypass road that would help to augment traffic flow. Visible traffic facilities specially traffic lights and traffic signs.	Transportation policies should take careful consideration the public transport operations and the pedestrian movements.	Proper monitoring of traffic rules/regulations since it has been implemented in Davao City.
	Designation of traffic enforcer helpedminimize the traffic congestion especially during malfunctions of traffic lights and celebrations of special events in the City.	Inadequate investment in road development and maintenance. Malfunctioning of traffic lights and pending road constructions which also contributes to a heavy traffic.	Hastening road projects to further develop roadways to lessen traffic congestion. Improve also the drainage system along the national highway to prevent flooding
	Proper decorum of speed limit and traffic rules. The City Transport and Traffic Management Office (CTTMO)/Police Traffic Officer helpedmanage the transport and traffic situation.	Poor management of transport corridors and implementation of law. Wrong parking, double parking, violation of the loading and unloading areas. Too much volume of vehicles which causes traffic congestion and contributes to air pollution. Laidback policy implementation. Lack of transportation control and management.	Stringent implementation of law. Enforce transport regulations properly.
	Tolerable traffic situation unlike in Manila where commuters experiences difficulty getting to their destinations safely and on time.	Scarcity of jeepneys in some areas of the city.But bulk of vehicles in another part. There are also old vehicles that requires maintenance and repair. The transportation system	Establishment of a regulatory board that will be responsible for the management and control of the number and safety of transportation vehicles.

		in Davao City is not yet advanced and modernized.	
	Increase volume of transport vehicles in the city implicates progress in economic activities.	Careless and uneducated drivers and commuters who ignored traffic rules and regulations which causes road accidents.	Have an annual or regular seminars/refreshers to drivers and commuters about the traffic rules and regulations - "ignorance of the law excuses no one". This also another way, to strengthen policy implementation on transportation related laws.
	The local government is starting to modernize the transportation system of the city. The modernization plan also includes the whole Mindanao to hasten interconnectivity, thus, it improves economic activity and called it the Mindanao Development Corridors.	Blockage, merger, and rerouting due lane closure or accidents. Sometimes, there is an overdevelopment of roads in some areas where the mass transit is already overcrowded.	Improve transportation planning and traffic management
	Major transportation plan for Metro Davao will start soon which connects Digos-Sta. Cruz-Davao City-Panabo-Tagum-and Maco.	Complex road network, especially in highways interconnected with Barangay roads.	Modify the road networks based on the present and future needs. There should also be a separate lane for each specific type of vehicles (PUJ, PUV, PUB, Private vehicles, bikes, ect.)
	During truck ban, closing of main roads or secondary roads due to road construction, the local government informed the people or commuters ahead of time for them to adjust.	Not enough vehicles or pedestrian stations to accommodate people with disabilities and other special needs.	Have an additional stations, areas, and pedestrians to accommodate people with disabilities and other special needs.
	For cargo trucks, gravel, sand trucks, and other heavy cargo trucks with more than six wheels and up have specified truck routes.	The drop-offs and pick-ups areas in the City is not wide enough to load and unload passengers, worst is drivers wait too long to get another passenger.	Improve the drop-offs and pick-ups areas so it would not be uneasy for the other vehicles. The amendment of truck ban hours also helped to reduce the traffic congestion.
INFRASTRUCTURE	Additional/extend bypass roads which will help minimize the traffic congestion.	Lack of budget allocation to fund infrastructure projects.	Strengthen Public-Private partnership programs
	Growth of infrastructure projects that is evident in the City's progress.	Unfinished and pending construction of roads, drainage, canals, etc. which causes traffic congestion and accidents. Some roads are of gravel construction or concrete surface is badly broken, and many are too narrow to accommodate larger public transport. Some are old and no longer safe to be used.	Identify the priority areas that requires immediate respond and have a long-term plan in order for sustainability. Try also to look into the marginalized areas that needs infra support.
	10% of green spaces are still preserved and practiced.	Davao City is too crowded via an aerial perspective. There is also a frequent occurrence of flooding and landslide.	Consider the greenery when designing an infrastructure plan. One must include the natural environment in the whole perspective to lessen the heat and pollution especially in the urban and semi-urban areas.
	The planned construction of Davao City Expressway Project, Davao City Bypass road (JICA), Davao City Coastal Road, and the Davao-Samal Bridge.	Substandard materials used, under-the-table transaction, issues on right-of-way	Ensure proper implementation of RA 9184 or the Government Procurement Reform Act. Secure a fair, just, and transparent bidding process. This would avoid suspicion, uncertainty and corruption.

V. THE ROLE OF PUBLIC-PRIVATE PARTNERSHIP

One of the President Rodrigo Duterte's 10-point Socio-Economic Agenda calls for boosting annual infrastructure spending to account for 5 percent of GDP, with Public-Private Partnerships (PPPs) playing a key role. In addition to this explicit support of PPPs, several of the Agenda's other objectives – escalating economic development, supporting rural development, investing in health and education, and promoting science and technology to enhance innovation - require infrastructure improvements in order to be realized. Overall, government spending on infrastructure is estimated to be USD 163 billion through 2022, with PPPs playing a key role (NJACM, 2017).

PPPs are being recognized by the national government and policy makers as a tool to address national infrastructure deficit and to develop the range of financing options. Way back, the Philippines has a fairly long history of engaging the private sector in infrastructure development and operations. A Build-Operate-Transfer (BOT) Law was passed in 1990 – the first one in Asia – and was then amended in 1994. That law, Republic Act (RA) 6957 as amended by RA 7718, provides the legal framework for Philippines PPPs and is implemented under rules and regulations that were revised in 2012. At the moment, a draft bill – the PPP Act – is under consideration which would enhance the existing BOT Law. The first BOT contract in Asia was awarded to Hopewell for the 210MW Navotas plant in 1988.

Since 2010, fifteen PPP contracts have been awarded for a total of approximately USD 6.4 billion. These include completed projects, such as the NAIA Expressway, a 7.75 km elevated expressway that improves access to the country's gateway airport in Manila, and 12,202 classrooms that were built in various regions throughout the country. Other projects that are under construction include the Mactan-Cebu International Airport New Passenger Terminal Building and the Bulacan Bulk Water Supply Project, both currently identified as good deals in the international PPP space. On May 18 and 24, 2018, Governor Miranda Bridge in Davao del Norte and the Davao River Bridge were successfully inaugurated and opened, respectively.

Thus, Public-Private Partnership, anchored with proper evaluation and selection of correct PPP project, plays an important role in the implementation of the nation's infrastructure development programs.

VI. TRANSPORT SYSTEM AND INFRASTRUCTURE MODERNIZATION

President Rodrigo R. Duterte declared during the ASEAN Business and Investment Summit in 2017 to open up other major island in Mindanao with high quality backbone infrastructures. Henceforth, Mindanao Development will taking off. The following are the major identified projects to be implemented starting 2019.

1. The major projects currently planned in Davao City are as follows:
 - Construction for a Davao City bypass road (work on south and central sections underway with a Japanese ODA loan, including tunnel section)

- Construction for another bypass road closer to town than the above bypass road
- Davao City-Samal Island connection road (Construction could be a bridge or tunnel. Only the bridge plan has been studied by METI.)
- Bus rapid transit (BRT) development

MAJOR PROJECTS IN DAVAO REGION



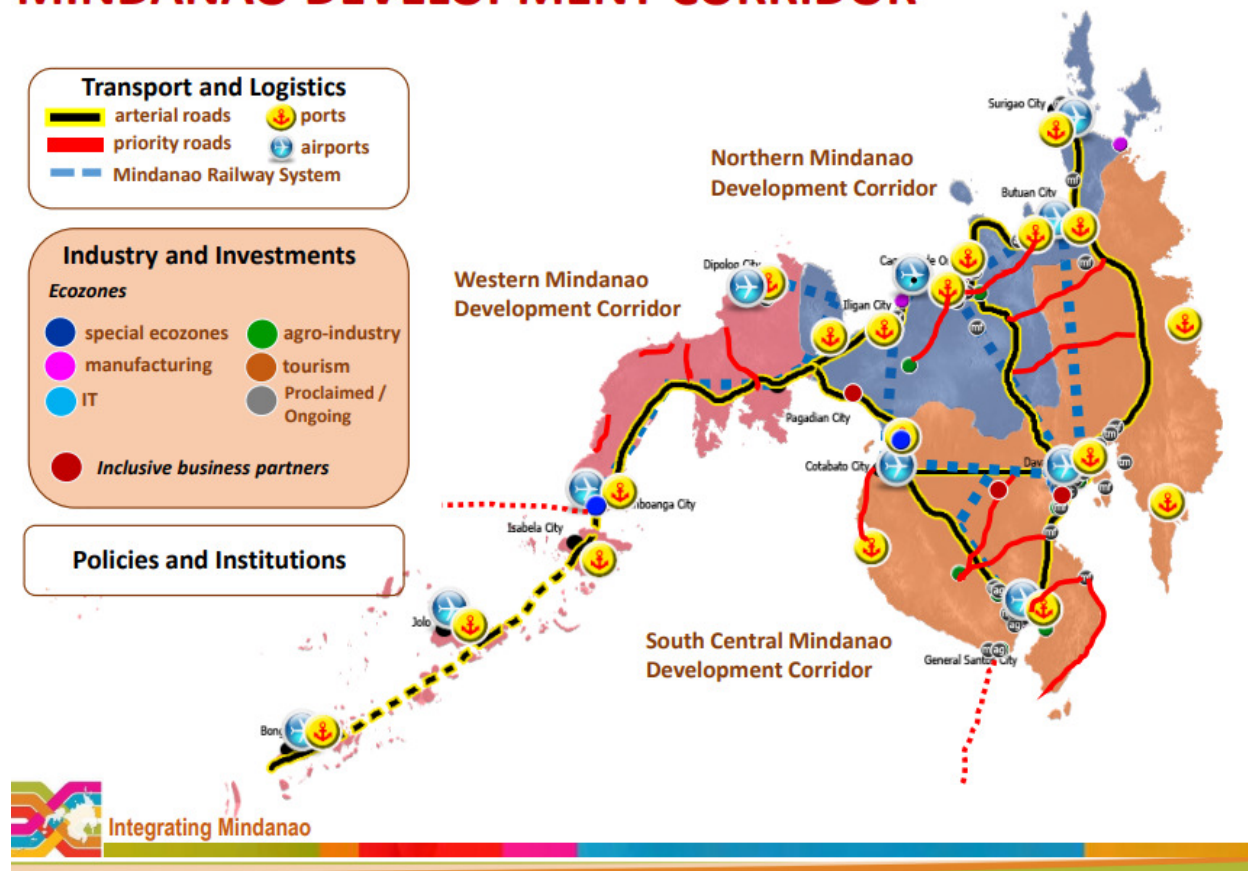
2. The Mindanao Railway Project of Duterte Administration with its Transit Oriented Development Plan, will connect Tagum City, Davao Del Norte and Digos City, and Davao del Sur will have a massive boost – not only in the traffic regulation and advancement in the public transportation, but also in promoting an environment-friendly transportation system to sustain a livable city. The first phase will be constructed from 2018-2021 with a distance of 102 kilometers.



3. Mindanao Development Corridor

The Mindanao Development Corridor banks on the availability of resilient/quality Infrastructure and integrated logistics support. These enablers will facilitate more Investments and contribute in the development of Industries. Through this, it paves the pathways for a globally-competitive Mindanao. It facilitate integrated development, link value chains and encourage trade, stimulate investments, enhance competitiveness and increase production capacities.

MINDANAO DEVELOPMENT CORRIDOR



VII. CONCLUSION

Davao City’s transportation modernization and infrastructure development has taken off to its advancement. It is evident with the newly accomplished and functional infrastructures. Nonetheless, along the process it is noted that issues and challenges surface in different degree. Successful transport reform requires the City Government of Davao to take a proactive strategy and action in the execution of desired improvement together with the stakeholders. The implementation of policies and procedures must be consistent and genuinely carried out with the enhanced institutional measures and technical capability. Furthermore, strategic-partnership through Public-Private Partnership address national infrastructure deficit and provides the range of financing options. With this, transportation modernization will improve mobility, economic activity and accessibility to social services.

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