A Case Study on the Adoption of Traffic Impact Fee in the Philippines

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Abstract: Socio-economic development generates new travel demand that strains the capacity of existing road systems and produces negative externalities posing resource and technical challenges to local governments in the Philippines. This research explored the viability of introducing Traffic Impact Fee (TIF) at local levels as a policy response. The TIF requires new developments to pay a proportionate cost of improving road capacity. An improvement-driven TIF model, using a limited area approach, was applied on a residential development project in Cabanatuan City to understand the opportunities and constraints arising from TIF implementation. The research concludes that there is potential for TIF adoption.

Key Words: Traffic Impact Fee, Traffic Impact Assessment

1. INTRODUCTION

Increased interaction of people, goods and services brought by socio-economic development generates new travel demand, a development impact that strains the capacity of existing road systems and produces negative externalities such as noise and air pollution. Local governments in the Philippines have meager resources to expand road capacity and address environmental issues mainly relying on the Internal Revenue Allotment (IRA) from the national government to deliver basic public goods and services. It is therefore imperative to explore innovative policies that will enable the development of safe and efficient road systems as well as to regulate development and its environmental impact. TIF adoption is one such option. This study explored the question, “To what extent can Traffic Impact Fee be adopted by local governments in the Philippines as a policy addressing the inadequacy of future road capacity brought by new developments?”

2. TIF CONCEPTS AND PROCESSES

2.1 The Philosophy of Impact Fees and the Rational Nexus Standard
Impact fees are premised on the philosophy that ‘development should pay for the cost of providing the facilities necessary to accommodate growth’ (Recht, 1988 as cited in Ross et al, 1991). These are one-time charges imposed on new residents/development and used to offset additional public service costs. Funds are used for capacity expansion of existing services and
not for ‘operation, maintenance, repair, alteration, or replacement of existing capital facilities and cannot just be added to general revenue’ (Carrion and Libby, 2004).

The principles of ‘rational nexus’ and ‘rough proportionality’ govern policies on impact fees. Rational nexus standard requires reasonable connection between the need for additional facilities and the new development with the fee payer benefitting in some way from the fee. Rough proportionality demands that calculation of the fee must be based on a proportionate “fair share” equation. Impact fees should meet specific criteria, namely (Chapin, 2006):

a. New developments benefit from facilities it paid for through impact fees;

b. Fees are used to fund only those facilities that benefit new development;

c. Fees are spent within a reasonable space of time;

d. Fees are spent within a zone where development is taking place; and

e. Double taxation is avoided by putting credit on development for other payments made for the same infrastructure facilities (such as property taxes). Likewise, the fees charged must not exceed a proportionate-share of the cost incurred or to be incurred in accommodating the development paying the fee.

2.2 Traffic Impact Fee Model

A TIF is a monetary charge on new developments meant to recoup or offset a proportionate share of transport-related costs arising from these developments (Nicholas, 1992). Different models are used to compute fees e.g., density model, consumption-based model, improvement-driven model. The latter is used for this study.

An improvement-driven model uses a system-wide approach wherein the traffic impact of changes in all land uses in a city or town is considered in computing TIF, covers all Traffic Analysis Zones (TAZs), and develops a TIF schedule assigning impact fee rate for each land use. The model classifies the cost of growth-related improvements needed over a fixed planning horizon by the number of new service units (e.g. average daily trips) projected to be generated by growth over the same planning horizon in order to calculate a cost per service unit. This method is usually based on sound transportation planning that explicitly distinguishes between improvements required to cure existing deficiencies and improvement required to accommodate the traffic generated by future growth (LSC Transport Consultants, 2004). The improvements are identified by a road or transportation plan and the development is identified by a land use plan. Road facility costs are allocated to different categories of development proportional to the amount of development and relative intensity of demand for each category. Travel demand is represented by a quantity indicator. Indicator for roads is measured in vehicle trips generated by development.

3. CASE STUDY: A MODIFIED IMPROVEMENT-DRIVEN MODEL AS APPLIED IN CABANATUAN CITY

A case study on a proposed expansion of a residential project in Cabanatuan City (referred to in the paper as the Project) was conducted using an improvement-driven TIF model. The model was used because it is consistent with the rational nexus and proportional share standards, encourages holistic and long-term planning, and considers the dynamic interaction between land use change and transportation requirements. The model also responds to ongoing efforts by the
National Center for Transportation Studies (NCTS) and government agencies to formulate policy guidelines on TIA, the latter being a requisite to TIF design and implementation.

Due to technical and data constraints, the improvement-driven model was modified to adapt to the planning realities in Cabanatuan City (and in most local governments in the Philippines). Instead of a system-wide approach, the case study focused on a limited area approach - only one development/project and one land use (i.e., residential) and followed four major steps: (i) Traffic Impact Assessment (TIA); (ii) estimation and allocation of eligible cost; (iii) application of a TIF formula, and (iv) computation of a TIF schedule. The TIA used secondary data for trip forecasting which involved analyses on trip generation and mode choice, trip distribution, and trip assignment. The estimation and allocation of eligible cost involved cost estimates of improvement works e.g., traffic signals, with data coming from the city’s 2002 and 2006 Traffic Signalization Projects. A TIF formula was used to compute the improvement cost. A sample TIF schedule was developed using the cost per trip generated through the TIF formula, the data on total target of dwelling units to be built, and the daily trip rate for residential projects.

Figure 1 Methodological framework of an improvement-driven TIF

3.1 The Study Area
Cabanatuan City is 125 km north of Manila. It has a total land area of 19,069 hectares where 58.19% is agricultural land, 37.66% residential, 0.14% commercial, 0.10% industrial, 0.41% institutional, 0.83% for recreational activities, and 2.67% unclassified areas. In April 2006, the city’s population was estimated at 245,375 with a population density of 12.87 per hectare and an annual growth of 2% (CPDO, 2006a). The city has a land transportation system covering major national highways and arterial road network. The road network has a total length of 350.24 km, which is divided into national roads (16.64%), city roads (4%), and barangay roads (79.36%). The Cabanatuan City Transport Terminal is the focal point of the public transportation network. Public buses ply between Cabanatuan and Manila route while public jeepneys and mini-buses...
connect Cabanatuan with San Fernando, Pampanga and nearby towns and cities. Jeepneys and tricycles service other routes within the city. Around 500 jeepneys ply from the rural barangays to the city center and some 1,976 jeepneys, mini-buses and buses operate in the city and nearby towns. Tricycle is the prime mode of intra-city transportation (CPDO, 2006b). In 2005, there were 59,408 units of registered vehicles (Land Transportation Office, 2005).

3.2 Proposed Infrastructure Improvements to be Undertaken by the City Government
In the absence of a transportation plan, infrastructure improvements were proposed based on the 2002 and 2006 Traffic Signalization Projects and from formal discussions with the City Planning and Development Office (CPDO). Proposals included geometric improvement of road approaches, channelization and lane marking of all intersections, traffic signalization of all key intersections, loading and unloading bays for public bus shuttles, bicycle and tricycle lanes, road widening of the Maharlika Highway from two-lane to four-lane traffic per direction, and road widening of all city and arterial roads from one/two lane highway to three-lane highway.

3.3 Scope of the Traffic Impact Assessment

3.3.1 Project Description
The TIA evaluated the potential traffic and circulation impacts of a proposed expansion of Lakewood City’s residential project. Lakewood City is a combination of 65 has. 18-hole championship golf course and 90 has. residential area. Around 19.77 has. will be devoted to the Project for 518 high-end residential units with an average lot size of 300 sq.m. Amenities will include landscaped entrances, wide concrete roads, underground drainage, 24-hour security, cable and telephone ready, landscaped parks, country club and outdoor activities (Lakewood Estate and Country Club, 2007).

The Project is situated in a delineated TAZ. A TAZ determines the boundaries of the TIA and TIF and is normally delineated by state and/or local transportation officials when tabulating traffic-related data. Figure 2 shows the TAZ covering the Central Business District, large portions of commercial and institutional activities and areas for agro-industrial and residential purposes. Residential zones comprise mostly of high and medium density residential areas. The TAZ has 18,502 existing structures covering 1,554.34 hectares and with total gross floor area of 2,255,376 sq.m.

3.3.2 Study Intersections
Eight existing intersections and three future intersections were identified for analysis. Some of the existing intersections have traffic signals that are non-operational.
3.3.3 TIA Scenarios
The TIA analyzed the potential traffic impact of the Project on the roadway system using the following scenarios:

- **Existing (2006) Conditions** – Baseline information on roads, traffic volumes and operating conditions were provided.
- **Future (2020) ‘Without Project’ Conditions** – Future traffic condition without the Project was developed for the horizon year 2020. Future traffic growth and operating conditions resulting from regional growth and background projects in the TAZ were forecasted. Trip generation rates for background projects in the next 10-14 years were not considered since there were no data available. Additional analysis on ‘future traffic condition without the project but with city government’s transport infrastructure improvements’ was included.
- **Future (2020) ‘With Project’** – Traffic conditions resulting from the Project were estimated and added to the future ‘without project’ forecast. The traffic impact of the Project on future traffic operating conditions was identified and evaluated. Also analyzed was the ‘future traffic condition with project and with city government’s infrastructure improvements’ scenario.

3.3.4 Traffic Data and Traffic Forecast
Unavailability of standard trip rates suited to local conditions was a major constraint in trip forecasting. To deal with this constraint, available data sets such as population growth and rate of vehicle registration were used to project traffic growth. The exponential growth formula used is as follows:

$$T_i = T_0(I + r)^n$$  \hspace{1cm} (1)

where $T_i$: Future trips in veh/hr  
$T_0$: Present trips in veh/hr  
$r$: Annual growth rate based on vehicle registration  
n: Number of years into the future

To determine the statistical correlation equation between the two sets of data, a simple linear regression model was used:

$$VR = a + b* P$$  \hspace{1cm} (2)

where VR: Vehicle registration  
a: Regression constant  
b: Regression coefficient  
P: Population

To test the linearity of the line equation, a coefficient of correlation was adopted:

$$r = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{\alpha(\sum x^2) - (\sum x)^2}{\sqrt{n}(\sum y^2) - (\sum y)^2}}$$  \hspace{1cm} (3)

In the case study, data from the 2002 and 2006 traffic signalization projects on traffic count volumes (12-hour) of eight (8) key intersections were used to compute peak-hour volumes per intersection for existing traffic condition. Traffic forecast used a regression analysis of vehicle registration and population. The two are statistically correlated ($r = 0.996$).

3.3.5 Traffic Growth

The growth rate of 7.85\% per year (based on the vehicle registration growth rate of Cabanatuan City) was used. Traffic volume for ‘future without project conditions’ was used as benchmark in evaluating the traffic impact of the Project. Traffic condition 14 years into the future (2020) without the Project was also projected. Future increase in background traffic volumes due to regional growth was assumed to follow the growth rate. However, projects currently under government approval process were excluded because of minimal traffic impact.

3.3.6 Trip Generation

Trip generation process provides an estimate of the number of trips to be generated by the new development. Trip generation rates are applied to a variety of land uses within an area (Nelson, 1991). The Project’s vehicle trip generation was estimated using the trip rates developed for Makati City (Sigua, 2007) which were patterned after the standard trip rates by Institute of Transportation Engineers (ITE, 1997) and were calibrated or modelled based on Philippine land use development particularly in cities. It is therefore assumed that the trip rates are applicable to
all cities in the Philippines including Cabanatuan City. The trip rates (originally defined using person trips per dwelling unit or D.U.) were converted to vehicle trips (see figures in parentheses, Table 1) using a standard occupancy factor of 2.2 persons per vehicle (car/jeep/UV) based on the Metro Manila Urban Transportation Integrated Study (JICA, 2000b). The A.M. and P.M. peak hours have the same trip generation rate with the A.M. directional movement reversed and used for P.M. directional movement. The Project is expected to generate a total of 1,064 veh/hr (358 entering, 706 exiting) during the morning peak hour and 1,064 veh/hr (706 entering, 358 exiting) during the afternoon peak hour. Pass-by trips were considered zero since residential land use generates home-based to work-based trip origin-destination.

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Peak Hour Time</th>
<th>Size</th>
<th>Unit</th>
<th>Peak Hour Rate</th>
<th>Trips</th>
<th>Pass-by Trips</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>AM</td>
<td>518</td>
<td>D.U.</td>
<td>1.52</td>
<td>3.00</td>
<td>787 (358)</td>
<td>1554 (706)</td>
</tr>
<tr>
<td>Residential</td>
<td>PM</td>
<td>518</td>
<td>D.U.</td>
<td>3.00</td>
<td>1.52</td>
<td>1554 (706)</td>
<td>787 (358)</td>
</tr>
</tbody>
</table>

3.3.7 Trip Distribution and Assignment
Trips generated are distributed to specific origins or destinations and assigned to particular sections of the transportation network. A common technique in predicting trip distribution and assignment is forecasting based on existing trip patterns. Traffic generated by a development is distributed based on the directional split of current traffic on the roadways. At each intersection, traffic is assigned according to existing turning movements. Modal split refers to the distribution of all person trips generated by development among a variety of available transport modes: auto, transit, motorcycle, bicycle and walking. One method of estimating modal split is through the analysis of similar developments in similarly located sites with similar transit services. Local transit entities may provide historical data on transit use in the project area. With the assumption that a constant level of transit service is adopted in the future, these modal split data can be applied to the prospective trips generated by the new development (Nelson, 1991).

In the case study, trip distribution done on the local roadway system evaluated the impact of additional traffic volume. Additional trips generated were assigned to the road network based on existing travel street patterns adjacent to affected intersections and road segments along the Maharlika Highway. Figure 3 shows future (2020) AM peak hour volume with project and with trips distributed to 11 study intersections.
Figure 3  Future 2020 AM peak hour traffic
Figure 4  Future 2020 PM peak hour traffic
3.3.8 Traffic Impact Analysis

This is an analysis of capacity and level of service (LOS) of intersections and road segments. Empirical models are used to analyse capacities using traffic volume and saturated flow rate data. The design capacity corresponds to a specific LOS. As the LOS improves, the design capacity decreases (in order to accommodate fewer vehicles, thus improving LOS). When the volume is significantly less than the capacity, the traffic flows freely, and the ratio of traffic volume to the capacity of the roads (the V/C ratio) is low. When a road gets crowded, the volume is close to (or even exceeds) the capacity and the V/C ratio is high (Henderson et al, 2006).

A standard typical LOS as a qualitative measure for identifying road deficiencies are as follows (TRB, 2000): LOS A - free flow, V/C<0.60; LOS B - free to moderate flow, V/C>0.60; LOS C- moderate flow, V/C>0.70; LOS D, V/C>0.80; LOS D - moderate to heavy flow; LOS E - heavy flow, V/C>0.90 and LOS F which means saturated flow, V/C>1.0. Assessment of the change in roadway operating conditions will define recommendations on site access and transportation improvement needs that will maintain traffic flow at an acceptable and safe level of service (Nelson, 1991).

In the case study, the TIA compared the volume to capacity (v/c) ratios at each study intersection using three scenarios:

a. Existing Traffic Scenario. The intersection of Sanciangco St. and Maharlika Highway has reached LOS F or total breakdown with ‘stop and go’ operation. Other key intersections have moderate flow to severe level of saturation (see Table 3).

b. Future Traffic Without Project Scenario. Due to an expected area-wide traffic growth, increased volume in traffic flows will dramatically affect capacity. By 2020, all intersections will experience total breakdown of operation (LOS F).

In ‘Future Traffic Without Project but with Infrastructure Improvements’ scenario, a list of infrastructure improvements was suggested. With these improvements, six key intersections will improve from LOS F to LOS E, C and B. The rest of the key intersections will remain at LOS F despite improvements.

c. Future Traffic With Project Scenario. Intersections at M. de Leon and Mabini Sts. (traversing Maharlika Highway) will remain at LOS F because of additional trips from the Project. Additional traffic volume increases capacity demand. Putting up three new intersections near the project site will open access points for existing critical intersections. The new intersections will also reach LOS F.

In ‘Future Traffic With Project and With Infrastructure Improvements’ scenario, the Project will produce additional local traffic at M. De Leon and Mabini Sts. (traversing Maharlika Highway) with LOS remaining at F. The three new intersections will improve from LOS F to LOS C and LOS D. The rest of the intersections will improve and will have the same LOS results as that of the future conditions ‘without project but with infrastructure improvements’.
Table 2  Level of service for Philippine highways

<table>
<thead>
<tr>
<th>LOS</th>
<th>v/c ratio</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.00-0.20</td>
<td>- Uncongested operation, all vehicles clear in a single signal cycle. Free flow traffic.</td>
</tr>
<tr>
<td>B</td>
<td>&gt;0.21-0.50</td>
<td>- Light congestion, occasional back-up in critical approaches. Free flow traffic.</td>
</tr>
<tr>
<td>C</td>
<td>&gt;0.51-0.70</td>
<td>- Some congestion on approaches, but intersection functional. Free flow traffic to moderate flow.</td>
</tr>
<tr>
<td>D</td>
<td>&gt;0.71-0.85</td>
<td>- Traffic required to wait though more than one cycle during short peaks. However, no long-lasting queues result. Moderate traffic.</td>
</tr>
<tr>
<td>E</td>
<td>&gt;0.86-1.00</td>
<td>- Severe congestion with some long-lasting queues in critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected left turn movements. Heavy traffic.</td>
</tr>
<tr>
<td>F</td>
<td>&gt;1.00</td>
<td>- Total breakdown with ‘stop-and-go’ operation. Backup may occur at nearby intersections. Forced flow.</td>
</tr>
</tbody>
</table>


3.4 Findings of the Traffic Impact Analysis
The overall LOS under the three traffic scenarios illustrates that traffic volume in the roadway system and critical intersections has good to ‘total breakdown’ conditions during existing scenario. The operating conditions of both without and with development future scenarios are saturated traffic flow. When improvements are in place for both without and with project future scenarios, the level of congestion in seven key intersections will improve while four intersections remain at LOS F. Table 3 shows the LOS summary at three operating scenarios. Afternoon peak-hour LOS are in parentheses.

Table 3  Summary of level of service – morning and afternoon peak hour

<table>
<thead>
<tr>
<th>Intersection Number and Name</th>
<th>2006 Existing Condition</th>
<th>2020 Future Condition w/o Project</th>
<th>2020 Future Condition w/ Project but w/o Improvements</th>
<th>2020 Future Condition w/ Project but w/o Improvements</th>
<th>2020 Future Condition w/ Project &amp; w/ Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Signalized Intersections</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 M. de Leon St./Maharlika Highway</td>
<td>D (D)</td>
<td>F (F)</td>
<td>F (F)</td>
<td>F (F)</td>
<td>F (F)</td>
</tr>
<tr>
<td>2 Zulueta St./Maharlika Highway</td>
<td>C (C)</td>
<td>F (F)</td>
<td>E (E)</td>
<td>F (F)</td>
<td>E (E)</td>
</tr>
<tr>
<td>3 Sanciangco St./Maharlika Highway</td>
<td>F (F)</td>
<td>F (F)</td>
<td>F (F)</td>
<td>F (F)</td>
<td>F (F)</td>
</tr>
<tr>
<td>4 Gabaldon St./Maharlika Highway</td>
<td>C (C)</td>
<td>F (F)</td>
<td>E (D)</td>
<td>F (F)</td>
<td>E (D)</td>
</tr>
<tr>
<td>5 Mabini St./Maharlika Highway</td>
<td>E (E)</td>
<td>F (F)</td>
<td>F (F)</td>
<td>F (F)</td>
<td>F (F)</td>
</tr>
<tr>
<td>6 Gen. Tinio St./Maharlika Highway</td>
<td>C (C)</td>
<td>F (F)</td>
<td>E (F)</td>
<td>F (F)</td>
<td>E (F)</td>
</tr>
<tr>
<td>7 Burgos St./Maharlika Highway</td>
<td>C (C)</td>
<td>F (F)</td>
<td>D (D)</td>
<td>F (F)</td>
<td>D (D)</td>
</tr>
<tr>
<td>8 Del Pilar St./Maharlika Highway</td>
<td>E (E)</td>
<td>F (F)</td>
<td>F (F)</td>
<td>F (F)</td>
<td>F (F)</td>
</tr>
<tr>
<td>Proposed Signalized Intersections</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Circumferential Rd./Extension Rd.</td>
<td>Does Not Exist</td>
<td>F (F)</td>
<td>C (C)</td>
<td>F (F)</td>
<td>D (D)</td>
</tr>
<tr>
<td>10 Extension Road/E. Vergara Blvd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2  Level of service for Philippine highways
3.5 Recommended Mitigation Measures
The preceding TIA highlighted two important conditions. Firstly, without introducing any road improvement, the LOS will reach total breakdown (LOS F) by build-out year (2020) thus needing urgent intervention. Secondly, the proposed infrastructure improvements will improve the LOS of seven key intersections. The remaining deficient four key intersections (i.e., M. de Leon St., Sanciangco St., Mabini St., del Pilar St., all connecting to Maharlika Highway) will need a different set of interventions.

3.6 Cost Analysis and Allocation
Cost analysis and allocation determines the total capital cost required for improving affected roadway area to be recovered through TIF. Roadways needing immediate improvements were identified and cost was allocated to benefiting users. The TIA showed deficiency in 11 key intersections. However, only those intersections directly affected by (or loaded with new trips from) the Project were included in the cost computation, namely: (1) M. de Leon Ave./Maharlika Highway; (2) Mabini St./Maharlika Highway; (3) Circumferential Road/Maharlika Highway; (4) E. Vergara Blvd./Extension Road; and (5) E. Vergara Blvd./Cabanatuan-Papaya Road. Of the total added trips of 1,064 veh/hr entering and 1,064 veh/hr exiting the project site, 40.3% additional trips occur at the intersection of M. de Leon Ave. and Maharlika Highway. Around 46.2% additional trips occur at the intersection of Mabini St. and Maharlika Highway. Improvement cost was estimated at ₱10,963,585.78 based on the traffic signalization projects. It is recommended that said intersections be provided with traffic signalization and geometry improvements related works. Traffic signal facilities include the supply of materials and electrical works. Geometry improvement works include excavation, concreting, civil works and supply of materials/accessories. Labor, material, contingency and overhead costs were also included. The construction of E.Vergara Rd. and adjacent streets are city government’s pipeline projects and were therefore excluded from the TIF.

3.7 Computation of Traffic Impact Fee Model
Data from TIA and cost analysis were used to calculate the full cost-based TIF schedule for the TAZ. Computation has two steps: (1) the development of a base impact fee per trip; and (2) the application of this fee to each type of land use.

Cost per Trip. The TIA estimated that the expansion project will generate a total of 1,064 veh/hr for A.M. peak-hour and 1,064 veh/hr for P.M peak-hour or an equivalent of 2,128 average daily trips. These peak-hour trips were converted to daily trips to suit the standard formula for impact fee. After which the improvement cost taken from cost allocation eligible for TIF was calculated. The following standard formula for cost per trip was used:

\[
Total \ Cost \ per \ Trip = \frac{Total \ improvement \ cost}{Total \ new \ trips} \quad (4)
\]

\[
= \frac{10,963,585.78}{2,128}
\]

\[
= \text{P 5,152.06}
\]
Fee Formula and Schedule. The impact fee formula is the product of the cost per trip, the number of units of each land use and the average daily trip rate of each land use. It is expressed as:

\[
Fee = \text{Total cost per Trip} \times \text{No. of Units} \times \text{Daily Trip Rate of Land Use}
\]

(5)

<table>
<thead>
<tr>
<th>Type of Land Use</th>
<th>Unit</th>
<th>Cost per Trip (PhP)</th>
<th>Daily Trip Rate</th>
<th>Pass-by Trip</th>
<th>Impact Fee (PhP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>Dwelling Unit</td>
<td>5,152.06</td>
<td>9.57</td>
<td>0</td>
<td>49,305.21</td>
</tr>
</tbody>
</table>

Projected Revenue. Based on fee schedule, the development of 518 residential units at build-out will give the city government P25,540,098.78 in additional revenues to be collected between 2006 to 2020 from the developer and homeowners.

4. RESEARCH FINDINGS

a. The case study generated a relatively high traffic impact fee to be charged per residential unit (at PhP49,305.21 or roughly US$1,000). Since only one project was considered, all costs were shouldered by the Project. It is therefore advisable to include other development projects occurring within the same timeframe to generate a realistic number of trips and to distribute cost equitably across projects.

b. An improvement-driven TIF model that uses a limited area approach has inherent weaknesses. Focusing on a limited number of projects generates fewer trips and disproportionately high fee imposed on these projects. It can also give rise to a ‘last developer in’ scenario where initial developments pay more substantially than succeeding developments. In contrast, a system-wide TIF model considers the impact of all developments across different land use types thus proportionately allocating the fee.

c. From the perspective of new developers, a high TIF charge similar to the Lakewood Project will discourage investments. With a better-designed TIF equation and approach, the issue of affordability can be addressed. Social acceptability can also be attained by getting across the message that TIF is developmental (and not regulatory) and therefore has wider socio-economic impact.

d. The system-wide improvement-driven TIF model is conceptually sound but faces operational difficulties if adopted in the Philippines. Most local governments lack an integrated land use and transportation planning, long-term development plans, transportation plans and clear investment plans that indicate detailed cost and assured resources. Data on forecasted land uses in terms of size, area (e.g., gross floor area), accurate parcellary boundaries by census tract of properties proposed for development, transportation model calibrated to local condition, and statistical models that forecast inflation rates of construction cost/cost index are also lacking. Moreover, developments
at the local level are mostly private-driven (which makes information difficult to access), largely spontaneous or unplanned, and influenced by issues such as land conversion.

e. An enabling legal and institutional environment exists for TIF adoption. A reasonable level of local autonomy is necessary for a TIF policy to prosper which the Philippine Constitution guarantees through increased decentralization of functions and devolution of power to local governments. The 1991 LGC further expands the power of local governments to generate resources, to define and regulate local development, and to undertake comprehensive land use and transportation planning.

f. The TIF, being a novel idea, is not included in the specific fees under the 1991 LGC. Fortunately, a miscellaneous provision exists that allows local governments to go beyond what is stipulated in the Code. Section 186 states that ‘local government units may exercise the power to levy taxes, fees or charges on any base or subject not otherwise specifically enumerated herein or taxed under the provisions of the National Internal Revenue Code, as amended, or other applicable laws’ (LGC, 1991). The TIF can easily be rationalized under this section provided that it can pass constitutional, statutory, and inherent limitations.

g. Local fees and charges are viewed more as regulatory rather than development tool. Policies on local taxation reiterate the role of fees and charges to control social and economic activities. For TIF to prosper, its essence as a charge on the impact of development on traffic whose purpose is developmental (e.g., improvement of present transportation capacity) has to be understood and appreciated. A shift in perspective will help local governments maximize their power to undertake innovative resource generation schemes and impose fees beyond those specifically provided in the 1991 LGC.

5. CONCLUSION AND RECOMMENDATIONS

There is a need and potential for TIF adoption in the Philippines despite the legal, institutional, technical and data constraints faced at the local level. The following recommendations can be used in undertaking future studies and developing policies:

a. Encourage local governments to expand the definition of a ‘fee’ under the 1991 LGC. As it is, a ‘fee’ is defined as a charge fixed by law or ordinance for the regulation or inspection of a business or activity (Nolledo, 1991).

b. Encourage developers to pay impact fees in kind such as physical improvements on-site or physical improvements off-site. Payments in kind help developers to bring property taxes down by utilizing an alternative revenue source to pay for infrastructure. This type of payment is tangible and actively involves the developers in putting up infrastructure or facilities thus creating perception of direct benefit from the TIF. It also lessens fear of corruption and fund diversion by local governments. A full-blown TIF policy (e.g., in the form of local ordinance) must ensure that a Special Fund is devoted solely for TIF charges. Segregation of TIF proceeds from the General Fund ensures that the fund is not diverted to other expenses and is insulated from political influence.

c. Design a lump-sum payment of TIF (cash or in kind) instead of a stream of payments. This supports the general principle that impact fees should be based on land development
regulation rather than on taxation schemes. TIF can be made part of the requirements for approving building permit applications of developers and investors. Most cities in the Philippines already have standard procedures on building permit applications which could be used for efficient fee collection.

d. Encourage local governments to adopt the ‘fair share’ principle in exacting TIF rather than resorting to ‘last developer in’ mechanisms. Fair share is based on the argument that ‘systems development charges [e.g., TIF] assumed ‘that all new trips do impact the system, whether to the point of inadequacy or not, and that sharing the cost of those impacts is better than only the last developer is paying. A fair share is the stated goal. Thus, a new development is assessed an SDC based on that development’s trip-producing characteristics’ (Baumgaertner and Chadda, 1986). Encouraging fair share is also consistent with the statutory and inherent limitations in taxes, fees and charges that local governments can impose.

e. Create a Special Fund for TIF proceeds to ensure financial accountability as well as efficiency in financing projects identified under the TIF scheme. This is also consistent with TIF’s principle that funds from TIF should not finance other transportation infrastructures that should be rightfully funded by the government and the cost for maintenance and regulation of existing infrastructure.

f. Increase understanding of local governments about TIF being a development tool rather than simply a resource-generating scheme that could potentially act as a disincentive for investments. There should be a balance between making developers responsible for their impact on traffic and ensuring continued interest in investment.

g. Develop an integrated land use and transportation models to address issues on forecasting growth and future transportation demand needs. The said models will undergo an urban transportation planning process consisting of six phases, namely: (1) inventory, (2) development of land use allocation and travel demand models; (3) plan synthesis and forecast; (4) evaluation; (5) program adoption and implementation; and (6) continuing study.

6. REFERENCES

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