



PPP ON BUILT ENVIRONMENTS: VALUE CREATION FOR SOCIAL EQUITY

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Abstract

This paper construes the feasibility of an investment of 260 million pesos for built environment, executed through Public Private Partnership. The work is a simple application of cost benefit analysis, with emphasis on value creation for social equity over monetary gain. It is thought that PPP is a transformative instrument for the advancement of community; whether change is institutional or structural; through policy reform or in the simple access to potable water.

The model construct simulates from the baseline using two selected most critical variables, the level of facility utilisation and rent. Profit to asset ratio is 7.9 with hurdle at 16.3. The expected outcome investing the built environment comprises of market inclusion and enterprise creation, labour inclusion and worker entitlements, education and asset creation. Value creation for social equity states 3,601.73 million pesos at a rate of return of 53.8%.

Keywords: PPP, Built Environment, Hurdle Rate, Value Creation, Social Equity

1. Introduction

Public-Private Partnerships are employed to rationalise deficit financing of Governments by deferred spending. This mechanism is particularly useful for Governments bound by restrictions on current expenditure to a fraction of GDP; thus an alternative method to raising taxes or cutting on budget. Effectually, a single firm is accountable for providing public infrastructure or services; and take in risk (Irwin, 2006; Lopez, 2006; Sanghi et al., 2007; Sciulli, 2007).

These days, Governments at local levels increasingly utilise PPPs to mobilise private funds in non-transport social infrastructure sectors; such as water and small energy, solid waste management, municipal parks, or grain storage (Flynn, 2007; Verger, 2010). These built environments have a transformative effect on the community, even by the sheer creation of place. Crafted to precise configuration, these can influence the social disposition into next generations (Rowley, 1994; Grogan & Proscio, 2000; Cooper et al., 2009).

This PPP initiative undertakes an investment of 260 million in pesos for built environment on public land situated in La Trinidad Benguet, as prescribed in Municipal Resolution 199 series 2008. Technical consultation for feasibility and legislation; design criteria by Design Lab Sync

and construction estimates by AZTEC Construction Group. The built environment shall serve as a tangible expression of commercial effectiveness and entrepreneurial spirit.

2. Geographical focus

This study has geographical focus on the Municipality of La Trinidad, which is a first class municipality constituting 21% of provincial population. Half of the population is below 20 years of age and 3.4% belong to the age group 65 years over. Gender composition is 7 more men for every 100 women. 44% of population completed elementary education; 27% completed high school, and only 4% with college completion. 58% of population belong to the economically active age group, yet a high dependency ratio of 72 of every 100 persons. Tribe represents 43% Kankanaey, 29.2% Ibaloi and 4% Kalanguya (Census of Population and Housing, 2013).

The municipality characterises high terrain valley with land area of 2,833 sq. kilometres. Two rivers and three creeks crisscross the floor elevation at 1300 meters AMSL; seven prominent mountains having the highest point at 1700 meters AMS Land the low region at 500 meters AMSL. The area is classified as Coronas typology with an average temperature of 18 degrees centigrade. Wind velocity is 1.43 and average rainfall of 850.70mm is during the rainiest month, August(PSO, 2010; Research and Evaluation Section, MPDO 2014).

Positioning as the primary industry mover, the built environment is situated at the intersection of Halsema and Pico Lamtang Highways, nearby high density residential areas, the public market, the Municipal hall and the provincial General Hospital.

The forecast population size, age groups and aging translates to 48,946 persons of employable age, less 9% unemployment gap as presented in Table 2. The determined annual income is 2.284 billion pesos.

Table 1: Forecast Working Population

Economically Active Age Group (Young adults & adults)	(-) less employment gap	Working population
43,757 persons	5,863	37,894

16.9% of family income most likely spent on food consumed outside home, tobacco and alcoholic beverages, personal care and effects, clothing, footwear and other wear, recreation, home furnishings, equipment and durable furniture, special occasions, gifts. Table 3 presents the computation on per capita income at 151 000 pesos annually for the number of economically active persons, translates to an average annual family income of 335,115 pesos or 27, 926 pesos monthly.

Table 2: Household Income Annually and Monthly

Ave Annual Household Income	Ave Monthly Household Income
151,000	27,926

The corresponding consumption demand for the primary market is 1.079 billion pesos. A secondary market recognises the tourists traversing Halsema highway, in addition to 10% of overseas Filipino workers regional market, plus to 15% of college enrollees. A tertiary market is recognised high side demand computation. This market segment adds 2,749 households representing 10% of household population of four adjacent municipalities: Itogon, Sablan, Kapangan and Tuba. Figure 1 presents the forecast consumption demand on high side and low side computations.

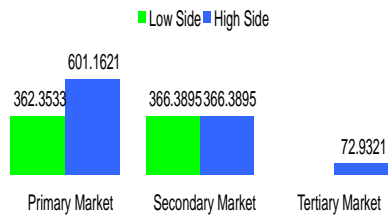


Figure 1: High-low consumption indicators

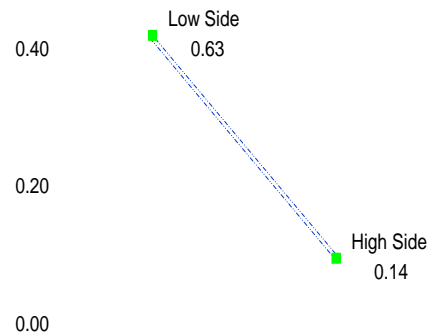


Figure 2: Gap-Glut based on Consumption

Basing on the low side consumption forecast, the present built environment inventory is in excess 1,814 sq. meters, indicating an industry glut at 10%. The break even industry rule of thumb is that a square meter churns out of at least 5 thousand pesos. Basing on the high side consumption demand, the existing built environment inventory comes short by 30,946 sq. meters, indicating industry gap at 39%, as illustrated in Figure 2.

3. Methodology

A built environment executed by public private partnership is best appreciated by the value creation in both aspects of social equity and financial return. Hurdle rate states the internal financial rate of return at net present value defined of market indicators. SERIO is an outcome based measurement of social equity, as a result of investing the built environment (IMDM, 2006; United Nations, 2008; Hesse, 2011; Simon, 2012).

For this specific PPP initiative, the outcome of value creation comprises of market inclusion and enterprise creation, alternative income particularly to toehold agricultural tilts in unfavourable weather; employment and worker entitlements, and asset creation.

The objective of this paper is to examine both social equity and financial return of the built environment and to determine the value creation on social equity can exceed hurdle rate. The work is a simple application of cost benefit analysis, underlining social equity over financial returns.

4. Simulation and Random

Market conditions translate demand for commercial space. These conditions determine the levels of utilisation of the built environment and its corresponding space value or rent. The simulation rationalises forecast financial returns under varying market conditions.

Simulation sets the baseline at minimum operating efficiency of the built environment, in terms of operating expenditure. Operating expenditure on the given spatial configuration defined as controllable variables are constant. Expenditure with indication of recovery is simulated at facility utilisation levels. These include common usage area, recovery on electricity and water consumption. The reliability of mathematical relationships of the space configuration of the built environment applies the actual land survey signed and sealed by local Government authorities.

The model construct simulates from the baseline using only two selected most critical variables, the level of facility utilisation and rent. Rent can be competitively priced to assume favourable market conditions, and bargain lease arises when there are no takers to depict unfavourable market condition. High side and low side potential monthly rent revenue is stated in Table 3.

Table 3: High side-low side Potential Rent Revenue

	No of stalls	High	Low
LG	21	26 500.0	199 500.0
UG	15	391 293.8	249 243.8
2F	37	493 293.0	282 807.0
3F	45	273 979.7	147 632.6
Lobby	107	752 250.0	562 125.0
		2 173 448.44	1 441 308.38

On a square meter basis: competitively priced rent floor is at 275 pesos with 900 pesos ceiling. Non-permanent structures on common are space peg rent between 14500 and 18500 pesos monthly. For unfavourable market condition, bargain rent floor is at 125 pesos with 425 peso ceiling. Non-permanent structures on common are space peg rent between 5500 and 9500 pesos monthly.

Note that in actual practice even when held by legal contracts, rent and utilisation are volatile that a degree of randomness can ensure viability. Randomness represents the unpredictability of collection efficiency, the collapse and boom of the property market, or management ineffectiveness that could result in disputes on receivables or lengthy litigations. Randomness is stated with the function = Rand between upper and lower limits.

Table 4: Simulation and Random

	Simulation of Baseline				Random between limits
	Baseline	A	B	C	
NPV	(135,193,154.2)	103,773,849.7	1,412,416.8	276,844,327.4	195,503,321.1
FIRR	5%	14%	11%	19%	16%
Payback in years	nil	7.1	9.2	5.4	6.1
Maximum Capital at Risk	268,000,000.0	268,000,000.0	268,000,000.0	268,000,000.0	268,000,000.0
Cost Benefit	0.5	1.39	1.01	2.03	1.74

Simulation A states the condition of facility utilisation at 95% occupancy at bargain rent, inclusive of income from common areas. Annual rent escalation is set to industry at 10%, and variables expensed with indication of recovery are simulated at the corresponding facility utilisation level.

Simulation B states the condition of gradual facility utilisation from 60% occupancy, but applies competitively priced rent, inclusive of income from common areas. Annual rent escalation is set at 10%, and variables expensed with indication of recovery are simulated at the corresponding facility utilisation level.

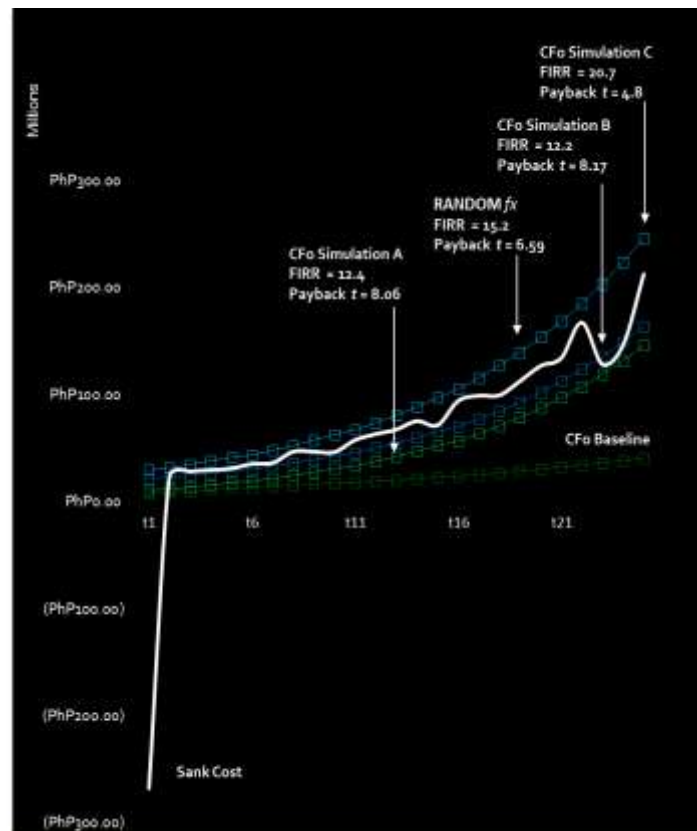


Figure 3: Random

Simulation C states the condition of facility utilisation at 95% occupancy at competitively priced rent, inclusive of income from common areas. Annual rent escalation is set to industry at 10%, and variables expensed with indication of recovery are simulated at the corresponding facility utilisation level.

The random function states f between arguments from baseline. Where cost of opportunity or discount rate is 15%, the FIRR or Financial Internal Rate of Return of 16.3%

5. Enterprise Creation

The transformation of a local economy can be achieved by developing a strong, vibrant Small Business sector. The growth of small businesses can raise the standard of living, and conceivably dismantle structural poverty. Built environments prove as a mechanism for this process since the utilisation of space for the benefit of sole traders, partnerships or limited companies, increase the chance of survival and growth (Kushnir, 2010). Enterprise creation develops business confidence of the local entrepreneurs, social cohesion and the refinement of collective thought.

For the case in point, the built environment completes 88 shops with floor area under 24 square meters and 16 shops with floor are a between 25 and 72 square meters. A sole trader that generates about 500 pesos daily makes 182,500 a year. All 104 shops shall generate to 18.980 million pesos annually, and 474.500 million pesos at the end of project life.

Σ Value Creation= 396.00 million pesos for the entire project life

6. Carbon Savings

The ASIF framework is applied to derive carbon emissions and monetised, in terms of fuel, burn costs (UN ESCAP, 2001). Taking the primary market of 18,463 households, assume 20% travel by private vehicles and 80% travel by public transport. Take the average household size to extrapolate the number of persons travelling via public transport, divided by the jeepneys passenger capacity. Given that the built environment results in market inclusion, multiply these figures by factor of 5 kilometres, which is the distance to reach the city. At average fuel burn for jeepneys and private vehicles, the carbon abatement is multiplied by 12, assuming the built environment is stop at once a month. Carbon savings reduces environmental stress due the built environment proximity to the farmlands; raising walkability and reducingland travel.

Σ Value creation on social equity = 23.001 annually or 575.25 million pesos across the project life

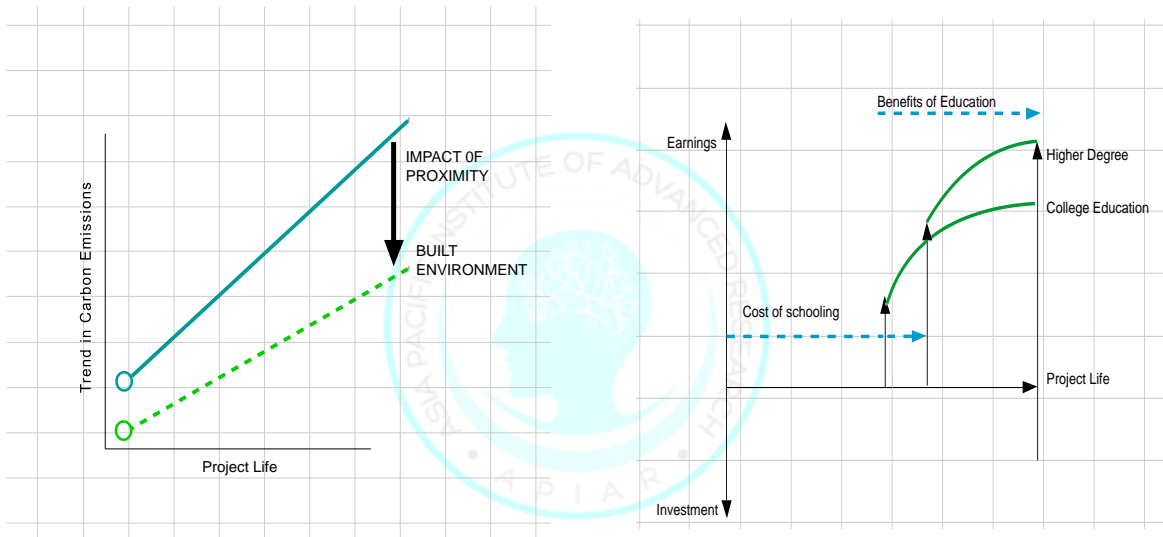


Figure 4: Carbon savings

Figure5: Stylised Age-Earnings Model

7. Earnings and Education

Raising earnings of parents has a positive direct effect on child education and achievement, conceivably minimises criminal activity and nuances of child labour, raises the literacy rate and enhances next generation productivity (Mincer, 1974). Toting on the work of Xin Wei et al. (2006), the relationship between education and earnings across Asian nations returns 4.8%. The study concludes education is significantly and positively related to future earnings, more particularly for men than women. Regions with advanced market reforms, earnings due to education sit a higher rate at 9%.

With the given space configuration of the built environment at marginal productivity, there would be about 243 workers. Each shop employs 1-2 worker for the microenterprises and small business, 3-10 workers for medium scale business, and for large firms 40 workers. Of the average family size of 5.5 and half of the workers married, about 364 children benefit from parent earnings in education. This would mean that at least 364 children will earn 4.8% higher than minimum wage as an outcome of parent earnings. At the given minimum wage of 250

pesos and 312 work days per year, each child has the potential of future earnings no less than 81,774 pesos annually, as the outcome of schooling, multiplied over the average life expectancy of 68.55 years and total number of children

Σ Value creation on social equity= 1,950.4282million pesos at average life expectancy

8. Labour Inclusion, Bridging the Structural Gap

Out of the economically active age group, the unemployment states 5,863 persons on provincial scale. With the jobs creation for 243 persons at marginal productivity, the structural gap is less by 4.14%. However, a third of these workers are most likely to have moved jobs and the labour structural gap is less by 2.9%. At 26 work days per month across 25 years of the project life at minimum wage of 250 pesos, the value creation for labour inclusion is 1,950,000 per capita or 473.850 million pesos. Adding the facility management expenses on salaries 28,461,789.5 28,804,703 on security services, 15,747,120 for cleaners across 25 years.

Σ Value creation on social equity = 546.8638 million pesos

9. Worker Protection

Investing this PPP ensures at least 243 workers in the formal sector at marginal productivity. Whether these workers moved up from the informal sector or unemployment, mere worker entitlement as sanctioned by law is a good vehicle to social equity (OECD, 2009). These workers are to receive SSS, NHIP, HDMF, 13th Month Pay, and SILP. Taking a conservative approach, worker entitlement is availed at least once during the 25 year project life. A typical workforce structure uses 30% on contractual status, 10% managerial, and 60% regular employees. Using the project profile for marginal productivity, only 60% of the worker count at marginal productivity is eligible for claims under RA 8282.

Pension entitlement computation assumes 15% of the workforce reaches 65 years of age by the close of project life. The maximum monthly pension is 1200 pesos at 18 months lump sum pay out for workers under 10 credited years of service

Σ Value creation on social equity =0.7873 million pesos

Social security services salary loan entitlement for 70% of workforce with regular employment status at maximum allowable amount 243 x 70% x 24,000.

Σ Value creation on social equity =4.0824 million pesos on one claim

Social security services emergency loan entitlement for 70% of workforce with regular employment status at maximum allowable amount 243 x 70% x 12,500

Σ Value creation on social equity = 2.12 62 million pesos on one claim

Social security services housing loan entitlement for 10% of the workforce with managerial functions at maximum allowable amount= 243 x 10% x 1,000,000

Σ Value creation on social equity = 24.3000 million pesos on one claim

Social security services maternity benefit entitlement at minimum daily wages of 250 pesos for 26 work days per month for 40% of the workforce as women and all 3 pregnancies are covered. Only half of 243 workers count as parents at 56,250 pesos of all 3 pregnancies

Σ Value creation on social equity =2.7337 million pesos at maximum allowable claim

10. Skills Transfer and Training

Skills transfer or training raises productivity, re-employability, and the probability into higher wage bands. Training includes the discovery and adaptation to advanced methodologies (Wolfe & Zuvekas, 1997). By application of the Mincerian equation, training as informal education can raise earnings at 9%. Over the 25-year project life, it is most likely 10% of the managerial positions are either promoted or take up higher wage earnings. This forecast is situated in the remaining 10 years of the project life. Workforce = 243 x 10% x 0.09 at 250 daily wage x 365 days in a year. 20.66 million pesos represents the value creation for the change in occupation by 10% of the workforce at marginal productivity. The difference in annual earnings from 78,000 and 85,020 is about 7 thousand pesos.

ΣValue creation on social equity = 20.659 M pesos annually

Table 5: Value Creation for Social Equity

ΣValue creation on social equity	Value creation million pesos
Enterprise Creation	474.5000
Carbon savings	575.2500
Earnings and Education	1,950.4282
Labour inclusion and bridging the structural gap	546.8638
Worker protection	34.0296
Workforce skills transfer training	20.6590
ΣValue creation on social equity	3,601.73
NPV	964,154,800.8
FIRR	53.8%
Payback in years	1.86
Maximum Capital at Risk	268,000,000.0
Cost Benefit Ratio	4.60

Conclusion

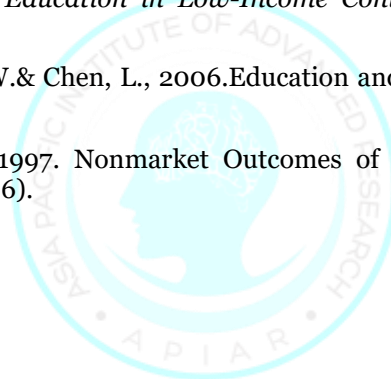
Investing this built environment deliberates a maximum capital of 268 million pesos for commercial facility use on a lot of 3900+ square meters. The profit to asset ratio is 7.9 and hurdle at 16.3 by simulation of random between upper and lower limits of the baseline. Return of Investment is discounted at a rate of 15%. The value creation on social equity states 3,601.73 million pesos at internal rate of return of 53.8%. With sufficient evidence this proposed Public Private Partnership exhibits rudiments for value creation on social equity to exceed hurdle rate, therefore with reasoned judgment concluded feasible.

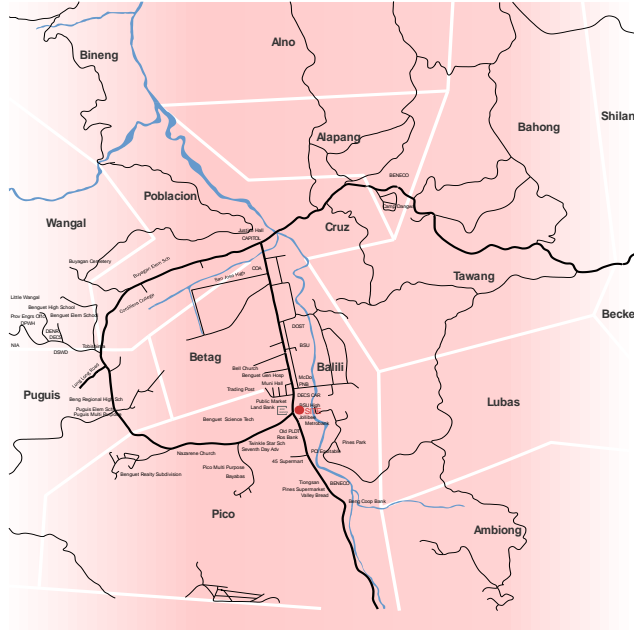
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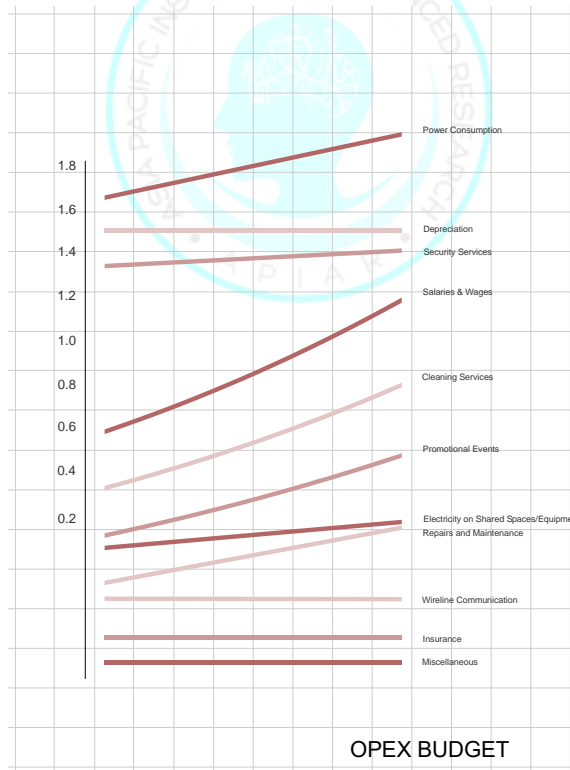
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Appendix A: Geographical focus



Appendix B: Operating Budget

Appendix C: Estimated utility consumption, wastewater and solid waste

No	Classification	Area in sq. meters	Cost of Water Cu.M	Cost of Electricity KwH	Wastewater r Gals/ day BOD	Solid Wster	% Recyc cable			
6	Accessories	35.5		34,801.9	4,099.2		41.60	10.40		
2	Apparel	120.0		17,932.5	2,112.2		13.90	3.47		
1	Appliance	72.0		12,880.7	1,517.2		6.90	1.73		
2	Bags	48.0		7,173.0	844.9		13.90	3.47		
3	Bank & Quasi financial	195.0	2,523.5	68.2	23,544.4	2,773.2	10.0	0.06	1.90	0.47
1	Barber	48.0	2,534.7	68.5	3,851.8	453.7	30.0	0.03	2.40	0.60
1	Bread & Pastries	98.0	2,886.3	78.0	41,019.1	4,831.5	92.5	0.06	35.30	8.83
1	Billiards	216.0	401.6	10.9	16,171.4	1,904.8	10.0	0.06	35.30	8.83
1	Bookstore	126.0		7,029.8	828.0			6.90	1.73	
88	Carts	352.0		7,947.5	936.1			609.80	152.46	
2	Computers	48.0		9,799.7	1,154.3			4.80	1.20	
1	Department Store	375.0	696.4	18.8	82,281.3	9,691.5	18.5	0.06	68.00	17.00
1	Fun Center	160.0		28,623.7	3,371.5			2.40	0.60	
1	Gaming	336.0	623.9	16.9	60,109.8	7,080.1	18.5	0.06	2.40	0.60
1	Hair Salon	75.0	3,960.5	107.0	6,018.5	708.9	200.0	0.03	2.40	0.60
2	Handyphone	48.0		9,799.7	1,154.3			13.90	3.47	
1	Hardware	96.0		17,174.2	2,022.9			6.90	1.73	
1	Internet	72.0		29,288.1	3,449.7			2.40	0.60	
1	Medical laboratories	136.0	489.2	13.2	15,686.9	1,847.7	74.8	0.08	2.40	0.60
1	Mini Bumpcar	120.0		48,813.4	5,749.5			2.40	0.60	
1	Movie House	377.0	3,619.0	97.8	153,355.6	18,063.1	1,200.0	0.03	68.00	17.00
1	Music Bar	48.0		9,799.7	1,154.3			6.90	1.73	
1	Optical	96.0	921.5	24.9	24,958.1	2,939.7	18.5	0.06	2.40	0.60
27	Outer Kiosks	243.0		36,313.3	4,277.2			187.10	46.78	
1	Pharmacy	105.0	377.7	210.2	12,111.2	1,426.5	30.0	0.08	6.90	1.73
1	Photocopy	48.0		3,189.7	375.7			2.40	0.60	
1	Photofinish	48.0	171.0	4.6	16,227.5	1,911.4	30.0	0.08	2.40	0.60
4	Restaurant	602.0	31,789.4	859.2	244,880.8	28,843.4	1,200.0	0.06	141.30	35.33
15	Services	344.0	2,144.6	58.0	43,318.5	5,102.3	450.0	0.06	35.90	8.96
2	Shoes	72.0		10,759.5	1,267.3			13.90	3.47	
1	Skin Clinic	48.0	2,534.7	68.5	12,479.1	1,469.9	18.5	0.03	2.40	0.60
12	Small foods	45.0	10,162.5	274.7	16,313.4	1,921.5	225.0	0.03	424.00	105.99
1	Supermarket	912.0	1,693.5	45.8	163,155.0	19,217.3	113.6	0.03	68.00	17.00
15	Ukay Ukay	225.0		33,623.4	3,960.4			104.00	25.99	
	Common Space		45,346.4	1,225.6	155,783.8	18,349.1	462.2	0.06	239.94	59.99
			112,876.4	3,250.8	1,416,216.0	166,810.3	4,202.1	0.96	2,181.44	545.36

Source: Calculations based on UN and WB waste per capita and application of business category