



## **An assessment of the quality of houses and households in sitio Lawesbra, Lapasan Cagayan de oro city: an extension program, Mindanao, Philippines**

## **Una evaluación de la calidad de las viviendas y hogares en sitio Lawesbra, Lapasan ciudad de Cagayan de oro: un programa de extensión, Mindanao, Filipinas**

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### **ABSTRACT**

The study focuses on assessing the quality of houses and households in Sitio Lawesbra, Lapasan Cagayan de Oro City. The respondents of the study are composed of 899 households of 110 houses. The study utilized a descriptive research design. Descriptive statistics such as frequency count, percentages, and weighted mean were used to describe the houses and household in Sitio Lawesbra; The study found out that most households per house are 9. The average age is from 19-24. The majority of the dwellers are male. The majority of the household in Lawesbra are students. And there are dwellers who are employed. The majority of the household in Sitio Lawesbra have the following electrical standards. The majority of them have primary connections and are using circuit breakers in the panel board. The majority of the junction box is opened, with 3-4 splices per junction Box. The majority of the size of wires used in Sitio Lawesbra are not standard. But the majority are using the standard, convenient outlet. The majority of the households are not using octopus type of extension wire. The houses in Sitio Lawesbra have a primary water connection. The majority are using Polyvinyl chloride pipes and do not have leaks with the pipes or water system. The data further shows that the drainage system in Sitio Lawesbra is open. In terms of toilet systems, the majority have a standard size of a comfort room, made from concrete materials with ventilation. The majority of the dwellers are using pail flush type of toilet bowl, none are using automatic flush type, and however, four percent have an Antipolo type of toilet bowl. Seventy percent of the ground is concrete with its own septic tanks. The majority have substandard room and substandard kitchen ventilation. In addition, the majority have standard security windows, standard walling, and standard partition. The majority used wood for the ceiling and used Galvanized Iron for roofing. However, twenty-nine percent of the houses in Sitio Lawesbra have roof leaks. Finally, the majority in terms of risk reduction mechanism of the houses in Sitio Lawesbra have a sub-standard fire exit. In fact, nineteen percent do not have a fire exit, and only fifteen percent have a standard fire exit. In terms of door positioning, the path majority is sub-standard. However, sixty-three percent did consider that they have an evacuation area, though sub-standard. But thirty-seven percent claimed that they don't have an evacuation area. Thus, based on the results, the following recommendations were implemented and recommended. The researchers already coordinated with the following agencies, and actions were made respectively. The local government improved drainage and pathway systems. CEPALCO installed the installation of primary electrical connections and an independent transformer with the light

post. Cagayan de Oro Water District also implemented reevaluation and repair of the water connection upon recommendation. Thus, it is recommended that the University of Science and Technology of Southern Philippines improve Sitio Lawesbra, as the closest community to the university that needs further augmentation and extension.

**Keywords:** Houses, Household, Electrical, Plumbing, Civil Engineering, Risk Reduction Mechanism

## RESUMEN

El estudio se centra en la evaluación de la calidad de viviendas y hogares en sitio Lawesbra, Ciudad Lapasan Cagayán de Oro. Los encuestados del estudio están compuestos por 899 hogares de 110 casas. El estudio utilizó un diseño de investigación descriptivo. Se utilizaron estadísticas descriptivas como recuento de frecuencia, porcentajes y media ponderada para describir las casas y el hogar en Sitio Lawesbra. El estudio encontró que la mayoría del número de hogares por casa es de 9. La edad promedio es de 19 a 24 años. La mayoría de los habitantes son hombres. La mayoría de los hogares en Lawesbra son estudiantes. Y hay habitantes que están empleados. La mayoría de los hogares en Sitio Lawesbra tienen los siguientes estándares eléctricos: La mayoría de ellos tienen conexión primaria y utilizan disyuntores en el tablero del panel. La mayoría de las cajas de conexiones están abiertas, con 3-4 empalmes por caja de conexiones. La mayoría del tamaño de los cables utilizados en Sitio Lawesbra no son estándar. Pero la mayoría está usando una salida conveniente estándar. La mayoría de los hogares no utilizan cables de extensión tipo pulpo. Las casas en Sitio Lawesbra tienen conexión primaria de agua. La mayoría usa tuberías de cloruro de polivinilo y no tienen fugas en las tuberías ni en el sistema de agua. Los datos muestran además que el sistema de drenaje en Sitio Lawesbra está abierto. En cuanto al sistema de inodoros, la mayoría tiene el tamaño estándar de una habitación cómoda, hecha de materiales de hormigón con ventilación. La mayoría de los habitantes están usando un inodoro tipo cubo con descarga, ninguno usa el tipo con descarga automática y, sin embargo, el cuatro por ciento tiene un inodoro tipo antipolo. El setenta por ciento del suelo es de hormigón con fosas sépticas propias. La mayoría tiene habitaciones deficientes y ventilación de cocina deficientes. Además, la mayoría tiene ventanas de seguridad estándar, paredes estándar y tabiques estándar. La mayoría utilizó madera para techos y hierro galvanizado para techos. Sin embargo, el veintinueve por ciento de las casas en Sitio Lawesbra tienen goteras en el techo. Finalmente, la mayoría en términos de mecanismo de reducción de riesgo de las casas en Sitio Lawesbra tienen una salida de incendios deficiente. De hecho, el diecinueve por ciento no tiene una salida de incendios y solo el quince por ciento tiene una salida de incendios estándar. En términos de posicionamiento de la puerta, la mayoría de los caminos no son estándar. Sin embargo, el sesenta y tres por ciento consideró que tienen un área de evacuación, aunque por debajo del estándar. Pero el treinta y siete por ciento afirmó que no tienen un área de evacuación. Por lo tanto, con base en los resultados, se implementaron y recomendaron las siguientes recomendaciones. Los investigadores ya se coordinaron con las siguientes agencias, y se realizaron acciones respectivamente. El gobierno local mejoró el sistema de drenaje y vías. La instalación de las conexiones eléctricas primarias y el transformador independiente con poste de luz fueron instalados por CEPALCO. La reevaluación y reparación de la conexión de agua también fueron implementadas por el Distrito de Agua de Cagayán de Oro, por recomendación. Por lo tanto, se recomienda que la Universidad de Ciencia y Tecnología del Sur de Filipinas contribuya al mejoramiento de Sitio Lawesbra, como la comunidad más cercana a la Universidad que necesita mayor aumento y extensión.

**Palabras clave:** viviendas, hogar, electricidad, fontanería, ingeniería civil, mecanismo de reducción de riesgos.

## 1. INTRODUCTION

House as a main need of humans, has features and specifications that affect its functions and resident satisfaction. Community households are the main abode that every person and family are needed to bond so as

to generate happy moments together. It provides and witnessed every story that these people are up to from their jobs, schools and etc. Urban houses are once exemplified as the type of houses that possess the modern way of architecture, which is the subject of various study varieties. One vital point in house quality is that urban houses thus offered a role for the social services and emergent facilities for the good and comfortable life of a family through its astounding physical structure. And the importance and quality of these households are supposedly upkeep and should be given weight, particularly in highly urbanized areas. Nowadays, urban houses are not kept for the visage of artistry but in affinities of business. Thus, these houses do transmute into wide walking condominium types of amenities. The quality of each fragment mostly turned to be sub-standard in terms of policies and planning.

Based on the necessity of providing the appropriate shelter and home for urban people, many condos, dormitories, and apartments are mounting like mushrooms anywhere in Cagayan de Oro City. Increasing demand of these facilities may vary to the class of living which the City yields. Different fields of specialization created the subject of various studies because of the diversified obstacle that emerges from every junction of its accommodations. The issue is focusing on these accommodations, which used to be an inaudible hub for workers, especially for students predominantly in Sitio, Lawesbra, Lapasan, Cagayan de Oro City, which occupants almost subjugated by students and staffs.

Generally, the quality of houses must refer to some important factors in safety and quality. In terms of security and comfort, residents should be given the importance which will instigate from the infrastructure thru its effectiveness. To be particular, the safety of the houses should include first, Proper Electrical Wiring. It is very evident today that failure of electrical safety wiring creates Huge Fire, which will cause loss of properties and even lives to all residents. This should not happen. Second, in terms of Building Infrastructure, the quality of woods used. Is this safe for earthquake, Storm, And of course third, the drainage system and cleanliness of the community. This will for the benefit of everybody to have a healthy living. It is, therefore, a must that houses must be assessed for a better living.

Drinking-Water Distribution Systems: Assessing and Reducing Risks, Washington, DC of the National Research Council 2006 provided eight (8) alternatives for premise plumbing. Premise plumbing includes that portion of the potable water distribution system associated with schools, hospitals, public and private housing, and other buildings. It is connected to the main distribution system via the service line.

Premise building systems comprised of a wide range of materials, including copper, plastics, brass, lead, galvanized iron, and occasionally stainless steel. Many of these materials are not typically present in the main distribution system. ("8 Alternatives for Premise Plumbing." The National Research Council 2006. Drinking-Water Distribution Systems: Assessing and Reducing Risks.

Sanitary and industrial plumbing installations inside buildings and premises shall conform to the National Plumbing Code provisions. Types of Construction.

Knowledge of how ceiling and walls are put together is important to understand the structure of a house full. In the most general terms, the ceiling usually has a wood-frame structure. Walls are either cavity or single-skin, and maybe loadbearing or non-loadbearing. In addition, there is a variety of ways that ceilings and walls may be finished, and there are different combinations of materials that can be used to achieve these finishes.

Frame ceilings are traditional but still widely used. A framework or frame joists provide support for the floor above and a surface attachment of the ceiling finish below. Concrete ceilings can take a variety of forms. Those are more often found in modern buildings, and their popularity has frown with the general use of concrete in the building industry.

While most people building or decorating a home think about the colors or types of walls or the types of flooring that are most attractive, the ceiling of a room makes an important style statement. The ceiling affects the look and feels of a room and the comfort and safety, as many ceilings are designed to control sound or be fire-resistant. There are many variations on the different types of materials that are appropriate for a ceiling, but some materials are more common or popular than others.

Wooden boards are commonly used for the general structure of a home and are thus typically a component of the ceiling. However, decorative planks are often used to cover the ceiling, as well. An entire ceiling may be covered in planks, just like a wooden floor, or may have strategically placed planks to add interest to an otherwise plain ceiling. Many types of decorative molding are also made from wood.

Plaster is a traditional material for covering a ceiling that has been used for centuries. Creating a plaster ceiling involves applying several layers of plaster paste over strips of wood. It creates a smooth, hard, attractive surface that is easily decorated with paints or more plaster. Plasterboard is made from a similar material but is cheaper and easier to install because it does not require waiting for several coats of plaster to dry. Plasterboard is prefabricated into sheets that attach to the ceiling with screws or nails and then are sealed.

Metal is often used as both a structural and decorative component in a ceiling. A drop or suspended ceiling is a ceiling that hangs below a pre-existing ceiling and often hides unattractive features, such as pipes in a basement, or to control sound in a noisy location, such as an office. These ceilings are typically composed of wires and a metal grid that holds ceiling tiles. However, metal is also used as a decorative covering for a ceiling, usually found in embossed tiles or sheets.

Ceiling tiles are lightweight and made from a wide variety of materials, such as plastic, metal, fiberglass, mineral fiber, wood fiber, vinyl-coated gypsum, and even cork. Most tiles are designed for installation in a suspended ceiling system, though some are designed to stick to a ceiling and are ideal for decorating a plain ceiling that is in good condition. Along with their decorative purpose, ceiling tiles are often designed to control noise levels in a room.

Every dwelling shall be so constructed and arranged as to provide adequate light and ventilation as provided under Section 805 of this Code. (National Building Code of the Philippines).

In section 801. General Requirements of Light and Ventilation. Every building shall be designed, constructed, and equipped to provide adequate light and ventilation. (Chapter 8. Light and Ventilation).

Habitable rooms provided with artificial ventilation have ceiling heights not less than 2.40 meters measured from the floor to the ceiling; Provided that for buildings of more than one-story, the minimum ceiling height of the first story shall be 2.70 meters and that for the second story 2.40 meters and succeeding stories shall have an unobstructed typical head-room clearance of not less than 2.10 meters above the finished floor. The above stated rooms with natural ventilation shall have a ceiling height not less than 2.70 meters.

For the size and dimension of rooms as provided for in PD 8456. The Philippines' National Building Code, minimum sizes of rooms, and their least horizontal dimensions shall be 6.00 square meters with at least dimensions of 2.00 meters for human habitations. For kitchen rooms, it will be 3.00 square meters with at least a dimension of 1.50 meters; while for bath and toilet, it will be 1.20 square meters with at least a dimension of 0.90 meters.

Burglars just love a beautiful, unsecured window. In fact, if the window's security is particularly poor, criminals may be able to easily slide a window open or pop it right out of the frame without even breaking the glass, stealing valuables right out from under your nose.

Home window safety starts by selecting the right window styles and glazing types and even investing in advanced security features that will have burglars running for the hills. And it ends with regular maintenance and upkeep that will keep your home safer for years to come.

Not all windows offer the same level of home security. Casement windows, which can only be opened using a hand-operated crank from the interior of your home, are much more secure than double or single-hung windows.

This window slides across horizontally to open, making it difficult to operate from the outdoors. For extra protection, sliding windows can be combined with horizontal security bars and cam-type locks, which virtually guarantee that windows won't be surreptitiously slid open. This type of window and other styles are less protected and should absolutely be secured with an appropriate window lock.

Most operable windows require a locking system to make sure burglars cannot just pry open the sash and climb in, but the design of the window will determine what type of lock is best. Latches are the most common kind of lock. A latch is screwed to one window and hooks into the second sash when in the locked position. Cam-type window locks are ideal for sliding windows and latch into place to keep the window from sliding on its tracks.

But the most secured lock is the keyed locks and is ideal for double or hung windows and offer extra protection since the lock can only be opened by someone who holds the key. Additionally, security grills are desirable to be installed to have a more secured window security as a thief may, at any given instance, attempt to intrude a house through the windows.

The study of Schipper and Pilling (2006) states that reducing losses to weather-related disasters, meeting the Millennium Development Goals and wider human development objectives, and implementing a successful response to climate change are aims that can only be accomplished if they are undertaken in an integrated manner. It finds that action within one realm affects the capacity for action in the others and that there is much that can be learned and shared between realms to ensure a move towards a path of integrated and more sustainable development.

## 2. METHODS

This research study utilized a descriptive research design. Creswell (2003) maintained that descriptive research is an approach which the inquirer often makes knowledge claims based primarily on constructivist perspectives (i.e., the multiple meanings of individual experiences, meanings socially and historically constructed. with an intent of developing a theory or pattern) or advocacy/participatory perspectives (i.e., political, issue-oriented, collaborative. or change-oriented) or both.

In addition, descriptive research is used when the objective is to provide a systematic description that is as factual and accurate as possible. It provides the number of times something occurs or frequency, lends itself to statistical calculations such as determining the average number of occurrences or central tendencies.

The study was carried out on the household and houses in Sitio Lawesbra, Lapasan, Cagayan de Oro City. Data analysis and presentation is carried at the University of Science and Technology of Southern Philippines, Lapasan, Cagayan de Oro City. The study made use of a purposive sampling procedure. A total of 110 houses were assessed, and 899 households as residents or dwellers participated in the study.

The data was collected through the following procedures. Through the cumulative efforts of the following; Dr. Sofia C. Naelga (graduate professor), Manilyn R.Gualiza, Nicanor Branzuela, Jr. Anabelle C. Dumaog

(MTTE students) Fernando, Capitan, and the following DTE students; Eulogio D.Apellido Jr, Lowell D. Espinosa, Casimero L.Icalina , George F.Gamolo, and Vilma G.Tamisan, the research was conceptualized. The construction of the instrument was done through the insights of a specialist in the field of Electrical, civil engineering, Plumbing and disaster risk mechanism with the criticism and evaluation of each member of the research team. After the paper was conceptualized, a pre-research was conducted to inquire whether the residents in Sitio Lawesbra were willing to participate in the research. Through the efforts and communication with the Barangay Chairman, Hon.Omar D.Labuntog and Sitio leader Mrs. Lorna Jaramillo the research was approved and ready to be implemented. On the day of the data gathering, a specialist in each field went to Sitio Lawesbra to assess the houses in terms of Electrical, Plumbing, Civil Engineering and risk reduction mechanism through the following people: Dr..The following people gathered Alenogines L.San Diego, Mr. Concordio M.Cahansa ,RME, Mr, Rozano A.Pimentel (MTTE experts) Architect Dennis E.Cahansa (external experts) and household assessment survey; Gene Mae H. Pioquinto, Joe Vane N.Anti-fuesto, (BTTE students), and Mr. Charlemagne Dime, Ms. Malyn C Rayon, Ms. Juvy Ladra Ms. and Jessa Sabugaa (BSEd-TLE students).

Descriptive statistics such as frequency count, percentages, and weighted mean are used to describe the houses and households in Sitio Lawesbra, Lapan, Cagayan de Oro City.

### 3. RESULTS

This part of the paper presents the analysis and interpretation of data gathered from the study. The data are presented in tabular form. Likewise, the details are analyzed and interpreted according to the problems stated in Chapter 1.

#### Problem 1. What is the profile of the households in Sitio Lawesbra, Lapan, Cagayan de Oro City?

Table 1. Distribution of statistics, mean, standard deviation Frequency and percentage distribution of respondents in terms of Number of Occupants

Number of person in the house	Frequency	Percentage distribution	House hold
4	8	7.27%	(4 x 8)= 32
5	4	3.64%	(5 x 4)= 20
6	3	2.73%	(6 x 3)= 18
7	13	11.82%	(7 x 13)= 91
8	0	0.00%	(8 x 0)= 0
9	82	74.55%	(9 x 82)= 738
Total	110	100.00%	899

Average household per house  
 $899 \text{ household} / 110 \text{ houses} = 8.17$  average occupants in a house  
 Standard Deviation: 1.78

The data from Table 1 shows that the majority of seventy-two percent (72%) of the number of households per house is 9. The average household per house is 8.17, but the standard deviation of 1.78 indicates that the household number varies a lot from each other.

Table 2. Distribution of statistics, mean, standard deviation Frequency and percentage distribution of respondents in terms Age

Description	Frequency	Percentage distribution
below 5 years old	20	2.22%
6-12 years old	40	4.45%

<b>13-18 years old</b>	178	19.80%
<b>19-24 years old</b>	287	31.92%
<b>25-40 years old</b>	231	25.70%
<b>41 and above years old</b>	143	15.91%
	899	100.00%

Average (19-24 years old)  
Standard deviation 1.21

The data from Table 2 shows that the majority of fifty-eight percent (58%) of the age of the households in Lawesbra are from 19 – 40 years old. The average age is from 19-24) but the standard deviation of 1.21 indicates that the age of household in Lawesbra varies a lot from each other.

The highest percentage of age is from 19-24. This indicates that the household in Lawesbra is in the adult stage. The data further shows that only 2.22% are in the age below 5. The data also shows that 4.25% of the household in Lawesbra are at the age of 6 to 12 years old. This may indicate that these is elementary and high school students, assuming that they go to school.

It is a different perspective the age 13-24 can also be considered the majority with fifty-two percent (52%) of the population. Based on the data, it can be inferred that a substantial number of occupants in Lawesbra are at the stage of high school education, tertiary education or as fresh graduates.

Table 3. Distribution of statistics Frequency and percentage Distribution of respondents in terms Gender

<b>Description</b>	<b>Frequency</b>	<b>Percentage distribution</b>
<b>Male</b>	484	53.84%
<b>Female</b>	415	46.16%
	899	100.00%

The data from Table 3 shows that majority fifty-four percent (54%) of the household in Sitio Lawesbra are male. Based on the data and the underlying assumption that male respondents know basic construction, electrical installation, Plumbing. It can be inferred that males having more males in the household in Sitio Lawesbra can be beneficial because they may have the capacity to make minor fixtures in the area. That is assuming that the male households in Sitio Lawesbra know basic electricity, plumbing, construction, and risk reduction contingency. If not, then it is a good opportunity for other research extension services to train the respondents in Sitio Lawesbra with their expertise.

Table 4. Distribution of statistics Frequency and percentage distribution of respondents in terms Employment *Status*

<b>Description</b>	<b>Frequency</b>	<b>Percentage distribution</b>
<b>Unemployed</b>	133	14.79%
<b>Employed</b>	287	31.92%
<b>Students</b>	479	53.28%
	899	100.00%

The data from Table 4 shows majority fifty-three percent (53%) of the household in Lawesbra are students. And there are also thirty-two (32%) percent are employed. In addition, there is fifteen percent (15%) unemployed. In relation to previous data, specifically on age, the fifteen percent of unemployed may include children below 5.

**Problem 2. What is the assessment of houses in Sitio Lawesbra, Lapasan, Cagayan de Oro City in terms of Electrical; Plumbing; Civil Engineering; And Disaster Risk Reduction Mechanism?**

Table 5. Distribution of statistics frequency and percentage distribution of respondents houses in terms of Electrical  
Table 5. Electrical

Indicator	Description	Frequency	Percentage distribution
Nature of Connection	Secondary	6	5.45%
	Primary	104	94.55%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
Panel board	Fuse type	10	9.09%
	Circuit breaker	100	90.91%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
Junction box	No junction box	3	2.73%
	Open	83	75.45%
	Covered	24	21.82%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
Splicing	More than 5 splice	2	1.82%
	3-4 slice	70	63.64%
	1-2 splice	22	20.00%
	No splice	16	14.55%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
Size of wire	Not standard	74	67.28%
	Standard	36	32.73%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
Convenient outlet	None	9	8.18%
	Substandard	48	43.64%
	Standard	53	48.18%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
Octopus type extension wire	Using	18	16.37%
	Not using	92	83.64%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>

The data from Table 5 shows that the majority of the household in Sitio Lawesbra have the following electrical standards. The majority have primary connections and are using circuit breakers in the panel board. The majority of the junction box is opened, with 3-4 splices per junction Box.

Table 6. Distribution of statistics Frequency and percentage distribution of respondents' houses in terms of Plumbing

Plumbing Indicators	Category	Description	Frequency	Percentage Distribution
Water system	Connection	Secondary	0	0.00%
		Primary	110	100.00%
		<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>



	Materials	Galvanized iron	12	8.57%
		<b>Poly vinyl chloride</b>	<b>98</b>	<b>89.09%</b>
		<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
	Leakage	With leak	10	9.09%
		Without leak	100	90.91%
		<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
<b>Drainage</b>	Type	Covered	5	4.55%
		Open	105	95.45%
		<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
<b>Comfort Room/ Toilet</b>	Size	Sub standard	20	18.18%
		Standard	90	81.82%
		<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
	Materials	Wood	35	31.82%
		Concrete	75	68.18%
		<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
	Ventilation	None	12	10.91%
		With	98	89.09%
		<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
	Type of bowl	Antipolo type	4	3.64%
		Pail type flush	106	96.36%
		Automatic flush	0	0.00%
		<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
	Flooring	Ground	13	11.82%
		Concrete	77	70.00%
		Tiles	20	18.18%
		<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
	Septic	Non	1	0.91%
		Shared	1	0.91%
		Own	108	98.18%
		<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>

The data from Table 6 shows that houses in Sitio Lawesbra have a primary water connection. The majority are using Polyvinyl chloride pipes and do not have leaks with the pipes or water system. The data further shows that the drainage system in sitio Lawesbra is open.

In terms of toilet system, the data shows that the Majority, eighty-two percent (82%) have a standard size of a comfort room. The majority, sixty-eight percent (68%) of the comfort room, is made from concrete materials, with eighty-nine percent (89%) ventilation. The data further shows that ninety-six percent are using pail flush type of toilet bowl, none are using automatic flush type.

However, four percent (4%) have an Antipolo type of toilet bowl. The majority, seventy percent of the ground is concrete, and ninety-eight percent, have their own septic tank for their toilet system or comfort room.

Furthermore, the World Bank study said that 9.1 million Filipinos still went to the toilet in the open, ranking third behind Indonesia and Cambodia, which had 22 million and 9.8 million people, respectively, who relieved themselves on the streets or in the fields. The study also said that 15.2 million Filipinos use public toilets.

Yet even having a sanitary toilet in each home may not really be enough for a country to stake a claim on a “good housekeeping” seal. For one, Sy notes that close to 80 percent of Filipinos may have access to flush toilets connected to private septic tanks. But, she says, the human waste in the septic tank should be dislodged at least once every three years. And if these are collected, do we know where the wastes go? If these are just thrown into the river or in open fields, she argues, then it still contaminates the water and soil, thereby causing damage to the environment and endangering the lives of people.

According to Sy, the World Bank initially estimates that the East Asian region needs to spend at least \$12 billion per year in water supply, sanitation, and wastewater treatment.

Table 7. Distribution of statistics Frequency and percentage distribution of respondents houses in terms of Civil Engineering

<b>Indicators</b>	<b>Description</b>	<b>Frequency</b>	<b>Percentage distribution</b>
<b>Room ventilation</b>	None	1	0.91%
	Sub standard	74	67.27%
	Standard	35	31.82%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
<b>Kitchen ventilation</b>	None	1	0.91%
	Sub standard	78	70.91%
	Standard	31	28.18%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
<b>Security window</b>	None	10	9.09%
	Sub standard	44	40.00%
	Standard	56	50.91%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
<b>Walling</b>	None	1	0.91%
	Sub standard	16	14.55%
	Standard	93	84.55%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
<b>Partition</b>	None	7	6.36%
	Sub standard	44	40.00%
	Standard	59	53.64%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
<b>Ceiling</b>	Makeshift	5	4.55%
	Wood	105	95.45%

	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
<b>Roofing material</b>	Makeshift	9	8.18%
	Nipa	0	0.00%
	Galvanized iron	101	91.82%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
<b>Roof leaks</b>	With leaks	32	29.09%
	No leaks	78	70.91%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>

The data from Table 7 shows that majority have substandard room ventilation, sixty-seven percent (67%), and substandard kitchen ventilation at seventy-one (71%). In addition, the Majority at fifty-one percent (51%) have standard security window and eighty-four percent (84%) standard walling, fifty-four percent (54%) standard partition. Ninety-five percent (95%) used wood for the ceiling, and ninety-two percent (92%) used Galvanized Iron for roofing. However, twenty-nine percent (29%) of the houses in Sitio Lawesbra have roof leaks.

Table 8. Distribution of statistics Frequency and percentage distribution of respondents houses in terms of Disaster Risk Reduction Mechanism

<b>Indicators</b>	<b>Description</b>	<b>Frequency</b>	<b>Percentage distribution</b>
<b>Fire exit</b>	None	21	19.09%
	Substandard	73	66.36%
	Standard	16	14.55%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
<b>Door positioning</b>	Substandard	82	74.55%
	Standard	28	25.45%
		<b>110</b>	<b>100.00%</b>
<b>Pathways</b>	None	9	8.18%
	Substandard	89	80.91%
	Standard	12	10.91%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>
<b>Evacuation area</b>	None	41	37.27%
	Substandard	69	62.73%
	<b>TOTAL</b>	<b>110</b>	<b>100.00%</b>

The data from Table 8 shows that majority sixty-six percent (66%) of the houses in Sitio Lawesbra have a sub-standard fire exit. In fact, nineteen percent (19%) do not have a fire exit, and only fifteen percent (15%) have a standard fire exit. In terms of door positioning, the majority, seventy-five percent, are sub-standard, and the majority, eighty-one percent (81%) of the pathway, is also sub-standard. However, sixty-three percent (63%) did consider that they have an evacuation area, though sub-standard. Thirty-seven percent (37%) responded that they don't have an evacuation area. According to UNICEF, The Philippines is highly exposed to natural hazards because it lies along the Pacific Typhoon Belt and is within the Pacific Ring of Fire. This is compounded by uncontrolled settlement in hazard-prone areas, high poverty rate, failure to implement building codes and construction standards, and degradation of forests and coastal resources, among others. The brunt of these natural hazards is felt by 27.6 million Filipinos, who are among the poorest and marginalized. They are often trapped in a seemingly never-ending cycle of disaster, displacement, and rebuilding. For a country like the Philippines, a proactive risk management approach is imperative. More than 40 percent of Filipinos (37 million) are under 18. Children are the most affected in any disaster; by this alone, their

participation in DRR is essential. However, Philippines: The national disaster risk reduction and management plan (NDRRMP) 2011 to 2028 made a plan which serves as the national guide on how sustainable development can be achieved through inclusive growth while building the adaptive capacities of communities; increasing the resilience of vulnerable sectors, and optimizing disaster mitigation opportunities with the end in view of promoting people's welfare and security towards gender-responsive and rights-based sustainable development. It outlines the activities aimed at strengthening the capacity of the national government and the local government units (LGUs) together with partner stakeholders, to build the disaster resilience of communities and to institutionalize arrangements and measures for reducing disaster risks, including projected climate risks and enhancing disaster preparedness and response capabilities at all levels.

#### 4. CONCLUSION

This chapter presents the summary, which includes the findings, conclusions, and recommendations based on the result of the study. This study assessed the quality of houses and households in Sitio Lawesbra, Lapasan Cagayan de Oro City. This study looked into the following questions: 1) What is the Assessment of the Houses in Sitio Lawesbra, Lapasan, Cagayan de Oro City in terms of Electrical, Plumbing, Civil Engineering, Disaster Risk Reduction Mechanism? and 2) What is the profile of the households in Sitio Lawesbra, Lapasan, Cagayan de Oro City in terms of Number of Occupants, Age, Gender and Employment Status?

This study made use of the descriptive research design. This study was conducted on 899 households of 110 houses in Sitio Lawesbra, Cagayan de Oro City. The study found out that 1) Majority, seventy-two percent of a number of household per house is 9. The average household per house is 8.17, but the standard deviation of 1.78 indicates that the household number varies a lot from each other. 2) Majority of the fifty-eight percentage of the households in Lawesbra are from 19–40 years old. The average age is from 19-24) but the standard deviation of 1.21 indicates that the age of household in Lawesbra varies a lot from each other. The highest percentage of age is from 19-24. This indicates that the household in Lawesbra is in the adult stage. The data further shows that only 2.22% are in the age below 5. The data also shows that 4.25% of the household in Lawesbra are at the age of 6 to 12 years old. 3) Majority, fifty-four percent of the household in Sitio Lawesbra, are male. 4) Majority, fifty-three percent of the household in Lawesbra, are students. And there are also thirty-two percent are employed. 5) Majority of the household in Sitio Lawesbra have the following electrical standards. The majority have primary connections and are using circuit breakers in the panel board. The majority of the junction box is opened, with 3-4 splices per junction Box. The majority of the size of wires used in Sitio Lawesbra are not standard. But the majority are using the standard, convenient outlet. The majority of the households are not using octopus type of extension wire. 6) The houses in Sitio Lawesbra have a primary water connection. The majority are using Polyvinyl chloride pipes and do not have leaks with the pipes or water system. The data further shows that the drainage system in sitio Lawesbra is covered. 7) Majority, eighty-two percent, have a standard size of a comfort room. The majority sixty-eight percent of the comfort room is made from concrete materials with eighty-nine percent ventilation. The data further shows that ninety-six percent are using pail flush type of toilet bowl, none are using automatic flush type. However, four percent have an Antipolo type of toilet bowl. The majority, seventy percent of the ground, is concrete, and ninety-eight percent have their own septic tank for their toilet system or comfort room. 8) Majority have substandard room ventilation sixty-seven percent and substandard kitchen ventilation at seventy-one. In addition, the Majority, at fifty-one percent, have standard security window and eighty-four percent standard walling, fifty-four percent standard partition. Ninety-five percent used wood for ceiling, and ninety-two percent used Galvanized Iron for roofing. However, twenty-nine percent of the houses in Sitio Lawesbra have roof leaks. 9) Majority, sixty-six percent of the houses in Sitio Lawesbra, have a substandard fire exit. In fact, nineteen percent do not have a fire exit, and only fifteen percent have a standard fire exit. In terms of door positioning, most seventy-five percent are sub-standard, and the majority of eighty percent of the pathway are sub-standard. However, sixty-three percent did consider that they have an evacuation area, though sub-standard. Thirty-seven percent responded that they don't have an evacuation

area. The research on houses and households in Sitio Lawesbra has been very successful since it gave a detailed description of the houses and households in Sitio Lawesbra. Recommendations were carried together with researchers' efforts in collaboration with LGU, CEPALCO, and the Water District to improve the quality of the houses in Sitio Lawesbra. A number of students' study in the university and live in Sitio Lawesbra as a resident or as boarding or renting, simply because it is cheap and near. Thus, Sitio Lawesbra is the best venue for extension offices to render services that involve improvement activities, such as skill development, literacy, construction, livelihood, and others. Directing effort to improve Sitio Lawesbra improves the lives of the student and the lives of the community closest to the university.

## 5. RECOMMENDATION

Sitio Lawesbra is just adjacent to the university. In fact, a number of students in the university are living in Sitio Lawesbra. Improve the settlement disposition, which may help improve students' performance. Understand the settlement situation students in Sitio Lawesbra and the administration should reach out and improve the quality of settlement of students in Sitio Lawesbra

Sitio Lawesbra is just adjacent to the university. In fact, a number of students in the university are living in Sitio Lawesbra. Thus, the best venue for the extension office to render its vision and mission is in Sitio Lawesbra, simply because it is nearer, and there are so many opportunities that the university can help. Improvements are considered consequential since Sitio Lawesbra is the closest community to the university.

A number of students in the university are living in Sitio Lawesbra. Teachers should not compromise quality because of life's circumstances, such as the quality of settlement in Lawesbra. Teachers should look at the results of this study to consider Sitio Lawesbra as a venue where they can direct the outcome-based projects in their class to improve the quality of settlement in Sitio Lawesbra.

The students in Sitio Lawesbra and the students in the university are the prime beneficiaries of this study. The quality of settlement of the students who live in Sitio Lawesbra can be improved because the administration, extension, and teachers' offices will now have a clear and concrete understanding of their settlement situation and now can direct their efforts and action to improve the quality of settlement in Sitio Lawesbra. As for students not living in Sitio Lawesbra, this research will serve as an opportunity to value the type of settlement that they have; if not, then at least empathize. But most importantly, students take part in the change, improving the quality of life, starting from themselves, then to the community closest to them.

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