

Quantity surveying and construction management construction essay



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The Qatar Construction Industry aims to form a complete waste management plan make honest with the state master plan and with a strong stress on recycling. The targets are to recycle 38 % of solid waste, up from the current 8 %, and cover domestic waste group at 1. 6 kg/day, the Qatar National Development Strategy (NDS) 2011-2016 has exposed.

Qatar produces more than seven hundred thousand tonnes of solid waste every one day. Much of it is crowded into landfills, with the underdeveloped recycling industry handling only 8 % of the waste

At presently 91 % of nondomestic waste is taken in a straight line to landfills, and the bulk of what is eventually recycled is picked through by companies that sift through the waste at the landfills. Qatar will take on an involved strategy to cover the levels of waste produced by industry and to recycle much more of what waste is produced.

The government published a policy text (QSAS) in 2010 in order to try and initiate better waste management activities within the construction sector.

This chapter appraises to introduce the dissertation according the following sections: background of the research; the research aim and objectives, outline methodology for the research; and the structure of the dissertation.

The purpose of this chapter is to explore the background of the research set out the setting for details of the dissertation, the importance, and further more continue with an exploration of the research aims and the chapter conclude with an outline of the objectives; literature review, data collection and analysis. Its comprise the entire chapter which are contain in the dissertation and finalize with an explanation of the dissertation structure.

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BACKGROUND

The waste management has been a long issue worry for the public, increasing the amount of waste by increasing the population producing, therefore continually been a concern that where waste drives or sprits. It is being determined by the most economically feasible selection and with slight concern for the earth natural environment

The principal importance is in waste escaping. Waste reduction can be defined as “ any technique, process or activity which avoids, eliminates or reduces a waste at its source, typically within the confines of the production unit” (Williams, 2005). Producers must take responsibility for creating long-term products with increased durability (Cooper, 1994). Waste decrease is the main to reducing the rising waste mountain and that is the main to sustainable waste management.

In a construction site whether you can be as a contractor, subcontractor, site director or a site member of staff, discovery that how to reduce, reuse and recycle construction wastes is important. It will not only benefit to save money at site, but it also permits you to pay an important part to reduce the construction harm that construction waste effects to the environment.

AIM

The aim of the research is to identify and establish sustainability of waste reduce, reuse and recycle the waste in construction industry and analyzing the real presentation in the Doha - Qatar Construction Industry.

OBJECTIVE

To identify the percentage waste management practice within the construction industry in relation to barrier/block.

Finding out how does the waste in construction been produced

To identify the answers why wastes are arise in construction site and the solution on it

To identify the solutions for incredulous barrier and recommend more sustainable methods.

To identify the feasible answer to overcome barrier and to advise practical recommendation using best available method on how waste can be achieved advance sustainably.

Identify the solution for solving the waste reduce, reuse and recycle the waste for a better environment.

OUTLINE RESEARCH METHODOLOGY

The Outline of the research methodology is limited to literature review, data collection and analysis. The involved review of establish waste management theory form Books, journals and internet finding. The important concerns were found on this research to explore more and from the research exploration to be used questionnaires to assembled facts.

The exploratory questionnaires' assemble to enlarge the research in an excellence method. The questionnaires was focused more than 150

organization within the Doha – Qatar Construction Industry and the inquiry was mainly conducted through the Email and online questionnaires

The data which are collected would then be analyzed to gain a conclusion towards the dissertation. More details about the methodology are mentioned in chapter 4 of this dissertation.

STRUCTURE OF THE RESEARCH

The dissertation is basically contains three main parts which are introduction, literature review and analysis of the collected data through questionnaires. The dissertation subject into six chapters, start with the introduction of the waste management, its comprising background to the study, aim and objectives and the explanation for undertaking the research. The second chapter comprises the concept of the waste and waste management. The three chapters comprise the concept of alternative materials used in construction. The chapter four comprises the research methodology used to data collection. The chapter five comprises analysis the questionnaires result consequence and discussion of the essential discovery for the research and the final chapter six completes the research process review and recommendation.

SUMMARY

The chapter set out to introduce the through a discussion of background to the research, its aim and objectives, the methodology to be employed and the details of the dissertation content. The research mainly concern to the aim of the dissertation is to explore sustainable waste management in Doha – Qatar Construction Industry and explore the research objectives of the

research. As a final point, the chapter accomplishes with an account of the dissertation structure.

CHAPTER two

Literature review

CHAPTER TWO

LITERATURE REVIEW

1. INTRODUCTION

The chapter primarily comprise the basic principal of sustainable waste management within Doha Qatar Construction Industry. It is mainly focussing the alternative material recovered and recycled form the construction waste as well. And review of the percentage construction industry in Doha – Qatar.

2. WASTE MANAGEMENT SYSTEM

The Waste management in construction needs planning as it is a necessary portion in the commencement of the tendering and in the complete project planning. Construction planning is completed in feature, the way to deliver the project on period, the quality of the project and within an proper financial plan. (Karim. K, 2000) A related method wants to be completed for waste management also. A waste management plan is a main portion of the route, similar other planning basics of the planning development.

Generally in obverse area of the project place will be used as a loading area, by means of the material which are approaching to the site can be kept at this point and the back part will be used for storage the waste material,

which will be kept in not the same hops, and little by little transported on view of the site with a loading truck (Guthrie and Mallet, 1995).

The whole of labors on site want to be well knowledgeable around the method and techniques that are predictable of them in respects to reusing and recycling produces. Definite coloured baskets will cover convinced kind of waste. There would be baskets for recycling and rubbish mainly, every time the baskets are full, they will be deserted in the filling trucks, and in turns transported off site for further practices.

In advance, the works bring into being, let easy right to use to storing zones to make sure that the materials are secure from some damage, and also let every single worker know where to discovery the storing zone for the specific kinds of materials. It is greatest to stock the materials away from waste materials.

2. CONCEPT OF WASTE MANAGEMENT

The waste management is the conduct of waste materials. It can be almost anything and a primary objective of waste management today is to protect the public and the environment from potentially harmful effects of waste.

The waste material is harmful by product of building progression in the construction sector and waste management is an essential method of finding and trating waste in order to minimize (BRE, 2003). One of the largest waste producers is the construction industry and the waste is producing 32 tons for disposal per year [Over view Construction waste in Doha Qatar, 2007].

3. RECYCLING AND RECOVERY

The recycling and recovery is the point if the waste cannot be re-used.

Recycling and recovery only be carry out when the product no bigger functions or cannot be repaired (Cooper, 1994).

Recycling can be defined as the followings;

Collection

Separation

Clean-up

Processing – “ To produce the market productivity”, Williams (2005)

4. WASTE TREATMENT

The waste to reduction is going to landfill. Alternative waste treatment which create a negligible impact on environment as following;

Recycling

Composting

Energy from waste

Mechanical Biological Treatment

Pyrolysis

Gasification

Combined pyrolysis-gasification

Anaerobic digestion

Mechanical Heat Treatment. Williams (2005).

5. KEY CONCERNS ON CONSTRUCTION WASTE

The Qatar Construction Industry aims to form a complete waste management plan make honest with the state master plan and with a strong stress on recycling. The aims are to recycle 38 % of solid waste, up from the current 8 %, and cover domestic waste group at 1. 6 kg/day, the Qatar National Development Strategy (NDS) 2011-2016 has exposed.

Qatar produces more than seven hundred thousand tonnes of solid waste every single day. Much of it is crowded into landfills, with the underdeveloped recycling industry handling only 8 % of the waste. The Domestic waste about 30 % and, with nondomestic waste from construction industrial accounting for the rest.

At this time 91 % of nondomestic waste is taken in a straight line to landfills, and the bulk of what is eventually recycled is picked through by companies that sift through the waste at the landfills. Qatar will take on an involved strategy to cover the levels of waste produced by industry and to recycle much more of what waste is produced.

Ministry of Department of Environment MoE (2022) classify that the construction and demolition waste into five groups which are following;

Construction and renovation- wood, roofing, fixtures, wall board, ductwork and piping, insulation materials and carpet.

Roadwork- asphalt, concrete and earth filling.

Excavated- earth, sand and stone.

Building demolition- mixed rubble, concrete, steel beams and pipes, bricks, timber, fixture and fitting wastes.

Site clearance- trees, brush, earth and the potential for mixed concrete rubble and sand.

Most of the issues contribute to the construction waste generation on site.

Most usually documented sources of construction waste are design, operational, material handling and procurement. Designated that the considerable amount of construction waste on site is directly associated to design mistakes.

The construction industry is nature; it is essential that relies on good communication and close intersection for positive project delivery. It is mean the practical waste reduction strategies can only be expressed and implemented when interested party understand the original and reasons of the construction waste.

5. DIRECT AND INDIRECT WASTES

Indirect wastes are always producing from the design stages of the construction project. These wastes are able to be preventing by having a good waste management, planning and foresight and as for direct wastes are produce form the construction project progress stages (Chris, 2009).

5. 1 DIRECT WASTES

Substitution of other material

Improprate scale of drawing have been produce

Builder error such as over-digging in dimension and incorrect setting out

Return of work to complete unfinished work.

5. 2 INDIRECT WASTES

Transport waste

Site storage

Conversation and cutting waste

Material handling

Lack of management in construction project

Streaming from material that are wrongly specified

5. THE WASTE HIERARCHY

The Gulf Cooperation Council – GCC states accepted a continuous waste management scheme and a specialist upkeep trick for waste making, collection, sorting, treatment and disposal. Most of the waste management creeds and plans applied are based on universally recognized scientific method counted in Waste Management Hierarchy as shown on figure 00.

Description: C: UsersirfanDesktop186567195. gif

Figure 00: Waste hierarchy

Source: <http://www.frost.com/prod/servlet/market-insight-top.pag?docid=186566927>

Description: C: UsersirfanDesktop186567198. gif

Figure 00: Waste hierarchy

Source: <http://www.frost.com/prod/servlet/market-insight-top.pag?docid=186566927>

The waste is escaping in the best perfect choice in the hierarchy. The theory dishonesties within the basis of not making the waste during the construction doing.

6. LANDFILLS IN DOHA QATAR

The waste management located in Mesaieed in Doha Qatar is expected to decrease the waste disposed of in landfill to 3 % to 5 %, in this manner reducing the share of total waste sent to landfill from 92 % to 64 % (<http://www.thepeninsulaqatar.com>).

The proficiency also will alter waste to energy and rise the level of waste recycling form 8 % to between 20 % and 25 %. It will be the five transfer positions as “ South Doha, West Doha, Industrial area, Dukhan and Al khor”. Prepared with collection bunkers for splitting reusable such materials as concrete (aggregate), concrete (Block) metal (steel), timber and, glass are be % case in points of how companies can create practice or use of such

materials. This will be helped to minimise the waste generation in the Qatar Construction Industry.

The Qatar Construction Industry aims to form a complete waste management plan make honest with the state master plan and with a strong stress on recycling. The targets are to recycle 38 % of solid waste, up from the current 8 %, and cover domestic waste group at 1. 6 kg/day, the Qatar National Development Strategy (NDS) 2011-2016 has exposed.

At % 91 % of nondomestic waste is taken directly to landfills, and the bulk of what is eventually recycled is picked through by companies that sift through the waste at the landfills. Qatar will take on a involved strategy to cover the levels of waste produced by industry and to recycle much more of what waste is produced.

7. TREND OF WASTE GENERATION IN DOHA QATAR

In December 1997, the Gulf Cooperation Council - GCC countries adopted a uniform waste management system and an detecting instrument for waste production, collection, sorting, treatment and disposal. Most of the waste management regulations and strategies adopted are based on universally accepted scientific approach enumerated in Integrated Waste Management Hierarchy.

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Figure 00: Waste Trend

Source: <http://www.frost.com/prod/servlet/market-insight-top.pag?docid=186566927>

8. WASTE MANAGEMENT IN DOHA QATAR CONSTRUCTION INDUSTRY

The Qatar Ministry of Environment - MoE has arranged the fresh standards for the construction and demolition of waste material, defining what are the materials are satisfactory for recycling and re-usable in the construction industry in Doha Qatar. The new standard have been arranged with a view to establishing a fresh waste management talent, in positive techniques like to the Ministry of Environment's Domestic solid waste management centre already in process near to Mesaieed Industrial City.

The MoE said that a new facility to form neat the existing landfills to process Twenty Thousand tonnes of construction waste produced in Doha Qatar Industry. Around 40-50 % of construction and demolition waste is re-useable, but at the moment most of it is deposited in landfills.

The following Table 00, 00 are display the arrangement of waste produced during the construction activities in Doha Qatar.

NO

DESCRIPTION OF MATERIALS

WASTE

1

Timber

38 %

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2

Soil

18 %

3

Plastic

11 %

4

Cardboards

8 %

5

Metals

8 %

6

Hard Materials

8 %

7

Bio Organic

5 %

8

Cast formless

2 %

9

Gypsum

1 %

10

Chemicals or Paint

1 %

Table 00- Doha Qatar Construction Waste Arrangement

Source: Qatar Construction Site (<http://www.qc-sites.com/>)

No

Description of Materials

Waste Type

Waste

1

Timber

46 %

38 %

2

Soil

38 %

18 %

3

Plastic

46 %

11 %

4

Cardboards

46 %

8 %

5

Metals

Recyclable

8 %

6

Hard Materials

38 %

8 %

7

Bio Organic

46 %

5 %

8

Cast formless

38 %

2 %

9

Gypsum

46 %

1 %

10

Chemicals or Paint

Hazardous

1 %

Table 00- Doha Qatar Construction Waste Arrangement

Source: Qatar Construction Site (<http://www.qc-sites.com/>)

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9. RECOVERY OPTIONS

The Qatar aims to establish a wide ranging solid waste management plan aligned with the master plan and with the strong on recycling. Recovery is defined by the QDS in its document, assistance on MWMS as the worth to gain value form waste through recycling, other form of material, or recovery of energy and compositing. The Doha Qatar target to recycle 38 percentage of solid waste, up from the percentage 8 %, and contain domestic waste group 1. 6kg/ day, the Qatar National Development Strategy - QDS 2001 to 2006 has revealed (QDS 2009). Therefor gives value to waste, and attempts to create a situation where the landfill of waste, becomes an economically un-viable disposal route (Waite 1995).

10. RECOVERIES AND ENERGY FROM WASTE

The recovery from waste as well-defined within the Waste Strategy is to achieve done of the followings. The statutory recovery targets as set by the Doha Qatar Ministry of Environment (MoE) are;

Composting

Recycling

Energy Recovery

Other forms of Materials Recovery

Source: QSAS

11. WHAT IS SUSTAINABLE CONSTRUCTION

Sustainable construction is meeting environmental and social duties, and same while successful effectiveness. The important features of sustainable construction are similar to those set for sustainable development. The end result is to decrease a firm's detrimental things on the environment.

Sustainable construction is usually used to describe the application of sustainable development to the construction industry, and balances 4 elements are following;

Effective protection deed of the environment

Prudent use of natural resources

Social growth which recognizes the wants of everyone

Maintenance of high and stable levels of economic growth and employment (CIRIA1, 2001).

The industry is distinct by a number of subdivisions, all who plan, design, build, alter or maintain the built environment. Also its subsidiaries, those who making materials, suppliers, and end of life occupiers or owners. The entire life cycle of any structure, from initial concept to demolition must be encompassed in the meaning of sustainable construction. Buildings and structures alteration the face of towns and countryside, and their construction, use, repair, maintenance, and demolition consume vast amounts of energy and resources compared to many other industrial sectors, (DETR, 2000).

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13. WHAT THE CONSTRUCTION INDUSTRY CAN PREPARE

There is the first step in moving to sustainable development; it is recognizing the strategic benefits of business environmental management can carry and to ensure that commitment to the environmental development exists in company (Welford1, 1998). In business, the concept of sustainability also embraces the three themes of the environment, economy and society. Bring changeover to sustainable construction, individual firms must comprehend and receive the devastating things their activities are having upon the environment, and the status of operating in an environmentally friendly manner.

They will then have to commit to not only approving to modification how they function, but really set up a pro-active outline for all employees, suppliers, and sub-contractors to adhere to. Sustainable businesses that show social corporate responsibility profit financially through more efficient actions and use of resources expand their corporate image; and maintain a modest advantage, (MaSC, BRE, 2005).

There are a number of steps firms can take towards sustainable construction, as identified by CIRIA, (2000).

Create a commitment to address their influences

Aim to be the finest and standard their performance

Life cycle costs of products and their impacts

Communicate with stakeholders with environmental and social reports

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Work with others in the supply chain to increase the act

Develop staff awareness through training

14. PROFITS OF SUSTAINABLE CONSTRUCTION

The ten themes for action discussed above simply make good industry intelligence, e. g. designing a project for minimal waste (DTI1, 2003).

14. 1 ENVIRONMENTAL

Sustainable act can deliver significant business efficiency & success.

Thin construction and pollution deterrence can create the calculable cost savings.

Recycling further waste material will minimize landfill tax and material purchasing costs.

Improve competence through regulatory obedience

Improve public and enhanced particular standing.

Evasion of pollution events, averting penalties, law court overheads and bad public relations.

14. 2 SOCIAL

Improving proof of output improvements for staff complicate in environmental and social presentation improvement provisions.

Commencing a social viewpoint, financial aids rise from better affairs with the clients, local groups and other sponsors.

Well health and safety performs to develop competence and minimize accidents, saving both managerial time and legal costs and fines.

14. 3 ECONOMICAL

There are significant chances available to improve or stand marketplace Point.

Making and business Doings will not be forced by local opposition, regulatory bodies or client necessities.

Improving project supply is essential to construct trust with the clients, improve success and advantage.

Inspire mutual, favorable long term relations with the clients.

Source: CIRIA1, 2001

15 THE TEN THEMES FOR SUSTAINABLE CONSTRUCTION

The essential to develop performance in the construction industry is necessary for it to become more sustainable. Managing and decreasing the environmental influences of buildings and structures, and the methods of construction, is a common starting for many organisations wishing to address sustainability (DETR1, 2000).

Re- use existing built assets, and renovate which develops their sustainability, where likely.

Design for minimum waste. Design out waste at all stages of product, building or structure, think about using recycled materials.

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Aim for lean construction, working on continuous improvement and high quality work.

Decrease energy in construction; be aware of energy consumption during construction.

Decrease energy in use, consider more energy efficient solutions in the design stage.

Do not pollute, understand environmental impacts and adopt an EMS or ISO to manage.

Preserve and enhance biodiversity throughout the construction process, from extraction of materials to landscaping buildings.

Conserve water resources, design for water efficiency in buildings.

Respect people and their local environment, be responsive to community and consider your workforce.

Set Targets to measure and compare your performance against others, set targets for Continuous improvement.

(DETR1, 2000 & DTI1, 2003)

16. CONCLUSIONS

The Chapter is generally defining to establish recommendation for Sustainable Waste Management in Doha Qatar Construction industry. The chapter will review the research objective of the dissertation; the chapter will then come to an end with an investigation of suitable recommendation of

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regarding Sustainable waste management system in Doha Qatar construction industry.

CHAPTER three

Alternative materials for construction

CHAPTER THREE

ALTERNATIVE MATERIALS USR FOR CONSTRUCTION

1. INTRODUCTION

Maximum of the waste will be produced from the construction industry and the source of the waste is produced must be known at the early stage as it will expansion good effect in waste management development. The materials identical like concrete (aggregate), concrete (Block) metal (steel), timber and glass.

2. CONCRETE (AGGREGATE)

Each quantity of concrete waste that is recycled for aggregate in fresh concrete would protect almost a quantity of key aggregate that comes from the countryside or dredged from the seas. Recycling concrete keeps money, and has further environmental aids.

2. 1 THE KEY REASONS OF THE WASTE OF CONCRETE ON THIS SITE COMPRISE

Unexpected modifications on design

Improper proportions of aggregate, water and cement

Purchasing too much

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Over pouring

Pumping waste

Incorrect use of material

2. 2 METHODS IN WHICH TO RECYCLE CONCRETE

Recycle the concrete and use it as aggregate for other local site as new concrete; it will protect/save the aggregate and waste disposal charges.

The Recycle concrete waste as sub base in roads or fill-in works.

The leftover aggregate can be transported off the site, by the loading vehicles as soon as the endorsed sum has been used on site.

concrete-disposal

Figure 0: Concrete Waste (Aggregate)

Source: <http://civilpents.blogspot.com/2012/02/recycled-concrete-aggregate.html>

3. CONCRETE (BLOCK)

Approximately 6 % to 28 % of concrete blocks results in waste in construction (QCS. 2007).

3. 1 THE CHIEF BASES OF THE WASTE OF CONCRETE BLOCKS COMPRISE

Unexpected changes on design

Over purchasing the quantity

Incorrect conduct of the blocks and stacking

The arrangement of the concrete walls and the columns

3. 2 METHODS IN WHICH TO RECYCLE CONCRETE BLOCKS COMPRISE

Practice greater pieces for erosion control

Castoff as a substitute for landscaping stone

Castoff as new aggregate for other sites

Castoff as sub base on new roads

3. 3 RECYCLING CONCRETE WASTE

Initially, when the concrete waste has been elated from the baskets on site to the loading trucks to be additional elated off-site, we need to discover, waste of concrete can be used for it, Then eliminate whatever within the concrete that could contaminate the concrete, (CIRIA, 1995) and then crush the concrete with a mobile crusher to the size of aggregate, if need be. Then store the crushed concrete in a separate area, so no other materials are dumped there. Then use it for other requirements.

Construction Waste Recycling

Figure 00: Concrete Waste (Block)

Source: http://www.ds-crusher.org/sloution/Construction_Waste_Recycling.html

4. REUSE OF METAL (STEEL) RECOVERED FORM WASTE

“ Steel is an ideal material to recycle. In fact 30% of all steel products in construction are now made from recycled steel” (Guthrie, P M, 1997) and the steel waste in construction it is able to recycle up to an approximately 90% of the total (Karim. K, 2000).

4. 1 CAUSES FOR METAL WASTE

Over-ordering

Faulty workmanship

Incorrect handling

Improper type of metal

Scope of cut-offs on site

Approach of workers

4. 2 REDUCE METALS

The greatest method to decrease any metal waste is to order a “ made to measure” bar from the manufacturer, it would be set for use and will not essential any decoration or bending.

4. 3 RE-USE OF METALS

Principal is to check the prospects on site, and if it is not, you might stock the materials somewhere else, for it to be used another time. When storing the metal, it is necessary to separate it from other metals. Loading trucks are wanted to carrying the metal waste off-site.

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4. 4 RECYCLING METALS

The greatest method to recycle metal is to shift scrap metal by the quantity to local salvage operators, the price of metal differs according to the variety. Materials identical like aluminum will be more valued than say ferrous metals. The metal waste that is made on site, will then be disposed of in the according basket, and additional later dumped into the loading trucks for it to be used somewhere else.

1641988-91588-james-hardy-altopress-maxppp-construction-waste-rebar-from-reinforced-concrete

Figure 00: Metal Waste (Steel)

Source: http://www.ds-crusher.org/solution/Construction_Waste_Recycling.html

5. TIMBER

The timber creation waste can come in various methods, from pallets which other goods were shipped with, engineered timber and treated timber. Wood wastage typically happens in residential construction industry and renovation works doings as the main produce. This is faced to concrete waste, which is more often produced in commercial sites involving demolition. Other factors such as the geographical location of the site and the framing methods used effect the amount of timber waste made.

5. 1 REDUCE TIMBER

The method to decrease the timber waste is best that those who are comprise to timber work are proper train with carpentering skill to handle for

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minimal the off cut or incorrect cut of the measurement. All timber are wanted to store in dry area due to water moisture will damage the timber.

5. 2 RE-USE OF TIMBER

Most of the timber that are not completely loss are to cut and store for advance use in storage or un-nailing all other timber after use and move them for more use if are refillable.

5. 3 RECYCLING TIMBER

Chipped timber, off cut and damage timber are