Recycling value chain

Photo: A.K. Enamul Haque, 2016

Apr 4, 2016

Courtesy: The Daily Star, May 6, 2016

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Many areas of Sylhet city were waterlogged due to yesterday's downpour as waterlogging has become a severe issue due to illegal occupation of the canals by influential people and incessant dumping of waste there. The photo was taken from Pathantula of Subidbazar area. Photo: Sheikh Nasir

Sylhet City Corporation is surrounded in the north and east by hills with tea gardens, and in the south and west by Surma river and flood-plains of Surma and Kushiara.

Reasons for the Research Initiative

- City Corporation has been trying to solve its waterlogging problems for years
- Agreed to engage IWM to do research on identifying causes.
- Understood need for both hard and soft interventions
- Could see the risk of increased water-logging due to climate change
- Could see the value of soft interventions to reduce costs to the city dwellers.

Causes of waterlogging

- Heavy rainfall – 45 km from Cherapunji of India – the wettest place on earth.
- Erosion and sedimentation of natural drainage channels
- Backwater flow from Surma during rainy season
- Construction of houses below flood-level
- **Illegal dumping of waste into the drainage canals**
- **Insufficient capacity to carry all wastes into the city dump-site**

Research and Interventions

- Understand the value chain of the recycling market - **done**
- Develop a policy brief to inform policy makers on value of encouraging formal recycling (PB to completed December 2018).
- Understand behavior of city dwellers towards at source segregation of kitchen waste - **done**
- Demonstrate value of at-source segregation - **done**
- Understand a realistic solution to introduce at source segregation – **to be done by March 2019**
- **Benefits of segregation – one paper done.**

Some details on the Pilot on At Source Segregation of Kitchen waste

- Household based intervention
  - How to pursue households to segregate kitchen wastes?
    - Treatment 1 – Provide Polythene Bags to segregate
    - Treatment 2 – Provide community based composting bins
    - Treatment 3 – Treatment 1 + Treatment 2
  - Doses of awareness
- Community level intervention
  - How to pursue community based organizations to keep neighborhood clean?
- Waste Collector based intervention
  - How to encourage community waste collectors to do extra work of composting?

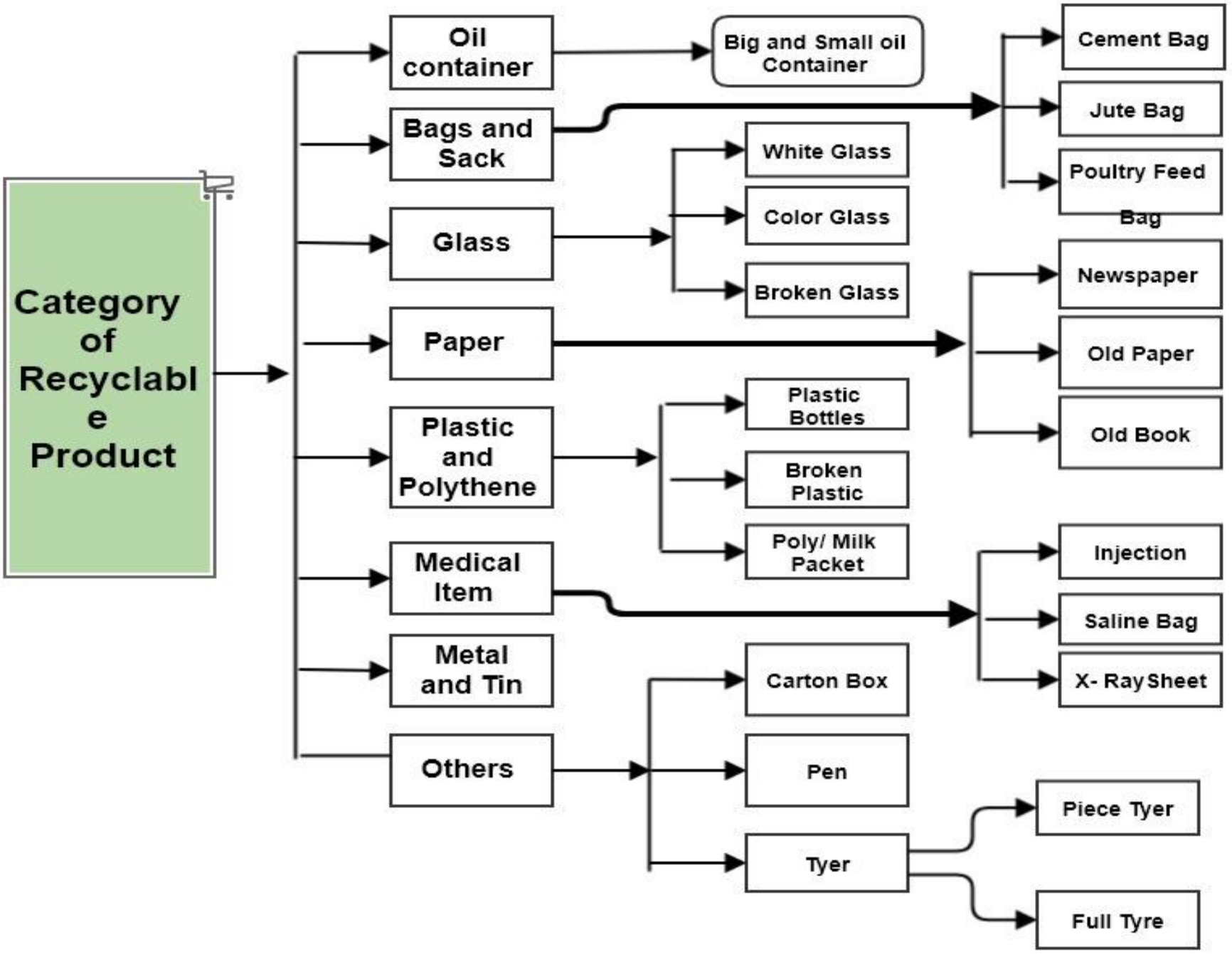
Experiment Design (HH)

Attributes of interventions	Treatment 1 – Community Compost Bins	Treatment 2 – Poly bag for segregation	Treatment 3 – Poly bags + Compost bins
Door to door awareness campaign using poster, sticker (information)	X	X	X
Monitoring of segregation behavior (persuasion)		X	X
Hazardous waste separation bag (responsible citizen criteria)		X	X
Info on recycling markets for plastic, paper and glass bottles (financial incentive)	X	X	X
Mayor's Awards for 'Green' behavior (social capital)	x	x	x`

Experiment Design (CBO)

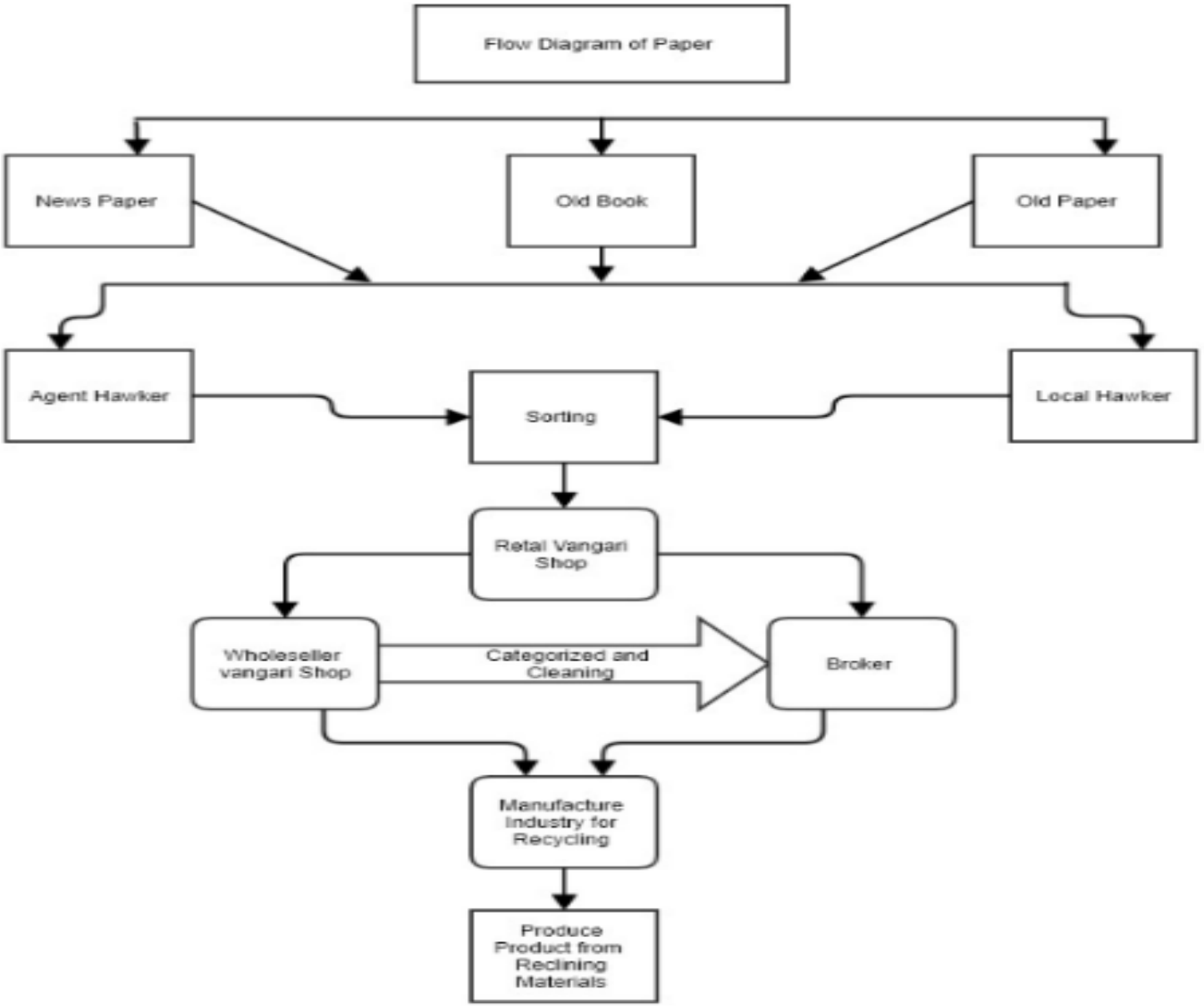
	Interventions
1	CBO based awareness campaigns – workshop, posters, stickers (information)
2	App/FB based feedback (persuasion)
3	Mayor's Awards for 'Green' behavior (incentives)

Value Chain of Recyclable Market

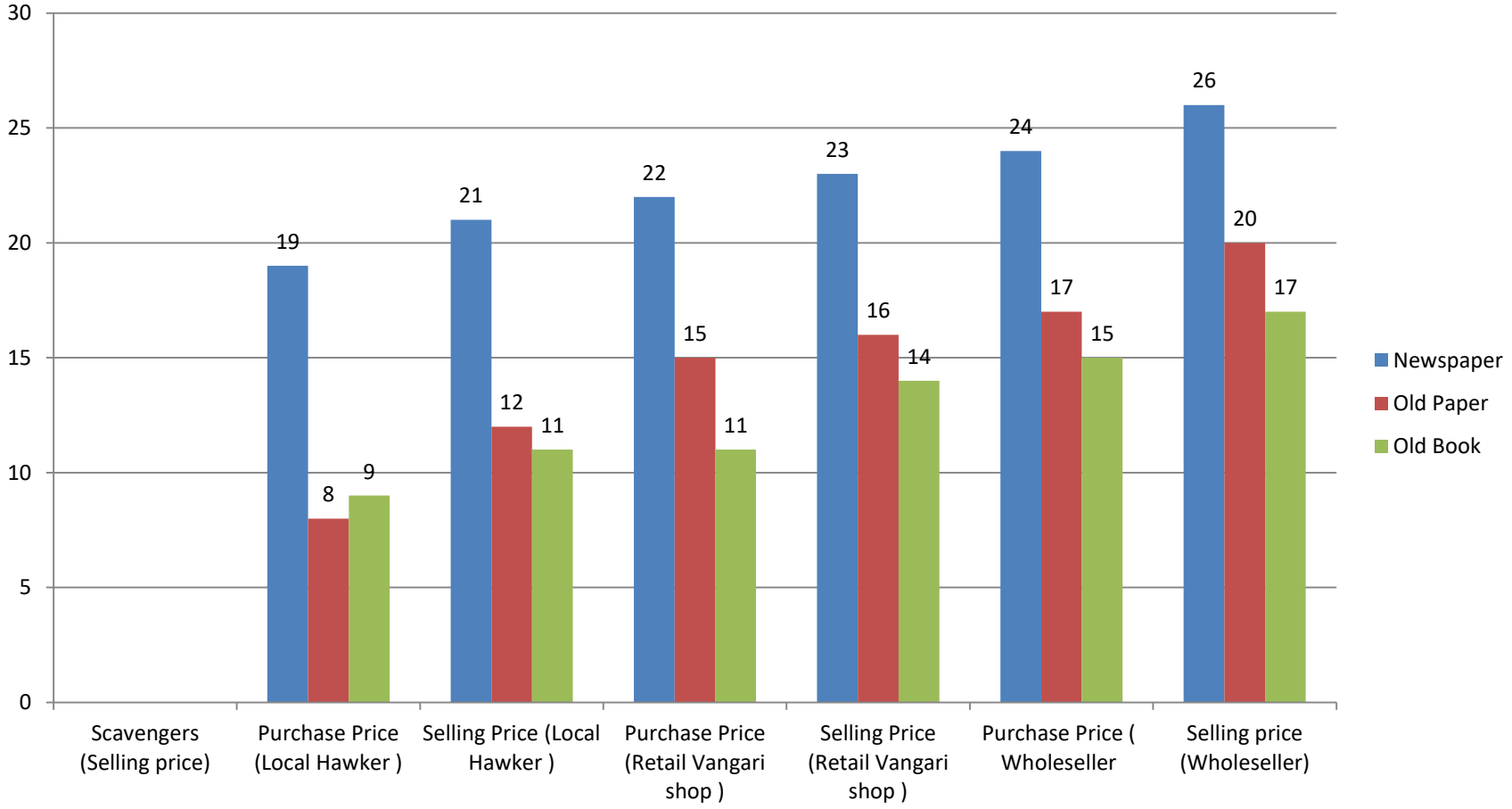

Category of Recyclable Product
Oil container
Big and Small oil Container
Bags and Sack
Glass
White Glass
Color Glass
Broken Glass
Paper
Plastic and Polythene
Plastic Bottles
Broken Plastic
Poly/ Milk Packet
Medical Item
Metal and Tin
Others
Carton Box
Pen
Tyer
Piece Tyer
Full Tyre
Cement Bag
Jute Bag
Poultry Feed Bag
Newspaper
Old Paper
Old Book
Injection
Saline Bag
X- Ray Sheet

PAPER

Flow Diagram of Paper Recycling



Local vangari shop and Hawker carried recycling paper by using this van


30
25
20
15
10
5
0
19
8
9
21
12
11
22
15
11
23
16
14
24
17
15
26
20
17
Scavengers (Selling price)
Purchase Price (Local Hawker)
Selling Price (Local Hawker)
Purchase Price (Retail Vangari shop)
Selling Price (Retail Vangari shop)
Purchase Price (Wholeseller
Selling price (Wholeseller)
Newspaper
Old Paper
Old Book

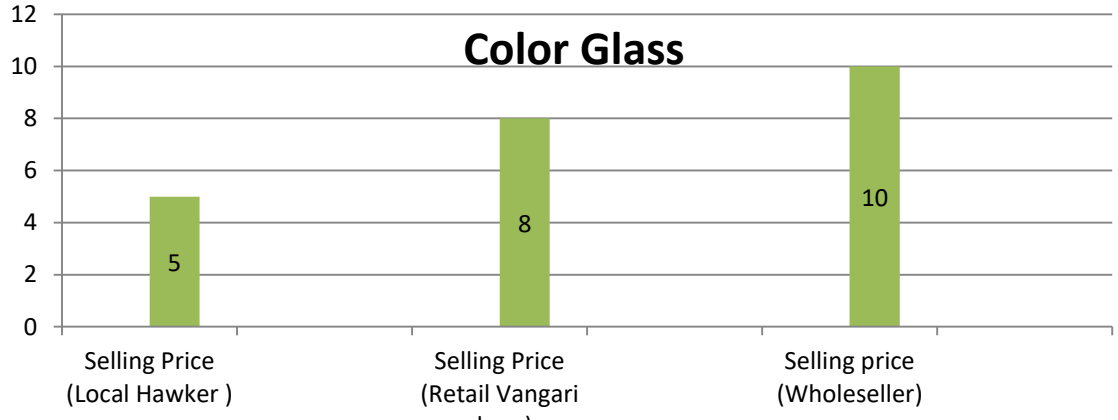
Glass

Sorting of glass in various category

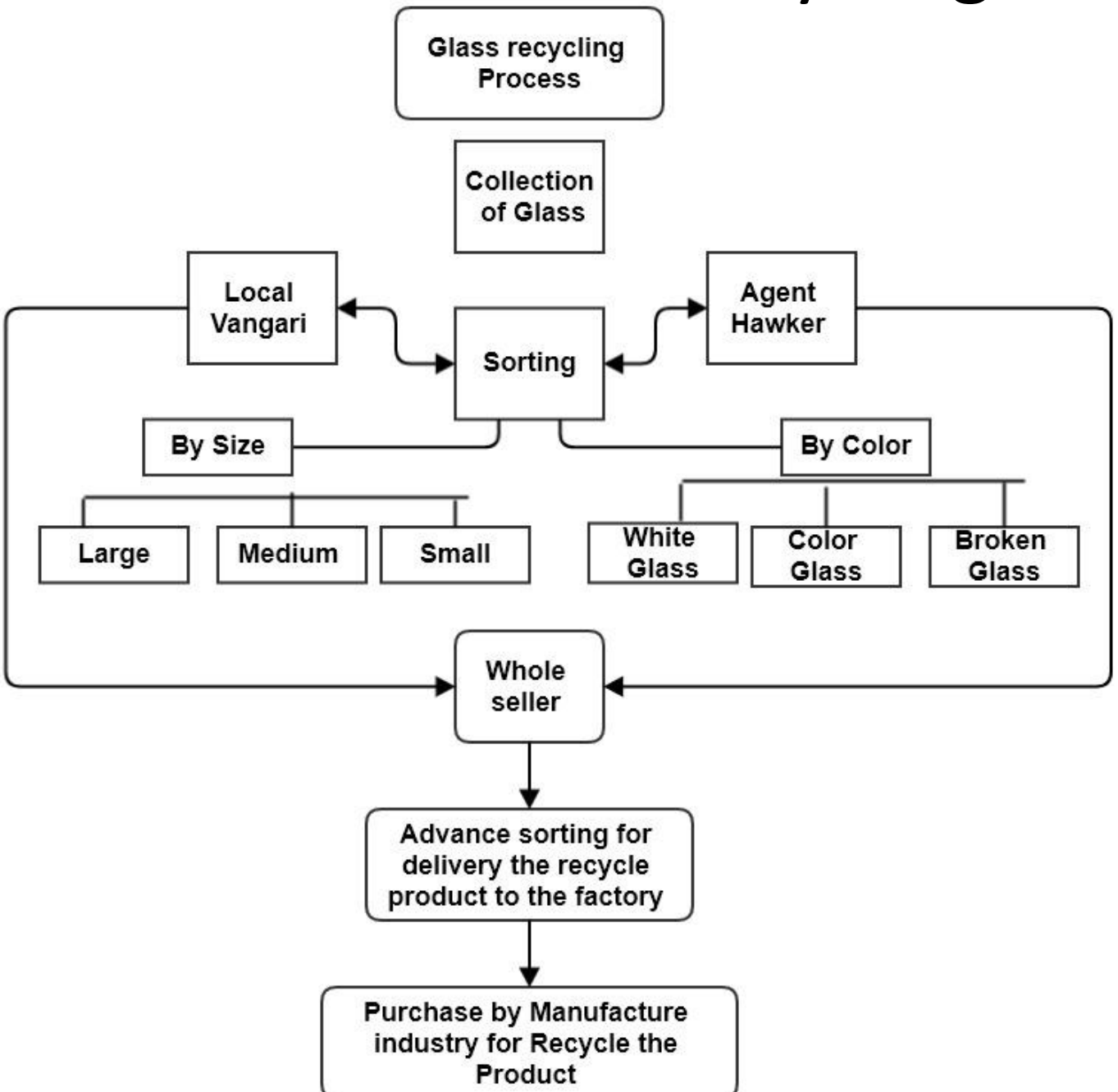
Stock of Recycling glass

Transportation system of recycling glasses

Value Addition (Step by Step Approximately)



Flow chart of Glass Recycling

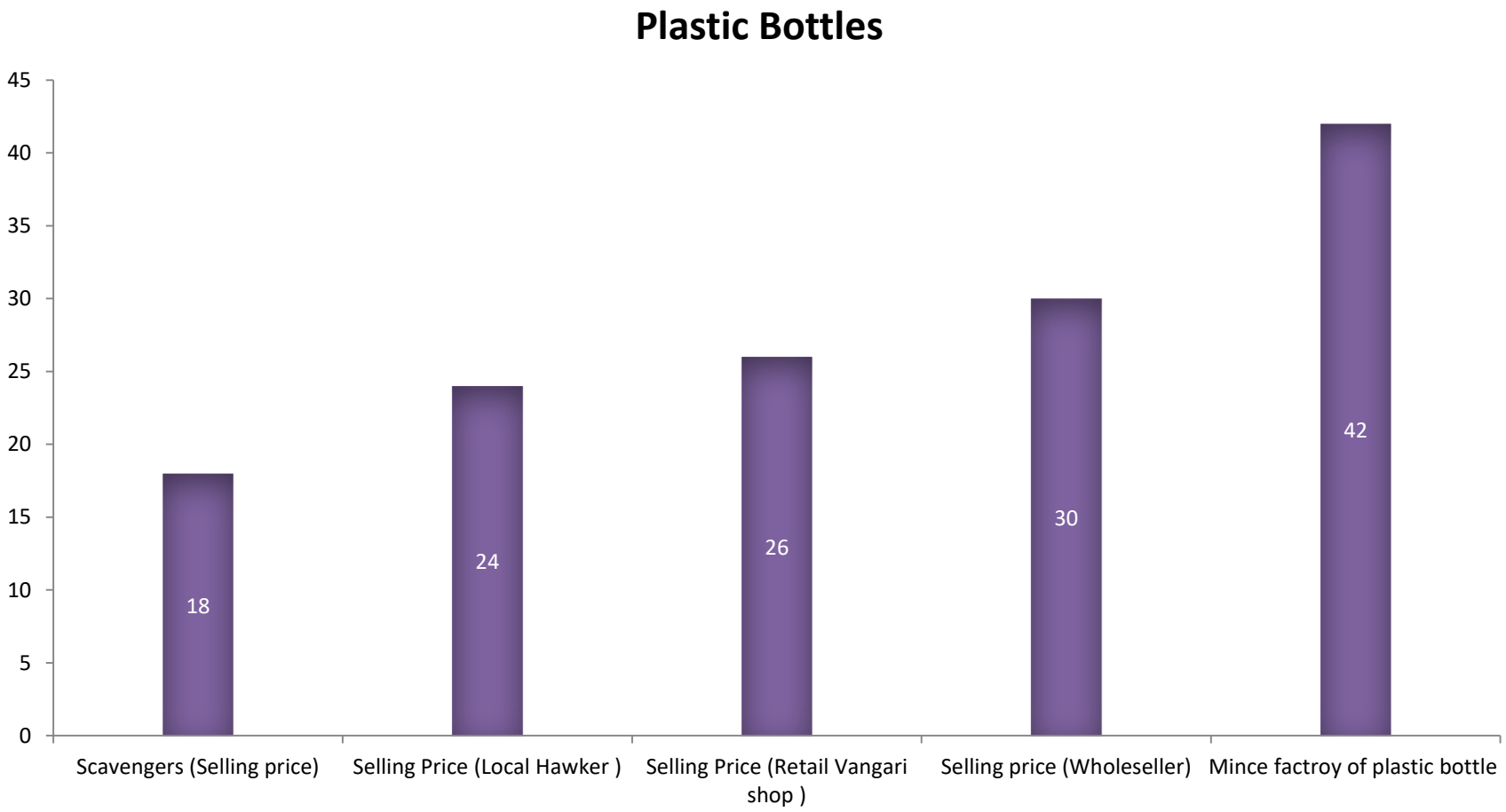


Plastic Bottles

Stock of Various of Plastic Bottles

Different type of Plastics

Value Addition (Approximately)



FGD with Stakeholder

Mince Machine for Plastic Bottles

Mince of Plastic Bottles

Cleaning Process of Mince

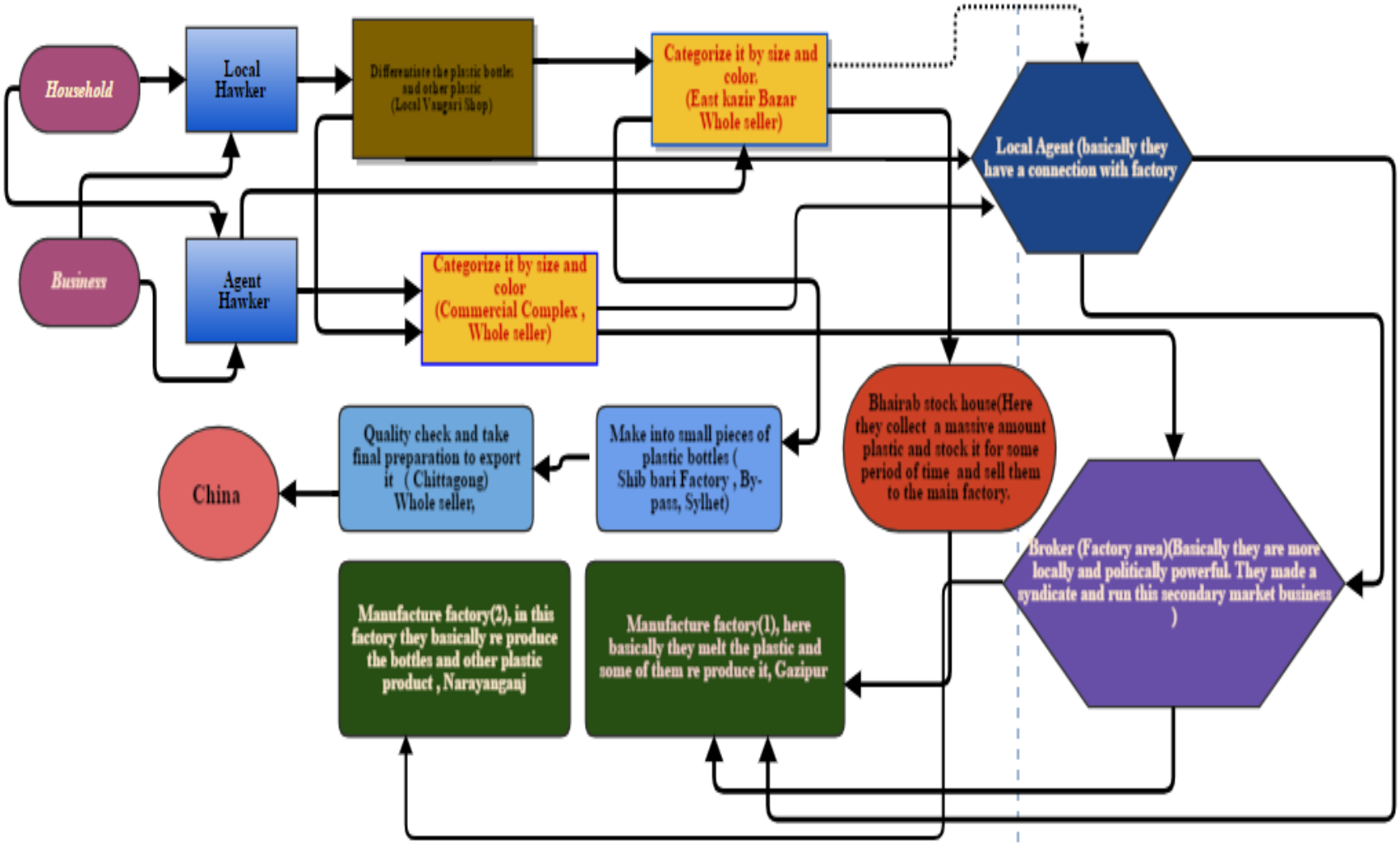
Drying and Preparing for stock

Stock and Ready for Sale

Who Are the Buyers

- Plastic Producer Company Like, RFL
- Preparing artificial rope
- Element of making Blanket
- For Construction Material

Value chain of Recyclable Products

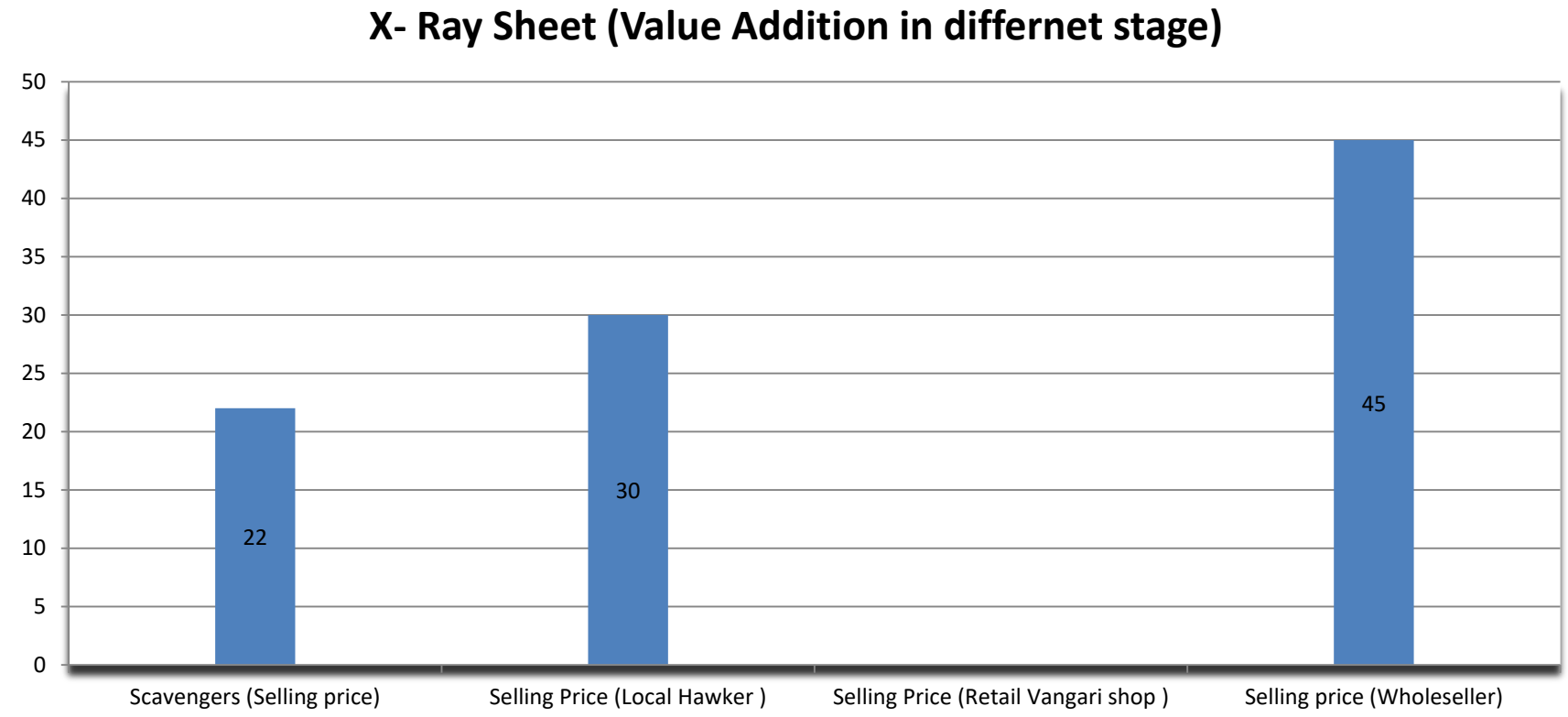


Broken Plastics (Mulam)

Sorting Broken Plastic

Polythene

Medical Items



- From the x-ray sheet they get

1. Copper
2. Silver
3. Lead

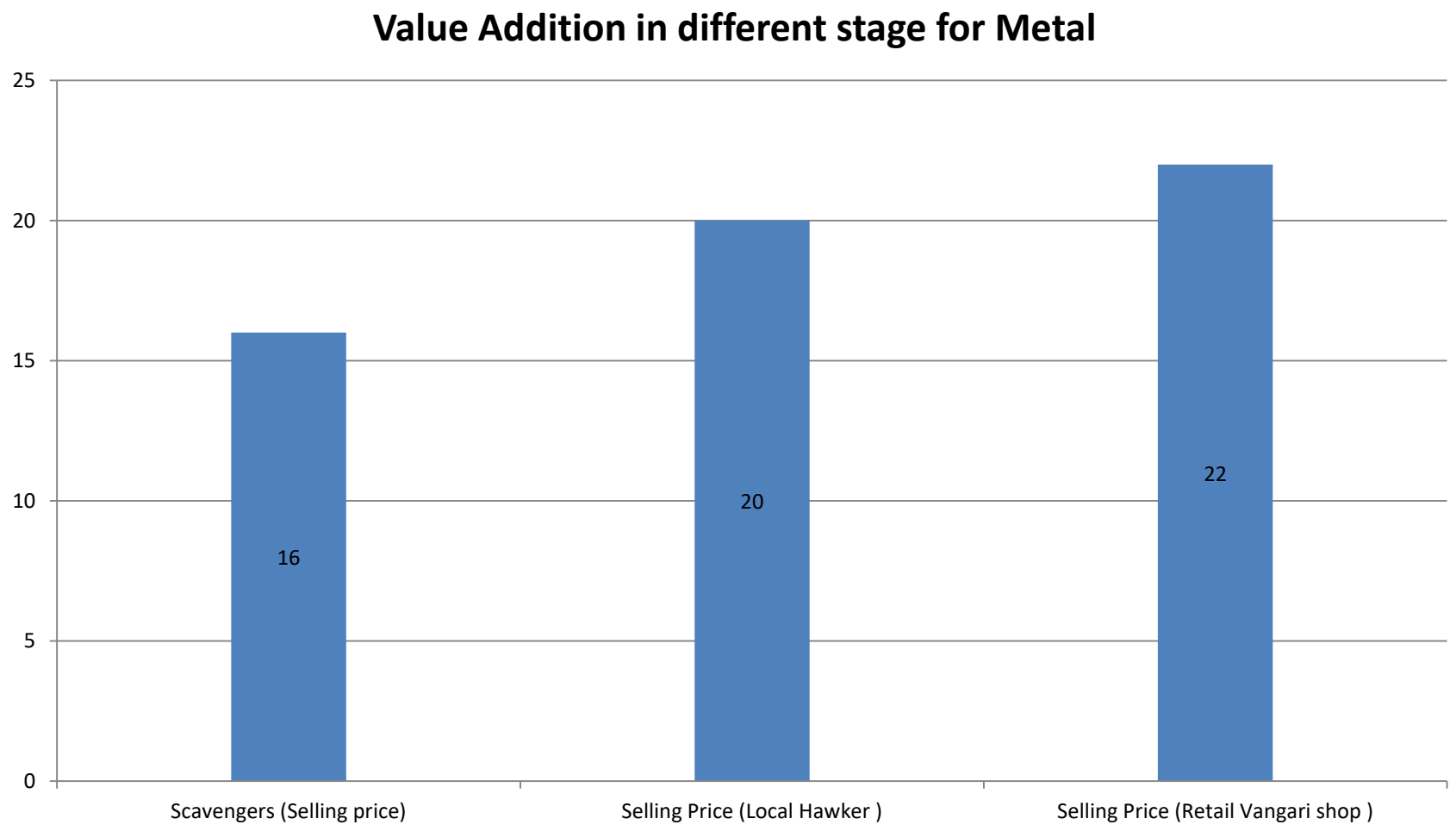
Price of other Medical items

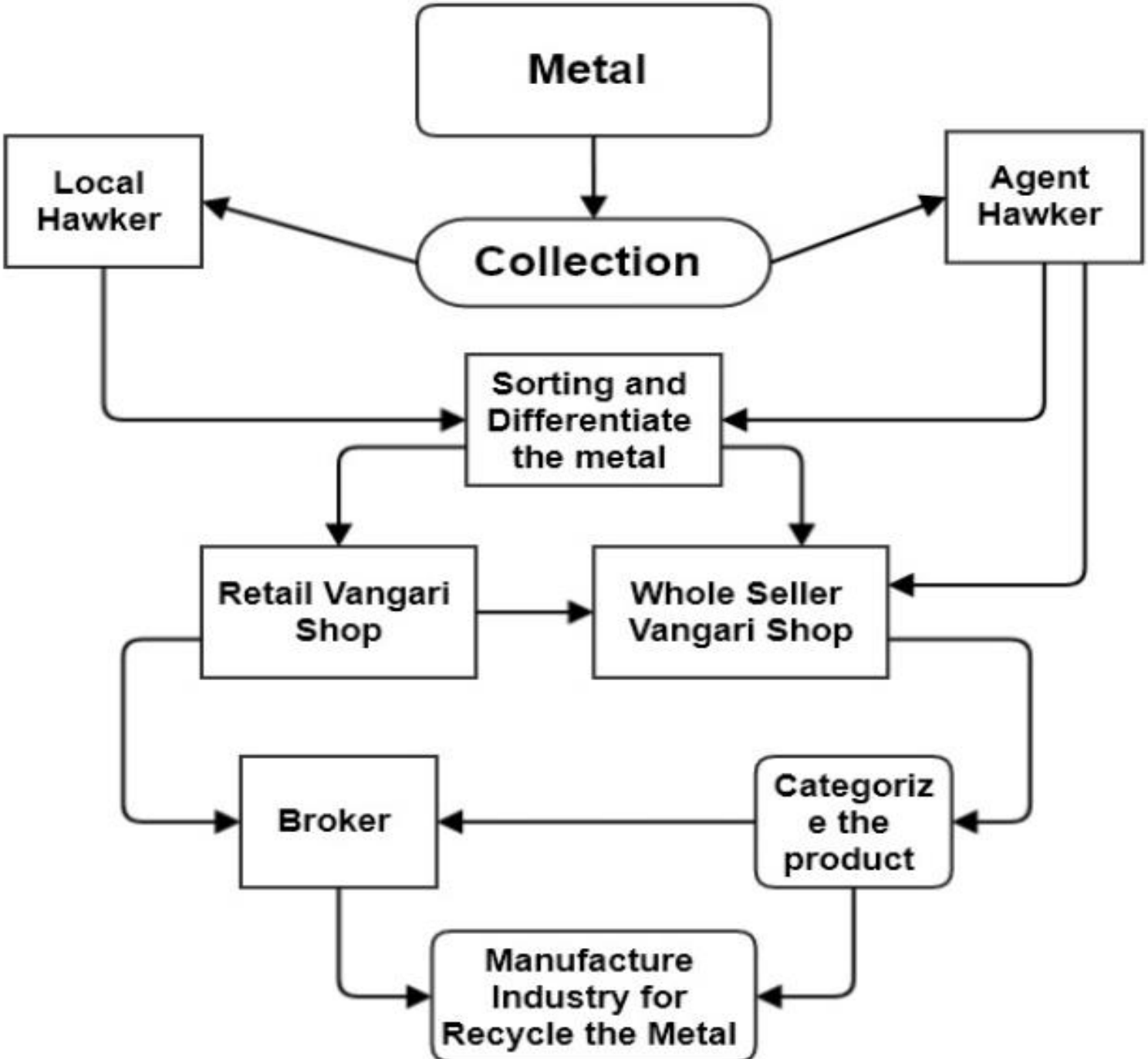
Item	Local Vangari shop selling price	Retail Vangari shop selling price	Whole seller selling price
Saline Bag		30	38
Injection	30	35	38

Bags

	Jute bag	Plastic(Polutry Bag)	Cement b
Scavengers (Selling price)			
Purchase Price (Local Hawker)	7		3
Selling Price (Local Hawker)	12		7
Purchase Price (Retail Vangari shop)			
Selling Price (Retail Vangari shop)			
Purchase Price (Wholeseller	15	12	8
Selling price (Wholeseller)	20	14	9

Metal and Tin


Value Addition in different stage for Metal
25
20
15
10
5
0
16
20
22
Scavengers (Selling price)
Selling Price (Local Hawker)
Selling Price (Retail Vangari shop)


Metal
Local Hawker
Collection
Agent Hawker
Sorting and Differentiate the metal
Retail Vangari Shop
Whole Seller Vangari Shop
Broker
Categoriz e the product
Manufacture Industry for Recycle the Metal

Stock of Tin in Vangari shop

Others Item

- Pen
- Tyer
- Oil Container
- Cartoon Box

PEN

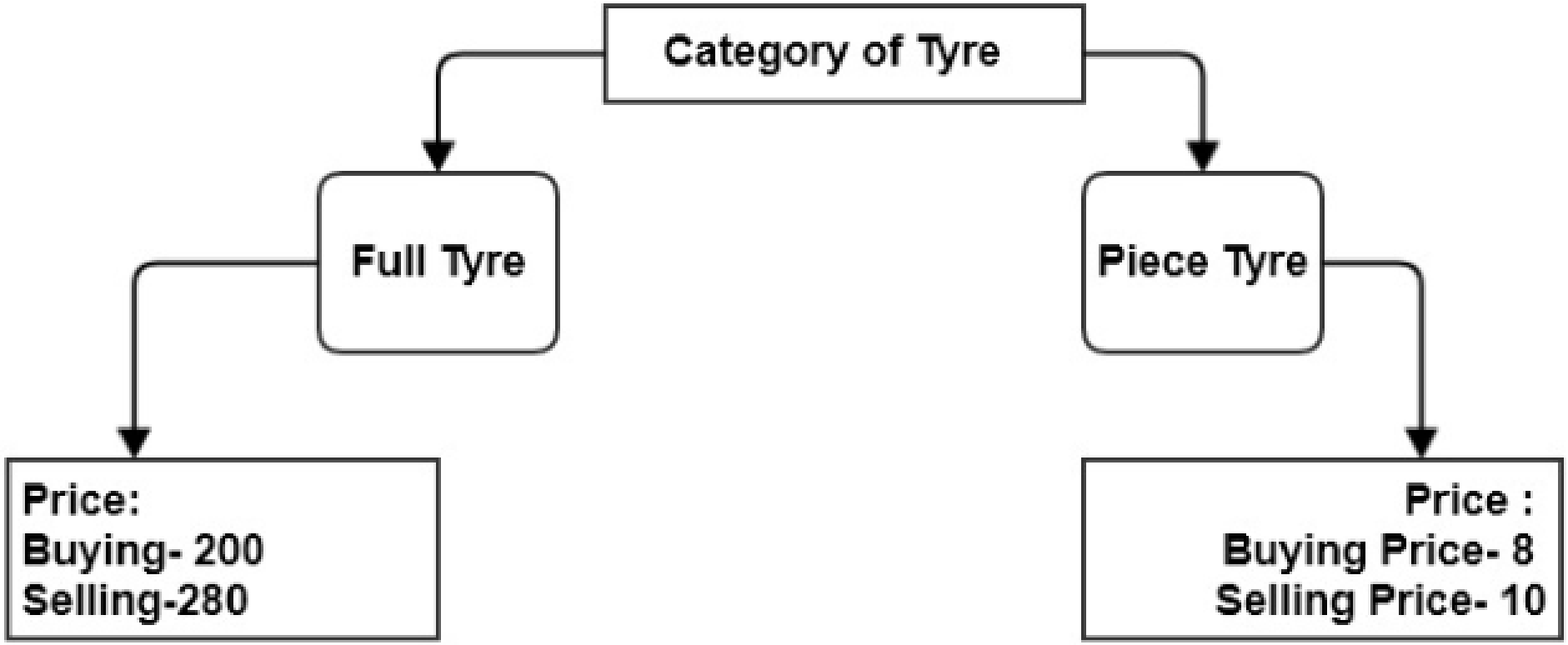
Price : Buying Price 30 Taka

Selling Price 45 Taka

- Useful Elements : Pen ball (Silver), Body, and Ink.

Tyre


মা মনি টায়ার সেন্টার
মা মনি টায়ার সেন্টার
জয় হেয়ার ড্রেসার
মা মনি টায়ার সেন্টার
জালালিয়া ট্রেডার্স
মা মনি টায়ার সেন্টার
জালালিয়া ট্রেডার্স


Category of Tyre
Full Tyre
Piece Tyre
Price:
Buying- 200
Selling-280
Price :
Buying Price- 8
Selling Price- 10

Cartoon Box

- Price of Cartoon Box

  Selling Price-16 Taka

  Buying Price- 9 Taka


Thank You