



**Welcome to the presentation of**  
**° PRODIPAN Social Business Project**  
**“Sustainable Clinical Waste Management”**

**44<sup>th</sup> Design Lab**

**17<sup>th</sup> January, 2015**



**Grameen Telecom Trust**

*Building Social Business...*

# Say No.....



# **Organization Name:**

# **PRODIPAN**

## **Executive Director & Contact Person:**

G. N. I. Faisal

## **Organization Address:**

Shaheb Bari Road,

Maheswarpasha

P.O: KUET, Khulna-9203

Ph: +88 01715016060

Email: [president@prodipan-bd.org](mailto:president@prodipan-bd.org)

Web site: [www.prodipan-bd.org](http://www.prodipan-bd.org)

# About PRODIPAN

- Prodipan is a *Bengali* term which means 'enlightenment'.
- Prodipan's first step into the world of development as a voluntary organization was during 1983 to bring to reality of creating a society where the basic needs of the people would be ensured through socio-economic development initiatives.
- Vision of Prodigian is to develop a Sustainable Society for Ensured Standard of Living and Improved Quality of Life for the Underprivileged.

# What is Clinical Waste?

- Clinical Waste refers to the wastes generated from different hospitals.
- According to World Health Organization (WHO), there are eight types of clinical wastes and all those wastes need to be disposed in a safe way.
- In Bangladesh, effective waste management has become challenging because of the fact that most hospitals in this country do not reach the optimum point of waste generation to install clinical waste management facility at individual clinic/hospital level.
- Lack of awareness; disregard to public health regulation along with profit motives of health facility owners and managers are the other crucial causes of pitiable clinical waste management condition of Bangladesh.

# Social Problems

- Clinical wastes are highly infectious as many of these wastes came in contact of patients with communicable diseases of serious nature
- In Bangladesh cities and towns are over populated due to Climate Migrations and lack of livelihood opportunities in rural set-ups. Out bear of infectious diseases like Diphtheria, Cholera, Anthrax; and Plagues can be caused from Clinical Wastes and can cause havoc.

# Project Focus

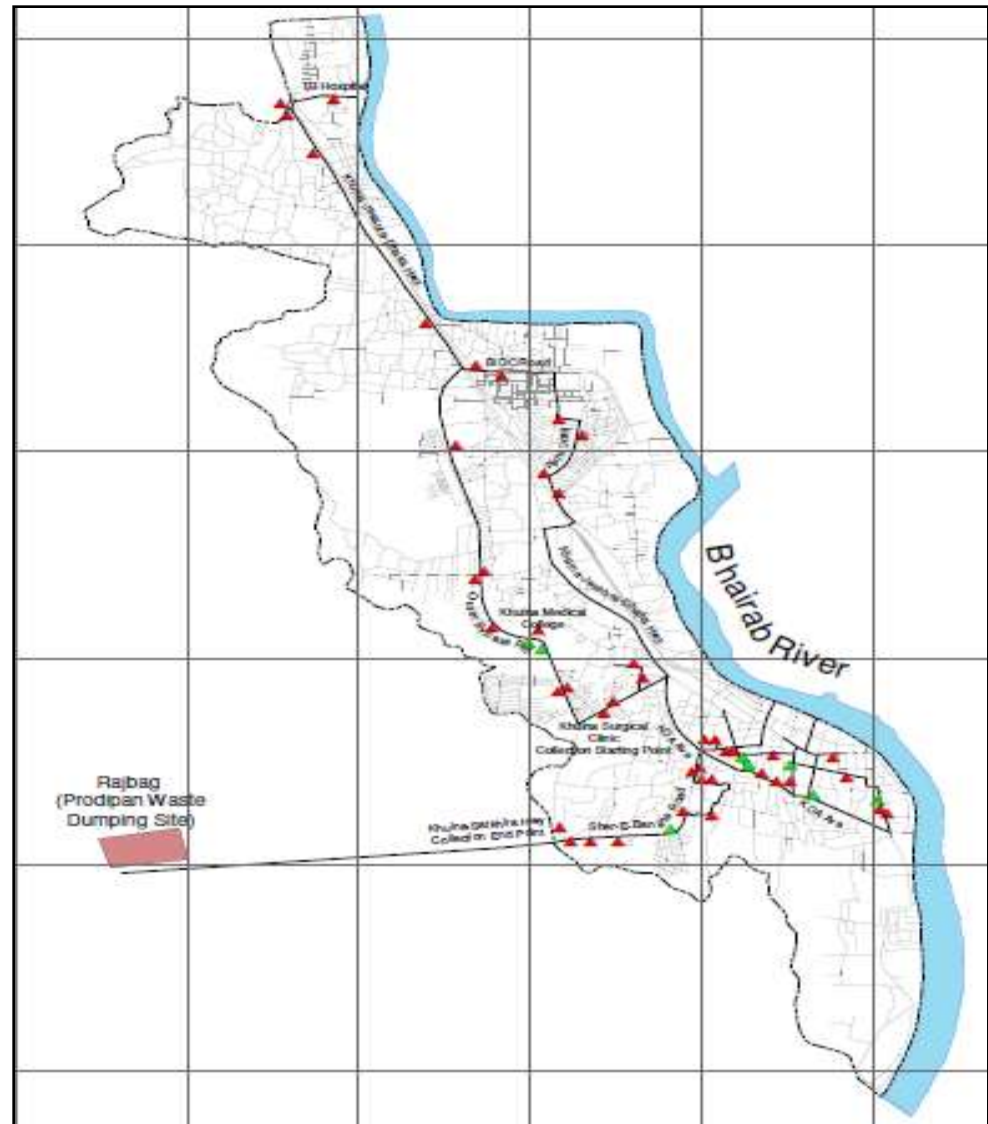
- Creation of clinical waste hazard free Khulna City through “**Sustainable Clinical Waste Management**”

## Project Location

- Razbadh Trenching Ground of Khulna City Corporation, Khulna

## Clinical Waste Collection & Disposal Route Map

# Project Map





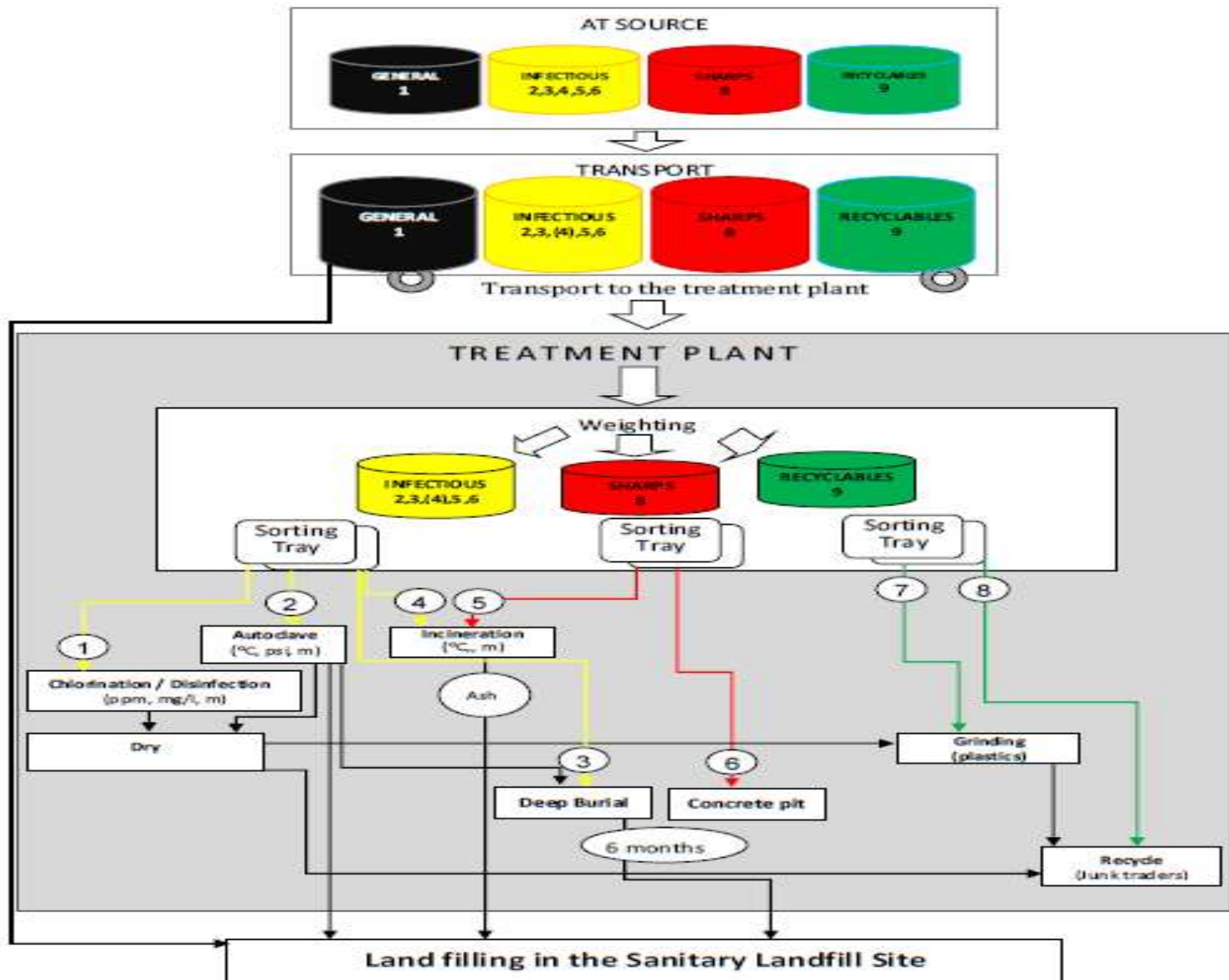
# Mechanism

- Clinical waste will be divided in four categories according to disposal possibilities.

These are:

- i) Non infectious dry and wet clinical wastes such as medicine strips, paper, food wastes
- ii) Infectious dry and wet wastes like plaster, bandage, cotton, wound dressing, surgical refuges, imputed limbs and other body parts and fluids
- iii) Sharps like Needles, scalpels, blades, broken glasses, vials,
- iv) Infusion sets and inter muscular injection sets.

# Flow Diagram of Medical Waste Management



# Business Operation

- Prodipan will develop a centralized Clinical Waste Treatment plant in Razbadh Trenching Ground of Khulna City Corporation, Khulna under a long term use.
- Under this project, Prodipan will strengthen the “separation at source” and “one stop treatment’ policy for Clinical Wastes in each and every clinic.
- Each clinic will put their clinical waste in four containers on which the name of particular waste will be clearly mentioned.
- Prodipan will collect these wastes in a covered van with four kinds of lager containers and bring the infectious Clinical Wastes to its Clinical Waste Treatment plant at Maheswarpasha.

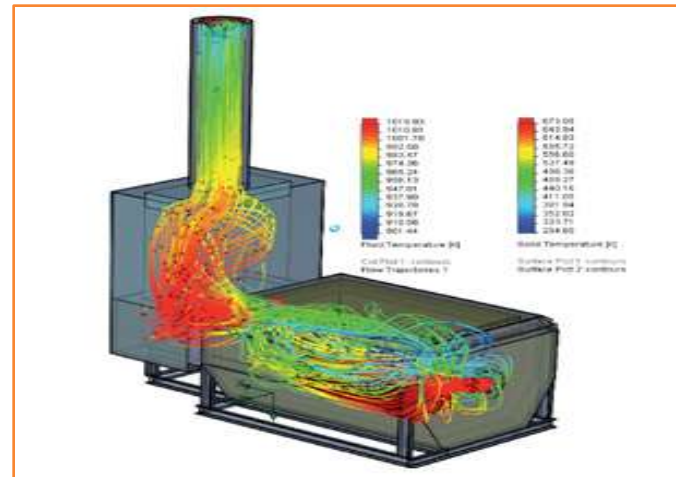
# Business Operation continued...

- All 152 hospitals, clinics and other health service facilities would dispose their clinical wastes through Prodipan's facility.
- If they do not agree, the Directorate of Environment will make sure that they have installed their own Incinerator and other Clinical Waste Management Facilities
- The service will be available 6 days a week and will remain open on festival days.
- There will be team of people with One Supervisor, One Driver, Three Waste Collectors, One Machine Operator and One Sorter.
- The salary and other allowances will come from Service Charges collected from different health care facilities.

# WASTE MANAGEMENT



## Clinical waste



Sl. No	Present Clinical Waste Treatment System	Proposed Improved Clinical Waste Treatment System
1.	Clinical waste treatment system of is only affiliated and not approved by DoE while approved City Corporation only	Clinical waste treatment system of will be duely approved by both DoE and City Corporation
2.	Separation at source is followed but no monitoring on proper disposal of infusion sets and syringes.	Very rigorous separation at source with the support of City Corporation and DoE
3.	Disposal of Clinical Waste through Prodipan is not mandatory for clinics of .	Disposal of Clinical Waste through Prodipan will be mandatory for clinics of .
4.	Clinical Waste is carried to disposal sight by normal semi-covered truck.	Clinical Waste will be carried to disposal sights in pilfer proof covered vans.
5.	Non-scientific burning of infectious wastes	Chlorine treatment of infectious waste followed by scientific incineration
6.	Infusion sets and syringes are only chlorinated before crashing	Infusion sets and syringes are autoclaved before crashing
7.	Clinical wastes are dumped and treated in unhygienic waste dumping yard of City Corporation.	Non-infectious wastes are dumped in City Corporation dumping yard and infusion sets, syringe, sharps and infectious wastes are scenically and separately treated in modernized waste treatment plants.
8.	A financially self sustainable sub-standard clinical waste management model with Quazi legal existence	A community managed financially self-sustainable modernized clinical waste management system with legal operational arrangements model.
9.	Limited Public awareness initiatives to draw support from the citizens of	Structured Public awareness initiatives to draw support from the citizens of

# Expected effects of the Project

- Have an effect on people's health. There will be less and less communicable diseases those could have been communicated through infectious clinical waste.
- There will be Less Contamination of Ground Water: Safe treatment of Clinical Waste will reduce the possibility of ground and surface water contamination.
- Scientific disposal of Clinical Waste will reduce public nuisance by controlling public presence of clinical wastes, human organs, fetus and placentas and so on.
- Scientific disposal of Clinical Waste will reduce the emission of carbon gases like Methane or Marsh gas.
- Scientific disposal of Clinical Waste will largely reduce the bulk of Clinical Waste and ease pressure on land for landfill.

# Financial Projection





# Cost of Project

Sl No.	Particulars	Prodipan (Existing)	GTT (Proposed)	Total (BDT)
1	Incinerator Building	1,000,000	-	1,000,000
2	Incinerator Machine	-	1,650,000	1,650,000
3	Pick-up Van	916,000	-	916,000
4	Cost of Electric Connection	-	150,000	150,000
5	Plastic Crashing Machine	-	190,000	190,000
6	Motor Cycle	250,000	-	250,000
7	Workshops for Motivation	223,200	-	223,200
8	Furniture and Office equipments (Annex-1)	588,500	-	588,500
9	Waste Management Accessories (Annex-1)	330,300	-	330,300
10	Tube well and Pump (Annex-1)	50,000	-	50,000
<b>Total Cost of the Project</b>		<b>3,358,000</b>	<b>1,990,000</b>	<b>5,348,000</b>

## Means of Finance

Particulars	Amount	%
Entrepreneur's Contribution (Prodipan)	3,358,000	63%
Investor's Investment (GTT)	1,990,000	37%
<b>Total</b>	<b>5,348,000</b>	<b>100%</b>

# Five Years Projected Income Statement

Particulars	Existing	1st year		2nd year		3rd year		4th year		5th year	
		Monthly	Yearly	Monthly	Yearly	Monthly	Yearly	Monthly	Yearly	Monthly	Yearly
<b>Service Income</b>											
Govt Hospital	936,680	94,809	1,137,708	100,498	1,205,970	106,527	1,278,329	112,919	1,355,028	119,694	1,436,330
Private Hospital		74,014	888,168	78,455	941,458	83,162	997,946	88,152	1,057,822	93,441	1,121,292
Clinic		75,159	901,908	79,669	956,022	84,449	1,013,384	89,516	1,074,187	94,887	1,138,638
Diagnosis Center		48,600	583,200	51,516	618,192	54,607	655,284	57,883	694,601	61,356	736,277
Pathological Centers		24,000	288,000	25,440	305,280	26,966	323,597	28,584	343,013	30,299	363,593
Sale of Crushed Plastic	47,440	75,000	900,000	79,500	954,000	84,270	1,011,240	89,326	1,071,914	94,686	1,136,229
<b>Total Service Income</b>	<b>984,120</b>	<b>391,582</b>	<b>4,698,984</b>	<b>415,077</b>	<b>4,980,923</b>	<b>439,982</b>	<b>5,279,778</b>	<b>466,380</b>	<b>5,596,565</b>	<b>494,363</b>	<b>5,932,359</b>
<b>Less: Variable Cost:</b>											
Fuel for Pick-up	179,255	17,680	212,160	18,210	218,525	18,757	225,081	19,319	231,833	19,899	238,788
Pick-up rent and Conveyance	361,800										
Servicing & Maintenance for Pick-up		1,667	20,000	1,717	20,600	1,768	21,218	1,821	21,855	1,876	22,510
Fuel for Incinerator		21,216	254,592	21,852	262,230	22,508	270,097	23,183	278,200	23,879	286,546
Maintenance for Incinerator		4,500	54,000	4,635	55,620	4,774	57,289	4,917	59,007	5,065	60,777
Chlorine		17,680	212,160	18,210	218,525	18,757	225,081	19,319	231,833	19,899	238,788
Fuel & Maintenance for Motor	35,531	4,000	48,000	4,120	49,440	4,244	50,923	4,371	52,451	4,502	54,024
Materials as and when required		8,333	100,000	8,583	103,000	8,841	106,090	9,106	109,273	9,379	112,551
<b>Total Variable Cost</b>	<b>576,586</b>	<b>75,076</b>	<b>900,912</b>	<b>77,328</b>	<b>927,939</b>	<b>79,648</b>	<b>955,778</b>	<b>82,038</b>	<b>984,451</b>	<b>84,499</b>	<b>1,013,984</b>
<b>Contribution Margin (CM)</b>	<b>407,534</b>	<b>316,506</b>	<b>3,798,072</b>	<b>337,749</b>	<b>4,052,984</b>	<b>360,333</b>	<b>4,324,001</b>	<b>384,343</b>	<b>4,612,114</b>	<b>409,865</b>	<b>4,918,375</b>
<b>Fixed Cost:</b>											
Salary & remuneration (Note-3)	390,649	126,360	1,642,680	132,678	1,724,814	139,312	1,811,055	146,277	1,901,607	153,591	1,996,688
Telephone/Mobile	5,200	500	6,000	500	6,000	500	6,000	500	6,000	500	6,000
Printing & Stationeries	1,290	300	3,600	300	3,600	300	3,600	300	3,600	300	3,600
Office Maintenance	3,840	1,200	14,400	1,200	14,400	1,200	14,400	1,200	14,400	1,200	14,400
Dumping Center Maintenance	2,157	1,500	18,000	1,500	18,000	1,500	18,000	1,500	18,000	1,500	18,000
Meeting with KCC & BMA		-	20,000	-	20,000	-	20,000	-	20,000	-	20,000
Day Observance (Environmental day)		-	10,000	-	10,000	-	10,000	-	10,000	-	10,000
Dresses	3,625	-	-	-	30,000	-	30,000	-	30,000	-	30,000
Signboard 3'x5' @ 200 per sft (one		-	7,000	-	-						
Depreciation		46,133	553,600	46,133	553,600	46,133	553,600	46,133	553,600	46,133	553,600
<b>Total Fixed Cost (FC):</b>	<b>406,761</b>	<b>175,993</b>	<b>2,275,280</b>	<b>182,311</b>	<b>2,380,414</b>	<b>188,945</b>	<b>2,466,655</b>	<b>195,911</b>	<b>2,557,207</b>	<b>203,225</b>	<b>2,652,288</b>
<b>Net Profit before Tax</b>	<b>773</b>	<b>140,513</b>	<b>1,522,792</b>	<b>155,437</b>	<b>1,865,248</b>	<b>171,388</b>	<b>2,056,658</b>	<b>188,432</b>	<b>2,261,184</b>	<b>206,640</b>	<b>2,479,678</b>
<b>Taxation (as AOP @ 22.38% avg rate)</b>			340,801		417,442		460,280		506,053		554,952
<b>Net Profit after Tax</b>	<b>773</b>		<b>1,181,991</b>		<b>1,447,805</b>		<b>1,596,378</b>		<b>1,755,131</b>		<b>1,924,726</b>
<b>Cumulative Net Profit:</b>			<b>1,181,991</b>		<b>2,629,796</b>		<b>4,226,174</b>		<b>5,981,306</b>		<b>7,906,032</b>

# Pay Back Period Analysis:

Particulars	1st year	2nd year	3rd year	4th year	5th year	6th year
Pay back period	590,996	868,683	1,037,646	1,140,835	1,709,840	-
Cash in hand available	590,996	579,122	558,732	614,296	214,886	2,653,045

# Break Even Point Analysis:

Particulars	Monthly	Yearly
<b>Contribution Margin Ratio: (CM/Rev)</b>	<b>81%</b>	<b>81%</b>
<b>Break Even Point-Sales : (FC/CM)</b>	<b>217,739</b>	<b>2,814,982</b>

# Statement of Cash Flow

Particulars	Year-0	Year-1	Year-2	Year-3	Year-4	Year-5
<b><i>Cash Inflow</i></b>						
Entrepreneur's Contribution	3,358,000	-	-	-	-	-
Investor's Investment (GTT)	1,990,000	-	-	-	-	-
Non Cash item: Depreciation	-	553,600	553,600	553,600	553,600	553,600
Net Profit	-	1,181,991	1,447,805	1,596,378	1,755,131	1,924,726
Cash Inflow Each Year	5,348,000	1,735,591	2,001,405	2,149,978	2,308,731	2,478,326
Opening Balance of Cash Surplus	-	-	1,144,596	2,277,318	3,389,650	2,477,066
<b>Total Cash Inflow</b>	<b>5,348,000</b>	<b>1,735,591</b>	<b>3,146,001</b>	<b>4,427,296</b>	<b>3,617,901</b>	<b>4,955,392</b>
<b><i>Cash Outflow</i></b>						
Plant, Equipment & Working Capital	1,990,000	-	-	-	-	-
Existing assets from Prodipan	3,358,000	-	-	-	-	-
Investment Pay Back	-	590,996	868,683	1,037,646	1,140,835	1,709,840
<b>Total Cash Outflow</b>	<b>5,348,000</b>	<b>590,996</b>	<b>868,683</b>	<b>1,037,646</b>	<b>1,140,835</b>	<b>1,709,840</b>
<b>Total Cash Surplus</b>	<b>-</b>	<b>1,144,596</b>	<b>2,277,318</b>	<b>3,389,650</b>	<b>2,477,066</b>	<b>3,245,552</b>

## Pay Back Period of the Project

Year of Return	Amount	Cumulative Amount
First Year	1,735,591	1,735,591
Second Year	2,001,405	3,736,996
Third Year	2,149,978	5,886,974
<b>Total</b>	<b>5,886,974</b>	-

<b>Pay Back Period (with in)</b>	<b>3 Years</b>
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## Investors Plan to return back the Investment:

Particulars	Period
Entrepreneur (Prodipan)	5 Years
Investor (GTT)	5 Years



**Thank You**