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Step1- Site Readiness- Required for 3 years

Shubhendu,29-April-2015
Afforestt

Pre Project Infrastructure

Sl No.	Item	Specification	Description	Photo	Status
1	Running water	Hose pipe with shower, water pump.	Make arrangements for water supply to the forest.	 	
2	Security	Fencing	To protect the forest from any cattle or human disturbance. 100% of afforestation should be protected.		
3	Maintenance Staff	Permanent on-site manpower	Ensure forest has a person (s) in-charge of watering, de-weeding and protection. Watering and de-weeding has to be done for the first three years. Number of people maintaining the forest depends on area afforested		
4	Demarcation	Limestone powder and rope	Demarcating the area to be afforested.		

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Step2- Facilities Readiness- Required during project Execution

Sunny,16-April-2015
Afforestt

Facilities Required to start the project.

Sl No.	Item	Specification	Description	Photo	Status
1	Earthwork	Machine digging capability of 1 Meter.	Organize machinery/earthmover on-site for digging and mound preparation		
2	Workers	Laborers/Volunteers	Mobilize manpower (laborers/volunteers) for all the manual work i.e. bio-mass mixing, mound leveling, plantation, mulching and watering		
3	Local logistics	Trucks/Tractors	Organize trucks/tractors as advised by Afforestt, in case material needs to be move around on-site		
4	Earthmover movement space	Space	Ensure the earthmoving machine (e.g. JCB) has space to move freely on-site.		
5	Approach to the site	Approach road	Approach road to site for the movement of earthmover and material trucks.		
6	Material Storage area	Open space close to site	Area to keep the biomass and mix it near the site.		
7	Saplings inventory area.	1 Sq Mtr= 50 Saplings storage area, with walkways	Sunlight Shielding and watering facility should be available		

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Step3- Material readiness

Sunny,16-April-2015
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Pre Project Infrastructure

Sl No.	Item	Specification	Quality parameters	Description	Photo	Status
1	Additional Soil	Only if required	Nitrogen content: Organic carbon:	Make arrangements for extra soil if required. This is a very rare situation that arises if the soil has too many rock boulders, consists of construction waste or is completely dead with no organic content or minerals		
2	Biomass-Perforation	>Paddy husk	Zero seed content Zero Dust	Organize biomass on-site as advised and finalized by Afforestt - The client needs to find suppliers of the biomass (manure, perforator and retainer) required and get it transported to the site in easy to handle packaging. Types of biomass mentioned in Cost estimation sheet		
3	Biomass-Water Retention	>Coco Peat:	Loose, moisture content 15%. Fiber/Coir less. Sieved (Filtered)			
4	Biomass-Nutrition	>Compost / Farmyard Manure/ Leaf Mole/Vermi Compost	Odourless Dry 100% Decomposed Nitrogen Content:			
5	Seedlings (plants)	Small bag size 4 X 6 inches to 6 X 8 inches. As per the species list by Afforestt)		Organize saplings on-site as advised and finalized by Afforestt - Finding suppliers and transporting the saplings to the site. Afforestt team will visit the sapling supplier if required		
6	Support for the plants	Sticks and ropes	Height" 1 to 1.2 Meters	Organize sticks and ropes for supporting the plants - Supply and transport		
7	Mulching	Straw		Organize mulching material (straw, rope, wooden pegs) - Supply and transport		
8		Wooden/Bamboo Pegs	1.5 to 2 feet			
9		Rope	To tie down the mulch. Not very thick			

How to select tree species for plantation.

Go to the link below for detailed step by step procedure
https://docs.google.com/spreadsheets/d/1bbjnTLI9aI4p_TpLGzvJE923GG_rA5aL6N_XIqC1U4Q/edit?usp=sharing

Step1	Make a database of all native species of your area. (Sample database in the end of this sheet)	
	Items in database:	
	Botanical Name:	The scientific name of the tree, sometimes you may find more than one scientific name of the tree, use the most common used scientific name in this case.
	Common Name in Local Languag	List down what these trees are called locally, try to write the names in local language script, it will most useful during procurement.
	Common English Name:	
	Type:	Find out and list down whether the tree is Evergreen, Deciduous or Perennial.
	Advantage:	A tree can have various advantages, however we want to restrict the listing to, fruit, bird-attracting, flowering, wood, medicinal.
	Height	Tallest the specie of that tree can grow. (Use maximum height, not average)
	Layer	Assign layer:
		A multilayer forest can have many layers but here we are going make every tree listed in the database fit into either of 4 layers.
		Shrub Layer: Also know as undergrowth, these are small trees which grow up to a maximum of human height or a little taller.
		Sub Tree Layer: Trees which are taller than human but in comparison to normal trees found in forest are still small
		Tree Layer: Common trees based on average height of trees in your geography.
		Canopy Layer: Trees that grow into giants, these are the tallest trees in the local forest.
		Fix the layers based on the height range of trees.
		For Example, in India the tallest tree grows up to 50 Meters, Shrub Layer = 2-6 Meters, Sub Tree= 6-15 Meters, Tree= 15-35 Meters and everything taller than 35 Meters is Canopy
		Mark each row with different color based on the tree's layer.
Step2	Check the native species saplings availability in the nursery on following criteria.	
	Bag Size	Bag size of saplings should be not bigger than 6" X 8". 6" X 4" is a good bag size, we have planed saplings from even smaller bags and they have given the same results.
	Age of sapling	Should not be more than 8 months. Ideal age would be 4-6 months.
	Height of sapling	Should be less than 1 Meter. Ideal height is 30 Centimeters to 60 Centimeters .
		List down the availability in copy of species database.
Step3	Assigning Percentages to available species.	
	Major Species	Choose 5 different species to be the major forest species, these should be the species which you commonly find in your area.
		Assign 8 to 10 percent to each of them. This will constitute 40-50% of number of trees in the forest.
	Supporting Species	Assign 2-4% to each specie to other common species of the area, the total will be 25-40%
	Minor Species	Assign 0.2- 1% to other native species of the area.*
		*We should try to plant as many species as possible for biodiversity. However in smaller areas the species which has percentage assigned below 0.5 % may not get included while p
	Percentage correction	Tweaking the percentage distribution based on categorical subtotals
	Based on Type:	We want to create an evergreen forest, so total percentage of evergreen species should exceed 70%.
	Layer wise distribution:	Subtotal of each layer should vary between the given range.
		Shrub Layer: 8 to12 %
		Sub Tree Layer 25 to 30%
		Tree Layer 40 to 50%
		Canopy Layer 15 to 20 %
	Advantage	Assign higher percentages to trees based on their advantage of your choice, Exapmle: if you are planting a fruit forest, 50% of the species should be fruit bearing.

Sl. No.	Botanical Name	on Name in Local Lang	ommon English Nam	Type	Advantage1	Advantage2	Ht. in Mtrs.	Layer	Availability	Percentage	Quantity
Example 1	Azadirachta indica	Turakabevu	Neem	Evergreen	Medicinal		25	Tree	Yes	8	24
Example 2	Tectona grandis	Sagavani	Teak	Deciduous	Timber		40	Canopy	Yes	3	9
Example 4	Punica granatum	Daalimbe	Pomegranate	Perennial	Fruit	Birds	8	Sub Tree	Yes	2	6
Example 5	Jasmine sambac	Dundu Mallige	Jasmin	Evergreen	Flower		3	Shrub	Yes	2	6

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Cost Estimation-India

Summary:-			Project Execution Cost		
Area covered (Sq. Mtrs)	Facilities	Materials		Total Execution Cost
1,000 [1]	131,700	60,000		191,700
Cost per Sq. Mtrs.				192

Facilities

Sl	Facility	Specification	Requirement/ Sq Mtr	Unit	Approx. Req.	Approx. Unit Cost	Sub Total
1	Earthmover	1) Earthmover machine to dig soil till depth of 1 meter. (Example: JCB 3DX)	0.06	Hours	60	700	42,000
2	Manpower	Manual labor /Volunteers	0.06	Man Days	60	300	18,000
Facilities Subtotal							60,000

Material

Sl	Raw material	Specification	Requirement/ Sq Mtr	Measurement Unit	Quantity	Unit Rate (Rs.)	Sub Total
1	Extra Soil (if required)	>Biomass rich. >Pours	0.02	Cubic meter (m^3)	20	0	0
2	Biomass-Perforation	>Paddy husk	6	Kg	6,000	3	18,000

3	Biomass-Water Retention	>Coco Peat	6	Kg	6,000	2.5	15,000
3	Biomass-Nutrition	>Compost	5	Kg	5,000	4.3	21,500
5	Mulch Straw	>64 kg pallets.	0.1	Cubic meter (m^3)	100	13	1,300
7	Rope	> Std. block.	1	Mtrs.	1,000	2	2,000
8	Wooden Pegs	>33 Cms. long. >3 cm Dia.	0.3	Nos	300	3	900
9	Saplings	>Max height = 1 Mtrs. >Bag sire 4"X6" OR 6"X8" > As per the list Approved by Afforestt	3	Nos	3,000	22	66,000
10	Support Sticks	>Max height = 1 Mtrs.	1.5	Nos	1,500	1	1,500
11	Lime Stone Powder	>Std. 1kg Bags	0.01	Kg	10	50	500
3	Material Logistics	Regular Transport	0.05	Trips	50	100	5,000
Material Subtotal							131,700

Pre-execution schedule.

Shubhendu, 18th May 2015
Afforestt

Sl	Item	Responsibility: Organisation	Person in Charge	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20	D21	D22	D23	D24	D25	D26	D27	D28	D29	D30	D31	D32	D33	Status
	Site Visit	Client		O																																	
	Soil Testing- Site	Afforestt				O																															
	Soil Survey-Assigning Soil Type	Afforestt				O																															
	Selection of biomass for soil conditioning based on soil strata and test results.	Afforestt						O																													
	Calculation of quantified biomass requirement for every 100 Sq Mtrs.	Afforestt						O																													
	Native Species Survey	Afforestt																																			
	Native Species Database Development	Afforestt																																			
	Quality inspection of the biomass ingredient material at source.																																				
	Husk	Afforestt										O																									
	Peat	Afforestt										O																									
	Manure	Afforestt											O																								
	Mulch	Afforestt									O																										
	Saplings	Afforestt			O																																
	Support Sticks	Afforestt			O																																
	Mulching Pegs	Afforestt													O																						
	Lime Stone	Afforestt															O																				
	Assigning the forest type based on client's requirement.	Afforestt		O																																	
	Selection of Species for forest plantation	Afforestt																																			
	Making of species ordering list.	Afforestt						O																													
											O																											
	Mandatory Site Readiness																																				
	Running water	Client																																			
	Demarcation	Client																																			
	Earthmover movement space	Client																																			
	Earthmover approach to the site	Client																																			
	Material Unloading and mixing area close to the site.	Client																																			
	Saplings storage area	Client																																			
	Facilities Readiness																																				
	JCB	Client																																			
	Labor	Client																																			
	Material Readiness																																				
	Perforator-Paddy husk																																				
	Specification and Quantity fixing	Client																																			
	Vendor fixing	Client																																			
	PO release	Client																																			
	Quality Check of pickup batch	Afforestt																																			
	Procurement	Client																																			
	Water retainer-Coco Peat																																				
	Specification and Quantity fixing	Client																																			
	Vendor fixing	Client																																			
	PO release	Client																																			
	Quality Check of pickup batch	Afforestt																																			
	Procurement	Client																																			
	Fertilizer-Compost																																				
	Specification and Quantity fixing	Afforestt																																			
	Vendor fixing	Client																																			
	PO release	Client																																			
	Quality Check of pickup batch	Afforestt																																			
	Procurement	Client																																			
	Mulch-Paddy Straw																																				
	Specification and Quantity fixing	Afforestt																																			
	Vendor fixing	Client																																			
	PO release	Client																																			
	Quality Check of pickup batch	Afforestt																																			
	Procurement	Client																																			
	Wooden Pegs																																				
	Specification and Quantity fixing	Afforestt																																			
	Vendor fixing	Client																																			
	PO release	Client																																			
	Quality Check of pickup batch	Afforestt																																			
	Procurement	Client																																			
	Rope																																				
	Specification and Quantity fixing	Afforestt																																			
	Vendor fixing	Client																																			
	PO release	Client																																			
	Quality Check of pickup batch	Afforestt																																			
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	Procurement	Client																																			

Project Execution Rundown Plan

Afforesation Area (Fixed)	1,000	Sq. Mtrs.	
Execution Time (Variable)	10	Days	(additional 2 days for reaching peak efficiency)
Daily Area Covered	100	Sq. Mtrs.	

Consumption

Item	Per Sq Mtr	Unit	Unit Cost	Qty Per day	Per day cost	Total Qty	Total Cost
Facility							74,000
JCB	0.08	Hours	600	8	4,800	80	48,000
Tipper	0.02	Hours	100	2	200	20	2,000
Manpower	0.08	Mandays	300	8	2,400	80	24,000
Material							143,850
Husk	0.006	Ton	2,200	0.6	1,320	6	13,200
Peat	0.006	Ton	2,500	0.6	1,500	6	15,000
Manure	0.005	Ton	4,500	0.5	2,250	5	22,500
Mulch	0.002	Ton	12,000	0.2	2,400	2	24,000
Saplings	3	Numbers	21	300	6,300	3,000	63,000
Sticks	1.5	Numbers	1	150	150	1,500	1,500
Pegs	0.3	Numbers	3	30	90	300	900
Rope	0.01	Kg	250	1.0	250	10	2,500
Lime Stone	0.025	Kg	50	2.5	125	25	1,250
Management							50,000
Supervision	0.005	Mandays	10,000	1	5,000	5	50,000
				Subtotal	**26,785**		**267,850**

			D-Day	Day1	Day2	Day3	Day4	Day5	Day6	Day7	Day8	Day9	Day10	Day11	Day12	Day13
	Planned Efficiency %		20	20	50	50	80	80	100	100	100	100	100	100	100	100
	Sq Mtrs		20	20	50	50	80	80	100	100	100	100	100	100	100	
Facilities																
	Unit	Unit Capacity	Requirement													
JCB	Earthmover	8	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Tipper	Tractor-Trolley	8	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Manpower	Head	1	2	2	4	4	7	7	8	8	8	8	8	8	8	0
Materials Consumption																
Husk	Ton		0.12	0.12	0.30	0.30	0.48	0.48	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Peat	Ton		0.12	0.12	0.30	0.30	0.48	0.48	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Manure	Ton		0.10	0.10	0.25	0.25	0.40	0.40	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Mulch	Ton		0.04	0.04	0.10	0.10	0.16	0.16	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Saplings	Numbers		60	60	150	150	240	240	300	300	300	300	300	300	300	300
Sticks	Numbers		30	30	75	75	120	120	150	150	150	150	150	150	150	150
Pegs	Numbers		6	6	15	15	24	24	30	30	30	30	30	30	30	30
Rope	Kilograms		0	0	1	1	1	1	1	1	1	1	1	1	1	1
Lime Stone	Kilograms		1	1	1	1	2	2	3	3	3	3	3	3	3	3
Supervision and Project management																
Materials Stock																
		Opening Stock														
Husk		24	24	24	23	23	23	22	22	21	20	20	19	19	18	17
Peat		24	24	24	23	23	23	22	22	21	20	20	19	19	18	17
Manure		20	20	20	20	19	19	19	18	18	17	17	16	16	15	15
Mulch		8	8	8	8	8	8	7	7	7	7	7	6	6	6	6
Saplings		12,000	11,940	11,880	11,730	11,580	11,340	11,100	10,800	10,500	10,200	9,900	9,600	9,300	9,000	8,700
Sticks		6,000	5,970	5,940	5,865	5,790	5,670	5,550	5,400	5,250	5,100	4,950	4,800	4,650	4,500	4,350
Pegs		1,200	1,194	1,188	1,173	1,158	1,134	1,110	1,080	1,050	1,020	990	960	930	900	870
Rope		40	40	40	39	39	38	37	36	35	34	33	32	31	30	29
Lime Stone		100	100	99	98	97	95	93	90	88	85	83	80	78	75	73

Materials Procurement			1 June 2015	2 June 2015	3 June 2015	4 June 2015	5 June 2015	6 June 2015	7 June 2015	8 June 2015	9 June 2015	10 June 201:	11 June 201:	12 June 201:	13 June 201:	14 June 201:
	Order Qty	Unit	D-Day	Day1	Day2	Day3	Day4	Day5	Day6	Day7	Day8	Day9	Day10	Day11	Day12	Day13
Husk	2	Ton														
Peat	16	Ton														
Manure	6	Ton														
Mulch	6	Ton														
Saplings	10000	Numbers														
Sticks	5000	Numbers														
Pegs	1000	Numbers														
Rope	50	Kilograms														
Lime Stone	50	Kilograms														

Open Issues sheet- Afforestation Project

Sl	Open Issue	Date of register	Expected date of resolve	Responsibility

[1] Afforestt:
Enter total area here.