

**DETAILED BUDGET ON THE COMMERCIALIZATION AND
INDUSTRIAL SCALE-UP ON THE PRODUCTION OF NIPRD
ESSENTIAL OIL FROM *Eucalyptus citriodora* PLANT**

13.1 Cost of; procurement of items to facilitate the smooth running of the 500-litres capacity steam distillation equipment.

S/No	Item Description	Quantity	Unit cost (N)	Amount (N)
1a.	30 KVA power diesel generator	1 complete set	18,000,000	18,000,000.00
1b.	12 mm electric cable	30 meters	255,000.00	255,000.00
1c.	Change over switch	1	160,000.00	160,000.00
1d.	Installation/logistics	1	585,000.00	585,000.00
2a.	Procurement of Cooling tower fan motor (2 KW).	1 set	400,000.00	400,000.00
2b.	Starter switch contactor for Fan electric motor	3	50,000.00	150,000.00
2c.	Three Phase electrical imprevener	3	25,000.00	75,000.00
3a.	Steam boiler: Burner contactor (100A)	2	80,000.00	160,000.00
3b.	2.5 mm electric cable	30 m	3,000.00	90,000.00
4a.	Stainless steel steam pipes – (16 lengths of 2")	16 lengths of 2" diameter	235,000.00 / length	3,760,000.00
4b.	Stainless steel water pipes – (8 lengths of 1 3/4")	8 lengths of 1 3/4"	215,000 / length	1,720,000.00
4c.	Stainless steel water pipes – (5 lengths of 1 1/2")	5 lengths of 1 1/2"	185,000 / length	925,000.00
4d.	Stainless steel water pipes - 11 lengths of 2"	11 lengths of 2"	235,000 / length	2,585,000.00

4e.	Workmanship for welding, alignment and installation		2,040,000.00	2,040,000.00
4f.	Pipe accessories and logistics cost		1,200,000.00	1,200,000.00
5.	Automatic Polarimeter for Optical Rotation. Model – Veidt INESA WXG-4	1 unit	800,000.00	800,000.00
6.	Digital Viscometer (10 - 100,000 mPa's)			
	Specification - <i>Digital lab rotation viscosity meter $\pm 3\%$ accuracy fluidity meter tester with 4 rotors and temperature probe (110-240v) NDJ-5S</i>	1 unit	1,200,000.00	1,200,000.00
	<i>Features; Compact design, variable spindle/rotor speed, Data storage, Versatility, Accuracy and repeatability, Digital display, Temperature measurement, Integrated time, Spindle set.</i>			
7.	Tabletop digital refractometer (BRIX ABBE)			
	Model name/number; BNWYA-2S/3S 0-100%			
	Features.	1 unit	1,700,000.00	1,700,000.00
	1. Sapphire prism, temperature control, 8-inch color touch screen.			
	2. Brix: 0-100%, high resolution: Brix: 0.01%			
	Estimated freight charges, insurance, tax on items to be imported:			950,000.00
			Subtotal	36,855,000.00

13.2 List of materials needed for the project

S/No	Description of item	Quantity	Unit Cost (N)	Amount (N)
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1	<i>Eucalyptus citriodora</i> leaves (twigs only)	22,000 kg	1,100.00 / kg	24,200,000.00
2	Packaging (20ml glass bottles with Aluminum screw lids, stickers and paper box)	10,000 units	1,500.00	15,000,000.00
3	Transport of plant materials to the facility for the 10 weeks duration	50 trips (440 Kg/ trip)	80,000.00	4,000,000.00
4	Labour for Ad-Hoc staff for the proposed 10 weeks duration	750 hrs.,	8334.00/hr	6,250,000.00
Subtotal -				49,450,000.00

13.3 List of daily running costs for production during the proposed 10 weeks duration

S/No	Description of item	Quantity	Unit Cost	Amount (N)
1	Diesel fuel for running generator (14.62L/hr)	8772 liters	1140.00/hr	10,000,000.00
2	Diesel fuel for running the steam generator boiler (12.5L/hr)	7500 liters	1140.00/hr	8,550,000.00
3	Charges for the use of water supplied	750 hrs.	4000/hr	3,000,000.00
Subtotal				21,550,000.00

13.4 Cost of new 1000-liter capacity steam distillation equipment for the Industrial scale-up.

S/No	Description of item	Quantity	Unit Cost (N)	Amount (N)
1.	Steam distillation apparatus (SD-1000L)			
	<i>Features:</i>			
	<i>Distillation kettle (1000L capacity)</i>			
	<i>Re-distillation pipe</i>			
	<i>hydrosol mixing tank</i>			
	<i>multi-stage high-efficiency condensation tower</i>	1 unit	35,775,000.00	35,775,000.00
	<i>secondary oil-water separator, top fragrance condensing device, gas steam boiler and other related pipelines.</i>			
	Estimated freight charges, insurance, tax on items to be imported:			15,550,000.00

Contingency expenses (10 %)	5,132,500.00
Subtotal	56,457,500.00

13.5 List and cost of glassware needed for the project

S/N	Item description	Quantity	Unit Price (Naira)	Amount (Naira)
1.	TLC glass plates GF 254 (5cm x 10cm) / plate, 40 plates/pack. (Qingdao HaiYang Chemical Company, China)	10 cartons	7000 /pack 70,000 / carton	700,000.00
2.	TLC glass tanks – (10 x 20 cm) / set	4 sets	30,145.00	120,580.00
3.	Glass rod 8 x 500mm	10 sets	180.50	1,805.00
4.	Forceps – 30cm, 20cm long	15 pcs	210.00	3,150.00
5.	Glass pipettes –			
	15cm long	500 pcs	90.50	45,250.00
	30cm long	500 pcs	120.00	60,000.00
6.	Glass pipettes rubber fillers (2ml)	20 pcs	90.00	1,800.00
7.	Glass Separating funnel	250 ml (5pcs)	2,500.00	12,500.00
		500 ml (5pcs)	5,200.00	26,000.00
		1 liter (10pcs)	7,000.00	70,000.00
		3 liters (2 pcs)	10,000.00	20,000.00
		5 liters (2 pcs)	15,000.00	30000.00
8.	Glass pycnometer	50ml (5pcs)	8000.00	40,000.00
		25ml (5pcs)	5000.00	25,000.00
		10ml (5pcs)	3000.00	15,000.00
9.	Glass round bottom flasks (various sizes)	10ml (50pcs),	950.50	47,525.00
		25ml (20pcs),	1000.00	20,000.00
		50ml (20pcs),	1500.00	30,000.00
		250ml (20pcs),	2500.00	2,500.00
		500ml (10pcs),	4000.00	80,000.00
		1L (10pcs),	6000.00	6,000.00
		2L (10pcs)	8000.00	80,000.00
10.	Glass round bottom flasks connector mouth	29/24 (3 sets)	5,000.00	15,000.00
		29/19 (3 sets)	5,000.00	15,000.00

11.	Glass measuring cylinders	5ml (30pcs)	1,011.00	30,330.00
		10ml (20pcs)	1,013.00	20,260.00
		250ml (20pcs),	1197.00	23,940.00
		500ml (10pcs),	33,277.00	332,770.00
		1L (10pcs),	21,408.00	214,080.00
		2L (10pcs)	71,677.00	716,770.00
12.	Glass beakers	5ml (30pcs)	6,062.00	181,860.00
		10ml (20pcs)	6,029.00	120,580.00
		250ml (20pcs),	11,759.00	235,180.00
		500ml (10pcs),	14,518.00	145,180.00
		1L (10pcs),	29,996.00	299,960.00
		3L (10 pcs)	35,000.00	350,000.00
		5L (10pcs)	40,000.00	400,000.00
13.	Melting point Capillary tubes	40 pks	5,000.00	20,000.00
14.	Glass desiccator (30cm diameter) with desiccant	1 set	40,000.00	40,000.00
15.	Densitometer for volatile oil	1 set	35,800.00	35,800.00
	Estimated freight charges, insurance, tax for items to be imported:			950,000.00
Subtotal -				6,426,550.00

13.6 List and cost of solvents needed for the project

16.	Methanol (HPLC grade) by Sigma-Aldrich	2.5L (12pcs)	40,000	480,000.00
17.	Hexane (Analar grade 99%) by Sigma-Aldrich	2.5L (12pcs)	40,000	480,000.00
18.	Standard distilled water by Sigma-Aldrich	2.5L (12pcs)	30,000	360,000.00
Subtotal -				1,320,000.00

13.7 List and cost of chemicals needed for the project

19.	Sodium Sulphate pentahydrate salt (99% Sigma-Aldrich or BDC)	20 x 500g	30,000.00	600,000.00
20.	1,8-Cineole (99% Reference standard)	2 x 100 mg	700,000.00	1,400,000.00

CAS number - 470-82-6				
21.	Alpha-pinene (99% Reference standard)	2 x 100 mg	510,000.00	1,020,000.00
CAS number - 80-56-8				
22.	Camphene (99% Reference standard)	2 x 100 mg	490,000.00	980,000.00
CAS number – 79-92-5				
23.	<i>p</i> -cymene (99% Reference standard)	2 x 100 mg	310,000.00	620,000.00
CAS number – 99-87-6				
24.	Silica Gel			
	60-80 micron	10 cartons	45,000/carton	450,000.00
	100-200 micron	10 cartons	45,000/carton	450,000.00
	300-400 micron	10 cartons	55,000/carton	550,000.00
25.	Sephadex LH-20			
	a. 100g (China)	2 pack x 100g	200,000.00	400,000.00
	b. 500g (China)	3 pack x 500g	900,000.00	2,700,000.00
26.	5ml syringe	10 boxes	10,000.00	100,000.00
27.	Parafilm roll – (10cm x 38 cm roll)	2 sets	32,900.00	65,800.00
Estimated freight charges, insurance, tax for items to be imported:				350,000.00
Sub-total:				9,685,800.00

13.8 Literature, documentation, information

S/N	Item description	Quantity	Unit Cost (N)	Amount (N)
1.	Stationeries for results, reports and filing (3 cartons of A-4 paper)	3 ctns	10,000.00	30,000.00
2.	3-in-1 Hp Lazer-jet black & white Printer (A4 paper size)	1 unit	2,500,000.00	2,500,000.00
3.	Toners cartridges for the Hp printer	3 sets	200,000.00	600,000.00
Sub-total:				3,130,000.00
Grand Total:				184,874,850.00

Grand Total - One hundred and eighty-four million, eight hundred and seventy-four thousand, eight hundred and fifty naira only (N184,874,850.00)