Budget for: The Smart Portable Ventilator: Integrating IoT and Mobility for Equitable Respiratory Care

Total Funding Requested: ₦19,580,000

1. Personnel & Expertise (₦4,440,000)

This covers the core team required to execute the commercialization phase.

Item	Description	Calculation	Cost (₦)
Project Lead/ Biomedical Engineer	Oversight of entire production, quality control, and deployment.	12 months @ ₦100,000/month	1,200,000
Software/ IoT Engineer	Firmware refinement, cloud infrastructure management, app support.	12 months @ ₦70,000/month	840,000
Electronics Technician (2)	Assembly, testing, and troubleshooting of ventilator units.	2 persons x 12 months @ ₦50,000/month	1,200,000
Field Deployment & Training Officer	Manages pilot site relationships, conducts training for healthcare staff.	8 months @ ₦75,000/month	600,000
Project Accountant/Admin (Part-time)	Manages budget, procurement, and reporting.	12 months @ ₦50,000/month	600,000
Subtotal			**₦4,440,000**

2. Equipment & Prototyping (₦6,000,000)

Capital for scaling from a single prototype to a pilot batch.

Item	Description	Calculation	Cost (₦)
Small-Batch Assembly Setup	Workbenches, ESD equipment, toolkits, fume extractors.	Lump sum for a small workshop	1,500,000

Item	Description	Calculation	Cost (₦)
Test & Calibration Equipment	Oscilloscopes, multimeters, flow analyzers, pressure calibrators.	Essential for medical device validation.	1,000,000
Pilot Batch Components (50 Units)	Cost per unit for components (RPi, Arduino, sensors, batteries, PCBs, casings, blowers, valves).	50 units @ ₦70,000/unit	3,500,000
Subtotal			**₦6,000,000**

3. Manufacturing & Production (₦4,500,000)

Costs associated with producing the final, certified pilot units.

Item	Description	Calculation	Cost (₦)
Injection Molding (Tooling)	Design and manufacture of molds for the device casing (a one-time cost).	Lump sum	1,500,000
Custom PCB Fabrication	Mass production of the main control board (replaces breadboard setup).	Design & fabrication for 50 boards	1,000,000
Final Assembly & Integration	Labor and consumables for assembling the 50 pilot units.	50 units @ ₦20,000/unit	1,000,000
Quality Assurance & Burn-in Testing	Rigorous testing of each unit before deployment.	50 units @ ₦10,000/unit	500,000
Packaging & User Manuals	Professional packaging and clear, printed documentation.	50 units @ ₦10,000/unit	500,000
Subtotal			**₦4,500,000**

4. Software, Cloud & IT (₦490,000)

Ensuring robust and secure software for the pilot phase.

Item	Description	Calculation	Cost (₦)
Cloud Services (Firebase/ AWS)	Data storage, user authentication, and serverless functions for 50 units over 12 months.	12 months @ ₦20,000/month	240,000
Mobile App Maintenance	Updates, bug fixes, and compliance for app stores.	Lump sum	150,000
Cybersecurity Audit	Essential for a medical device handling patient data.	One-time fee for a security firm	100,000
Subtotal			**₦490,000**

5. Regulatory, Compliance & IP (₦1,300,000)

Critical for legal operation and protecting your innovation.

Item	Description	Calculation	Cost (₦)
NAFDAC Medical Device Registration	Fees for the mandatory registration with the National Agency for Food & Drug Administration & Control.	Estimated fee for a Class B device	400,000
Initial Clinical Validation Study	Partnering with a teaching hospital for a formal pilot study and report.	Support for study logistics and personnel	500,000
Patent Filing (PCT)	Filing an international patent to protect the invention.	Attorney and filing fees	400,000
Subtotal			**₦1,300,000**

6. Pilot Deployment & Training (₦2,350,000)

Costs for successfully placing and supporting the units in the field.

Item	Description	Calculation	Cost (₦)
Site Installation & Logistics	Transport, setup, and configuration at 10-15 healthcare facilities in FCT.	Lump sum	400,000
Healthcare Staff Training	Developing training materials and conducting workshops for doctors and nurses.	Workshops, stipends, materials	750,000
12-Month Support & Maintenance	On-call support, spare parts, and potential unit repairs during the pilot.	Lump sum	1,200,000
Subtotal			**₦2,350,000**

7. Contingency (10%) (₦500,000)

Unforeseen expenses and cost overruns.

Calculation: 10% of (Total Direct Costs) = 10% of ₦5,000,000 (approx.) = **₦500,000**

Budget Summary

Category	Cost (₦)	% of Total
1. Personnel & Expertise	4,440,000	22.7
2. Equipment & Prototyping	6,000,000	30.6
3. Manufacturing & Production	4,500,000	23.0
4. Software, Cloud & IT	490,000	2.5
5. Regulatory, Compliance & IP	1,300,000	6.6
6. Pilot Deployment & Training	2,350,000	12.0

Category	Cost (₦)	% of Total
7. Contingency	500,000	2.6
TOTAL	**₦19,580,000**	**100%**

N.B.:

1. **Local Economic Impact:** This budget invests in local Nigerian talent (engineers, technicians) and will eventually stimulate local manufacturing and job creation.
2. **Cost-Effectiveness:** The cost per unit at this pilot scale is a fraction of the price of imported traditional ventilators, making it a highly efficient use of grant funds.
3. **Sustainability:** The budget for regulatory compliance and IP protection shows a long-term vision for a sustainable, legally compliant business, not just a one-off project.
4. **De-Risking the Project:** The clinical validation and NAFDAC registration are essential steps to de-risk the technology for future investors and buyers.
5. **Alignment with Goals:** This budget directly supports the goals of the commercialization grant by bridging the gap between a lab prototype and a market-ready product that is ready for wider adoption.