BUSINESS PLAN

Project Title: *Novel Anti-Tick Polyvalent Vaccines (JUTVAC-NG and DOGVAC-NG) Patented as Game Changers in the Livestock Value Chain: For Commercialization in Nigeria*

1. Executive Summary

Nigeria's livestock industry suffers severe economic losses due to tick infestations and tick-borne diseases. Current reliance on acaricides is unsustainable, as resistance, environmental risks, and high costs continue to undermine productivity.

The University of Jos, through its Africa Centre of Excellence in Phytomedicine Research and Development (ACEPRD), has developed and patented two indigenous polyvalent anti-tick vaccines: JUTVAC-NG (for cattle) and DOGVAC-NG (for dogs, sheep, and goats). Both vaccines have shown high efficacy in reducing tick burden, improving animal health, and increasing productivity.

With NASENI's commercialization support, this project will establish GMP-compliant production, conduct multi-zone field trials, build cold-chain distribution networks, and launch nationwide commercialization in partnership with Nigerian pharmaceutical and agro-allied companies. The initiative is projected to deliver a ₦10 billion annual economic impact within five years, while boosting food security, job creation, and industrial growth in line with the Renewed Hope Agenda.

2. Institutional Overview

- **Lead Institution:** University of Jos, Africa Centre of Excellence in Phytomedicine Research & Development (ACEPRD).
- **Principal Investigator:** Prof. Goni Dogo Abraham.
- **Patent Status:** FG patent license granted to University of Jos for novel polyvalent anti-tick vaccines.

- **Partners:** Innovative Biotech Ltd., Nigerian pharmaceutical companies, farmer cooperatives, and veterinary associations.
- **Facilities:** Equipped laboratories, molecular biology infrastructure, bioreactors, and vaccine research expertise.

3. Problem Statement

- Tick infestation reduces livestock productivity by up to 40% annually.
- Economic losses exceed ₦20 billion yearly due to reduced meat, milk, hides, and mortality.
- Acaricides are costly, environmentally harmful, and ineffective due to resistance.
- Nigeria spends heavily on imported veterinary products, draining foreign exchange.
- No locally produced tick vaccine currently exists, creating a critical gap.

4. Market Opportunity

- **Livestock Population:** 20m cattle, 40m small ruminants, 8m+ dogs.
- **Estimated Demand:** 50–60 million vaccine doses annually.
- **Target Market:**
    - Commercial livestock ranchers.
    - Smallholder farmer cooperatives.
    - Veterinary hospitals and clinics.
    - Dog owners and breeders.
- **Regional Expansion:** Strong export potential to ECOWAS livestock markets.

5. Products & Services

- **JUTVAC-NG:** Polyvalent anti-tick vaccine for cattle.
- **DOGVAC-NG:** Polyvalent anti-tick vaccine for dogs, sheep, and goats.
- **Associated Services:** Training programs for farmers/vets, cold-chain logistics, and advisory on integrated tick management.

6. Competitive Advantage

- **Local Innovation:** Based on Nigerian tick isolates → superior efficacy.
- **Sustainability:** Biological solution, no chemical residues.
- **Cost-Effectiveness:** Reduces repeated acaricide spraying.
- **Government Alignment:** Matches NASENI's industrialization agenda and livestock reforms.
- **Patent Protection:** Secured national patent license.

7. Technology & Production Plan

- **Current TRL:** 6 (prototype validated in pilot environment).
- **Development Milestones:**
    - GMP-compliant production setup (Month 12).
    - Pilot vaccine batches (Months 12–18).
    - Multi-state trials in 3 geopolitical zones (Months 18–24).
    - Regulatory approvals (Month 24).
    - Commercial launch with private partners (Month 30+).
- **Expected Outputs:** Validated vaccines, commercialization-ready processes, IP protection, and spin-off licensing opportunities.

8. Marketing & Distribution Strategy

- **Pricing:** ₦1,500 – 2,000 per dose (cheaper than acaricide regimens).
- **Distribution Channels:** Veterinary clinics, farmer cooperatives, agro-vet stores, and regional distribution hubs.
- **Promotion Strategy:** Demonstration trials, farmer workshops, media campaigns, and stakeholder engagement.
- **Adoption Strategy:** Subsidized pilot rollouts and training of 2,000+ farmers/vets.

9. Organization & Management Team

- **PI:** Prof. Goni Dogo Abraham (veterinary parasitology, vaccine R&D).
- **Co-Researchers:**
    - Dr. Henry Madubuike (molecular biology & immunology).
    - Dr. Gloria Karaye (microbiology, QA & cold-chain).
    - Engr. Uchechukwu Ohaeri (bioinformatics & M&E).
- **Senior Advisors:**
    - Prof. Simon Agwale – Vaccine manufacturing & industry linkages.
    - Prof. Demo Kalla – Livestock policy & commercialization pathways.
    - Prof. Lami H. Lombin (MFR) – Veterinary public health & zoonoses.
    - Prof. Babale H. Mafuyai – Governance & R&D infrastructure.

10. Financial Plan

Proposed Budget – ₦299,341,875

- Personnel: ₦41,075,000 (13.7%)
- Equipment & Materials: ₦62,250,000 (20.8%)
- Prototype Development & Scale-Up: ₦42,325,000 (14.1%)
- Field Trials & Validation: ₦45,600,000 (15.2%)
- Market Validation & Stakeholder Engagement: ₦28,837,500 (9.6%)
- IP Registration & Certification: ₦14,250,000 (4.8%)
- Dissemination & Knowledge Sharing: ₦18,100,000 (6.0%)
- Monitoring & Evaluation: ₦11,650,000 (3.9%)
- Advisory & Consultancy Fees: ₦21,000,000 (7.0%)
- Contingency: ₦14,254,375 (4.7%)

Revenue Projection (Post-Commercialization)

- **Year 1:** ₦500m (pilot sales).
- **Year 3:** ₦2bn (national adoption).
- **Year 5:** ₦5bn+ (export to ECOWAS).

11. Risk Assessment & Mitigation

- **Technical:** Vaccine instability → addressed with GMP and QA/QC.
- **Regulatory:** NAFDAC/Vet Council delays → mitigated by early engagement.
- **Market:** Farmer hesitancy → mitigated with training, subsidies, and cooperatives.
- **Financial:** High production costs → offset by PPPs and phased rollout.

12. Sustainability & Scalability

- Scale-up with Nigerian pharma and Innovative Biotech Ltd.

- Regional exports to ECOWAS livestock markets.
- Integration into Presidential Livestock Reforms agenda.
- Continuous farmer/veterinary training for adoption.
- Reinvestment of revenues into next-generation livestock vaccines.

13. Conclusion

The Novel Anti-Tick Polyvalent Vaccines (JUTVAC-NG and DOGVAC-NG) represent a pioneering Nigerian innovation with proven efficacy and strong commercialization potential. With NASENI's support, this project will transition from pilot to full-scale production, transforming Nigeria's livestock industry, reducing import dependence, creating jobs, and achieving a ₦10 billion annual impact within five years.