Making aquaculture robust through species diversification-beyond catfish and tilapia production in Nigeria

Presentation by: Sejiro Michael OKE-TOJINU

MD/CEO Sejfarms Consults Limited

Outline

- Overview of Aquaculture in Nigeria
- The need for Diversification
- Indigenous Species/Candidates
- Market Survey
- Production Technology and management
- Nutrition
- Value chain opportunities
- Projected Budget
- Conclusion

Overview of Aquaculture in Nigeria

Aquaculture plays a vital role in Nigeria's economy, providing employment opportunities and contributing significantly to food security. However, the industry predominantly focuses on catfish and tilapia production, limiting its potential for growth and resilience. This proposal aims to explore the benefits of species diversification in aquaculture to foster a more robust and sustainable industry in Nigeria.

The Need for Diversification

- **Risk Mitigation:** Diversifying beyond catfish and tilapia reduces the sector's vulnerability to disease outbreaks, market fluctuations, and environmental risks.
- **Market Expansion:** Introducing new species taps into niche markets, diversifies revenue streams, and enhances market competitiveness.
- **Environmental Sustainability:** Species diversification promotes ecosystem health by reducing the ecological impacts of monoculture practices.
- **Resilience:** Diversification enhances the resilience of the aquaculture sector by spreading risks across multiple species and production systems.
- **Innovation:** Exploring alternative species fosters innovation in production techniques, genetics, and value-added products.
- **Long-Term Viability:** Sustainable aquaculture practices, facilitated by species diversification, ensure the sector's long-term viability and environmental sustainability.

Indigenous Species/Candidates

Nigeria is rich in indigenous aquatic species with high aquaculture potential, offering genetic diversity and local adaptation. Listed below are few Key Indigenous and exortic Species.

1. Pangasius hypothalmus
2. Heterotis niloticus (African bonytongue)
3. Parachanna obscura (Snakehead Fish)
4. Megalops atlanticus(Tarpon)
5. Fresh water Brama
6. Gymnarchus niloticus (Aba)
7. Rana temporaria (Frog)
8. Cyprinus carpio (Common Carp)
9. Hetero-Clarias (Hybrid Clarias species)
10. Chrysichthys nigrodigitatus (Eja Obokun) Silver Catfish e.t.c

Indigenous Species/Candidates

Pangasius hypothalmus

Heterotis niloticus (African bonytongue)

Parachanna obscura (Snakehead Fish)

Hetero-Clarias (Hybrid)

Indigenous Species/Candidates

Fresh water Brama

Gymnarchus niloticus (knife fish)

Rana temporaria (Frog)

Chrysichthys nigrodigitatus (Eja Obokun) Silver Catfish

Cyprinus carpio (Common Carp)

Market Survey

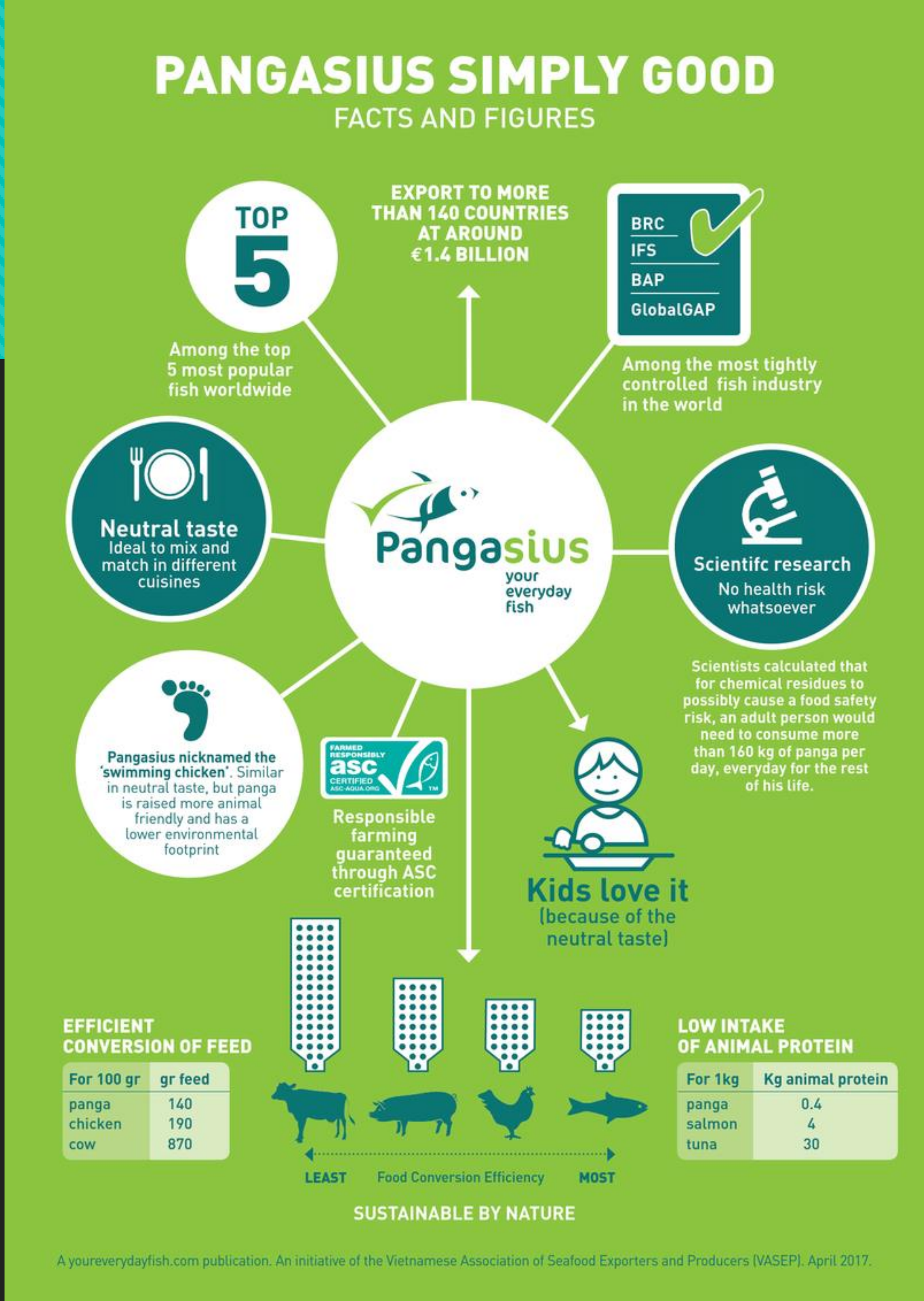
There is currently high demand of alternative species in the market,

Target Markets:

1. Existing Grow-out Fish Farmers in Nigeria:
   - Seeking diversification and improved profitability.
   - Interested in resilient breeds and market-driven approaches.
   - Attracted to species with fast growth rates and high market value.
2. Large Human Population in Nigeria and Beyond:
   - Represents a significant market for fresh and processed fish products.
   - Prioritizes freshness, quality, and nutritional value.
   - Prefers indigenous species with unique flavors and culinary versatility.
3. Existing Cold chain actors

Marketing Strategies:

- Targeted campaigns to educate farmers on benefits and profitability.
- Branding and packaging to position products as premium offerings.
- Expansion into new regions and distribution channels.
- Product differentiation to meet diverse consumer preferences.



Production Technology and Management

Adopting appropriate production technology and management practices is critical for successful aquaculture diversification.

Key Considerations:

1. **Hatchery Management:** Ensure the availability of quality seedstock through efficient hatchery management practices.
2. **Pond/Cage Culture:** Implement suitable culture systems, such as ponds or cages, depending on the species' requirements and environmental conditions.
3. **Feed Management:** Develop nutritionally balanced feeds tailored to the dietary requirements of indigenous species, optimizing growth and health.

Production Technology and Management

Value Chain Opportunities

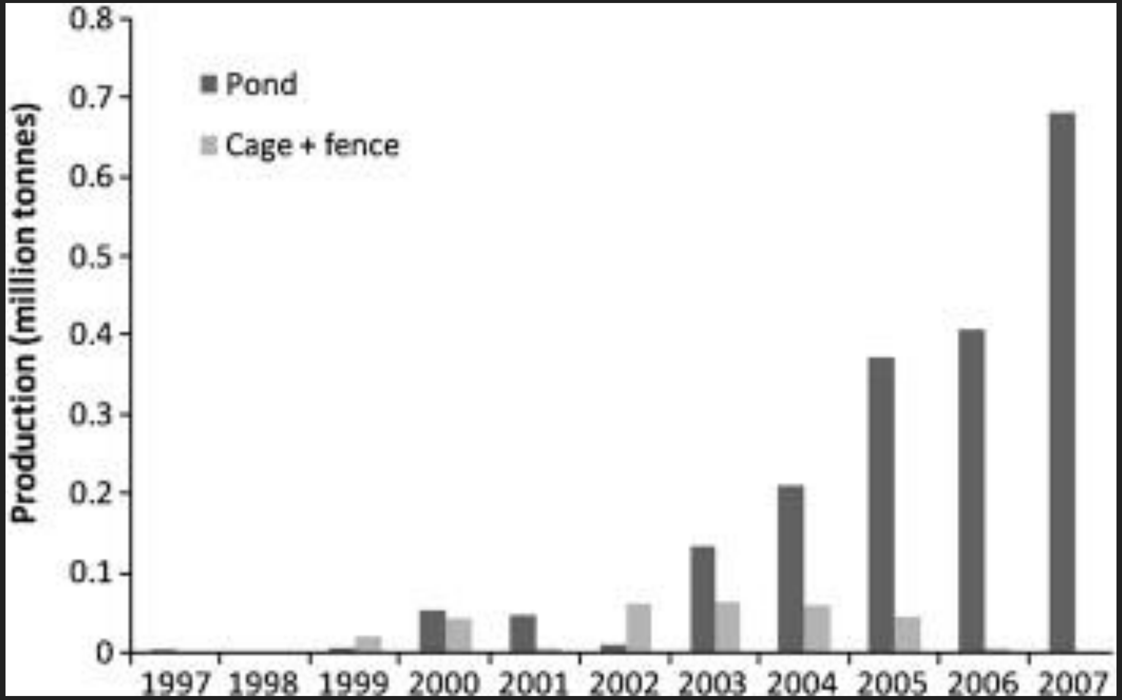
Exploring value chain opportunities enhances the competitiveness and profitability of aquaculture diversification initiatives.

Key Value Chain Activities:

1. **Research development Opportunities (Nutrition, pathology, equipment e.t.c)**
2. **Hatchery and Grow-out production**
3. **Processing and Packaging:** Add value to indigenous species products through processing, such as filleting, smoking, or canning, and attractive packaging to appeal to consumers.
4. **Marketing and Distribution:** Develop marketing strategies to promote indigenous species products and establish distribution channels to reach target markets effectively.
5. **Branding and Certification:** Build brand identity and consumer trust through branding initiatives and certification schemes, highlighting product quality, safety, and sustainability.

Market Linkages:

Foster partnerships along the value chain, including with processors, distributors, retailers, and restaurants, to streamline market access and maximize product reach.



Updated figures about the panga farming

Dimensions of the farms:
- total area/farm: 4.09ha (from 0.2 to 30 ha) (72% < 5 ha)
- water area/farm: 2.67 ha (0.12-20)
- area/pond: 6100 m² (800 m² 2.2 ha)
- depth of the pond: 4m (2-6 m, mostly 3.5-4.5 m)
- number of ponds per farm: 4 (1-17)

Production yield:
- stocking size: 7.8 cm (1.5 -18)
- stocking density: 48 fish/m² (18 - 125) and 12 fish/m³ (5-31)
- harvest at the size of 1.0kg (0.6 - 1.5) after about 6 - 7 months
- 406 tons/ha/crop (70.0 - 850), 300 tons or more for 75% of the farms, and 10.4 kg/m³ (1.5 - 22.7)
- the yield depends on the pond area, depth and volume, stocking density and location of the farm.

(from Phan et al. 2009)

PROJECTED BUDGET

Hatchery design, setup and accessories

Hatchery Set-up and Pond-construction - $200,000

Hatchery/Farm Accessories and equipment - $50,000

Research and Development (R&D) - $50,000

Capacity Building and Training - $40,000

Utility / research / haulage vehicle and dispatch rider $70,000

Cold Chain Facilities (Cold room, Freezers, co0ling tricycles) - $100,000

Office /multimedia /publication equipment $20,000

Contingency Fund - $20,000

Total Budget: $550,000

Conclusion

Species diversification presents a promising opportunity to enhance the resilience, competitiveness, and sustainability of aquaculture in Nigeria. By investing in research, capacity building, policy support, market development, and collaboration, we can unlock the full potential of alternative species and build a more robust aquaculture sector for the future.

BLUE REVOLUTION! BLUE ECONOMY! FOOD SECURITY!