

From Waste to Growth: Fish Waste to Fodder for Healthier Environments



GREEN
MAWARED
SUSTAINABLE SOLUTIONS



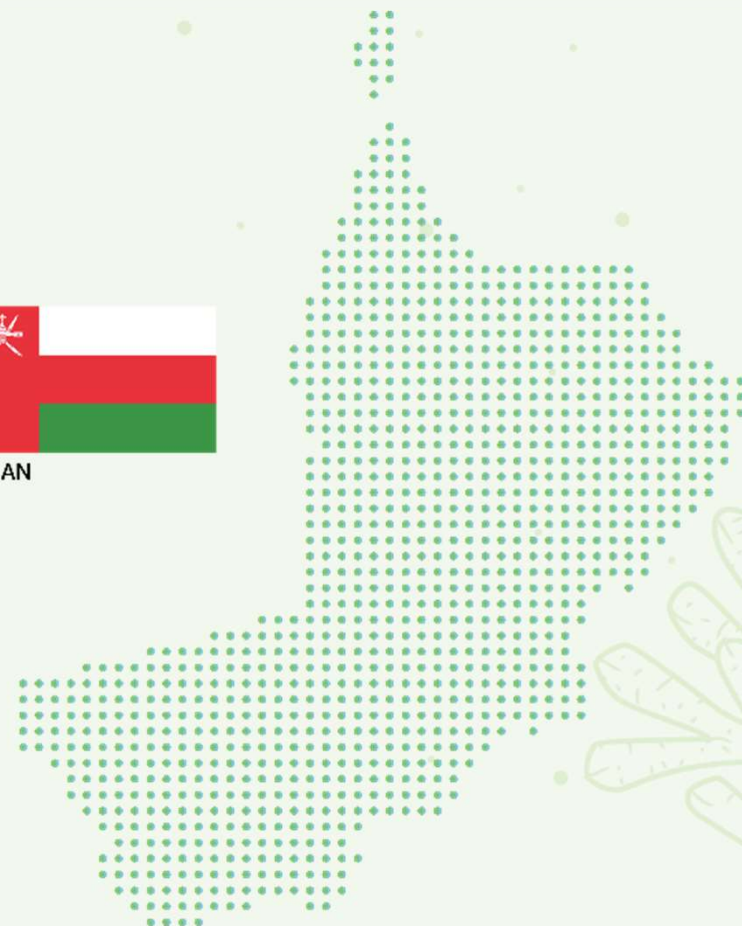
The Problem Fish Waste



Oman Fishing Industry in Numbers



OMAN



Oman Fishing Industry in Numbers



Over
920k Tones /
Year (2022)*



Annual Increase
of 11.4%
Since 2002*



Estimated Fish
Waste 20-35%



200-300k
Tones

*National Center for Statistics & Information

Environmental & Health Challenges

Ground Water Contamination

Attraction of Vectors



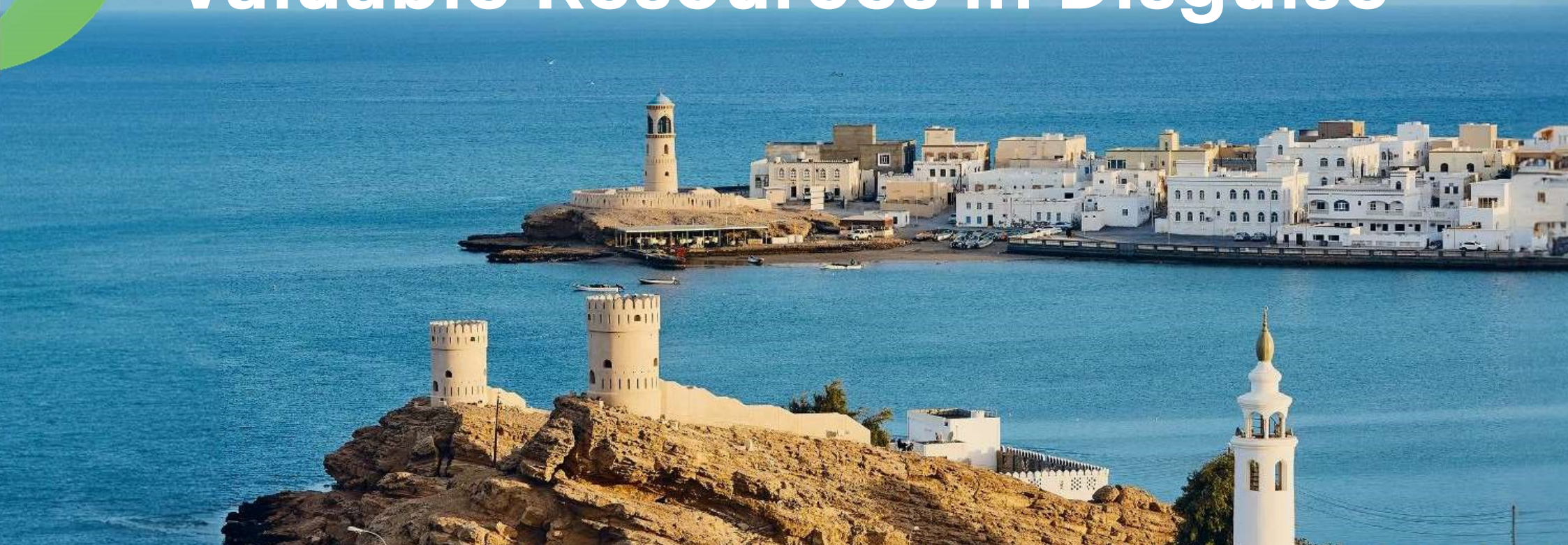
Surface Water Eutrophication

Release of Harmful Gases

Bacterial Infections



The Opportunity Valuable Resources in Disguise



Potential Uses of Fish Waste Global Applications

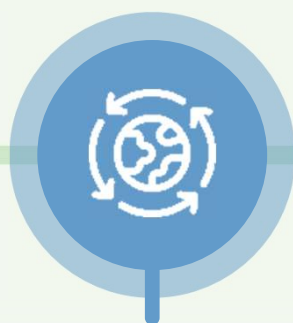


- **Fishmeal and Fish Silage For Poultry Fodder**
Denmark and Norway
- **Biogas Production**
China and Indonesia
- **Collagen & Gelatin Extraction**
Japan and South Korea
- **Organic Fertilizers & Compost**
Brazil and Vietnam

Soil Organic Fertilizer and Poultry Fodder: The Rationale



Economic Viability



Circular Economy



Food Security



Sustainable Agriculture



Environmental Conservation



The Science Process of Transformation



Fish Waste into Fishmeal Chicken Fodder





Benefits to Human Health & Environment


A scenic coastal view featuring a prominent white cylindrical tower with a crenellated top, perched atop a rugged, reddish-brown rocky cliff. The foreground is dominated by large, light-colored boulders. The sea is a vibrant blue, and a small boat is visible near the shore. In the distance, a sandy beach and other buildings are visible under a clear sky.

Poultry Health



Rich Nutritional Content

- High-Quality Protein
- Omega-3 Fatty Acids



Reduced Disease Vulnerability

- Strengthened Immunity
- Digestive Health



Improved Egg & Meat Quality

- Enhanced Yolk Color
- Taste & Texture



Economic & Ethical Benefits

- Efficiency in Production
- Animal Welfare





Environmental Impact

Marine Pollution Prevention

- Waste Reduction
- Protecting Marine Ecosystems

Carbon Footprint Reduction

- Sustainable Processing
- Carbon Sequestration

Groundwater Preservation

- Reduced Chemical Runoff
- Water Quality

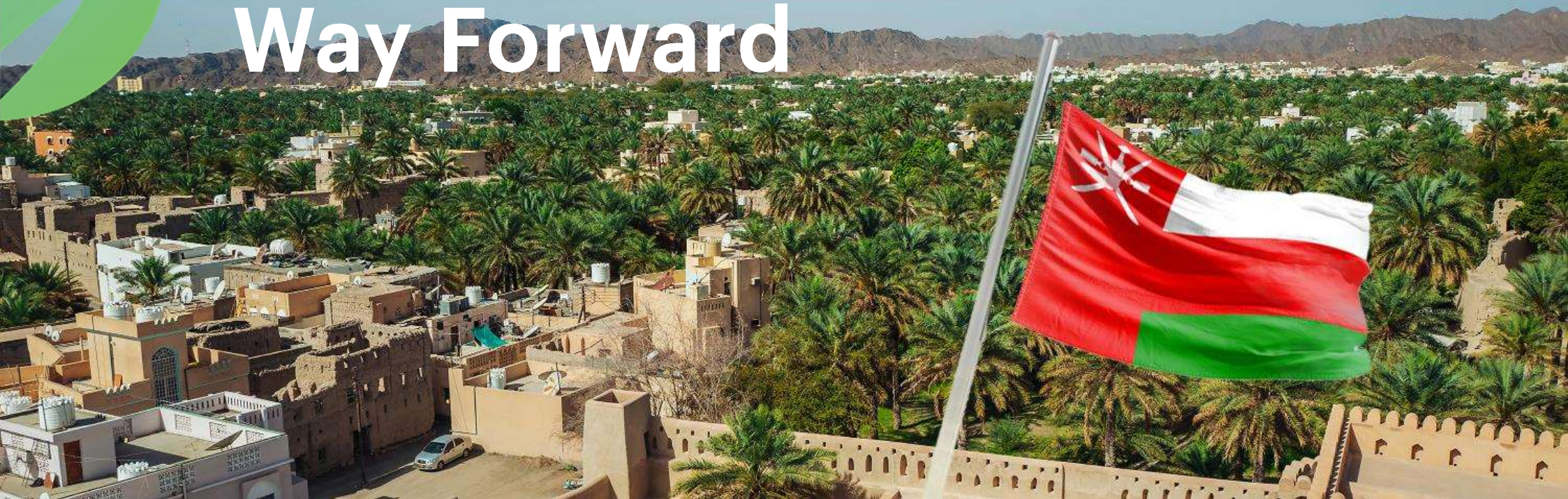
Holistic Environmental Care

- Circular Economy
- Conservation of Resources





Challenges & Way Forward





Challenges

Technical Challenges

- Processing Complexity
- Storage & Transportation

Market Acceptance

- Perceived Value
- Quality Concerns

Regulatory Issues

- Safety Standards
- Environmental Regulations

Economic Considerations

- Initial Investment
- Market Pricing



Alignment with Oman 2040





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