

وزارة البيئة والمياه والزراعة

Ministry of Environment Water & Agriculture



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Lessons Learned on Climate Resilient Agriculture: Kingdom of Saudi Arabia

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Poultry Sector: Kingdom of Saudi Arabia



Poultry Sector Status

Poultry production in Saudi Arabia in 2020

900,000 metric tons

Poultry production in Saudi Arabia in 2021

970,000 metric tons

Domestic production self-sufficiency level 2020

65 % Self-sufficiency

2030 Vision self-sufficiency level

85 % self-sufficiency

2030 Vision Domestic Production target

2.21 million metric tons

Poultry Sector Highlights

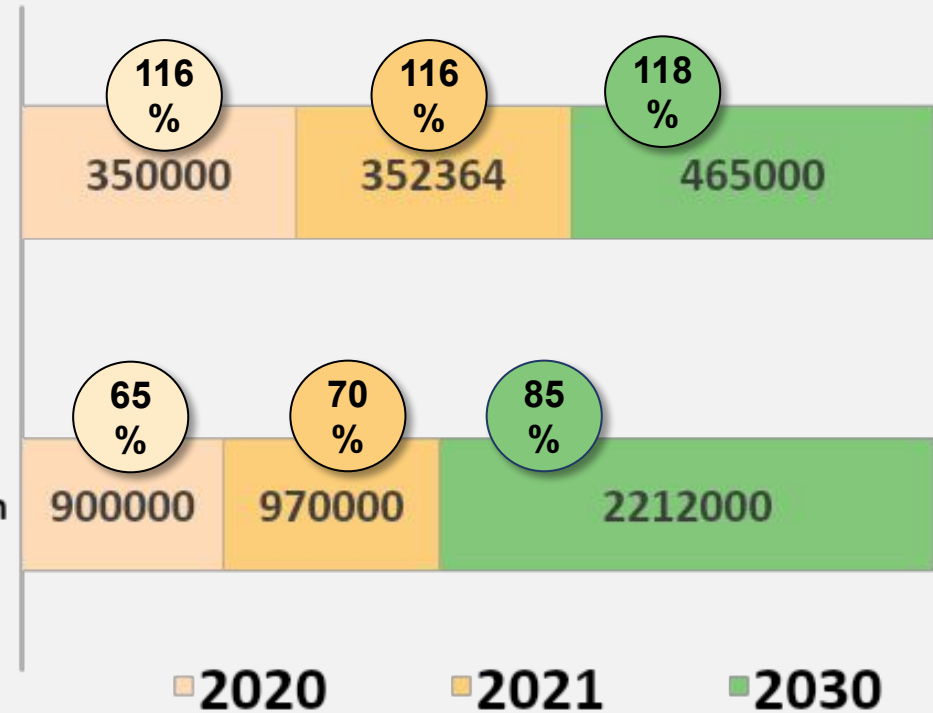


Poultry Production (tonnes)/Self-Sufficiency (%)

Eggs Production



Chicken Production



Poultry Sector Challenges: Kingdom of Saudi Arabia



Poultry Sector Challenges

Greenhouse gas Emission

GHG Emission



Harsh environmental condition prevailing in the country



Disease Control, and Antibiotic Resistance



Increased production costs for poultry meat and eggs



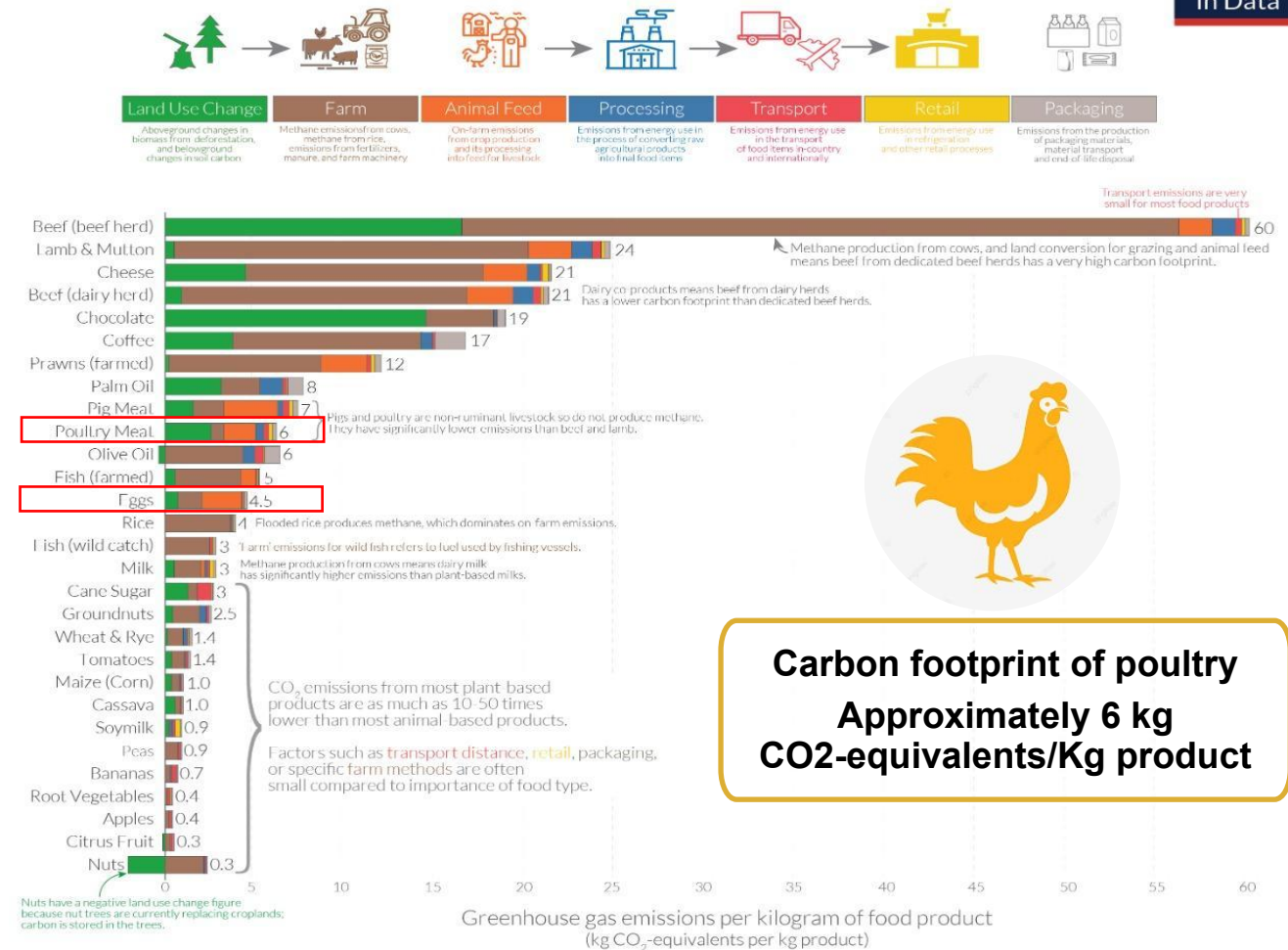
Carbon footprint, in terms of Greenhouse gas (GHG) emissions



Increasing amounts of waste generated by poultry farms contribute to emission of Greenhouse gas (GHG)

Food: greenhouse gas emissions across the supply chain

Our World in Data



Traditional Poultry Waste disposal methods & Implications



Storage and disposal of raw poultry manure has become an environmental problem because of the associated air, water and soil pollution

Poultry manure begins to decompose immediately after excretion giving off ammonia which, in high concentrations, can have adverse effects on the health and productivity of birds as well as the health of the farm workers

Landfilling the poultry litter leads to greenhouse gas emissions and loss of valuable resources

Pollution of soil and water with nutrients, pathogens and heavy metals is generally caused by poor manure-management and occurs where manure is stored

Odor is mainly emitted from manure & is caused by ammonia (NH_3), volatile organic compounds (VOC), & Hydrogen Sulphides (H_2S)

Poultry Waste management in KSA: Two Case Lessons



**Almarai
Company**



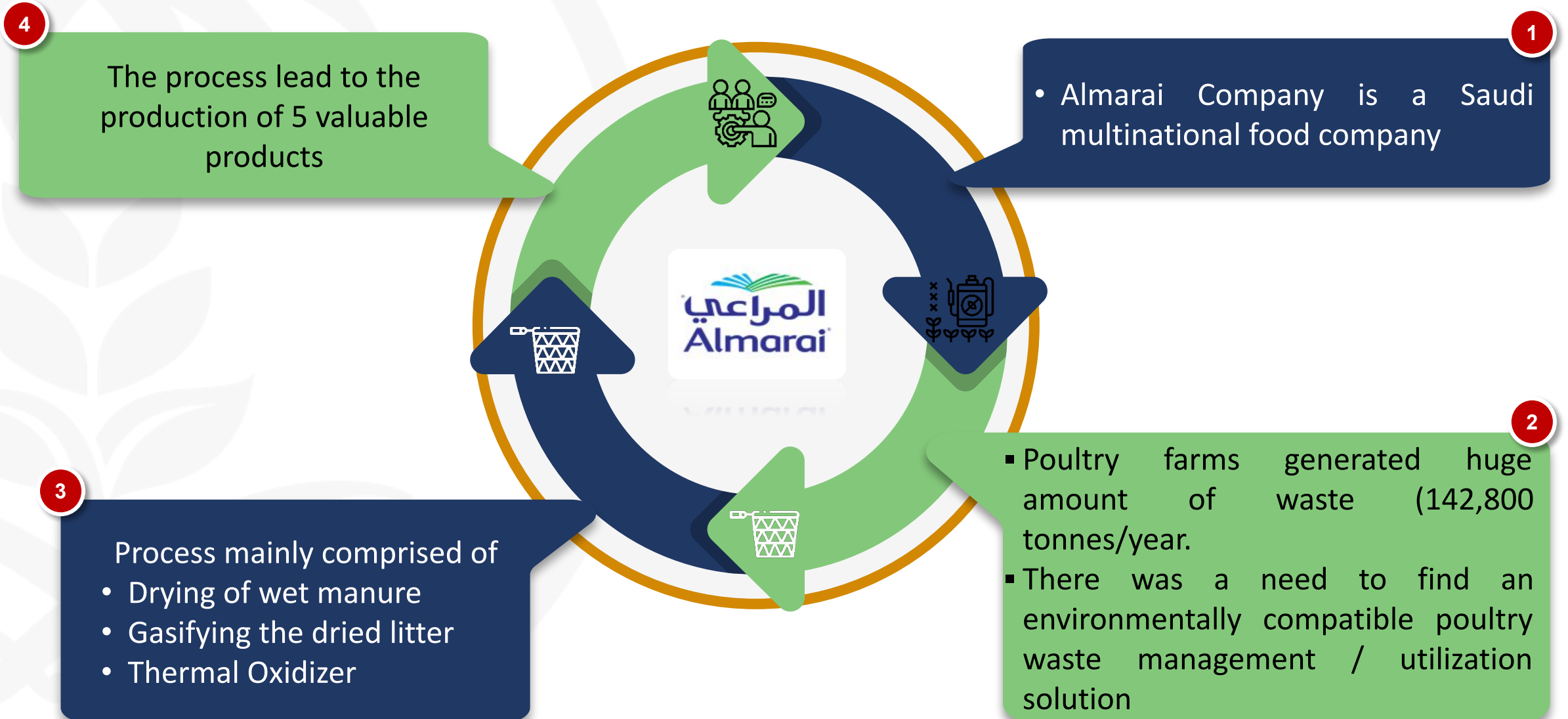
Poultry Sector



**Tanmiah Food
Company**





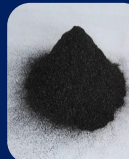


Poultry Waste Management Case of Almarai Company





Poultry Waste Products & their Applications

Products		Applications
1	Poultry Fat/Oil	 <ul style="list-style-type: none">▪ Ingredients for Pet Food manufacturing.▪ Fuel for oil burners▪ raw materials for biofuels
2	Poultry Meal	 <ul style="list-style-type: none">▪ Ingredients for Pet Food manufacturing,▪ Organic Fertilizer,▪ not suitable for human consumption & animal feed
3	Feather Meal	 <ul style="list-style-type: none">▪ Raw material for pet food,▪ feeds additive▪ “not for ruminant animals” and as organic fertilizer,▪ “not suitable for human consumption
4	Blood Meal	 <ul style="list-style-type: none">▪ Raw material for pet food,▪ feeds additive▪ “not for ruminant animals”▪ organic fertilizer,▪ not suitable for human consumption
5	EcoChar (Charcoal) (14,400 tons/year) production	 <ul style="list-style-type: none">▪ EcoChar mainly comprised of 12.8% C, 21.6% Ash),▪ it can hold 1,1-2,5 times its own volume in water▪ Release nutrients and moisture gradually

Poultry Waste: Case Study of Tanmiah Food Company (TFC)



4

Proportionate to the amount of waste, these disposal costs are also expected to grow by four times as much.

1

- Tanmiah Food Company collectively generate about 109,460 tons of solid waste annually
- This is expected to increase by up to 437,840 ton annually.

3

Cost to dispose of all of TFC's waste reach up to SAR 10 million on a yearly basis.

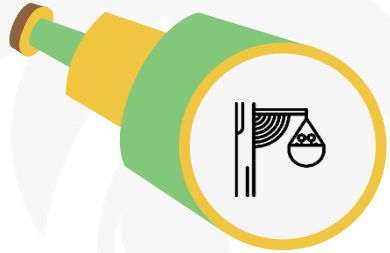
2

Amount of wastewater is currently around 579 million liters per annum, with the potential to grow towards 2.3 billion liters per annum.

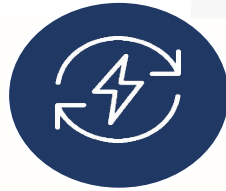
Eco-friendly Poultry Waste Management: Vision and Mission



- Ambition to collectively go beyond reducing harm and to deliver positive outcomes for the society and the ecosystem
- Create a value chain which, ultimately, has a net positive impact on the environment
- Technologies and their applications should mitigate the harmful impact of poultry production by for example leading to a net carbon negative value chain

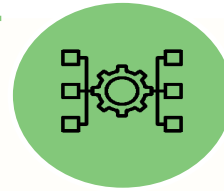


**Waste management
Technology Insight: Poultry
Waste Management**



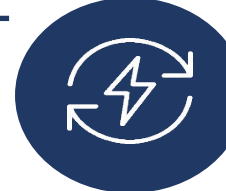
Insect farming

Converting poultry waste to renewable energy to organic lubricant through black soldier fly farming



Pyrolysis

Converting poultry waste to renewable energy and biochar through microwave pyrolysis



Hydrolysis

Converting poultry waste to amino acids fertilizer through hydrolysis technology



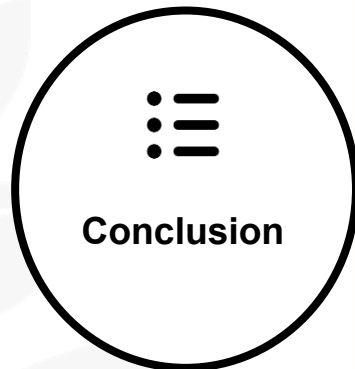
Proteinia

Converting poultry waste to enzymes through black soldier fly farming



Lessons Learned on Climate Resilient Agriculture in KSA: Poultry Sector

★ Technology help to reduce 500-600 Kg of CO₂ in every ton of chicken manure process as per technology



Conclusion



Zero waste



Zero emission for landfills



Carbon positive process



Climate Resilient: Poultry sector



THANK YOU