



UNITED ARAB EMIRATES
MINISTRY OF INDUSTRY
& ADVANCED TECHNOLOGY

Industrial Investment Opportunities



Food Waste into Animal Feed

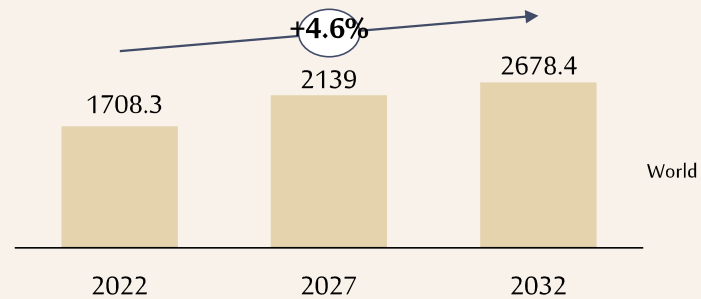
Food Waste into Animal Feed (BSF Feed Ingredient)

Waste-to-Feed facility involves collecting, processing and treatment of food waste using BSF Technology to produce high protein animal feed, with oil feed and soil as by-products

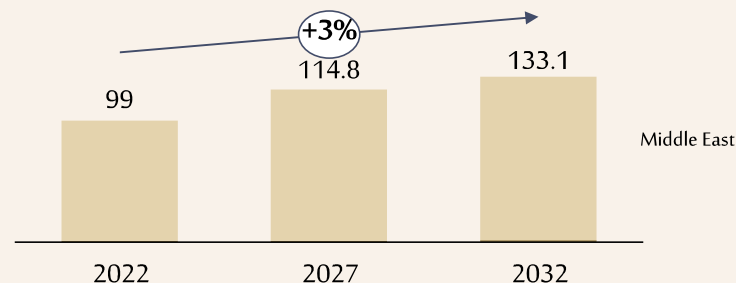
Investment case

- Setup large scale treatment plant to produce animal feed from food waste in the UAE
- Investment size = AED 147 Mn
- Plant capacity = 90,000T per year
- Expected IRR = 17%
- Expected NPV = AED 43.9Mn

Global Market Size 2022 – 2032 (Bn AED)



Regional Market Size 2022 – 2032 (Bn AED)

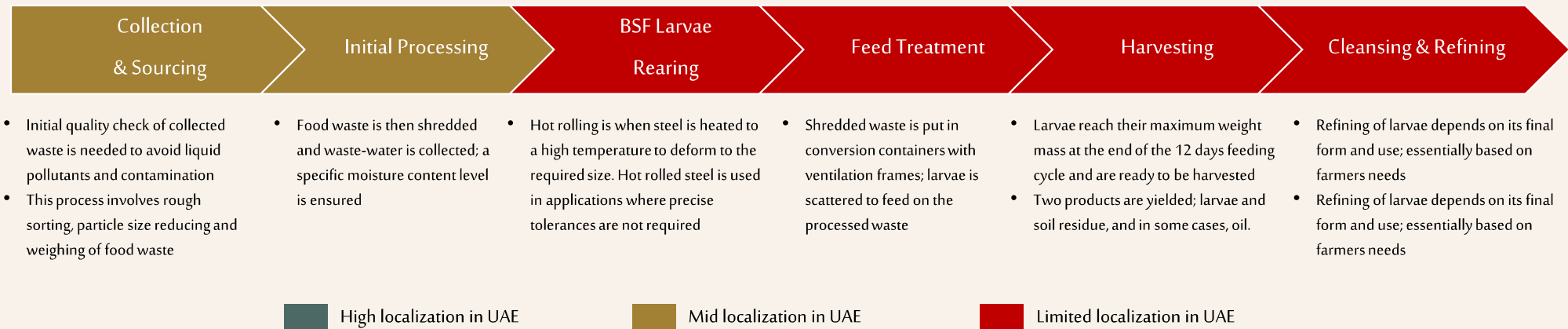


Global trends & demand drivers

- High per capita food waste generation in the UAE (around 197kg) generates a loss of around \$3.5 billion per year
- Environmental awareness of food waste risks is shifting consumer behavior and consequently increasing demand for products that can be associated with lower carbon emissions such as larvae animal feed
- Price inflation of animal feed stocks prompt farmers to search for cheaper, sustainable feed alternatives
- Increasing global meat and poultry demand coupled with the growing global population are key factors driving the demand in the animal feed market
- Regional campaigns and awareness programs on food waste management such as UAE food pledge; this prompts the adoption of sustainable larvae to cut its food waste by half by 2030

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Value chain analysis



- Initial quality check of collected waste is needed to avoid liquid pollutants and contamination
- This process involves rough sorting, particle size reducing and weighing of food waste

- Food waste is then shredded and waste-water is collected; a specific moisture content level is ensured

- Hot rolling is when steel is heated to a high temperature to deform to the required size. Hot rolled steel is used in applications where precise tolerances are not required

- Shredded waste is put in conversion containers with ventilation frames; larvae is scattered to feed on the processed waste

- Larvae reach their maximum weight mass at the end of the 12 days feeding cycle and are ready to be harvested
- Two products are yielded; larvae and soil residue, and in some cases, oil.

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Value proposition

- High per capita food waste generation in the UAE (around 197kg) generates a loss of around \$3.5 billion per year
- The facility can reduce import dependency on animal feed and possible supply bottlenecks; UAE currently imports ~1billion of soyabeans every year of which 85% used as poultry feed
- The facility supports in closing the loop of food production; food waste is upcycled using Black Solider Fly (BSF) larvae technology into sustainable products that are sold back into the industry
- The processing plant reduces the damage of methane emissions from landfills which represent the largest source of GHG emissions from the entire waste sector, ~700mt of CO2 per year
- The facility reduces public health threats (i.e. Salmonella) and environmental risks caused by harmful disposal of food waste

Enabling Entities

- **Food Tech Valley:** Home to four key clusters; waste generated from F&B factories can be collected and sent to the treatment facility, reducing its transportation cost
- **Abu Dhabi Investment Office:** Offers financial support (rebates on investments, key cost centres, innovation cost, utility costs) and non-financial support (land location, regulatory and strategic advice)
- **F&B Business Group:** Facilitates engagement on potential partnerships and distribution contracts with different players
- **EDB:** Competitive debt pricing will help lower WACC and in return improve Internal Rate of Return and pay back period
- **MoIAT:** Collaborating with the relevant federal and local entities to further enable this investment opportunity