



THE ECONOMIC REVENUES OF USING BIOGAS TECHNOLOGY IN THE NEW EGYPTIAN RECLAIMED AREAS

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ABSTRACT

Energy sources represent one of the most important inputs of the production process without which the production process can't begin or continue. The process of fossil fuels production has long been associated with large amounts of emitted pollutants into the atmosphere starting through the industrial revolution at the beginning of the last century and up to nowadays, causing high levels of pollution that have threatened the human presence on earth. Fossil fuels has three main problems: the first is polluting the environment and the second is that it is steadily depleting and the third is that it has a decreasing supply function, contrary to its increasing demand, which has led to a steady increase in its international prices. It is a must and not a luxury. These made the world to produce the biogas and its secondary product "the biogas compost" which environmentally and economically compatible compared to other alternatives offered in the global market.

In Egypt, the problem of fuel is more acute, especially in the desert provinces, where the challenges of shortage of supply of LPGs combine with increasing demand due to rapid population increase with spatial spacing between production

and distribution areas accompanied by transportation, storage and handling risks. In a short period of time, all of which are a constant pressure on the balance of the local market for fuel, especially gas cylinders (LPG). Increasing carbon emissions from different sectors especially transport and agriculture (with regard to the accumulation and unsustainable handling of agricultural wastes) and the industrial sector pose significant challenges to environmental safety in Egypt. Which makes these factors a pressure pathway for the state to encourage the spread of the use of biogas technology in the agricultural sector, especially as it save the foreign currency through the provision of a complete decomposed, free of parasites, and low cost fertilizer in addition to it doesn't cause environmental pollution compared to other high-cost organic fertilizers and extremely expensive and environmentally pollutant chemical ones. The study found that the size of the most common fermenter in the category of small-size fermenters is 6 m³ because it has a high economic return.

The research concluded that in biogas production units studied in the newly reclaimed areas of three Governorates (South Sinai, Fayoum, Assiut), net profit reached the end of life of the project, estimated at about 15 years, is about 42642 LE. The average annual profit per unit (4240 LE), IRR (15%), and the total cost recovery period of the unit are estimated at (7 years).

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A sensitivity analysis of 10% found that**First****Increase costs by 10%**

- Net profit of LE 40454.
- The average annual profit is LE 3424.
- Internal rate of return (IRR) 15%
- The total cost recovery period for the unit is 7 years.

Second**Revenues decrease by 10%**

- Net profit of LE 3622.
- The average annual profit is LE 3075.
- Internal rate of return (IRR) 15%

- The total cost recovery period for the unit is 7 years

Third**Increase costs by 10% and decrease revenue by 10% together**

- Net profit of LE 34014.
- The average annual profit is 3000 pounds.
- Internal rate of return (IRR) 15%
- The total cost recovery period for the unit is 7 years

The study recommends the use of 6 m³ biogas fermenters in the agriculture sector for heating, lighting and cooking purposes especially in newly reclaimed lands to provide energy and organic fertilizers to ensure the sustainability of the environmental resources in these virgin areas and the success of production processes economically.