



Broiler Value Chain: Socioeconomic Plan for Commercial Broiler Farm in Jordan

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

The broiler farm will be established in Bereen which is located in Zarqa Governorate and it is far away about 17 km from the capital Amman. Nearness of the farm to the city make easy access to market for the purchase of day old chicks, farm inputs (feed, etc.) and selling of broilers.

The farm is distant from the community, has good infrastructure such as roads, electricity and water.

With a vision to be a unique model for poultry production. The Mission of this study is to satisfy customers with consistent quality poultry products and services. Profitability and growth will be achieved through efficient production, human animal treatment and employee development in a safe and supportive work environment. Through making a substantial contribution to the economic and social development of the region through employment, supply quality and safety broiler meat in the region, making profitable enterprise to earn a good income.

The controlled poultry farm is a project of livestock sector, the purpose of the controlled poultry farm is to provide all the facilities ranging from automatic operations of temperature control, feeding and nipple drinking system for the broiler birds, monitored by the concerned & technical staff.

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Broiler farming in a controlled environment is a profitable venture due to continuously increasing demand of the white meat in the market. Poultry is an important sub-sector of agriculture that has contributed enormously to food production by playing a vital role in the domestic economy. The initial cost of the project is including of initial working capital of 417,797 JD, revenue and NR with a mortality rate not more than 5% is 29038 JD, the innovation in this project is a biogas unit to reach sustainability goals.

Keywords: Broilar value; socioeconomic plan; livestock; agriculture; Jordan.

1. INTRODUCTION

Poultry sector took the lead in meat production [1,2], in both investment and productivity, the investments is estimated to be 396 million dollars which is formed more than 51% of livestock product [3], although providing more than 25000 permanent job opportunity, in 2015, this sector provided the local market with (86%) of broiler meat demands and (100%) of table eggs. the average consumption of broiler meat was 29.5kg per capita annually [4].

1.1 Mission and Vision Statement of the Broiler Farm

Mission: To satisfies customers with consistent quality poultry products and services. Profitability and growth will be achieved through efficient production, human animal treatment and employee development in a safe and supportive work environment.

Vision: To be a role model for poultry production.

1.2 Objectives

- Make a substantial contribution to the economic and social development of the region through employment.
- Supply quality and safety broiler meat in the region.
- Making a profitable enterprise to earn good income.

2. MATERIALS AND METHODS

2.1 Farm Description

2.1.1 Location of the farm

- The broiler farm will be established in between which is located in Zarqa

Governorate and it is far away about 17 km from the capital Amman.

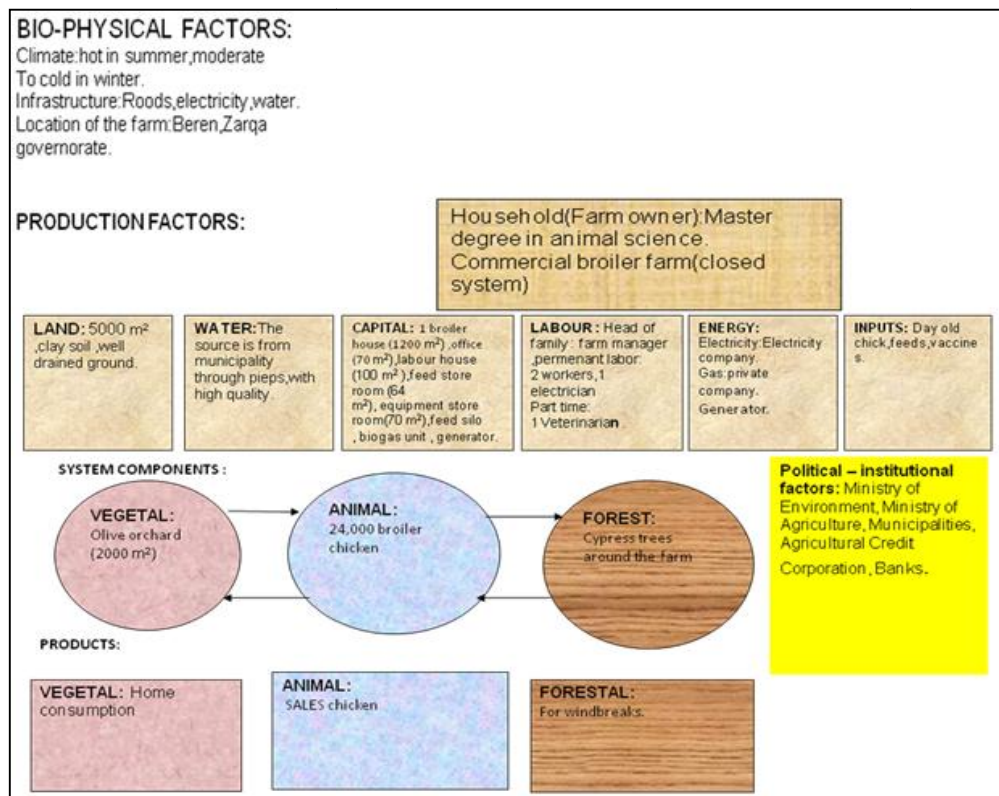
- Nearness of the farm to the city make easy access to market for the purchase of day old chicks, farm inputs (feed, etc.), and selling of broilers.
- The farm is distant from the community, have good infrastructure such as roads, electricity and water.

2.1.2 Farm description

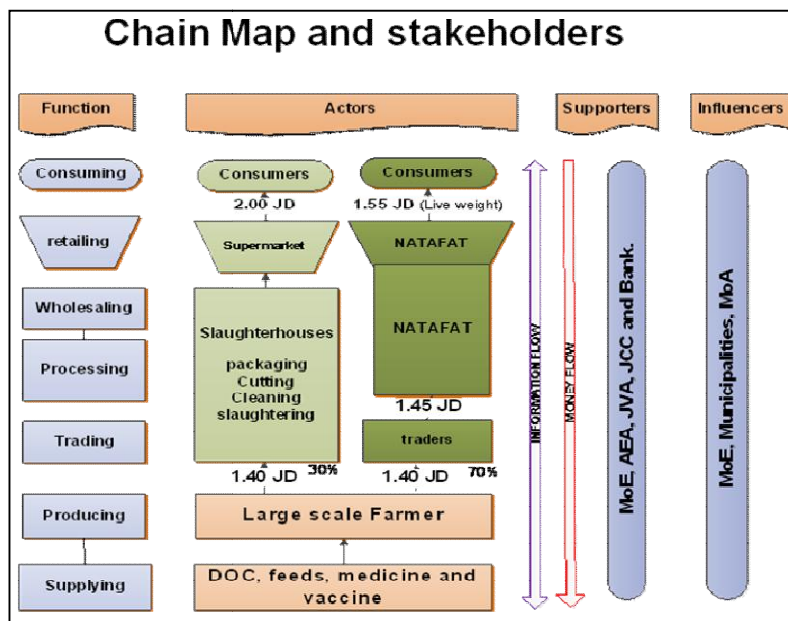
- **Farm Size:5 dunnams (5000 m²)**
 - 3 dunnams (3000 m²) for 1 broiler house, feed storage, equipment storage, office area, labor housing, and biogas unit.
 - 2 dunnams (2000 m²) used for planting olive tree.
- **Buildings:**
- The housing system is environmentally controlled houses with double layer insulated metal sheet roof, with artificial ventilation and cooling system, and all heating, lighting, feeding and water supply are automated.
- Farm consists of 1 broiler houses, the area of the broiler house is (100*12=1200m²).
- Flock/Herd size: The house has a capacity to accommodate 24,000 birds per cycle.
- Breed: we will choose the Hubbard breed in our business plan because it is available with good price and has a good performance and FCR, but we can choose one of the other breeds (Cobb, Ross, and Lohmann) in case of unavailability of Hubbard [5].
- Product + unique selling Point: broiler chickens 5 weeks old,

The proposed model of the Socioeconomic Plan for commercial broiler farm in Jordan was as follows.

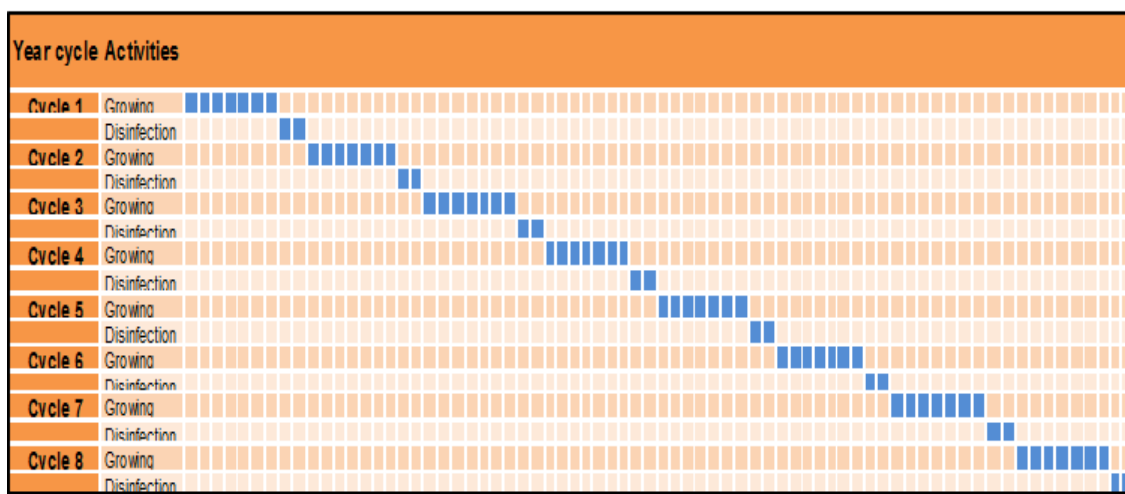
2.2 Farming System Diagram



2.3 Chain Map and Stakeholders



Production Plan Flock Size: 24,000 birds Units: 1 environmentally controlled house, with area 1200 m².



Every square represent 5 days

Average slaughter age (weeks)	5
Resting period per flock/days	10
Production cycle (days)	35
Number of cycles per year	8
Number of birds per flock	24,000
Total annual birds produced	192,000
Mortality Rate	5%
Net birds after mortality per year	182,400
Stocking rate bird/ m ²	20
Average selling weight kg / Bird	1.75
Broiler sale price per kg(live)/JD	1.40
Feed Conversion Ratio(FCR)	1.7
Total Feed intake kg /bird /cycle	3.0
Daily water consumption per bird/litter	1.4

2.4 Marketing Plan

There are two choices for selling broiler chickens

- The informal market, the farm will sell the live broiler chicken to the middlemen, and then the middlemen sell to the small processing units Natafat (small processing units), individually owned which use primitive and manual plucking, cleaning, and cutting of the birds, sell the broiler chickens directly to the consumer, the consumer likes to choose their preferred weight before it get slaughtered, cleaned, and finally packaged in plastic bag [6].
- The formal market is buy selling the birds to big slaughter houses after agree on the price which is in most time not good for the farmers.

- For the transportation of the live chicken, the middlemen and the big slaughterhouses have big trucks for carrying the birds from farms to slaughterhouses or to Natafat (direct fresh or live selling market) [7].

Product: The main products of this farm, are healthy and good quality broiler chicken with live weight of 1.75Kg/bird [5].

Price: The price of 1 kg live weight of bird will be 1.30 JD at the farm gate to the middleman, the middleman selling price to Natafat will be 1.34 JD, the Natafat selling price to consumer will be 1.45 JD.

People (consumer segment): the target customers will be both class (low and high-income consumers) through the informal and formal market.

Place (channel): The live birds will be distributed to Zarqa markets through middlemen and Natafat; some will reach supermarkets through slaughterhouses where the processing of birds used to take place.

Promotion: advertisement of our product because the high-quality broiler meat will be the key of our success through supplying formal and informal market with high-quality meat.

2.5 Housing

2.5.1 Buildings/unit

- The broiler houses are concrete structure closed system (100*12=1200 m²) with a

double layer insulated metal sheets roofs which have a reflective surface on the outside to help in reducing the conductance of solar heat and should be insulated.

- The floor should be made of cement, to prevent damage by rodents and to permit easy and efficient cleaning and disinfecting.
- The floor-level of broiler houses should be raised 30 cm above the outer ground level to prevent seepage of water into the house [5].

2.6 Sustainability Profile

- **People**

Development of rural areas.
Increasing job vacancies for citizens.

- **Planet**

From the environmental perspective, the treatment of poultry manure represents the ultimate solution to the pollution and odor

problems that threaten the population and the ecosystem at both local and global levels. Biogas plant will provide a clean and renewable form of energy. The use of biomass energy has many unique qualities that provide environmental benefits. Improving the soil, by using the fertilizer from the output of digestion.

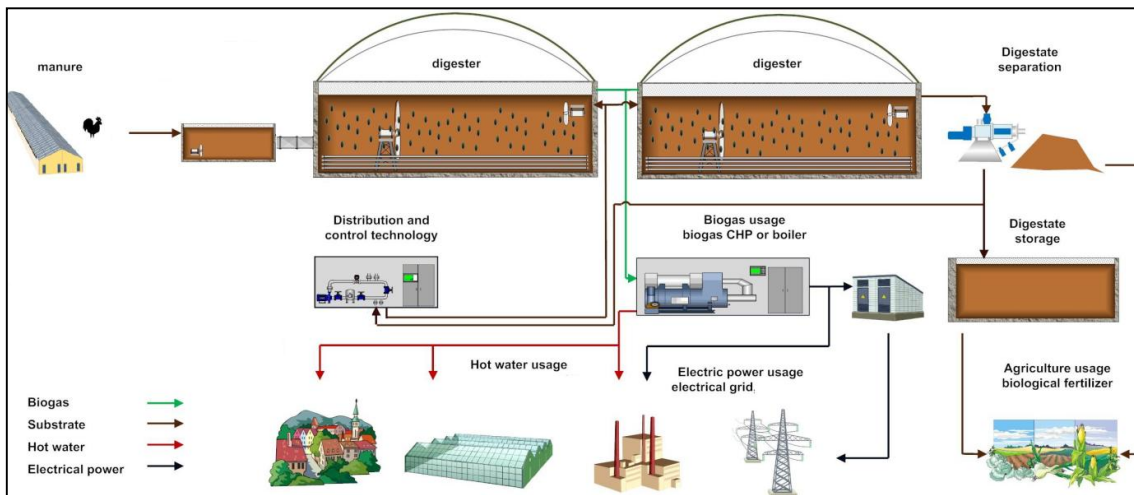
- **Profit**

Environmentally controlled broiler farms give a good profit because of the presence of high demand for broiler meat and suitability of local circumstances for the production of broiler chickens.

Producing renewable fuel like biogas to provide basic energy needs, to generate electricity, burning for heating or cooking in animal farms will result in reducing the cost of electricity and energy which lead to a very good profit.

2.7 Innovation: Biogas Unit

- Number of birds per flock=24000 bird will produce 36 ton manure per cycle
- 5 kg of litter will produce 1 m³ biogas
- 36000 kg will produce 7200 m³ biogas
- 1 m³ of biogas will produce 2.1 kWh of electricity
- 7200 m³ of biogas will produce 15120 kWh / cycle
- 15,120 kWh / cycle*8 cycles= 120,960 kWh/year
- The farm needs 18,750 kWh / cycle for lighting and heating
- The farm needs 150,000 kWh/year
- We will buy electricity in the first 2 cycles, and the remaining need of the farm in the next 6 cycles will be cover by our production from biogas unit.
- The next year we will try to buy a second biogas unit to cover all of our needs for electricity and we can sell also.



3. RESULTS AND DISCUSSION

The proposed project should generate revenues from sale of chicken after they have been raised for 6-7 weeks in the environmentally controlled poultry shed. Assumptions used for the product mix are as follows:

$$\begin{aligned} \text{The Total cost for one year} &= \text{FC} + \text{VC} \\ &= 39784 + 378013 \\ &= 417,797 \text{ JD} \end{aligned}$$

Revenue and NR:

The mortality = 5%

The total sale birds equal 22800 birds per batch

Revenue

$$\begin{aligned} \text{Net result (Profit)} &= \text{Revenue} - \text{TC} \\ &= 446,880 - 417,797 \\ &= 29038 \text{ JD} \end{aligned}$$

	Total Live Weight kg	Price	Total price JD
Birds Sale	22800*1.75=	1.40JD/kg live weight	55860
22800	39900 kg	39900*1.40	
Total per cycle			55860
Total per year			446.880

Item	Amount.	Price	total
Feed	72	350	25200
DOC	24000	0.3	7200
Vaccine & drugs			1500
Water			500
Electricity (for the first and second cycle)			700
Heating (for the first and second cycle)			1000
Litter			600
Miscellaneous			6256
Total variable cost for one cycle (for the first and second cycle)			42956
Total variable cost for one cycle (for the rest 6 cycles)			41256
Subtotal variable cost per year (8 cycles)			333448
interest on variable cost 2%			6668.96
Total variable cost per year (8 cycles)			340117

* 1 Jordan dinar JD equals 1.41 US \$)

4. CONCLUSION

The controlled poultry farm is a project of livestock sector, The purpose of the controlled poultry provide all the facilities ranging from automatic operations of temperature control, feeding and nipple drinking system for the broiler birds, monitored by the concerned & technical staff. Broiler farming in a controlled environment is a profitable venture due to continuously increasing demand of the white meat in the market. Poultry is an important sub-sector of agriculture and has contributed enormously to food production by playing a vital role in the domestic economy. The initial cost of the project is including of initial working capital of 417,797 JD, Revenue and NR with a mortality rate 5% is 29038 JD, the innovation in this project is a biogas unit to reach sustainability goals.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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