



Greenhouse facilities in Kryvyi Rih City



Investment offer description, 1 hectare (tomatoes, cucumbers)

Project summary

Project matter

Establishing of industrial greenhouse (protected ground) to grow vegetables (tomatoes, cucumbers) in Kryvyi Rih (Dnipropetrovsk region) on the area of 1 hectare

Appeal

- city's large population (as of December 1, 2017 - 632,7 city's large population);
- city's large population;
- presence of target market (grocery markets, supermarkets, retail trade net);
- average salary in the city (july – october 2017) - 7 794,9 UAH.;
- stable demand for vegetable products



Project readiness

The Project needs creating of project and budget documentation on building works

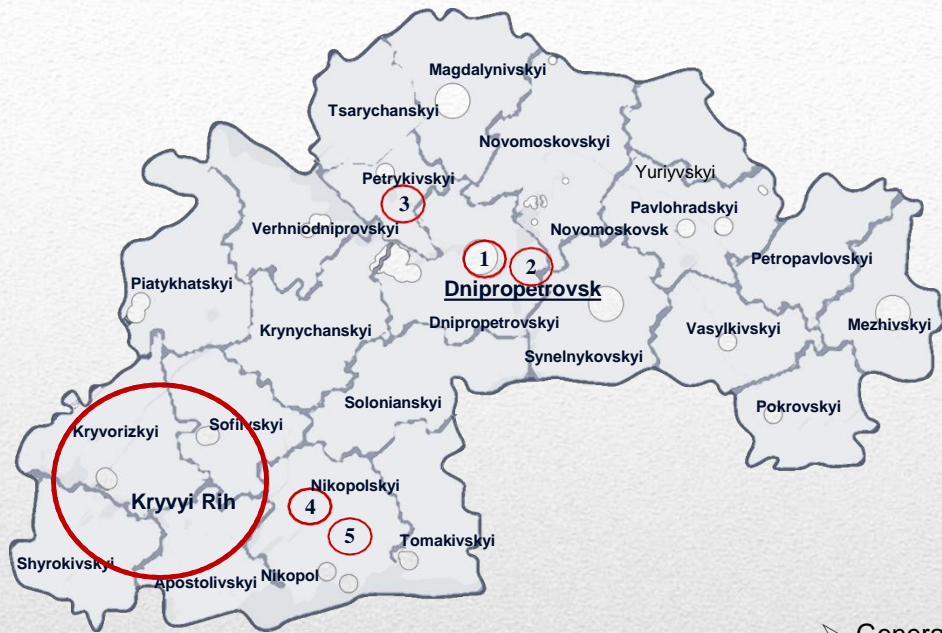
Cost

The Project estimated cost is 12 896 430 UAH.
The Project implementation resources: investor's own funds.

Project effectiveness indices

Index	Unit of account	Number
Discounted payback period, DPP	month	52
Net present value, NPV	thousand UAH	2 057,37
Internal rate of return, IRR	%	25,8
Profitability index, PI		1,2
Budget (own equity)	thousand UAH	12 896,43

Greenhouse development analysis



Commentaries:

- Today there are 5 greenhouses of protected ground working in Dnipropetrovs'k oblast with total area of 39,2 hectares.
- There is no industrial greenhouses with protected ground in the Kryvyi Rih city.

No	Location	Business name	Area, hectares
1	Yuvileyne village, Dnipropetrovsk area	LLC "Dniprovsky"	6,0
2	Dnipropetrovsk city	LLC "Agroinvest"	3,7
3	Elyzavetivka village, Petrykivsk area	LLC "Dniprovsky"	17,5
4	Katerynivka village, Nikopol area	PE "Katerynivska-1"	6,0
5	Menzghynske village, Nikopol area	PE "Pektoral"	6,0

Greenhouse area dynamics in Ukraine during 2013-2017 years, thousand hectares



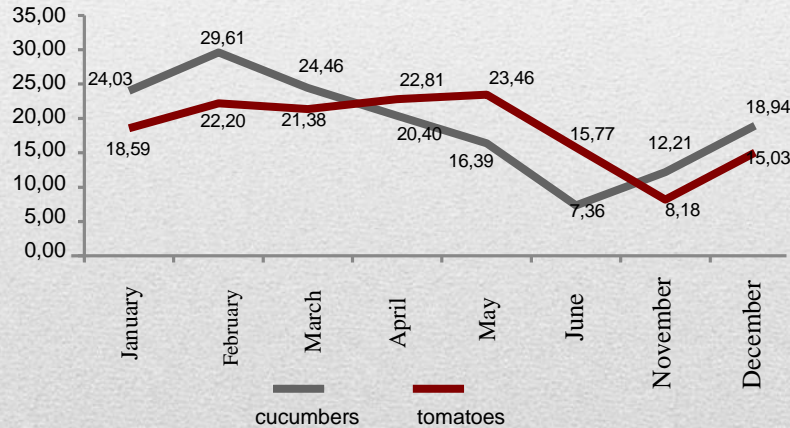
- Generally Ukraine covers only 55% of population needs in greenhouses (protected ground, winter and spring).
- The area of growing facilities in protected ground at Ukraine are increasing last 5 years, except 2015, and as to 2018 they are 3,27 thousands ha.
- According to the Ministry of agricultural politics, the area of brand-new greenhouses launched in is about 60 ha (31 objects) with overall investments more that 1.6 billions UAH.
- The greenhouses of Ukraine are generally specialized on growing of vegetables - 79%, flowers - 19%, fruits and mushrooms- 2%.
- The glass greenhouses in Ukraine hold just 2,8%. The most popular greenhouses complexes are spring (film) ones (55,6%) and tunnels-like (41,7%).

Marketing research analysis

Current situation

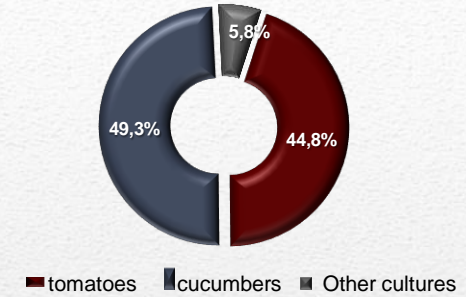
- Proportion of the imported fresh vegetables at the Ukrainian market is about 30%, that is explained by considerable demand on products at the internal market (from data of Derzhkomstat, from 2013 till 2017 the import of tomatoes was increased in 13,1 times, cucumbers — in 15 times and was 48,2 and 14,1 thousand accordingly in 2016).
- According to actual consumption of vegetables per a person, Ukraine goes behind ratified norms of consumption (an annual norm is 134 kg, cucumbers and tomatoes are 49 kg from this amount; an actual consumption is 110 kg, cucumbers and tomatoes are 32 kg from this amount (less than a norm on 35%)

The vegetables sale price dynamics at the city's markets in 2017 year, UAH/kg



- The highest price of cucumbers during the year exceeds the lowest one in 4 times, tomatoes – in 2.8 times.
- The average price in 2017 of cucumbers – 22,0 UAH/kg, of tomatoes – 19,80 UAH/kg.
- The most profitable period to sell greenhouse products is from December till May.

The greenhouse cultures market segmentation in Ukraine, 2012 year, %



- The domination of cucumbers and tomatoes among the greenhouse cultures is explained by lower risks in their growing than one of strawberries or salads.

Greenhouse building project



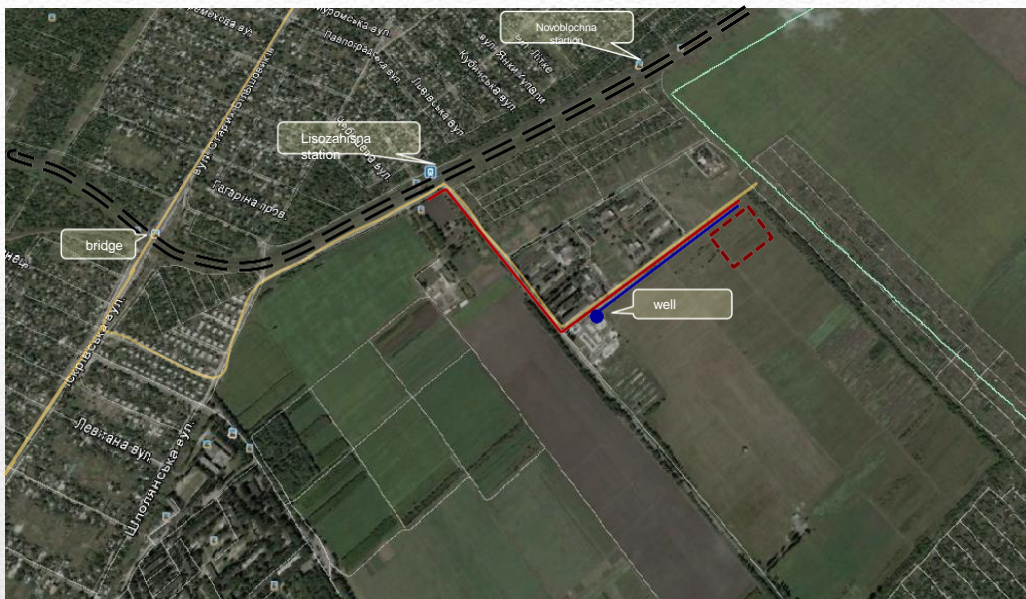
COMMENTARIES:

Land location	Within city limits in Blahoeva Street, Dovhyntsiivskiyi area
Land area	About 20 hectares Recommended for the greenhouse - 10 000 m ² (1 ha)
Communications	Access to water and electricity sources nearby
Accessibility to the area	by asphalt road
The area of administrative and production and storage facilities	400 m ²
Greenhouse overall area	9 600 m ²
Greenhouse usable area including:	
➤ for growing tomatoes	7200 m ²
➤ for growing cucumbers	4500 m ²
	2700 m ²
Average harvest from 1 m²:	
➤ tomatoes	20-60 kg
➤ cucumbers	25-50 kg

* Note:

The city council additionally offer unused lands in Inhuletsk area for the development of greenhouse:

1) Fialkova street- 0,14 ha; 2) Zelenivska street- 0,2 ha.



Conventional signs

electrical network:

- support pillars are available;
- necessity of electric supply network to the land is 1380 m.

water supply:

- a well is available;
- necessity of water supply tubes to the land is 590 m.

railway:

- two railway stations disposed near the land:

Lisozahisna station– 1200 m

Novoblochna station- 800 m

roads:

- asphalt motorways;
- passenger traffic taxis (shuttle buses): №206, 264, 265, 269;
- the distance between the bus station and the land is 2,4 km

Potential land area for the greenhouse

There are no facilities on the land territory

Greenhouse facilities placement scheme on 1 hectare



Greenhouse characteristics:

- **Material:** polycarbonate, thickness 8 mm. Polycarbonate is highly resistant to precipitation and ultraviolet rays, has a high level of light transmission, that makes better influence on microclimate for much earlier maturation of all greenhouse cultures, provides high heat saving level
- **Frame:** aluminum profile. Aluminum is a chemically inert metal, excluding its rust and corrosion under the influence of any conditions (outside) and internal modes of Greenhouse (high temperature and humidity). Greenhouses frame does not bend due to square crossing of profiles (2x2 cm), profile thickness is 1,5 mm, and extra supporting design elements.
- **High:** 2,5 m; **width:** 4 m; **length:** 15 greenhouses – 100m, 10 greenhouses – 90m.
- **Life settings:** 10 years and more.
- **Cost :** 7 637,5 thousand UAH.
- **Possible supplier:** Ltd. «Ukrainski teplytsi», Ukraine, Odessa city, tel.: (048) 700 55 44

Equipment characteristic:

Equipment title	Description	Cost, thousand UAH
Greenhouse radiant heating system	300 UAH/sq.m. x 7200 m ²	2 160,0
Greenhouse light system (LED lights)	500 UAH/1 lamp x4800 lamps	2 400, 0
Greenhouse ventilation system	((2500 UAH x 4 pieces) + 3600 UAH) x 25 greenhouses	340,0
Humidity system	3500 UAH x 25 greenhouses	87,5
Drip Irrigation	6000 UAH x 25 greenhouses	150,0
Vegetables growing system	950000 UAH/15 greenhouses + 650000 UAH/10 greenhouses	2 500, 0

* **Note:** delivery and equipment assemblage costs are not included

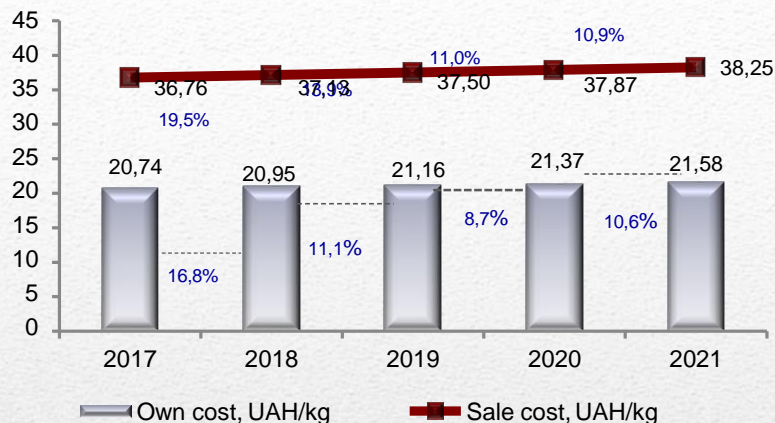
Project implementation schedule

Measures	Implementation Schedule (Months)							Budget, thousand UAH
	1 month	2 month	3 month	4 month	5 month	6 month	7 month	
Allotment of land	■	■	■	■	■	■	■	32,1
Official documents processing			■	■	■	■	■	7,32
Project-financial documentation development			■	■	■	■	■	353,5
Communications supply (water, electricity)				■	■	■	■	151,5
Greenhouse building					■	■	■	7 637,5
Building of administrative and store facilities					■	■	■	606
Buying and installing of equipment						■	■	7 234,7
Buying of transportation units							■	202,8
Greenhouse work implementation							➔	

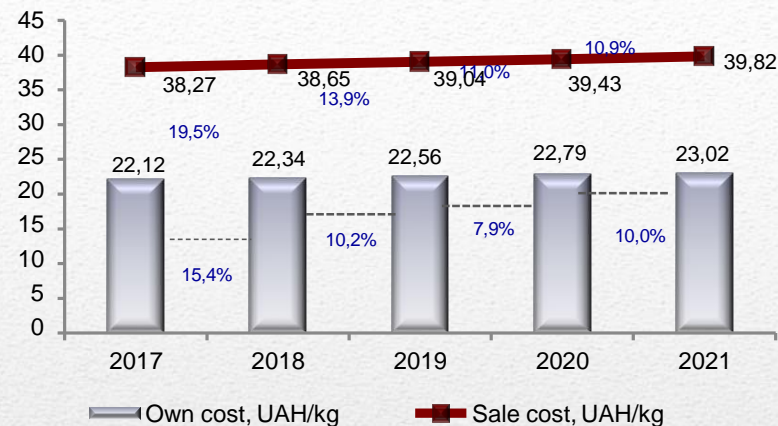
PROJECTS BUDGET, overall, thousand UAH.	10,7	10,7	191,11	256,62	1 713,75	1 638,01	9 075,54	12 896,43
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Products cost prices

TOMATOES



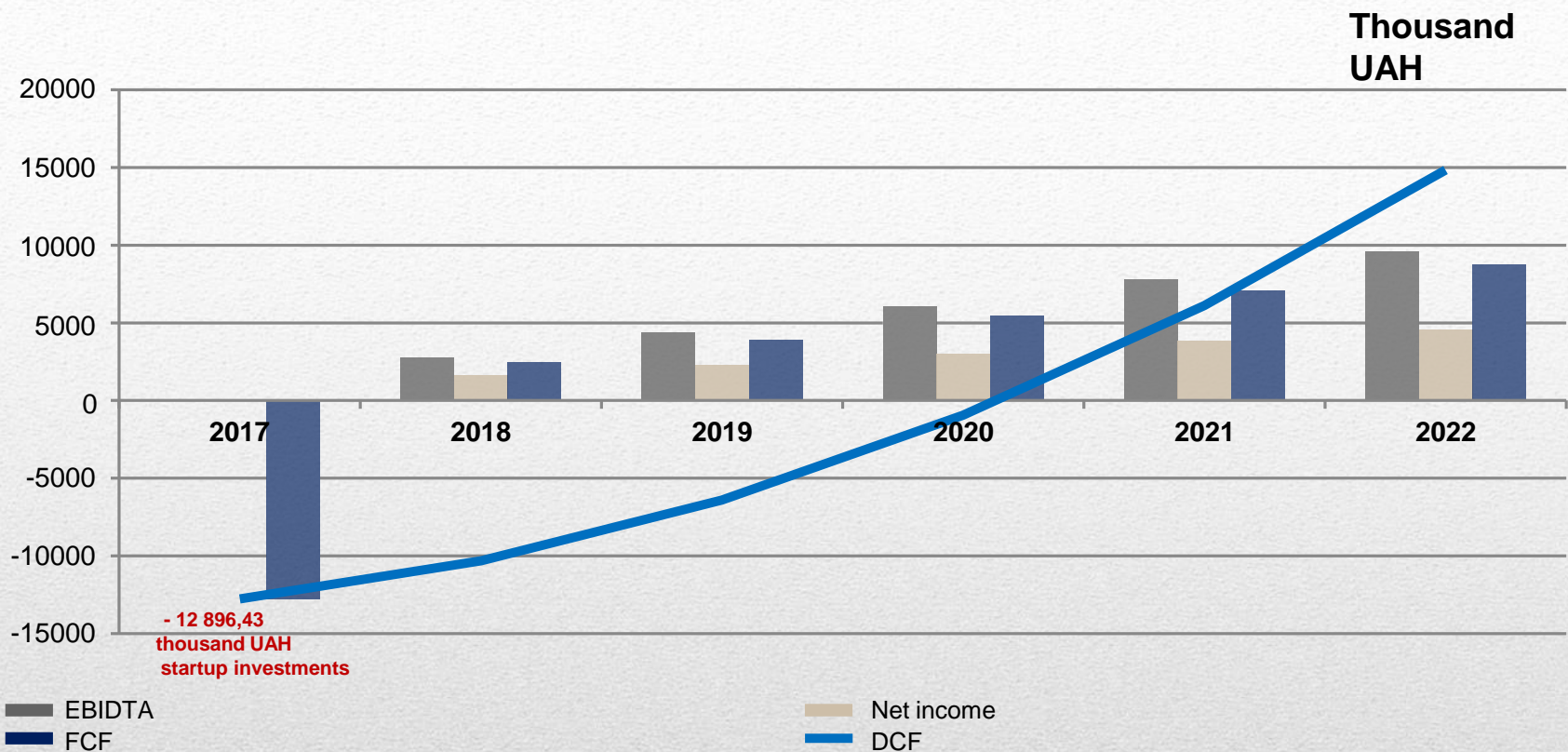
CUCUMBERS



Own cost structure and product's sale cost

Indexes	Unit of account	Tomatoes					Cucumbers				
		2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Raw and other materials	thousand UAH	4,46	4,69	4,73	4,78	4,83	2,68	2,81	2,84	2,87	3
Fuel and energy	thousand UAH	984,2	1018,6	1028,78	1039,07	1049,46	590,5	611,17	617,3	623,45	629,68
Other material expenses	thousand UAH	33,7	35,1	35,4	35,8	36,16	20,25	21,06	21,3	21,5	21,7
Amortization	thousand UAH	2033,2	2603,95	2629,99	2656,29	2682,85	1219,9	1562,37	1578	1594	1609,71
Wages	thousand UAH	542,05	596,25	602,21	608,23	614,32	325,23	357,75	361,33	364,9	368,6
Payroll accounting	thousand UAH	200,56	220,61	222,81	225,04	227,29	120,34	132,37	133,7	135,03	136,4
Own cost	thousand UAH	3798,14	4479,21	4523,92	4569,21	4614,91	2278,89	2687,53	2714,5	2741,75	2769,1
Profitability	%	64,31	64,9	65,4	66,2	66,8	60,11	61,33	62	62,5	63,1
Sale cost	UAH/kg	33,12	36,76	37,12	37,5	37,2	34,48	38,27	38,65	39	39,4
Output	t	202,5	216,0	218,16	220,3	222,5	113,4	121,5	122,7	123,9	125,2

Ключові показники проекту



Index	2017	2018	2019	2020	2021
EBITDA	2 751,62	4 349,24	6 037,76	7 791,75	9 589,26
Net income	1 628,22	2 287,07	3 022,29	3 812,50	4 555,27
FCF	2 441,48	3 913,60	5 462,09	7 065,56	8 721,59
DCF (cumulative)	-10 326,82	-6 413,22	-951,13	6 114,43	14 836,02

SWOT – analysis and possible risks

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ➤ Convenient geo-economical location ➤ Approach roads ➤ Using intensive growing technologies ➤ High quality production ➤ Flexible pricing ➤ Absence of similar greenhouse facilities in the city 	<ul style="list-style-type: none"> ➤ Lack of developed markets ➤ The presence of competition from households ➤ Proceeds of cheap vegetables from other regions and countries
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ➤ Development of new markets at neighboring regions ➤ Attracting new customers ➤ The rapid growth of greenhouse products ➤ Expansion of products assortment ➤ Increasing yields of vegetables cultures ➤ Creating an own network of sales outlets ➤ Possible expansion of production area (to 20 ha) 	<ul style="list-style-type: none"> ➤ Technical problems in the production organization ➤ Probability of new competitors ➤ Growth of inflation ➤ Contract difficulties with suppliers and customers ➤ Unstable economic situation ➤ Tariff increases on energy and water

Possible risks	Reasons	Measures to reduce
Need for increasing the investment	Increasing terms of projects implementation	Overseeing the implementation and compliance a work schedule
Reduced demand of products	Market oversaturation, whole economy conditions	Expansion of markets, including export
Reducing the sale cost	Considerable level of competition, seasonality	Achieving lowest spending level
Product quality discrepancy	Diseases of greenhouse plants	Using intensive technologies of cultivation and protection
Implementation period increase	Delays in delivery and installing works	Contract predictions in delays penalties

Potential sales markets



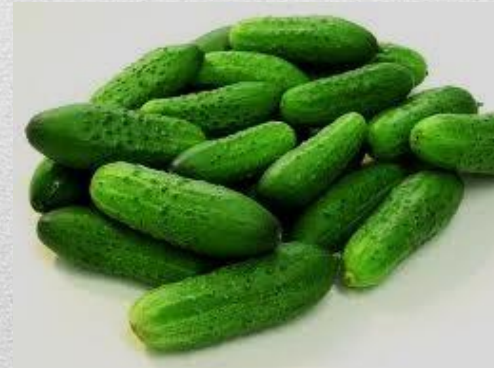
To achieve a normative year-consumption of cucumber and tomatoes the estimated market size of greenhouse products is 32,3 thousand tones.

<i>Project's production volumes</i>	<i>year/tons</i>	2017	2018	2019	2020	2021
		315,9	337,5	340,86	344,2	347,2



Potential sales markets:

- grocery and mixed city's markets (28). Monthly average vegetables sale on the city's markets is more than 45 tons;
- supermarkets and grocery stores in the city (54). Monthly average sale is about 45 tons;
- restaurants (434);
- preschool educational establishments (155);
- secondary educational establishments (147);
- health care establishments (54).



MARKETING STRATEGY:

- sale of fresh products during the "peak price" period on markets (winter-spring);
- marketing measures for products promotion, expansion of city's markets (including possibilities for export)

THE CITY GOVERNMENT

- Land allocation
- Assistance in communications supply
- Assistance in passing of permission procedures



- Creating new jobs (17 persons)
- Providing city residents with domestic vegetables products
- Reducing import products
- Additional revenues to the budgets of all level trough the taxes and fees

DEVELOPMENT INSTITUTION

- Providing the investor with information to make optimal decision
- Assistance of passing licensing procedures and implementing of the project



PRIVATE SECTOR

- Experts knowledge
- Carrying out business analysis and risk assessments
- Investments in the greenhouse building
- Competence of managing business in the industry



- Income from the successfully working business
- The possibility to expansion greenhouse area, which can increase the income, sales volume and sale markets.





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