



## BUSINESS PLAN

### Outline Project Concept Study

TomCuc Ltd.

FOR  
INVESTMENT IN MACEDONIA

**GREENHOUSE FIRST STAGE: 6.4 ha**  
of total construction area 13.2 ha

### EXECUTIVE SUMMARY



**THIS FINANCIAL PROJECT WAS DEVELOPED IN THE  
METHODOLOGY AND WAYS THAT ARE NECESSARY  
FOR THE APPROVAL FOR PROJECT FINANCE  
(WITHOUT INSURANCE OR GUARANTEE) BY  
NATIONAL CREDIT AGENCY,  
INVESTORS AND BANKS.**



*This Feasibility Study is prepared by courtesy of*

**International Investment Council**

*It does not imply offering of securities.*

July, 2018



# INFORMATION MEMORANDUM\*

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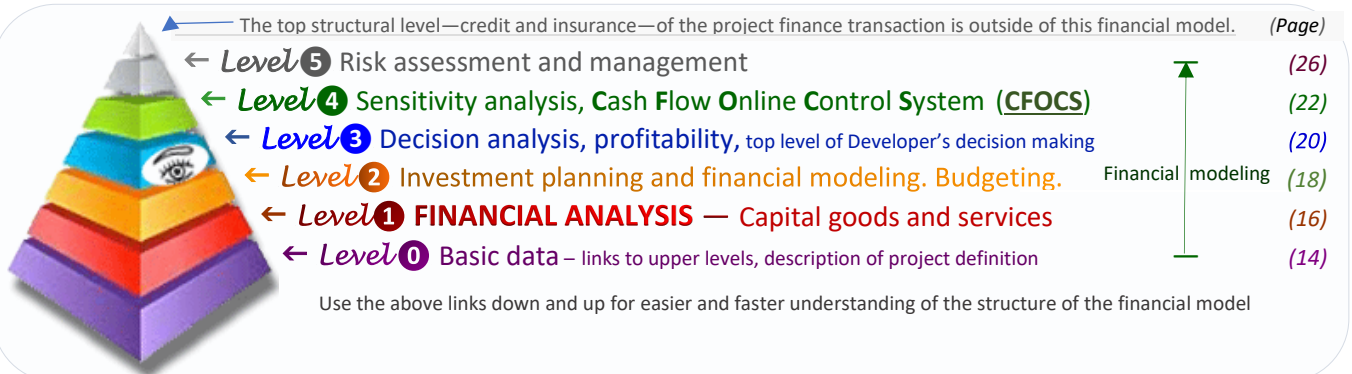
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## CONFIDENTIAL NOTE

This Business Plan (the present EXECUTIVE SUMMARY, Excel-based *Pro-forma Capital-Budgeting*, Risk Assessment Program, the enclosed contracts, commercial offers, certificates and other papers and instruments contains commercial and business secrets, and is **confidential and/or privileged**.

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\*

This Summary is generally assumed to be used online. The [URLs](#) in the electronic copy facilitate following the content when you're read it. References to external sources are intended for people who are using assistive technologies, and for non-financial experts—administrators, business managers, entrepreneurs, translators.

<sup>†</sup> Please note. This Summary, as well as the program Excel file of the financial model that is described here, except for the verbalization and figures, are presented with specially selected fonts, color applications, images and icons for [more](#) purpose of visualization the information. [Visualization](#) is perceived and remembered [60,000 times faster](#) than the verbalizing)

## INTRODUCTION



**Project Name:** GREENHOUSE “TomCuc-1”

*Base level Zero (0)*

**Developer:** TomCuc Ltd.,<sup>1</sup> Macedonia, Project Company (PC).



**Area,** total: 13.2 *ha*. **First stage:** Area: **6.4 *ha***; Greenhouse construction plot: **5.9 *ha***.

**Subject:** Capital investment in greenhouse in Village Nikulane, District Staro Nagorichane, Macedonia for vegetables: **Tomatoes (T)** and **Cucumbers (C)**.



### Prices of TURNKEY DELIVERY:

**Total import value, DDP\*:** € 8,542,844. -

**Local country costs:** € 872,000. -

**Credit term:** 7-year period (the 12-month grace period included).

Financial Model →

**Collateral:** Corporate equity bonds (when required).

**Profitability:** NPV = € 533,578 - (Cell C75) at a hurdle rate 10% (Cell C74), [Worksheet **BUDGET**]

IRR = 8.4% - (Cell C76). (Click the Button **Check** to confirm the correct computing)

**Feasibility study:** DSCR = 2.03– Good (with the proviso that 1.2 is the critical value)

LLCR = 8%

**Payback period:** 6 years and 4 months - (Cells H74 : I74).

**Financing:** Project finance with EU funds - support of State Central Project Management Agency (CPVA), CFCD of Ministry of Finance of Macedonia through instruments like PHARE, CARDS, SAPARD, ISPA and the newest IPA (Agency), underwriter and local commercial bank.

**Distribution:** Greenhouse vegetable markets, London and Stockholm (UIC: 113570001)

**Management and operation of greenhouse:** TomCuc Ltd.

**Distribution and financial control:** OCFCs,<sup>†</sup> through [EEC Ltd.](#)<sup>2</sup>

*This Summary is made on pre-design base data, and it will be fully completed when a final offer for equipment is provided.*

\* DDP – Delivered Duty Paid ([more](#))

<sup>†</sup> Online Cash-flow Control System – software granted by International Investment Council, Washington, D.C.



## The Status Quo

This Project is developed by **International Investment Council, (IIC)**, a DBA-formation of **East Electric Company LLC**, Washington, D.C., and with courtesy of its outsourcing for Europe and Central Asia, **East Electric Company Ltd., Bulgaria (EEC)**. It is one of the series of capital investment projects [\[more\]](#), subject of the activities of **International Investment Partnership (IIP)**, where IIC is indirect partner through its President, **Prof. George Angelow**—one of the General Partners of IIP and authorized<sup>3</sup> by the concessionaire of the construction land in 2016 to do and perform all and every act and thing whatsoever requisite.

## ✓ Background

The process of the feasibility study started with a request and an enquiry from the Macedonian Partners of IIP for assistance in the construction of a modern vegetable greenhouse in early 2015. Later next year, the formal decision IIC and its associate outsourcing companies to develop without advance payment a financial project for credit from state export credit agency of manufacturer. Bids were received from Spain, the Netherlands and Canada, but their export credit agencies refused, for various reasons—the Spanish because of a protracted internal political crisis; Canadian due to incompetence and violation of the law; Dutch did not respond to the inquiry. Meanwhile, over these three years IIC with European outsourcing support carried out all the feasibility study, design, risk assessment, and the whole Project documentation. The climatic characteristics of the locality and their specific impact on the harvest of tomatoes<sup>4</sup>, and cucumbers<sup>5</sup> was provided by NASA and for other specialized institutions.

This Financial Project is for funding the new greenhouse [Delivered Duty Paid \(DDP\)](#) cleared for import and all applicable taxes and duties paid (e.g. VAT, GST) on a turnkey bases by a Spain producer, and local preparation of the construction site and receiving of permits made by Macedonian design and construction company \_\_\_\_\_ Ltd. under key.

## ✓ Development Land<sup>6</sup>

The whole site at Village Nikulane, District Staro Nagorichane ([see above](#)) is large and on completion of the zoning and master planning activities. It includes an existing old half broken greenhouse from the middle of the last century. A part of this site, 13.3 *ha* (without the old greenhouse) will be the construction land of the whole Project. In August 2018 it was established a new entity, named “TomCuc Hot Home”, registered **TomCuc HH Ltd.**, which obtained the concession for this land, and in September it gave the land to rent on the Project Company.<sup>7</sup>

The land sales option is the most flexible and least capital-intensive option in the range of this project financing – Cell R64 [[Worksheet Intro](#)].

## ✓ Sales Strategy

The sales strategy is very simple. It is focused on export in the European Union and Russia. As primary markets have been selected UK—more specifically the North London area<sup>8</sup>—

and Sweden. The marketing research results in two Letters of Intent (herewith attached) from professional distributors in both destinations. With the opening of proceedings, the Project Company, will organize participation in various trade fairs to expand its trading network in Europe. The necessary funding for this is provided in the Cash-flow Proforma Budgeting on **Level 2** of the Financial Model.

## ✓ Status of the Project

[Financial Model](#) 

**Capital industrial investment project.** Financial modeling is developed preferentially for [project finance](#) and particularly in this case for greenhouses. It is purposed for both the project due diligence review and further monitoring and operational control and financial risk management of the business during the loan life. At the beginning of the due diligence process, this can help speed up matters and allow the lender, e.g. Agency, to evaluate the project sooner and correct. The general purpose is to conclude a [concept design review](#) through an optimal size of capital investment and operational costs. As mentioned above, it has the well-known *hierarchical structure* for system analysis in five levels.

The financial modeling package contains:

- (i) **Information Memorandum (Business Plan – this Executive Summary)** which provides a detailed verbal description of the financial model, so that an auditor, performing due diligence, can gain full perception of the business venture with its profitability evaluation and financial quantitative risk assessment. Part of this **Summary** focuses on a guide for easy operation with an Excel program file and the supporting software presenting the financial model and budgeting during the loan life for the benefit of all participants in the financing.
- (ii) Functional Model of 45T [Capital-budgeting—Cash-flow Pro-forma](#)<sup>9</sup>
- (iii) **Input data and assumptions** [Worksheet **Intro**]. There are now double browsing buttons to the worksheets for fixation of different zooming. In the mode of use of the financial model for the operational control of the project and management, the right sectors of the buttons will serve the visit the worksheet in algorithmic conditions and control section.
  - **Capital goods and services** with their prices and loan [Worksheet **Cap. Goods**];
  - **Sales, Costs, Cash-flows, Measuring Profitability** and Pay-back methods applied, and graphical representations of the most important parameters of the Financial Model [Worksheet **BUDGET**];
  - **Personnel** and salaries on payroll [Worksheet **Staff**];
  - **Decision and Sensitivity Analysis** of posterior probabilities of events affecting the most important factor with impact over the cash inflow for risk management during operation [Worksheet **Bayes**].

- (iv) **Risk Assessment and Management**<sup>10</sup> with Manual<sup>11</sup> of a demo version and description of an Excel file with the financial model and software.\* It is provided in a customized version with actual results of the assessment of eight risk factors and their impact over the business venture. A brief description facilitates a fast but incomplete understanding of the preliminary study.

## ✓ Infrastructure

In the overall strategy of the Financial Project for this type of business, the infrastructure is treated as structurally identifying. For the purpose of strategic analysis, cost attribution, and phasing decisions, the infrastructure for the project is divided into two types: (1) primary—road-transport, and (2) secondary—energy & water-supplying, designated as following:

- (1) to connect the site and provide distribution to each plot, Block 2 and Block 2, and the warehouses for:
  - (i) raw materials, and
  - (ii) end products for distribution
- (2) Connection to the grids for:
  - (i) electrical power supply, transformer substation, distribution as above, and
  - (ii) water supply, potable and for irrigation - utility connection and/or borehole, any central pumping plant, distribution as above.

Both types of the infrastructure will be treated as a separate capital cost item.



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# PROJECT INFORMATION AND TECHNICAL MEMORANDUM

## 1. EXECUTIVE SUMMARY

### 1.1. BRIEF DESCRIPTION



#### Type of the Financial Project



←click and download

This **Financial Project** is capable of producing enough cash to cover all operating and debt-servicing expenses over the whole tenor of the debt. It is the ultimate product of a universal financial model for project finance in the real economy. Its general structure is a very simple *hierarchical* formal system: <sup>\*</sup> input → calculation algorithm → output and management.



- **Level 0** is the basic level with desired equipment, final products with their market prices and the expected final results in [Worksheet **Intro**];
- **Level 1** - capital goods and services in Worksheet **Cap.Goods**;
- **Level 2** is the upper level with the rules of cash-flow pro-forma budgeting determined in Worksheet **BUDGET**;
- **Level 3** - quality analysis of the investment; and
- **Level 4** - risk management by the functional rules of [Worksheet **Bayes**].

In this *formal system* with visual pyramidal structure, from top to bottom, the management **5** is the “Command Center”, which with download feedback can change the output of **Level 3**. Respectively, following this structure, is that the rules for the operation of the formal system on **Level 1** are determined by the rules of the upper **Level 2**, which in turn are determined by functional rules of **Level 3**, etc. The meta-rules of the top **Level 5** cannot be changed because there is no higher level above it which has rules that specify how to modify them. The application of the principle of Theory of Control (Cybernetics) is the hierarchical structure, which is correct applied in similar cases of the financial modeling —this project—in order to keep the transaction under control which significantly mitigates the operational risk factor, including **Online Cash-Flow Control System** [\[more\]](#). Finally, the input **0** is highly project-specific, located at the base **Level 0** of the pyramidal structure, where all first data input and assumptions are fixed, constant, not changeable during the operating with the model.

They are:

- various costs and assumptions, offered by the suppliers of capital goods and services;
- Developer’s long-term assets (land, concessions, raw materials, etc.), connected with the engineering project and will be put on it;
- forecasting revenues and the relevant duties, tax rates, interest rates and other local country costs.



<sup>\*</sup> If you’re interested in the theoretical fundamentals of the FORMAL SYSTEMS which are the basis of information transfer, visit the website and download the description in PDF format [📄](#)



## Motivation and Scope of Financial Model (FM)



The Project Company (PC) and Applicant is **TomCuc Ltd.**, Macedonia

The technology which will be applied and the facilities are manufactured by a leading designer and builder of greenhouses. The CEO of the PC, **Dimitar Ivanov<sup>12</sup>**, is a highly qualified engineer-agronomist with many years of experience in vegetable production.

Financial Project is developed<sup>13</sup> by [East Electric Company Ltd.<sup>14</sup>](#), an auxiliary company in Bulgaria of [East Electric Company LLC](#), Washington, D.C., with courtesy support of the designer of the financial model and software product, [International Investment Council](#), (DBA formation) a leader in financial modeling and forecasting helping clients with investments, financial transactions, strategic planning, and operational aspects. Only a local company from the region of origin and development of the engineering project is capable of making a specific and adequate interpretation of the business in figures and formulas with all events that may occur in a very specific business environment. High-level experts have been assigned to provide a professional **Feasibility Study** of the business, climate, and other specific parameters of the recent development of greenhouse production in the region.<sup>15</sup>



## Objectives of TomCuc



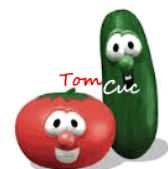
Long-term:

- Investment in greenhouses of new modern type for tomatoes **T** and cucumbers **C** (*Products*), hydroponic growing system with high productivity, up-to-date technology designed to be crop flexible, heating system based on pellets and EU eco-approved model and local department administrative water concession<sup>16</sup> as a second option heating system;
- High level digital control of quality and sales;
- Product export to EU countries;
- Certification under ISO 9000:9004, ISO 10000 and ISO 14000 about the quality of production;
- Coordination with zoning building and other codes and building requirements checked with the local authorities, including for steel tubing cold frame design, before offering application.



Short-term:

- Design of the greenhouse complex for the products.
- Advertising and marketing.
- Registration of trade mark (**TomCuc**).
- Training of technologists – agronomist and gangers.
- Mitigation of default risk factor through diversification of the export.







## Investment



## Location and Equipment

The greenhouse location is on the land of Village Nikulane, District Staro Nagorikane, Northeast Macedonia. This is an economically underdeveloped region. One such investment will help the development of the region and encourage local production. Therefore, it is expected the successful implementation of the social programs of the government.

The area intended for **double pane glass cover structure of high-end greenhouse hydroponic system** complex will be 13.2 ha<sup>17</sup> of 15 ha managing by TomCuc, Ltd.– **fully automated using sophisticated controls that open roofs, close vents, survey outside weather,** etc. The construction of the greenhouse is divided into two stage—the first on **6.4 ha** plot on which **5.9 ha** construction plot.

On the attached picture of the area is marked out the land plot of the complex, and above it - a plot of 18 ha - old existing greenhouse on area of 12 ha (8 units on 1.5 ha each). Both belong to TomCuc HH Ltd. This greenhouse is not working and will be destroyed. Its de-installation is expensive and will be subject to reinvestment. On its place in the second stage ahead:



- (i) To build a new greenhouse, *or (if it is technically and financially justifiable);*
- (ii) The first greenhouse, built under this project, to be designed to contain technological facilities (heating and irrigation systems, computer control, etc.) to serve both. Therefore, the next second phase of reinvestment to be delivered and installed only the structures of the blocks, pipes and other infrastructure facilities. This is an issue that should be treated professionally and presented by the manufacturer and supplier of the equipment; their engineering offer, one of the contract applications, of which the drawing must be stamped by a local licensed engineer.

According to the strategy for development of the northeast region of Macedonia there is priority support for of farms involved in labor intensive sectors, implementation of new technologies, and preparation and storage of finished products.



## ✓ Climatic characteristics and expected results

Average temperature	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum	4	8	14	19	24	28	30	30	26	19	10	5
Minimum	-2	0	2	5	10	13	15	15	11	6	1	-1
Mean	0	3	8	12	17	21	23	23	19	12	6	1

Average Maximum Temperature °C 16,9

Average Minimum Temperature °C 7,97

Absolute Maximum Temperature °C 40,6

Period	Maximum value (date)
01.01.2005 - 30.07.2016, all days	<b>+40.6</b> (07.08.2012)

Absolute Minimum Temperature - 21,8 °C

Period	Minimum value (date)
01.01.2005 - 30.07.2016, all days	<b>-21.8</b> (15.02.2012)

### ★ Radiation

Monthly Average Insolation (kWh/m <sup>2</sup> /day)											
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1.69	2.33	3.31	4.09	5.20	6.14	6.38	5.58	4.09	2.66	1.69	1.37

### ★ Wind

Monthly Average Wind Speed (m/s) - 10-year Average												
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Year
4	4,16	3,92	3,68	3,28	3,19	3,36	3,41	3,36	3,69	3,92	4,17	<b>4,17</b>

Minimum and Maximum Difference from Monthly Average Wind Speed (%)													
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Year
min	-10	-9	-11	-8	-18	-12	-11	-10	-8	-8	-14	-11	-11
max	13	10	12	7	14	13	11	16	6	13	8	12	11

Wind speed Maximum value 49 m/s (12.05.2006)

### ★ Precipitation

Monthly Average Precipitation (mm/day) 22-year Average												
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Year
2,02	2,17	1,81	2,18	1,91	1,65	1,37	1,18	1,72	1,97	2,85	2,57	1,94

### ★ Relative Humidity

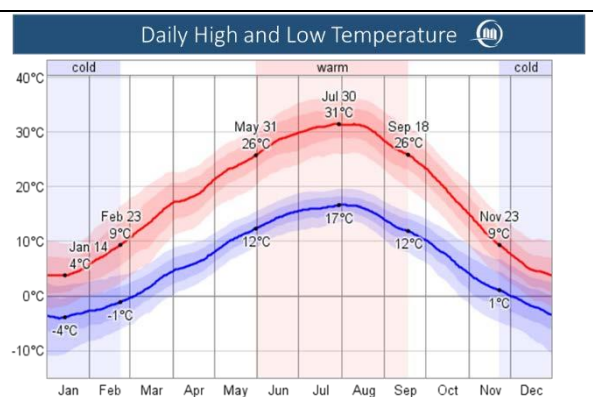
Monthly Average Relative Humidity (%) 22-year Average												
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Year
84,3	78,1	69,9	62	55,4	50	45,2	45,6	52,5	66	80,3	84,9	<b>64,4</b>

### ★ Snow depth (cm)

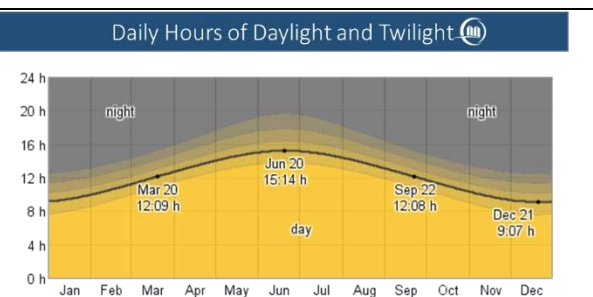
Period	Mean value	Maximum value (date)	Latest date of snow cover	Earliest date of snow cover	Number of observations
24.07.2005 - 30.07.2016, all days	<b>8.0</b>	<b>28</b> (13.02.2012)	<b>10.03.2010</b>	<b>27.11.2013</b>	67

## ✓ Local Climate Investigation

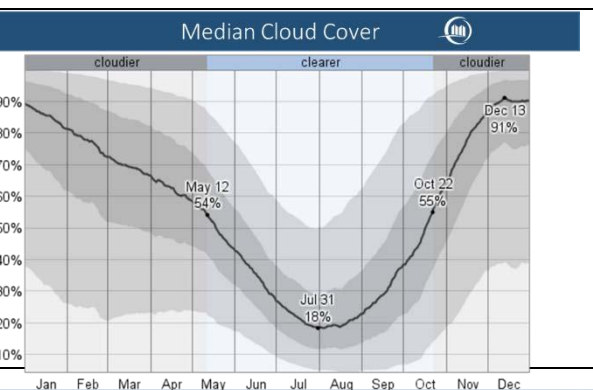
Over the course of a year, the temperature typically varies from -4°C to 31°C and is rarely below 11°C or above 36°C.



The length of the day varies significantly over the course of the year. The shortest day is December 21 with 9:07 hours of daylight; the longest day is June 20 with 15:14 hours of daylight.

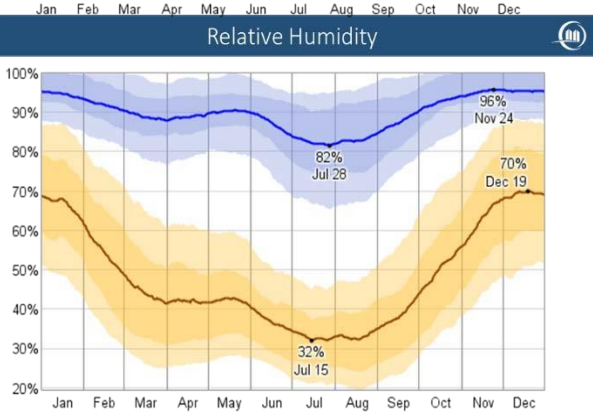


The median cloud cover ranges from 18% (mostly clear) to 91% (mostly cloudy). The sky is cloudiest on December 13 and clearest on July 31. The clearer part of the year begins around May 12. The cloudier part of the year begins around October 22.



The relative humidity typically ranges from 32% (comfortable) to 96% (very humid) over the course of the year, rarely dropping below 19% (dry) and reaching as high as 100% (very humid).

The air is driest around July 15, at which time the relative humidity drops below 37% (comfortable) three days out of four; it is most humid around November 24, exceeding 93% (very humid) three days out of four.



2016-11-29

| 5 HECTARE GREENHOUSE PROJECT, MACEDONIA |

The climatic zone of the Project has features for greenhouse production of vegetables, placing it in one of the first, best in Europe (NASA research of this climate zone for tomatoes and cucumbers, provided at the request of IIC.

**Note.** This information is presented in local country language for the convenience of the managing team

#### Outside extremes Външни крайни

Minimum temperature : -10°C

Препоръчителна температура за производствена площ : +18°C

Temperature разлика вътре и отвън : 28°C

Минимална температура за производствената площ : +12°C

#### Energy savings Спестяване на енергия

Top screen Горен екран : 40%

Side screens Странични екрани : 60%

#### Energy losses

Wind speed Скорост на вятъра : 5m/s

Transmission Предавателен коефициент на покрива : 6.9 Watt/m²K

Transmission Предавателен коефициент на стрната : 5.7 Watt/m²K

Промяна на въздуха в оранжерията : 0.3 пъти за 1 час без преграждане

#### Installations

Heating medium Отоплителна среда : water вода

Главна температура на доставената вода : 93°C

Главна температура на връщащата се вода : 70°C

System pressure Налягане с системата : 0.95bar

Макс. скорост на водата по надземната мрежа : 1.6m/s

Макс. скорост на водата в подземната мрежа : 2.5m/s

#### Heat sources – fuels Източник на нагряването

Not applicable due  
to the high price →

Fuel 1 (Main) : Natural gas

Caloric value gas : 34MJ/m³-st 0 °C

Natural gas supply pressure : 200mbar

Fuel 2 (Backup) : Light oil

Oil quality : Diesel

Caloric value light oil : 44.8MJ/kg

#### Energy calculation production greenhouse Изчисляване на енергията за оранжерийното производство

Inside temperature (screens closed) Вътрешна температура. (затворени капаци) : +18°C

Температурна разлика вътре / вън : 38°C

Изискуем капацитет на нагряването (затворени капаци) : 142W/m²

Maximum изискуем капацитет на нагряване : 7.05MWth

#### Energy calculation service area and technical areas

Вътрешна температура (междинна) : +18°C

Temperature разлика вън/вътре : 28°C

Изискуем капацитет на нагряване (изолирани п: нели) : 35W/m²

Maximum изискуем нагревателен капацитет : 0.07MWth

#### Carbon Dioxide dosing

CO2 dosing rate : 250kg/h/ha

Click to download certificate

Tomatoes



Cucumbers

## ✓ Technology

This is a preliminary description to the Financial Model containing suspected and desirable requirements and expected characteristics of the greenhouse.

Greenhouse vegetable production with cost effective energy efficient structure with conventional pellet's-based heating system and option for the use of natural hot water source available near the site.

High performance greenhouse with **double pane glass cover structure of high-end greenhouse hydroponic system** with computer control drip irrigation, fertilization, heating, requiring different humidity for cucumbers and tomatoes so that two types of separate production rooms are to be planned.

Control measure center will reduce the amount of inoculum (spores) available and promotes rapid drying of wet leaves which reduces the conditions for infection. Fungal spores are easily transmitted by water remove from one leaf to another and they depend on standing water on the plant surface to cause infections. Plants that remain wet all night from the evening watering are prime targets for disease infection.



## 2. PROJECT DEFINITION ↑

**Level 0 INPUT DATA AND ASSUMPTIONS** - initial parameters on the bases level

### Greenhouse construction area, production, quantitative model of yield and sale prices and alternative evaluation

The base **Level 0** is developed on [Worksheet **Intro**]. It contains the entire project output database. It is given by the **PC's** manager who has made verbal description the idea of the Project. Later offers from suppliers of equipment and services have been received (Row 81) with similar prices.

This information is unchangeable, independent from the mathematical algorithm of the model. Conversely, the results are based on the database entered at this level. For a better, easier and faster conceptual understanding of the **Project** and future business management, a visual interpretation of the structure is given for the user - the hierarchy that is the basis of cybernetics - the management theory (as well as herein above this verbal description). The desired and expected result of the movement and processing of this information is presented visually to this picture.

All this explanation and quantitative digital information to become a budget and a financial model of the project and for the management of the business after its financing and implementation must be converted into a formal system. There this first data input remains completely independent of the further modeling (with one **Exception** only). This base information feeds the next higher hierarchical **Level 1** of the structure of the FM in 6-month periods for the duration of the loan life.



**Exception** ⚠ The part titled **“For Developer's use only”** contains only one variable—the planned price of the **T** product, which forms the main cash inflow. As a rule, the Project has to be a pessimistic forecast, the monthly prices of this product **T** are variable and can be reduced at the discretion of the **Developer**—in the case of -21% (Cell 48).


Note. Every figure representing first input of data and assumptions, when first entered in a **cell**, is marked with symbols: ① for a non-monetary value and € for monetary value in EURO.



On worksheet **Intro** there is also two big pictures showing a greenhouse. Behind there is information presenting the final main data


$$\text{Sales / Costs / Income} = \text{Revenues} - \text{Costs}$$

achieved at the end of the modeling for the end of the loan(s) life, which is expected achievement of the business. This is a feedback from the top **Level 5** to the base. The idea of hiding this information from the user's view of the base level at the beginning until he reaches **Level 3** and the subsequent ones.

To remove this screen-picture on worksheet **Intro**, click the big picture or this icon  to see the records of this information. BROWSING OPERATIONS area contains buttons and icons that are recommended for navigation with in correspondence with other worksheets with desired zooms instead their sheet tabs.

Below **Section 0: INPUT DATA AND ASSUMPTIONS**

where there is a tabular visualization of both products and other baseline data. Indicative of the quality characteristics of the Project is the total relative annual yield of **679 t p.a./1 ha** (Cell N15).

Section 0: INPUT DATA AND ASSUMPTIONS				
	Quality Evaluation		679	t p.a./ 1 ha relative yield
	Area ①	5.9	4 140	t p.a. Project
	T ≈ 70% ①	4.1 ha	702	t p.a./ 1 ha      Max size:
	C ≈ 30%	1.8 ha	625	t p.a./ 1 ha      13.2384 ha
	Others ≈ 0%	0.0 ha		

Next are:

- table with **Basic unchangeable values ready for transfer to the upper level**. All data therein are provided from **INFLOW DATA WORKING PANEL** below;
- their origins are from our market research and manufacturers' offers;
- on any row there, on the right, are presented the baseline financial parameters of the annual production:
  - yields of tomatoes (**T**) and cucumbers (**C**), and their **market prices** on monthly basis,
  - current costs— fertilizer, seeding and substrate,
  - consumption of water and electricity, and
  - heating;
- construction and infrastructure local country expenses costs:
  - import prices, and
  - VAT, own funds investment (if the case so requires), etc.;
- finally, the original source of most data of two+ commercial offers - from Spain and Canada, and others (if any).

Various colors, icons and other application facilitate fact and correct perception of the variety of information by type and origin.

Financial Model creates all possible funding options and the Developer selects and offers the creditor and / or investor the best option for the final Financial Project.

This information is transferred to specific positions on the next higher level for processing under its algorithm and rules of financial planning.

## 2. FINANCIAL ANALYSIS



### Level ① Capital Goods and Services [Worksheet Cap.Goods]

This **DESCRIPTION OF PROJECT** contains a pessimistic forecast of financial model of **CREDIT LOANS FOR PROJECT FINANCE Limited Recourse Project Finance**.

Here are presented the project investment costs. They can from four different credit sources, alternatively combined in one or two. The investment capital has four applications; each could be from own resource.

€ 1 \$1.14

### Section 1 CREDIT LOANS FOR PROJECT FINANCING

**Loan "A"** Purchase, exported cap. goods and services; delivery DDP\*

*Conditional* Could be up to 30% of original part of the export paid by

**Loan "B"** Loan "A" Greenhouse base, assembling, infrastructure and other LTAssets - all one-off local country costs (up to 30% of original part of export value)

**Loan "C"** Permanent purchase of production materials and seasonal trade (conditionally - the start-up working materials)

**Loan "D"** Own funds (Loan "C"). Credit percentage down payment, when required (as ECA's practice)

\* DDP - Delivered duty paid

Loan "A" ↓

Loan "D" ↓

Level ① Zoom 155 Capital Goods and Services					GRACE PERIOD				BUDGET
CAPITAL INVESTMENT EXPORT (Loan "A")					D → OWN FUNDS Loan "D"				Check
Adv.%		Net Price	VAT incl.	PROJECT FINANCE	Loan "A" + VAT + "D"				
				Advance Balance	0% 0%	0% 0%	0% 0%	0% 0%	
25%	① Greenhouse turnkey complex, DDP	10 916 400	13 099 680	2 729 100 8 187 300	0	0	2 729 100	8 187 300	10 916 400
25%	Local construction & foundation, DDP	0	0	0 0	0	0	0	0	0
0%	(sea port - greenhouse plot) Trucking	89 739	107 687	0 89 739	0	0	0	89 739	89 739
0%	2 Yrs Supervision and training	48 800	58 560	0 48 800	0	0	0	48 800	48 800
0%	Plants, fertilizers, pesticides, substrate	599 715	719 658	0 599 715	0	0	0	599 715	599 715
0%	Financial modeling package and OCFCs	0	0	0 0	0	0	0	0	0
0%	Pickup truck for products and staff, Bulg.-Mac.	36 000	43 200	0 36 000	0	0	0	36 000	36 000
	<b>SubTOTAL:</b>	<b>11 690 654</b>	<b>14 028 785</b>	<b>2 729 100 8 961 554</b>	<b>0</b>	<b>0</b>	<b>2 729 100</b>	<b>8 961 554</b>	<b>11 690 654</b>
ELIGIBLE FOREIGN CONTENT (Loan "A")									
		Net Price	VAT incl.	Advance Balance					
25%	100% Greenhouse Screening plots and materials			0 0	0	0	0	0	0
25%	Plants, fertilizers, pesticides, substrate			0 0	0	0	0	0	0
0%	Shipping			0 0	0	0	0	0	0
	<b>SubTOTAL:</b>	<b>0</b>	<b>0</b>	<b>0 0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Export	11 690 654	Loan "A", EXPORT VALUE, TOTAL:	11 690 654 14 028 785	2 729 100 8 961 554	0	0	2 729 100	8 961 554	11 690 654

\* Cell F14 export net price € 3,769,710. - ↑ + Cell G14 ↑ VAT € 4,448,258. -, and ↑ Cell M6 15% own funds

Loan "B" ↓

Loan "D" ↓

LOCAL COUNTRY COSTS (Loan "B")						OWN FUNDS Loan "D"		Loan "A" + VAT + "D"		TOTAL			
Advance, %		Net Price	VAT incl.	Advance	Balance	0%	%	0%	Advance	Balance	Value		
	Capital investment	1 107 400	1 276 080	186 840	920 560	0	0	0	186 840	920 560	1 107 400		
€ 4.7	132 384 m2 available farmland with license		622 205	0	622 205	0	0	0	0	622 205			
20%	Construction, water feelers, tubing, others	655 000	786 000	131 000	524 000	0	0	0	131 000	524 000	655 000		
20%	Infrastructure - road, hedge, water & power supply	200 000	240 000	40 000	160 000	0	0	0	40 000	160 000	200 000		
10%	Other unforeseen expenses - land, video control, etc.	158 400	190 080	15 840	142 560	0	0	0	15 840	142 560	158 400		
0%	Trucking from sea port	50 000	60 000	0	50 000	0	0	0	0	50 000	50 000		
0%	Motor car / microbus	44 000	0	0	44 000	0	0	0	0	44 000	44 000		
	Financial modeling package and OCFCs	245 000	294 000	220 500	24 500	0	0	0	220 500	24 500	245 000		
90%	Cash-flows, profitability & sensitivity analysis +	185 000	222 000	166 500	18 500	0	0	0	166 500	18 500	185 000		
90%	Financial risk assessment and management	60 000	72 000	54 000	6 000	0	0	0	54 000	6 000	60 000		
12%	LOCAL COUNTRY COSTS (LCC), TOTAL:	1 352 400	1 570 080	407 340	945 060	0	0	0	407 340	945 060	1 352 400		
Import + Local Costs:						13 043 054	15 598 865	3 136 440	9 906 614	0	0	WORKING CAPITAL ↓	13 043 054
						Loan "D"		€ 0	Optional:		€ 20 000		
								5.5%			€ 13 063 054		

The above two table depictions represent two parts of Table: **Capital Goods and Services**, including the following **Common components of the investment**:

- ✳ Cell F21 **CAPITAL INVESTMENT EXPORT** + (Loan "A") **€ 7,430,876.-**
- ✳ Cell F35 **LOCAL COUNTRY COSTS (LCC)** (Loan "B"): **€ 922,000.-**
- Incl. ✳ Cell F25 **Capital investment** **€1, 26,000.-**
- ✳ Cell F32 **Financial modeling package and OCFCs** **€268,000.-**

Local country costs are 20% (Cell C35) of the export originated from the country of manufacturer total value. The subtotals from both tables are transmitted to the next **Level 2**.

This is the possible simplest presentation of the expenditure side for capital investment. It is based generally on one of the commercial offer [Cell A81, Worksheet **Intro**] and which should be updated according to the requirements of the Agency, confirmed by a commercial contract. However, financial modeling provides opportunity of various treatment of this database in the financial project. It can help the decision maker—individual (e.g. CEO) or the Board of the Developer—to analyze and proceed in compliance of the real and optimal alternative of a best investment strategy. By way of example look at an option as pessimistic forecast—Developer is not in position to meet the usually required (i) "own funds", and even (ii) the VAT so that the equipment to be delivered inside the country on the building plot; thus, to meet with the seller/supplier obligation of DDP\* supply. Therefore, two additional options have been modeled, as following:

- (i) **OWN FUNDS Loan "D"** [Cell U47, Worksheet **Intro**] - not applied. Every public credit institution (bank, investment fund, etc.) usually requires the borrower to cover 10 – 30 percent of the investment (US ECA, Ex-Im Bank—15%<sup>†</sup> [Cell T56 and ↓, Worksheet **Intro**]).  
To select own fund self-participation, click on the button ☐.  
To enter the required percentage on Cells N6 and N24, click
- (ii) VAT payment at receiving the import capital goods on the buyer's customs is the other conditional problem for the buyer/importer [Cell U47, Worksheet **Intro**] – not requires.

**Loan "C", WORKING CAPITAL** – not required.

[Cell Q38] **€ 20,000.-** This is an operational information for use only during the loan period (exceptional)

**Loan "D", OWN FUNDS, 15% percentage of Loan "A" and/or Loan "B"** (conditional).

\* Delivered Duty Paid

<sup>†</sup> From 2003, on a proposal of IIC, accepted and legally resolved the local exporter to increase the price with 17.5% and pay 15% of it instead the foreign buyer.

**DEPRECIATION OF ASSETS** is the last position of this section, and source targeted at the next structural level, containing the financial algorithm of the project [Worksheet **Cap.Goods**]  
Price: € 1,155,208.- [Cell H40].



(Subject to adjustment with actual project data delivered by Manufacturer and offer local Builder).



## Level 2 Investment Planning and Financial Modeling



### Section 2. CASH FLOWS. Pro-forma Budgeting Pessimistic Forecast

At **Level 2** is attached form of aggregate cash flows with breakdown which shows how the basic financial parameters from the lower hierarchical **Level 1** of the investment capital are applied in the development of Business Plan on 6-month periods on Worksheet **BUDGET**.

<b>a</b> Sales, Revenue Pro-forma Budget	19 387 858	0	0	1 665 988	1 189 588	1 753 671	1 252 198	1 841 355	1 314 808
Less: Date:		30-Dec-18	30-Jun-19	31-Dec-19	30-Jun-20	31-Dec-20	30-Jun-21	31-Dec-21	30-Jun-22
<b>b</b> Costs, TOTAL (in €)	9 893 855	4 475	120 621	593 541	788 136	735 940	904 351	782 156	950 601

It contains the rows of incomes from **a** Sales.

<b>a</b> Sales	Operational slot→		4 584 241	3 325 844	4 929 291	3 576 177	5 175 756	3 754 986
• Greenhouse own production			4 584 241	3 325 844	4 929 291	3 576 177	5 175 756	3 754 986
• Tomatoes			3 396 332	2 437 542	3 651 970	2 621 013	3 834 568	2 752 064
• Cucumbers			1 187 909	888 302	1 277 322	955 164	1 341 188	1 002 922
• By-products								

Note. The empty square herein↑ above is to accept the data from any annual sales selected by Button over the selected year's data.

This option performs three functions: (i) collects each of the six-month sale values in separate sum into the empty white field; (ii) indicates in black wherefrom the information was sent (see below); and

<b>a</b> Sales	Click to clean up→	€ 8 930 741	4 584 241	3 325 844	4 929 291	3 576 177	5 175 756	3 754 986
• Greenhouse own production		8 930 741	4 584 241	3 325 844	4 929 291	3 576 177	5 175 756	3 754 986
• Tomatoes		6 586 632	3 396 332	2 437 542	3 651 970	2 621 013	3 834 568	2 752 064
• Cucumbers		2 344 109	1 187 909	888 302	1 277 322	955 164	1 341 188	1 002 922
• By-products								

(iii) sums up the data from Rows 2 and 3 here above. Each row for both six-month periods below the button submits them in the empty field in Col. C. The current year is indicated in Cell C43.

The Rows (44 to 48) contain information from transferred from **Level 0** [Worksheet **Intro**] to and summed up in both half years, but with a correction of a trend of gradual revenue growth due to the increase of qualifications and the development of the markets. From there the data are forwarded directly to the upper **Level 3** and its principles and corresponding algorithms of the software is implemented feedback process management on Worksheet **Bayes**. This is a typical example of applications of the two principals of Cybernetic in practice— feedback on one level and hierarchical structure. Similar applications are ordinary practice in this financial model with the risk assessment software.

**Total Costs *b***, includes two components—Variable costs *c* and Fixed costs *d*.



Income data (in €), EU Zone		Periods:	Date:	30-Jun-19	31-Dec-19	30-Jun-20	31-Dec-20	30-Jun-21	31-Dec-21
<b>Variable costs</b>			<b>14 943 004</b>	<b>0</b>	<b>0</b>	<b>997 936</b>	<b>894 149</b>	<b>1 350 276</b>	<b>1 188 546</b>
736 719	1st Heating, packing, running costs	2nd	634 566	0	0	736 719	634 566	736 719	634 566
	Operat. costs—fertilizers, substrate, etc.			0	0	151 731	93 789	345 488	287 545
2 000	p.ann./ha. Other materials and services					7 417	5 783	7 417	5 783
2.7%	Payroll, production staff, per ann.		507 600			253 800	253 800	260 653	260 653
<b>Fixed costs</b>			<b>1 839 312</b>	<b>16 020</b>	<b>121 660</b>	<b>132 848</b>	<b>145 760</b>	<b>133 908</b>	<b>146 716</b>
1 600 p.a.	Office - phones, internet, rent, power			100	200	240	800	800	800
2 000 p.a.	Cars - fuel and maintenance			0	300	500	1 000	1 000	1 000
24 000 p.a.	Accounting, Fin. reporting, Online cash-flow control			0	1 000	12 000	12 000	12 000	12 000
2.7%	Payroll, administration, p. ann.		70 800	15 200	23 600	35 400	35 400	35 400	36 356
13 291	Insurance of building, products, cars			720	12 571	720	12 571	720	12 571
1.0%	of sales - marketing, exhibitions		8 398 838		83 988	83 988	83 988	83 988	83 988
22-Mar-17 Turnkey - start date of operation									

The salaries, provided by auxiliary [Worksheet **Staff**], include annual increase in compliance with the so-called "Swiss rule" of 2.7% (Row 64).

The computed final results of the budgeting are displayed graphically. The Financial Model is construed to accept updated budgeted figures with the real ones provided online by the accounting software (or manually) throughout the whole loan life.



(Subject to adjustment with actual project data delivered by Manufacturer and offer local Builder).



## Level<sup>3</sup> PROFITABILITY ANALYSIS [Worksheet BUDGET]



**Discount Cash-Flow Models** for capital budgeting—the best measures of the financial effects of this investment\*

Excel is the most appropriate platform for financial forecasting and scenario analysis to create with the right methodology consistency, transparency, and flexibility full set of analyses for projects of this kind. At this **Level<sup>3</sup>** is processed the cash-flows information for calculation quality ratios. They are leading for decision making about purchase the project as well as for the Agency / credit bank auditors whether to support the Project. It is the source of output data for the next upper level—sensitivity analysis and quantitative financial risk assessment for calculation of the insurance fee and annual interest of the loan(s).

<b>Level<sup>3</sup> PROFITABILITY ANALYSIS</b> 1-Yr period Operating Cash Flows		Years: 1
<b>Discounted Cash Flow Models</b> Section MEASURING PROFITABILITY		Up front investment: -13 043 054    3 513 515
<b>Discount (hurdle) rate :</b> <input type="radio"/> 10.0%		<b>Debt-Service Coverage Ratio = EBIT/Costs</b> <b>2.07</b> The Investor can make enough in operating <b>Good</b> profits to pay its current debt service costs. <b>DSCR</b> It is subject of fiscal year-end monitoring.
<b>Net Present Value (NPV for CADs) :</b> <b>109 515</b>		<b>Loan Life Coverage Ratio</b> <b>Level<sup>4</sup></b> Unlike period-on-period measures such as the above DSCR, it provides the Lender with a measure of the number of times the cash flow over the scheduled loan life can repay the outstanding debt
<b>IRR :</b> <b>10.3%</b>		<input type="button" value="Check"/> <b>LLCR = 1%</b>

- ✓ **Net Present Value** (NPV for CADs) – how revenue is earned and cash received from the purchased assets specified on **Level<sup>1</sup>** and the excess of cash from revenue over the cash paid for the costs associated with the investment as developed on **Level<sup>2</sup>**. Discounting expected cash flows from the Project (Cell C75) to the present using the discount rate of 10% (Cell C74) is positive (too much), 3,861.- All expected discounted cash flows to the present time, **NPV > 0** indicates that the investment should be pursued with hurdle rate = 10.5%.

- ✓ **Debt Service Coverage Ratio** (DSCR) (Row 70)—one of the financial ratios that every small business manager should understand—for each six-month period, equal to EBT (Row 29) / Costs (Row 22) from the set of financial statements measuring TomCuc's ability of servicing its debt, including making payments on principal, interest, and leases. A ratio of 1 means that the company's net operating profits equals its debt service obligations.

Creditors want to know how much debt it currently owes and the available cash to pay the current and future debt.

DSCR is required to be 1.25 or more,


**DSCR = 2.03** is "**Good**" (Cell F70).

\* Based on the old adage that a bird in the hand is worth two in the bush—the use of money has a cost (interest).



- ✓ **Internal Rate of Return (IRR)** – Project Company can expect to earn cash by the Project  
**IRR = 8.4%** (Cell B75).

(to check the NPV making it 0 – click the Button Check IRR and then click Restore).

- ✓ **Loan Life Coverage Ratio (LLCR = 8%)** (Cell F76).  LLCR provides the lender with a measure of the number of times or percentage the project cash flow over the scheduled life of the loan can repay the outstanding debt balance.

It is the time required for cumulative returns to equal cumulative costs as computed on *Level 2* when the designated approximate numbers are replaced with true amounts taken from the original offers and/or agreements with suppliers of goods and/or services specified on *Level 1*.



(Subject to adjustment with actual project data delivered by Manufacturer and offer local Builder).



## Level 4 SENSITIVITY ANALYSIS, Cash Flow Online Control System (CFOCS) ↑

### ✓ Section PAYBACK PERIOD METHOD (PB)



The real length of time required to cover the cost of investment will be computed when all prices, time periods, etc. are real, supported by the respective documents – contracts for purchase of capital goods and services. However, based on the received offers and other elements of this Financial Model, the expected length of time is a little bit over the half of the 7-year loan life (about 3 - 4 months) [Rows 128 – 132].

**Default Risk Management**

**Section**

**PAYBACK PERIOD**

Period: **6 Years 4 Mo**

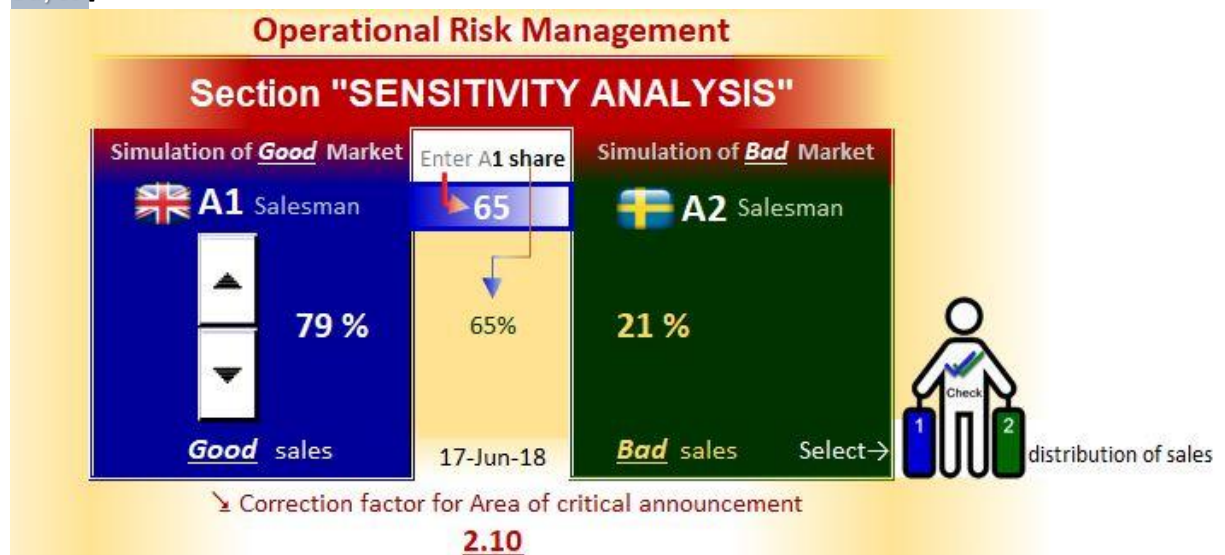
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Date: **30-Jun-22** earliness

to update

Accelerated amortization of loans

### ✓ Section SENSITIVITY ANALYSES and Online Control [Worksheet Bayes]



A fundamental basis for the Operational and Risk Management—a general advantage of this Financial Model over massive investment business plans.

The emphasis of the Financial Project is its effectiveness, and it is the sales and repayment of the amount invested in the schedule within the planned timeframe. The results of the product marketing research and its step-by-step Sensitivity Analyses showed that for the selected Products offered by:

- (i) Project Company as an / Macedonian / EU (in a near perspective) entity, the theoretically best markets would be England (north London) and Sweden [Sales Strategy, [Page 3↑](#)] and as a result we have the relevant documents for intention and confirmed distribution readiness; and
- (ii) as original producer in Macedonia - the Russia market (optional presently).

Majority of parameters in this Financial Project are based on incomplete information at the time of evaluation and they were estimated. Therefore, the results of the evaluation process are uncertain as well. At the pre-design stage it is conventional practice to analyze the parameters that are realized in the future and the manner in which they can be controlled by the PC. Feasibility stage is customary to use the Sensitivity Analyses which here treats the problem with improving the cash flow by managing the receivables through marketing and salesmen. In this sense here, it is made an analysis of the effect on the profitability of changes in sales as result of the marketing and management of the financial risk through predictable

and unpredictable events of interest. The best method and mathematical algorithm for this purpose is Bayes Theorem [Worksheet [Bayes](#) ].



## Cash Flow Online Control System (CFOCS)



Cash flows are considered the lifeblood of every business, and how it is managed can mean whether the company is succeeding or not. Controls over all cash inflows and outflows of the PC is for lender's protection. We use online billing application that has integrated accounting capabilities. It will give the ability easily to enter all invoices and payables, track your cash flow, monitor inventory, generate necessary reports, and manage information from our distributors all from the website.

As far as the Investor, PC, rely on project finance where the Lender and Investor rely exclusively ("non-recourse" financing) on the cash flow generated by the project to repay the loan and earn a return on the investment, the OCFCS, including the Risk Assessment and Management part of this Financial Model, appears to be one of the main functions, respectively qualities of this financial model. They are designed to optimize the costs of finance for the Project. It should also underpin the allocation of risks between the ECA and the PC. In particular, the financial model ensures that financial and other risks are well managed within and between the ECA, sponsors and its financiers (if any). This gives comfort to the funder(s), are both incentivized and empowered to deal in a timely manner with problems that may occur in the Project, as shown in Section **SENSITIVITY ANALYSES**.

Managing cash flow is supposed full time of the loan life the lender, insurer and the shareholders to have online password access to the operational business plan. Twice a month, e.g. every two Friday, regularly accounting report data and graphic presentation of the cash flows will be appropriately available on the Project Developer's website. Thus it can raise red flags to potential problems before they grow too big to handle, reduce the reliance on credit, and indicate if a receivable is past due.

The management of OCFCS is assigned to International Investment Council, Washington, D.C., through its auxiliary local country East Electric Company Ltd., Bulgaria, as one of shareholders of the PC in close cooperation with **Brothers Global Ltd**, 46A Queens Ave., London, N21 3JH, UK

At least two of the leading salesmen (A1 and A2) in the vegetable commercial sector are with a different professional culture and experience. They will distribute products from the greenhouse in two very different markets—English (north London, [Page 3↑](#)) and Sweden. In the pessimistic forecasts of pro-forma budgeting it is supposed on one hand different participation rate of factors (in the case of Salesmen) with different participation rates, Cells C7 and C9, and on the other hand - with not sufficiently


Event A1 QUANTITY	Salesman A1 QUANTITY	65%	Percentage of planting quantity
Event A2 QUANTITY	Salesman A2 QUANTITY	35%	Percentage supplied to A2 ⇨
Event A1 sales QUALITY	Salesman A1 QUANTITY	96%	Percentage <u>Good</u> sells (G).
Event A2 sales QUALITY	Salesman A2 QUANTITY	60%	Percentage <u>Bad</u> sells (B).

foreseeable impact of these events on the selected target. It is the product of various unforeseen events with different percentage of participation rate in the final result (**Good** and **Bad** sales), Cells C11 and C13, (as prices and terms of deferred payments) of the different quantities supplied to them.


**MATHEMATICAL MODELIN**  
QUANTITATIVE APPROACH TO DECISION MAKING

In modeling terminology physical replicans are represented to as icons models. It is an attempt of physical conditional appearance as the idea of the object being analogically modeled. It represents a problem by a system of symbols and mathematical relationship or expressions - called "mathematical models". The purpose is that both models enable us to draw conclusion about the real situation.

This computer **Quantitative Model** involves volume variables - such as production volume or sales volume— and cost, revenue or profit to help .

In this financial modeling are developed and involved a software package containing one model, herein presented, and one program for financial risk assessment, **SR-PROGRAM**. Both interpret the output information  make it possible to control the operational decision making and risk management through Online Cash-Flow Control System.

Our approach is to describe decision making situation in which quantitative methods have been successfully applied. It shows how the appropriate methods can be used to help the auditor and manager make better decision. Problem solving can be defined as the process of identifying a difference between some actual and some desired state of affairs herein this Project and then taking actions to resolve the difference making the "best" or optimal solution.

Back to **BUDGET** ← 

To the extent that the assessment of the Project is critical to the creditor and the insurer for its financing as well as subsequently for the development of the Project Company's business, this mathematical model for analysis and management provides accurate objective information about sales and profits after repayment of credit contributions. Given the particular emphasis on this part of the entire software package, we have used for its operational management specific symbols (icons), not typical of computer practice but memorized by the operator, including a brief description of the **QUANTITATIVE APPROACH TO DECISION MAKING**.

Management of the business through these already "predictable events of interest" (the feedback) results in potential changes to costs. One of all obvious examples is presented on Row 66 [Worksheet **BUDGET**] is in Cell B66. There is a fixed

percentage of sales determining the marketing expenses for each period. Through feedback from **Level 4** with the changes for improvement of the distribution, including the quantity of products for selling to the Salesman A1 (percentage of the **Good** sales) these costs will be reduced. This model calculates lower value of the evaluation in Cell P21 [Worksheet **Bayes**].

**Monitoring** of accounts receivables allows to identify quickly trends in payment behavior. If a salesman routinely pays on time but has had from time to time months of late payments (possible **Bad** events), this increases Risk Receivables Factor and could be a red flag. In this decision-making situation for Sensitivity Analyses we use a single feedback model to examine and control several alternatives of changing input values of the model from **Level 4**. They are due to the impact of two unpredictable events of interest identified on **Level 2** through Bayes theorem and show the degree of impact to the cash inflows. During this period of time the ordinary yields of Products are not achieved. This section is developed for operational purposes on Worksheet **Bayes** and subsequent risk management which efficiently manage the cash flows not to be significantly affected.

The program algorithm for analyses of decisions (Bayes Theorem) in the Excel-based financial model [Worksheet **Bayes**] is an alternative of the accepted market decisions, following this option in definite cash-flow parameters during the loan(s) life. Then (an option) in this case in compliance with the results of risk assessment it is recommendable diversification of the distribution to another prospective market, e.g. the Russian (R. Macedonia, wherefrom the Products origin) has not embargo restrictions about that. In this **Project** this is the only alternative, developed in capacity of so called “pessimistic forecast”, obligatory in the financial modeling for **project financing** application and conditional – in the business management and operational control of the financial risk during the credit(s) pay-off period.

### ✓ Section Debt Service Reserve Accounts (DSRA)

**Sales** and **Costs** data for each six-month period of one calendar year, separately and total, are presented on the top of Worksheet **BUDGET** on Rows 20 and 22 as budgeting. In addition to the **Financial Project** there are sections adding functions of a business management model and the associated with-it financial risk.

One option to manage quantitative financial risk is funding **DSRA**. It takes great shape and it is fully recorded within the project financing documentation and is developed from **Project** cashflows throughout procedure in this Section in addition to the functions of **OCFCS**.

There are five Rows (49 to 53), which do not contain budgeting data but are designed for managing the business within the debt term. They are created **DSRA** which can really a cash reserve for several months. By way of example its value in Cell F49 is 1,000 and distributed in three half-year periods additional funds on Row 49. Below it (Row 50) is computed the repayment with 6% annual interest. Purposes: (i) **PC** has inadequate funds or **CADS\*** to pay for debt service, (ii) implementation of some innovation, or (iii) refinement of some part of the technology lines (our case) building an additional heating system with hot mineral water available on the ground.

OPERATIONAL AND RISK MANAGEMENT		Option: Funding DSRA	1 000	50%	30%	20%	500	300	200	0
Dynamic structure of new loan with 6% Interest		Select and	↑ ENTER ↑	New debt to add to the Costs→			0	515	309	206
A	Sales, Current accounting reports									
B	Costs, TOTAL accounting reports									
CFOCS	Cash Flow Statements		A – B	Accounting						



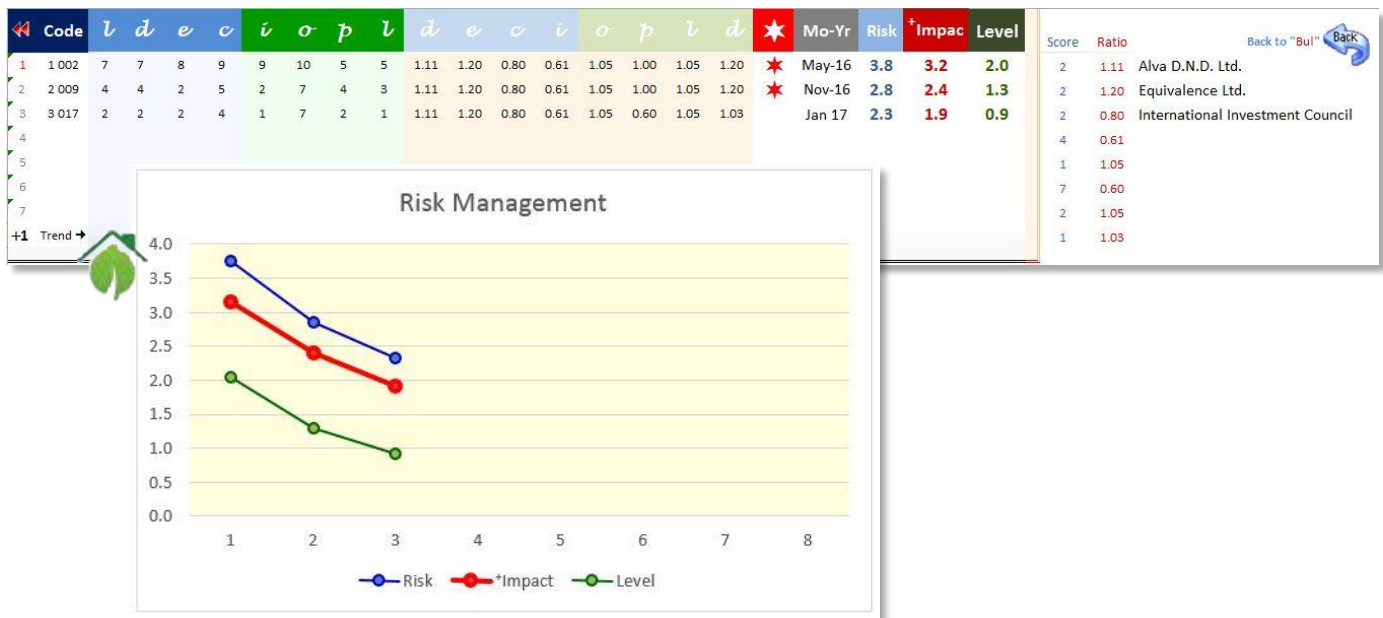
\* Cash Available for Debt Service (CADS) - Investopedia



## Level 5 RISK ASSESSMENT AND MANAGEMENT



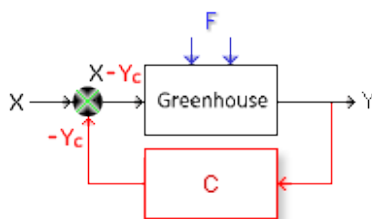
INTRODUCTION. Quantitative financial risk assessment (see description below) is the main priority for the final version of the cash flow proforma (Pessimistic Forecast), which is the basis for assessment and acceptance of the application for project financing of the industrial investment project. The assessments are presented graphically on Page “File” of the **7+1 Program** here ↓



The following provides more information for experts and auditors regarding the application of the software product used in this financial project

### Brief Description of Risk Assessment

Setting the parameters of anticipated events is done in Section “**SENSITIVITY ANALYSIS**” on hierarchical **Level 4** [Worksheet **BUDGET**] for control the whole system which computed two predictable prior probability **SALES REVENUE EVENTS** of interest through **Buyes’ Theorem**. In other words, this information for prior probability of events on the basis of the principle of hierarchical structures (the first principle of Cybernetics) is transmitted to the upper **Level 5** at the **Input (X)** of the **Object of control** – the **Greenhouse**. At this level will takes place the second principle of Cybernetics – the negative feedback. The information from the output of the Object (**Y**) is returned back (**-Y<sub>c</sub>**) through the **Control system** [Worksheet **Bayes**] to a lower **Level 4** as signal for management. So called “disturbance impact” (**F**) see the technology description below.



INTRODUCTION. We begin sensitivity analyses with prior probability estimates for specific events of interest – the QUANTITY of products **A1** supplied to **Salesman 1** for sale on the market. His percentage of the whole quantity of products is introduced in Cell M75 with SpinButton for **Event A1**. Respectively, the remaining part up to 100 percent is for **Salesman 2**.



Both are indicated on Cell C7 and Cell C9 on Worksheet **Bayes** and in the tabular presentation below **QUANTITY %** from **A1** to **A2 Sales**. Then from sources such as special accounting reports, periodic values of cash in-flow indicated on the financial model, and so on we obtain additional information about the events. Given this new information we want to revise or update the above *prior probability* values by computing through specific algorithm and thus receive the *posterior probabilities* (tabular presentation in **POSTERIOR PROBABILITIES** below). The steps of probability revision process are shown in figures, and the final result is a ratio of cell P21, transferred for convenience in Cell M78 Worksheet **BUDGET**. The result, this ratio, forms Row 66 as a part of the Fixed Costs of the Business Plan for operational control of cash flows.\*

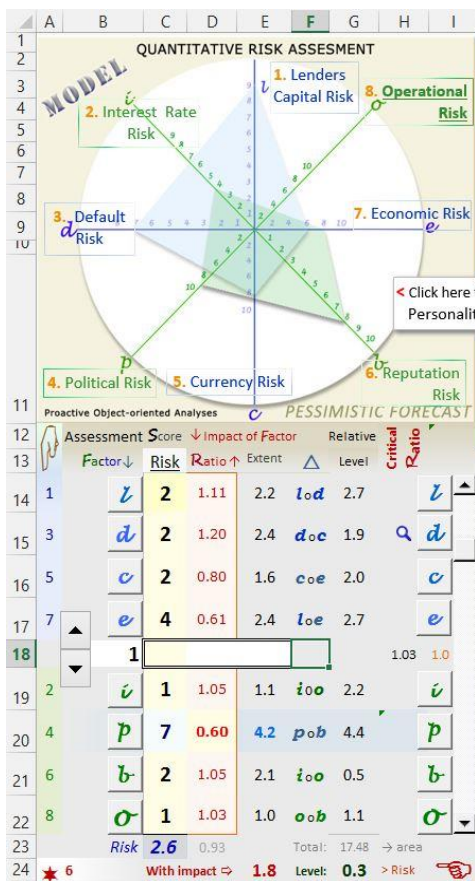
This is a real feedback to the subject to automatic control of one and the same *Level* ④.

So far as this financial model is construed as pessimistic forecast for development of the project, the presentation of this Section "**SENSITIVITY ANALYSIS**" is limited to this application only.

There are other activities that are related to online cash management. Can be analyzed their prior probabilities and to revise or update the posterior probabilities of other events and their compliments with mathematical algorithm on Worksheet **Bayes5**. They will be used in developing a complete decision strategy.

### Pre-project Assessment of Risk Factors

(Example) Assessment Rate Level 0-10 of impact of Factor



◀ This graph of the main matrix is a model for visualization of the program only; the values of the axes are not the real value of the Valister's model.

**Feasibility Assessment.** Once the final parameters of the capital investments are available, a full version of the program will be provided for management of the risk during the loan life.

The assessor introduces in the Main Operational Matrix (MOM) data based on information about general accepted criteria for quantitative assessment in relevant adequacy on the scale from 0 to 10, to be processed by the software product.

The program is based on Excel-file of Microsoft Office 2013 package of Windows 10 with macros and algorithm of VBA-program language (see Enclosure 4 again). This program is widely used on the East Coast of the United States after the failure of conventional products for **risk assessment (RA)** from before the mortgage financial meltdown in 2008. Sensitive analyzes are aimed mainly (but not only) to two risk factors, default (*d*) and operational (*o*) of special significance for financing and insurance institutions and, of course, to conceptually related Developer / Borrower.

◀ These figures on the left present the introductory segment of MOM of expertise in a mathematical model of geometric figures, proportional to the value at risk (VaR) factors and the extent of its impact on the field of their investment project.

\* For more information about the applied software see application [Risk Assessment and Management](#)

**OPERATING FORM**

RISK or PERSONALITY

FORWARDING MATRIX

Risk

Factor

TOTAL LEVEL

Ratio 1.001

2	1.11	2.2	l	3
2	1.20	2.4	d	2
2	0.80	1.6	e	2
4	0.61	2.4	c	3
1	1.05	1.1	i	0
7	0.60	4.2	o	0
2	1.05	2.1	p	1
1	1.03	1.0	b	1

Area: 17


2.63 1.8 0.3

Σ risk factors: 3 Level: 0.3

Annotations:

- Button to enter data of the assessor with code index 1 004
- Value of the Factor multiplied the Rate of impact – this is the real VaR in the business environment.
- Coefficient(s) < 1 indexing subsequent strong impact of the risk management.
- Area roundup of 0.01 = 1.1 x 1.0 (average of two linked factors: Reputational and Operational).
- Risk assessment
- Risk factoring - Total assessment
- Total area - Total assessment
- Total risk assessed with the specific impacts

Three successive assessments have been made through feasibility study as follows:

- 1) Pre-design **INSIDE EXPERTISE** made by Macedonian partner, Akva D.N.D. Ltd., as former tenant of the Project construction plot land. Relative high level of risk on critical level 
- 2) **EXTERNAL ASSESSORS** made next quantitative assessment after adopted decisions:
  - registration in EU Project Company (PC) and subsidiary in Macedonia;
  - PC will contract and make export of the final products;
  - permanent online cashflow control,
  - operative risk management; and
  - final accounting reports.Result: Significant mitigation of the financial risk; and
- 3) **INDEPENDENT EVALUATION** made by the project Developer after proposal / decision to divide the project into two parts each 5.1 ha with the lapse of time between the two stages of 6 up to 9 months to raise staff qualifications and training of new workers. Result: Completely acceptable financial risk level.

During the in-depth study of each risk factor and predictable events related to those risks emerged new unpredictable events of interest. They have evaluated in the current operative assessments. This is a kind of preliminary virtual management of the risk of unpredictable events. It is performed with quantitative methods in practice, and in this particular case of conditional probability of the quality indicators of salesmen - only with Bayes' Theorem ([see the next section below](#)).

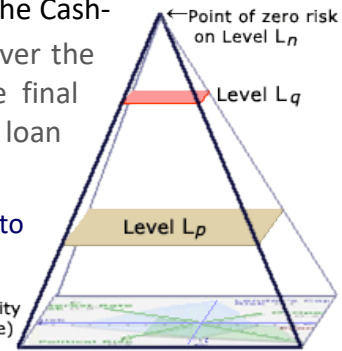
The computed results showed values of some factors with their impact on the Operational Risk ( $\sigma$ ) in critical value. The feedback from top **Level 5** to the basic **Level 0** indicated requirement of making exchange of organizational decision of the project.

**When** in the financial model have been entered real figures of the value of capital investment, sales and costs, etc., a new RA has been made, including by **INSIDE EXPERTISE** only.

- ◆ **Default Risk ( $\mathcal{d}$ )** = 2 in this pessimistic forecast covers an acceptable low level. It is a key factor for the positive resolution of a loan application. The system, called OCFCS (for short),

that is recommended and includes as a key element successful control, is an instrument that serves post factum in the investment throughout the **Financial Model** as an provider current information to the lender, insurer and to the investor. It is more important for the  **$\alpha$ -Factor** to be foreseen not only in the **Sensitivity Analysis of the Cash-flow Pro-forma Budgeting** of the business plan as an effect over the cash inflow, but its magnitude to be assessed prior to the final investment decision making and the approval of the loan application.

Many organizations suffer from a lack of standardization with regards to 'financial modelling language'. This affects the transparency, integrity, and operational efficiency of an organization's processes, resulting in incorrect analytical insights, poor business decisions and staff morale and frustrations within management. Analysis of different levels of the structure of business management facilitates making the right management decisions.



The software of quantitative RA based on Excel and Visual Basic for Applications is friendly for operation, increases likelihood and magnitude of events and their possible impact. It treats eight risk factors – seven financial and the operational risk.


Generally, three groups of experts make inside, external and, when the case so requires, independent evaluations. In case the level of the total risk and the **Operational Risk ( $\sigma$ )** factor achieves preset critical values, the system automatically recommends making evaluation of **Personal Traits** of the decision makers or the top managing staff (not happened in this case).



### 3. MARKETING TOOLS



#### Marketing Study (brief description)



During the market survey it was found that every year the import of vegetables in EU is increasing due to a gradual increase in the consumption of fresh vegetables in the winter-spring season. Many foreign companies mainly Greek, Turkish and Macedonian export such products, however very often of unsatisfactorily quality [more  in Bulgarian/Macedonian language]

An integral part of this Project is the marketing initiative to include our **Products**, certified with the highest quality indicators, in the market nets of approved long-term distributors in the EU. The concentration of distribution and sales of products from four (in perspective) greenhouses in the region as part of the functions of the East Electric Company Ltd. helps increase the interest of major players in the vegetable markets. It was confirmed of a mutual interest in [Synallagmatic contracts](#) with two distributors. (For reasons of commercial confidentiality this information will be provided only to the auditors of the creditor and the insurer.)

The start-up risk assessment shows that the diversification of export with local market products during the bad selling by a single distributor decreases the efficiency of the marketing initiative and the respective investment made for distribution of the greenhouse products.



#### Partners, Suppliers and Clients

The PC,  Ltd., is in the Balkan region. It will apply for project finance. The commerce and marketing will be subject of activities of Bulgarian East Electric Company Ltd. The scope of such cooperation is, except the full online control and management through using the free of charge provided software by the outsourcing partner **International Investment Council** for Financial Modeling and the unique **8R-PROGRAM**  the optimal distribution of a greater amount of **Products**. This concept and **Sales Strategy** was made in close cooperation with two large distributors of European vegetable markets through their requested and promised quotas.





## SWOT Analyses

The SWAT table below summarizes the key external factors relevant to **TomCuc**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>Developer owns a large site – 20 ha for this project and 18 adjacent to this plot.</li> <li>The Project's site is located near the regional center, Kumanovo, 16.2 km and 55 km Skopje from the capital Skopje.</li> <li>Developer has a concession for using hot water, discovered after being probed by the municipality near the site.</li> <li>Bulgaria has <a href="#">Currency Board</a>—fixed rate of 1.95583 BGN = 1 EURO <a href="#">[more]</a> with a close outlook to join the Eurozone.*</li> </ul>	<ul style="list-style-type: none"> <li>Lack of equity capital of the Developer to finance the Project, which slows down its development and limits the size of its own equity shares.</li> <li>Shortage of qualified technology and manufacturing staff, which increases financial risk and may lead to division of the Project into two stages.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>Developer can obtain refund of up to 50% of the invested amount in compliance with the Macedonian investment promotion act.</li> <li>Ability to diversification of the Products with vegetables.</li> </ul>	<ul style="list-style-type: none"> <li>The continued political and administrative support of local municipality is uncertain. On the other hand, its continuation and deepening are undesirable.</li> </ul>



\*

It is a strong position for Bulgaria and his strength lies in the fact that it increases its financial stability, but it could be threats for other EU countries which currency have free EURO rate, but this could pose a threat to other EU countries whose currency has a free exchange rate for the euro due to a lot of speculation in its fixation and economic collapse. For this reason, the Czech Republic, Poland and Hungary do not want to join the EURO.



## 4. ORGANIZATIONAL AND MANAGEMENT PLAN



### Legal Form

**TomCuc** Ltd. is/will be newly established limited liability Project Company. It is borrower, purchaser of equipment and materials, principal and coordinator of all participants, and seller of the Products.

**TomCuc** HH Ltd. is/will be subsidiary company single proprietor of PC which will operate and manage the greenhouse in Macedonia as product of a foreign investment with all benefits in compliance of the local legislation.



### Personnel policy

The results of the feasibility study show the requirements for 0.1 ha 2 workers; in this case after construction and commissioning of the greenhouse complex the production staff will be 3 employs, and with the administration the total number will be 10. Including:

**TomCuc** Ltd. – 5 administrators –CEO, Chair of the Managing Board, and experts.

**TomCuc** HH Ltd. – 13 administrators - **Dragan Petrushevij**, CEO of greenhouse; technicians, Accountant security and 91 production staff.

The staff is highly qualified; part of all company employees have higher education; each worker is past three months training together with experts from the supplier and established market our teachers with specialization in the field of agriculture. Year-round and long-term maintenance of permanent staff. The enterprise can train personnel Agricultural University of City of Plovdiv during the summer months.

Project Company TomCuC, Ltd. STAFF - Start Salaries						
PERSONNEL, Position	Nr	€ p.Mo	p.ann	€ p.Mo	0 Months	
<b>ADMINISTRATION</b>	<b>1.5</b>	Base salary		„Bonus (conditional)		
1 CEO	0.5	€ 1 000	€ 0	100	€ 500	€ 0
2 Expert risk management	0.5	600	0	75	0	0
3 Expert financial control	0.5	600	0	50	0	0
TomCuC Ltd., TOTAL:	1.5		€ 0			€ 0

Project Company TomCuC HH, Ltd. STAFF - Start Salaries						
PERSONNEL, Position	Nr	€ p.Mo	p.ann	€ p.Mo	12 Months	
<b>ADMINISTRATION</b>	<b>6</b>	Base salary	Fixed salary	„Bonus (conditional)	TOTAL	
1 CEO - Manager	1	€ 900	€ 10 800	300	€ 1 200	€ 14 400
2 Senior level technicians	2	800	19 200	200	1 000	24 000
3 Mid-level technicians	2	400	9 600	100	500	12 000
4 Accountant	1	500	6 000	50	550	6 600
<b>SERVICE STAFF</b>	<b>5</b>					
5 Truckers	1	500	6 000	50	550	6 600
6 Security	4	400	19 200	0	400	19 200
SubTOTAL: 11			€ 70 800			€ 82 800
<b>90 PRODUCTION STAFF</b>	<b>90</b>					
7 Payroll staff, p Mo	90	€ 400	€ 432 000	100	500	540 000
Social Security (averaged)			75 600	17.5%		94 500
SubTOTAL:			€ 507 600			€ 634 500
TomCuC HH, Ltd., TOTAL:	103					€ 622 800

<b>Social Security (averaged)</b>	17.5%	€ 14 490
<b>TOTAL:</b>		€ 637 290

### Staff Qualification



End



## 5. Enclosures



- 1 Certificate of Incorporation
- 2 Certificate of Incorporation of EEC (UIC: 113570001)
- 3 Deed of Assignment
- 4 Climatic characteristics of the locality and their specific impact on the cucumbers
- 5 Climatic characteristics of the locality and their specific impact on the tomatoes
- 6 Development Land
- 7 Lease of land
- 8 Greenhouse vegetable distribution Holland Bazaar Cash & Carry
- 9 Functional Model of Capital-budgeting—Cash-flow Pro-forma and Analyzes
- 10 Risk Assessment and Management, Demo version
- 11 Handbook – Manual for operation with Risk Assessment ([↑ go back to page 15](#))
- 12 \_\_\_\_\_, Personal profile
- 13 Professional Service Agreement
- 14 Website presentation of both, US and Bulgarian East Electrical Companies
- 15 Feasibility Study of greenhouse production in Bulgaria & markets in the region
- 16 Hot water concession
- 17 Greenhouse construction area

