



# Biological water treatment

INNOVATIVE METHOD USING LIVE ALGAE

# Objective of the project



The organization of the serial production of the concentrate of living algae *Chlorella*

and the implementation of biological treatment of freshwater bodies

# Problems that the product solves

- ▶ **Chlorella is** the simplest single-celled algae that lives in fresh water
- ▶ **The main feature** of this plant is the ability to intensively produce of Oxygen
- ▶ **The chemical and biological properties of Chlorella** allows the use of a concentrate to clean and restore the biological balance of fresh water:
  - *reduce of “water bloom” caused by the massive development of blue-green algae*
  - *improve the maximum permissible concentration of substances (pH, dissolved oxygen, iron, manganese, ammonium nitrogen, nitrite and nitrate nitrogen, calcium, phosphorus, copper, zinc, magnesium, petroleum products, phenols)*
    - *increase the recreational potential of water bodies*
    - *improve the organoleptic characteristics of water*
    - *reduce the bacterial contamination of water by pathogenic microflora*
    - *increase the amount of dissolved oxygen in water during the entire growing season*

# Competitive advantages of new technologies



## The advantage of OUR PREPARATION over analogues:

- new technology, allowing a 2.5-fold reduction in the period of growing Chlorella in artificial conditions
- modified nutrient medium, allowing to increase the concentration of algae in the volume and, accordingly, reduce the consumption of concentrate per area (volume) of the reservoir
- innovative technology of adaptation of the final properties of the concentrate under the physically-chemical properties of water of a particular reservoir

# The development stage of the project



- There is a worked out idea, confirmed by scientific developments
- Created a sample of products (liquid concentrate of living algae in a nutrient medium)
- Conducted tests on 3 fresh water reservoirs with varying degrees of contamination
- Found sources of funding for the launch of small-scale production (personal funds of project participants)
- The feasibility study of the organization of mass production
- Applications for certification of products are submitted in accordance with the EAU declaration
- Documentation is being prepared for patent protection of innovative concentrate production technology

# Market and target audience



- ▶ **The proposed method does not have environmental consequences**, since all the processes that it naturally causes in a reservoir are aimed at improving water quality, increasing dissolved oxygen in it and destroying pathogenic bacteria.
- ▶ **The method is applicable to a freshwater reservoir of any depth and area**, as well as the degree of contamination. The technology we offer restores the required balance of flora and fauna of the reservoir.
- ▶ **The method has no economic alternative**, since the cost of its implementation is an order of magnitude lower than any other way of dealing with the "blooming" of water bodies.

# Description of the business model



**The revenue part of the project is formed by:**

1. sales of concentrate for independent application by the customer using simplified technology under our control (small water bodies, private sector)
2. Implementation of work on reservoirs of high pollution and large surface areas (corporate segment, municipal and regional order)
3. sales of franchise for production in regions (partner sales)

# Tasks to achieve the goal



1. To make equipment for in-line chlorella cultivation using a new technology
2. To get laboratory equipment for quality control of the product during mass production
3. To purchase equipment for inlet and outlet water quality analysis in a pond
4. To issue the intellectual property right for use in serial production of the algae strain
5. To implement a product promotion program among the target audience



# The Project team



- **KHVOSTENKO Alexander**, higher education, Yaroslavl Polytechnic Institute, Engineer - production manager

- **KUZNETSOV Vitaly**, higher education, Yaroslavl Polytechnic Institute, Engineer - Head of direct sales

- **SHAROV Evgeny**, financial consultant of the project, MBA, project Manager

# Financial questions

- ▶ To solve the problems of the project, an amount of **5.4 million rubles is required**
- ▶ This financing solves the following tasks:
  - equipment manufacturing - 2.500.000 rubles
  - organization of a certified laboratory with modern means of product quality control and equipment - 1,400,000 rubles

## **Organization of production including:**

- Selling expenses (creating a franchise to promote the solution in the regions, advertising to the target audience) - 600,000 rubles.
- The launch of mass production and financing before reaching the payback point of the project - 900.000 rubles.

**As of June 2019, the initiators invested in the implementation of the project 600 thousand rubles of their own funds.**

**Payback period – 27 months**

# Initiator of the project

**“Clean World” Ltd.**

**Yaroslavl, Russian Federation**

**Product quality confirmed:**

- Declaration of Conformity of the Eurasian Union
- The results of chemical studies of RosTest

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