PEAT BRIQUETTE PRODUCTION ESTABLISHMENT IN THE ARKHANGELSK REGION

Investment proposal
MARKET DESCRIPTION

The of world generation structure in 2012-2040. (by type of fuel in% ratio)

- 2012:
  - Coal: 41%
  - Hydroenergetics: 16%
  - Natural gas: 22%
  - Atomic energy: 11%
  - Renewable sources, including biofuels: 5%
  - Oil: 5%

- 2020:
  - Coal: 5%
  - Hydroenergetics: 11%
  - Natural gas: 16%
  - Atomic energy: 23%
  - Renewable sources, including biofuels: 12%
  - Oil: 18%

- 2040:
  - Coal: 16%
  - Hydroenergetics: 1%
  - Natural gas: 23%
  - Atomic energy: 18%
  - Renewable sources, including biofuels: 16%
  - Oil: 30%

World’s peat extraction

- Finland: 37%
- Ireland: 5%
- Belarus: 4%
- Russia: 5%
- Sweden: 5%
- Canada: 5%
- Lithuania: 4%

Legend:
- Coal
- Hydroenergetics
- Natural gas
- Atomic energy
- Renewable sources, including biofuels
- Oil
MARKET DESCRIPTION

Dynamics of peat extraction in Russia, million tons.

The total volume of peat resources in Russia: 150-160 billion tons.

The bulk of Russian peat consumption is agricultural and horticultural.

Only 5% of all peat deposits are used as fuel.

The structure of Russia’s peat and peat mixtures exports by subjects of the Russian Federation in shares in physical terms.

Russia is exporting to:
- Japan
- Germany
- The Netherlands

Prospective markets:
- Countries of Southern Europe
- Countries of the Middle East
- Southeast Asia
Peat is a clean, reliable energy source, which eventually becomes a real alternative to coal, wood, fuel oil, gas.

The **10 kg’s burning time** is 8-12 hours (4 times longer than the burning of coal) (5-7 times longer than burning wood)

**Ash content**: 20 times less than of wood and 40 times less than of coal

When burning does not emit toxic and carcinogenic vapors, does not spark.

*The average cost of peat briquettes in the package:* 8573 rubles / ton

*Without individual packing:* 2385 rubles / ton

*The main competitor among the CIS countries is Ukraine.*
The deposit "Bory", Primorsky district, Arkhangelsk region
Total area: 2824 hectares
Peat reserves: 3 457 thousand tons
Distance to Arkhangelsk: 8.6 km
Distance to the railway station "Tsiglomen": 2.5 km
Distance to the pier "Glinik": 1.5 km
PEAT PROCESSING

Peat production line:
- heat generator;
- bunker-storage with 2 feeders;
- conveyor belt, designed to feed raw materials into the dryer;
- junk basket;
- aerodynamic dryer;
- high-pressure fan;
- cyclones;
- bunker of finished raw materials for further granulation or briquetting;
- granulation press;
- system of aspiration and cooling of granules;
- press for briquetting;
- briquette cooler;
- crosscutter.
DESCRIPTION OF COMPETITIVE FORCES (ACCORDING TO M. PORTER'S MODEL)

- Threat of substitutes
- Bargaining power of customers
- Threat of new entrants
- Bargaining power of suppliers

Flowchart showing the interconnections between these competitive forces.
ORGANIZATIONAL PROJECT PLAN

1st Year
- Obtaining production license
- Purchase of production equipment
- Start preparing the land for mining

2nd Year
- Preparing the land for mining
- Purchase of equipment for the production
- Preparation of industrial and office premises

3rd Year
- March - mining start
- September - start of production
- December - shipment of the first batch of 3 tons

4th Year
- June - mining start
- November - start of production
- December - shipment of the first batch of 3 tons

7th Year
- December - field work back
## The Main Financial Indicators of the Project

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total investment volume</td>
<td>167,944 thousand rubles</td>
</tr>
<tr>
<td>Payback period</td>
<td>3.7 years from the production start</td>
</tr>
<tr>
<td>NPV</td>
<td>6,272 thousand rubles</td>
</tr>
<tr>
<td>IRR</td>
<td>15.6%</td>
</tr>
</tbody>
</table>

### Financial Results Dynamics

![Financial results dynamics graph](image)  
*Revenue, Expenses, Net profit, thousand rubles.*
# SWOT-ANALYSIS

## Strengths
- The port proximity
- Large volumes of deposits
- Accessibility of transport highways
- Availability of labor resources for project implementation

## Weaknesses
- Presence of periods with low temperatures
- Lack of experience in peat extraction and processing
- The lack of up-to-date geological exploration data for new deposits
- Obligations to pay "northern" deductions
- High logistics costs (product is light, but voluminous)
- The high gap between production and production

## Opportunities
- Several peat deposits development
- Fertilizer production line Development
- New peat exploration organization
- Creation of boiler houses on peat in municipal entities of the region
- Sales export development
- Creation of several processors with a single production operator

## Threats
- Increase in tax rates
- Deterioration of climatic conditions due to climate change as a whole
- Reduction of world bets on peat briquettes
- The worsening of the world political situation
- Decrease in demand for peat briquettes (appearance of alternative sources, more attractive)
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