Ministry of Investment,
industry and trade
of the Republic of Uzbekistan

Investment proposal:
Production of wind generators

Ministry of Investment,
industry and trade
of the Republic of Uzbekistan

Production of wind generators

Economic impact:

- Employment: 1,200 direct jobs, 3,000+ indirect jobs.
- Export Opportunity: Regional hub for wind technology.
- Target Market: National renewable energy projects, Central Asia, Middle East, and Eastern Europe.

Social impact:

1. Energy Security: Support domestic renewable energy projects (targets up to 30–40% renewables).
2. Climate Impact: Avoids ~1.2 million tons of CO_2 annually by replacing fossil fuel generation.
3. The project positions itself as a regional leader in wind generator production with higher output and stronger R&D capacity.

Location of the project

Project description:

1. The project will establish a state-of-the-art plant capable of producing onshore wind generators with capacities ranging from 1 MW to 8 MW. The facility will have advanced R&D capabilities for continuous product innovation and efficiency improvement.

2. Planned Production Capacity:

250 wind generators per year (average capacity 2 MW each).Total installed capacity manufactured annually: ~500 MW.

Economic indicators:

Financing: 120 million USD

Area: 30 hectares

Revenue: $277,5 million/year

ROI: 45,1 %

NPV: ~ $150,7 million

IRR: ~23%

Production indicators:

Small (1 MW):
50 units

Medium (2.5 MW):
50 units

Large (5 MW):
15 units

Ministry of Investment,
industry and trade
of the Republic of Uzbekistan

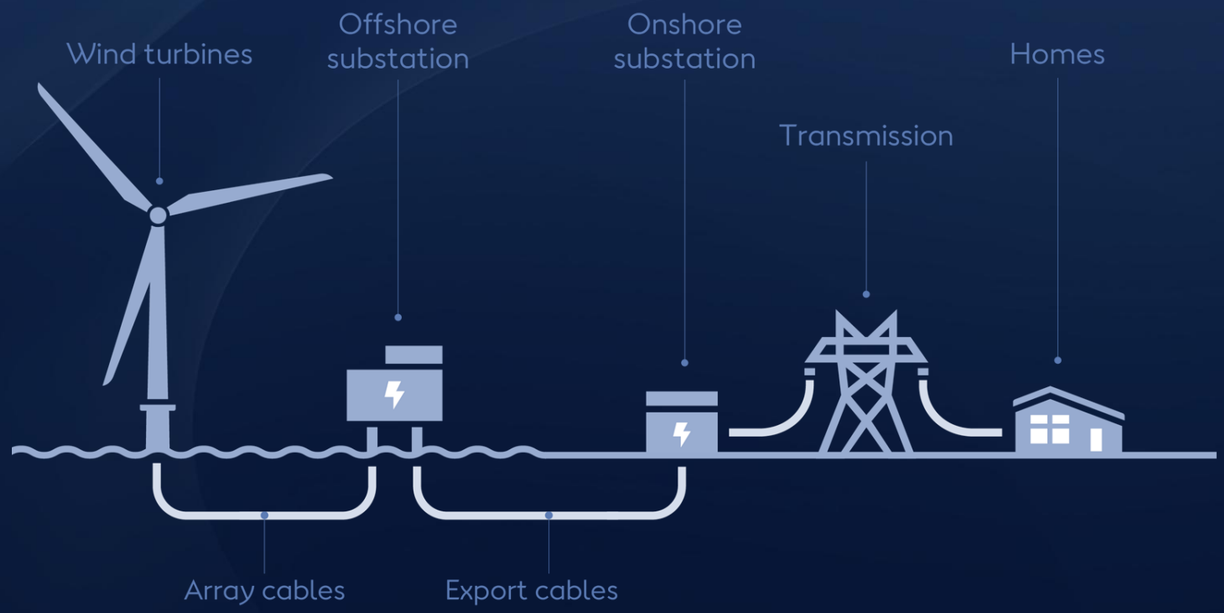
Processing chain & product yield

Key production stages

1. Research, Design & Engineering:
Market analysis and design adaptation.
R&D on aerodynamics, materials (composites, steel), and energy efficiency.
Prototyping and certification of different generator sizes (1–5 MW, 8 MW).
2. Raw Material Procurement:
Steel plates for tower sections.
Fiberglass, carbon fiber, and resins for blades.
Copper wire, magnets, and electrical components for generators.
3. Tower Manufacturing:
Steel rolling & welding to form cylindrical sections.
Surface treatment (sandblasting, anti-corrosion coating).
Painting & finishing for durability.
Quality inspection for welding seams and load strength.
4. Blade Manufacturing:
Composite layup (fiberglass/carbon fiber layers with resin).
Vacuum molding & curing in large molds.
Trimming, sanding & finishing for aerodynamics.
Balancing & structural testing (fatigue, load resistance).
5. Nacelle & Generator Assembly
6. Hub & Rotor Assembly
7. Final Assembly & Testing
8. Logistics & Delivery
9. Installation Support & After-Sales Service

Production capacity & technology

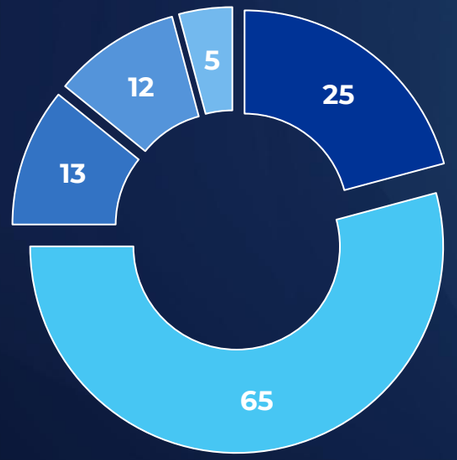
	Production	Features
1	**Small Wind Generators (1 MW units)**	Suited for farms, small grids.
2	**Medium Wind Generators (2–3 MW units)**	Standard for onshore wind farms.
3	**Large Wind Generators (5 MW units)**	For large-scale projects and exports.



Ministry of Investment,
industry and trade
of the Republic of Uzbekistan

Project expenses

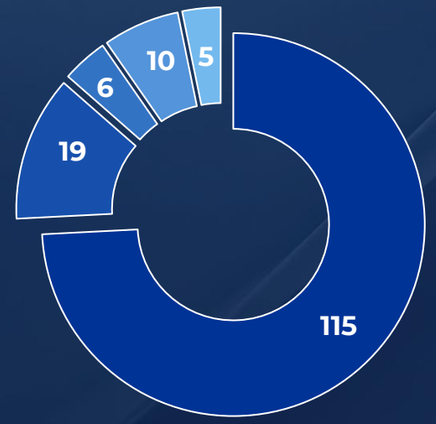
Initial Investment (CAPEX) *(mln dollar)*



Total CAPEX: **$120 mln**

- Land and construction
- Technological equipments
- Infrastructura and transportation
- Licenses & certification
- Others

Operating Costs (OPEX) *(mln dollar)*



Total OPEX: **$155 mln**

- Raw materials
- Labor
- Utilities
- Logistics and maintenance
- Marketing

This financial overview outlines a comprehensive cost structure and strong profitability of the proposed wind generator products project. The breakdown includes both initial capital investment (CAPEX) and annual operating costs (OPEX), alongside projected revenue and profit estimates.

Product	Capacity	Amount (million USD)
Small (1 MW)	50 units	55
Medium (2.5 MW)	50 units	140
Large (5 MW)	15 units	82,5
TOTAL		**277,5**

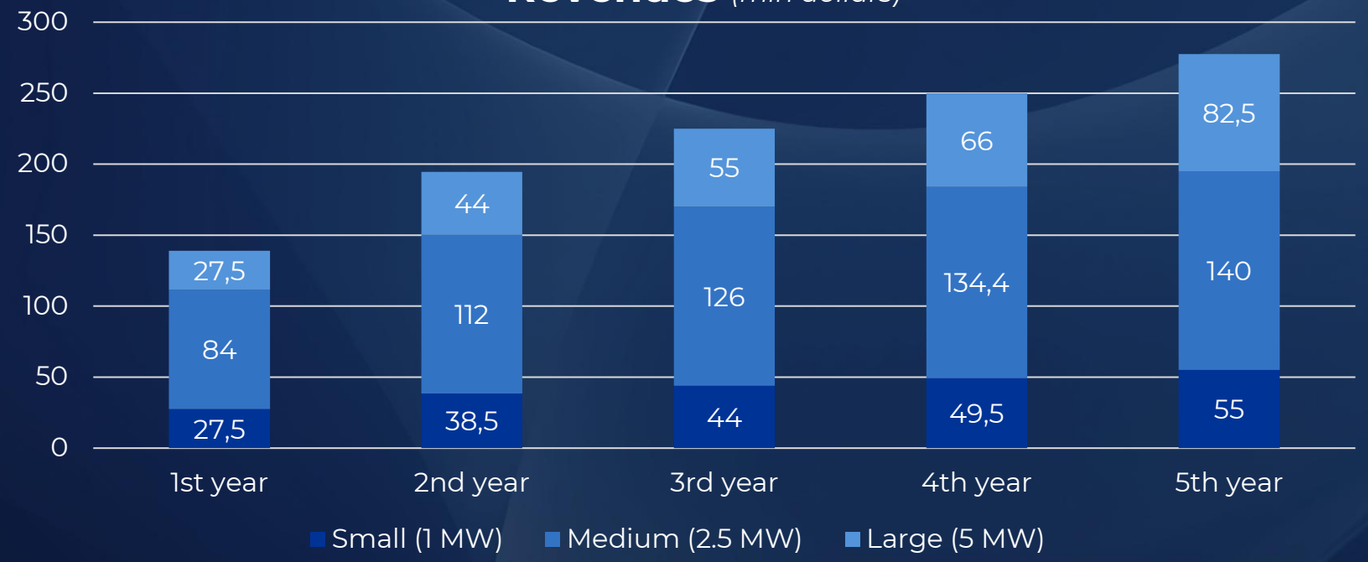
Annual EBITDA:
= $277,5 mln - $155 mln = **$122,5 mln**

The project's strong profitability forecast is underpinned by efficient operations and high market demand, positioning it as a highly attractive investment.

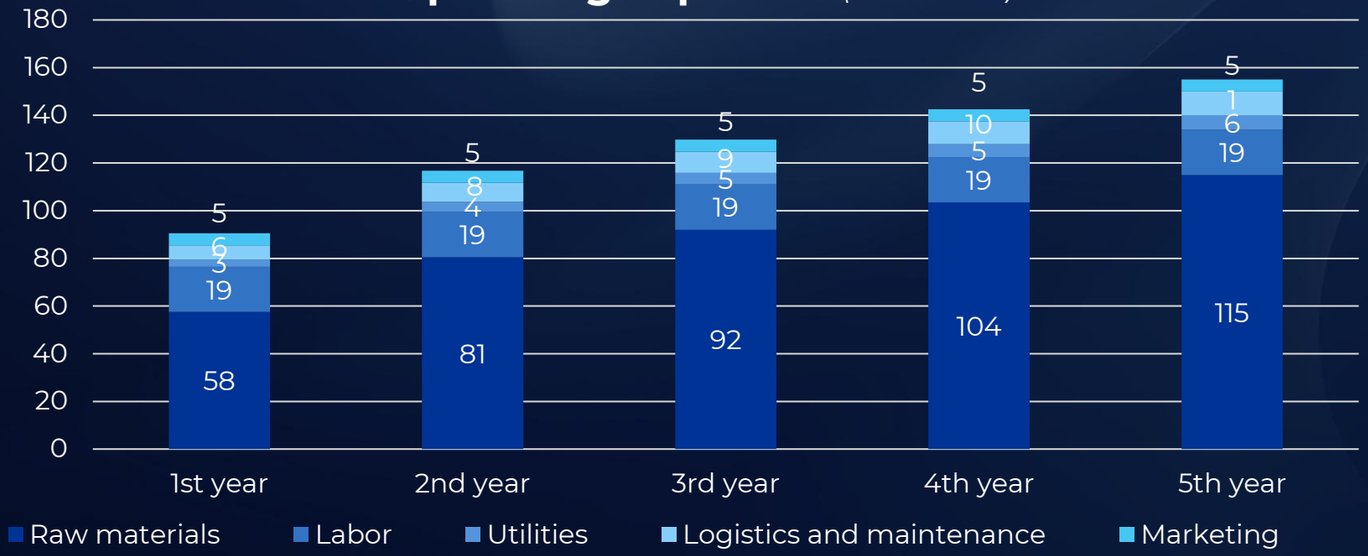
Ministry of Investment,
industry and trade
of the Republic of Uzbekistan

Financial indicators
(5-year projection)

Revenues *(mln dollars)*



Operating expenses *(mln dollars)*



Total 10-year cash flow:
$469,4M after full CAPEX recovery

NPV (12% discount rate):
NPV= **$150,7 million** *(Highly favorable!)*

IRR (Internal rate of return): ≈ **23%**

Payback period (PP):
= **2,47 years**

Profitability index (PI):
=(NPV+CAPEX)/CAPEX=($150,7M+$120M)/$120M= **2,26**

Return on investment (ROI):
= **45,1**