Derisking Renewable Energy Investment

- Selecting Public Instruments to Promote Wind Energy Investment in Belarus
UNDP’s Sustainable Energy Investment (2000-2016)
‘Continuous experiences and intellectual leadership’

Over the past 17 years, UNDP invested a total of US$ 2 billion in sustainable energy projects in 155 countries and territories worldwide.

Source: UNDP
Derisking Renewable Energy Investment (DREI) Renewable energy vs. business-as-usual - high vs. low financing costs


All assumptions (technology costs, capital structure etc.) except for financing costs are kept constant between the developed and developing country. Operating costs appear as a lower contribution to LCOE in developing countries due to discounting effects from higher financing costs.
Wind Energy in Belarus

Context and Opportunities

Energy generation by resource

Current status of wind energy

• Total investment in wind energy amounted to about USD 40-45 million in 68 MW of wind energy investment

• This investment, made up of 66 individual developers/licenses, is fragmented and a result of the current small quotas in the regulatory regime.

The opportunity for investment in wind energy

• Belarus has some of the best wind energy resources in the Europe and CIS region

• Wind energy can contribute to improved energy security, a lowered dependence on energy imports, and can assist Belarus in meeting its climate change contributions under its INDC.

Wind energy targets

• By 2020 it is planned to introduce at least 200 MW of wind power plants

• This report uses a 2030 target of an additional 500MW in private sector investment in wind energy, building on this 2020 target

Source: OECD/IEA (2016)
Derisking Wind Energy Investment in Belarus
Financing Cost Waterfalls

Business-As-Usual Financing Costs

Source: UNDP
Derisking Wind Energy Investment in Belarus
Financing Cost Waterfalls

Business-As-Usual Financing Costs

![Cost of Equity (USD)](chart.png)

Source: UNDP
# Derisking Wind Energy Investment in Belarus

## Illustrative Instrument Package

<table>
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<th>Risk Category</th>
<th>Policy Derisking Instrument</th>
<th>Financial Derisking Instruments</th>
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| **Power Market Risk**       | • Transparent energy sector planning  
                              • Long-term national wind energy strategy and targets  
                              • Well-designed and transparent procedures for quota and PPA tendering and fixed tariff  
                              • Standard PPA with well-designed, transparent key clauses across all regions | NA                                                                    |
| **Permits Risk**            | • Permit harmonization  
                              • Development of a registry of available wind sites  
                              • Contract enforcement and recourse mechanism | NA                                                                    |
| **Social Acceptance Risk**  | NA                                                                                          | NA                                                                    |
| **Resource and Technology Risk** | • Capacity building for resource assessment  
                              • Feasibility studies; networking; training and qualifications; R&D; technology standards;  
                              • Exchange of market information (e.g., via trade fairs and the establishment of a wind energy association) | NA                                                                    |
| **Grid/Transmission Risk**  | • Strengthening Belenergo’s operational performance, grid management etc.  
                              • Regular updates of the grid code | • Take-or-Pay Clause in PPA                                           |
| **Counterparty Risk**       | • Strengthening Belenergo's and regional grid operators’ management & operational performance for existing operations | • Government (sovereign) guarantee                                     |
| **Financial Sector Risk**   | • Promoting financial sector policy favorable to long-term green infrastructure investments, including project finance  
                              • Strengthening of investors’ familiarity with financing renewable energy projects | • Concessional public loans                                             |
| **Political Risk**          | NA                                                                                          | • Political Risk Insurance                                             |
| **Currency/ Macroeconomic Risk** | NA                                                                                          | • Partial-indexing of the PPA tariff                                   |

Source: UNDP
Derisking Wind Energy Investment in Belarus

Wind Energy LCOE before and after derisking

LEVELIZED COST OF ELECTRICITY (LCOE)

<table>
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<tr>
<th>Description</th>
<th>LCOE (USD cents/kWh)</th>
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<td>Baseline Investment (unsubsidized)</td>
<td>9.1</td>
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<tr>
<td>Wind Investment BAU</td>
<td>12.6</td>
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<tr>
<td>Wind Investment Post-Derisking</td>
<td>9.3</td>
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Source: UNDP
Derisking Wind Energy Investment in Belarus
Evaluation of public instruments' effectiveness

Source: UNDP
Conclusions

*Investing in derisking creates significant economic savings*

**Key Conclusions**

1. Generation cost of wind energy decrease from USD cents 12.6 per kWh to USD cents 9.3 cents per kWh

2. USD 807.7 million of private sector investment in wind energy is attracted while an estimated USD 649.8 million of gas imports can be saved.

3. Derisking creates savings to the economy of USD 370.8 million when compared to commissioning 500 MW wind energy generation capacity under the current policy and investment environment.

4. Carbon emissions are lowered by 11.8 million tonnes of CO2 over the next 20 years, thus contributing to climate change mitigation and environmental preservation.

**Affordable, locally produced and clean wind energy which benefits the people, economy, and environment in Belarus.**
Thank you!