



WPP “Stary Sambir-1” nature does nothing in vain (green power projects)

12/9 Sichovykh Striltsiv Str.,
79007, Lviv, Ukraine
tel. (032)261-07-76
info@ecooptima.com.ua,

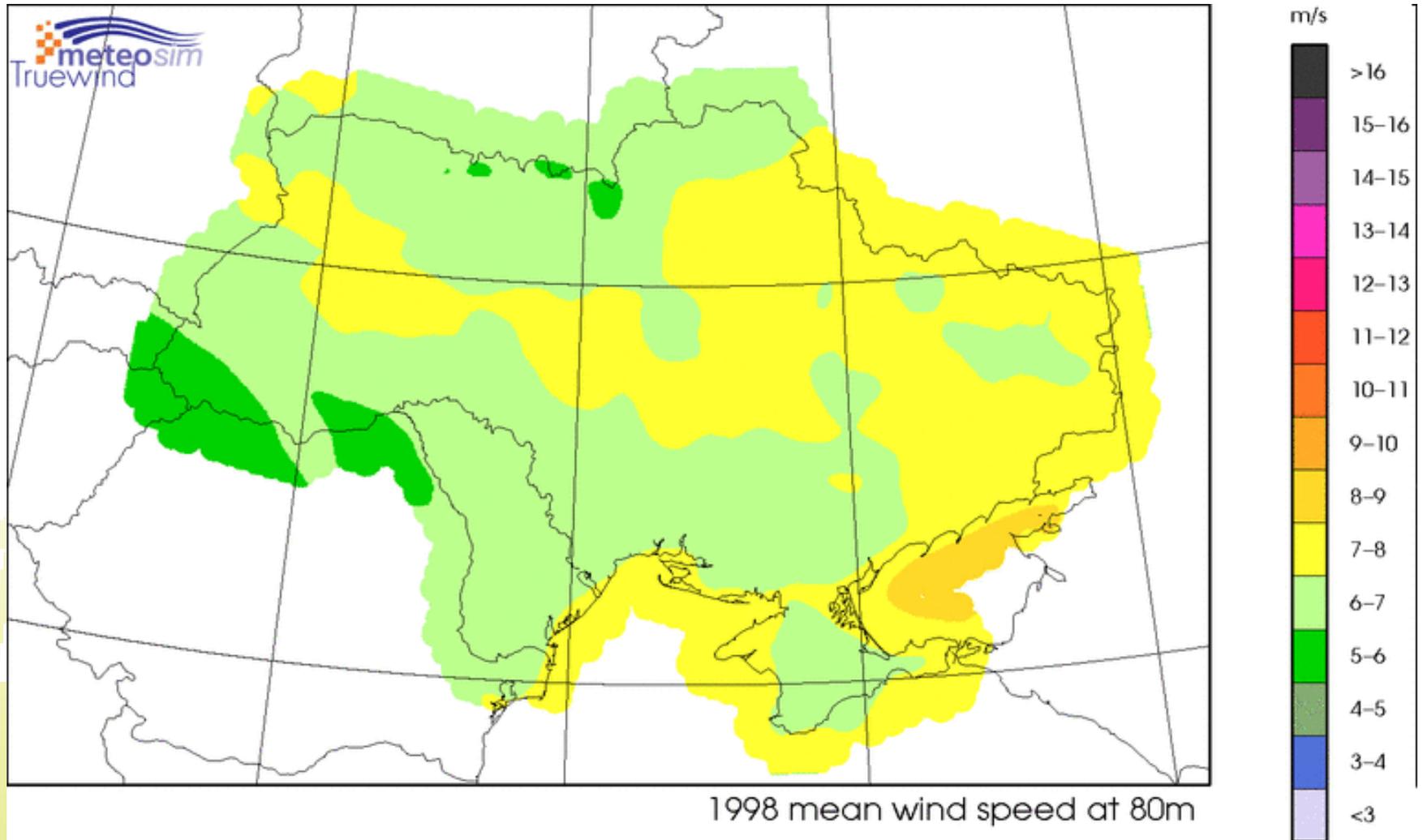
“Wind of the Carpathians” project



- Terrain features and large area of mountainsides contribute to the formation of strong winds with directions along the Dniester River
- Essence of the project: construction of three wind power plants on the territory of the Western Ukraine with a total capacity of **79.2 MW**
- The 1st phase **13.2 MW: CAPEX 20.5 million Euro**
- **CAPEX: 123 million Euro**
- **PBP: 7 years**
- **IRR: 11%**

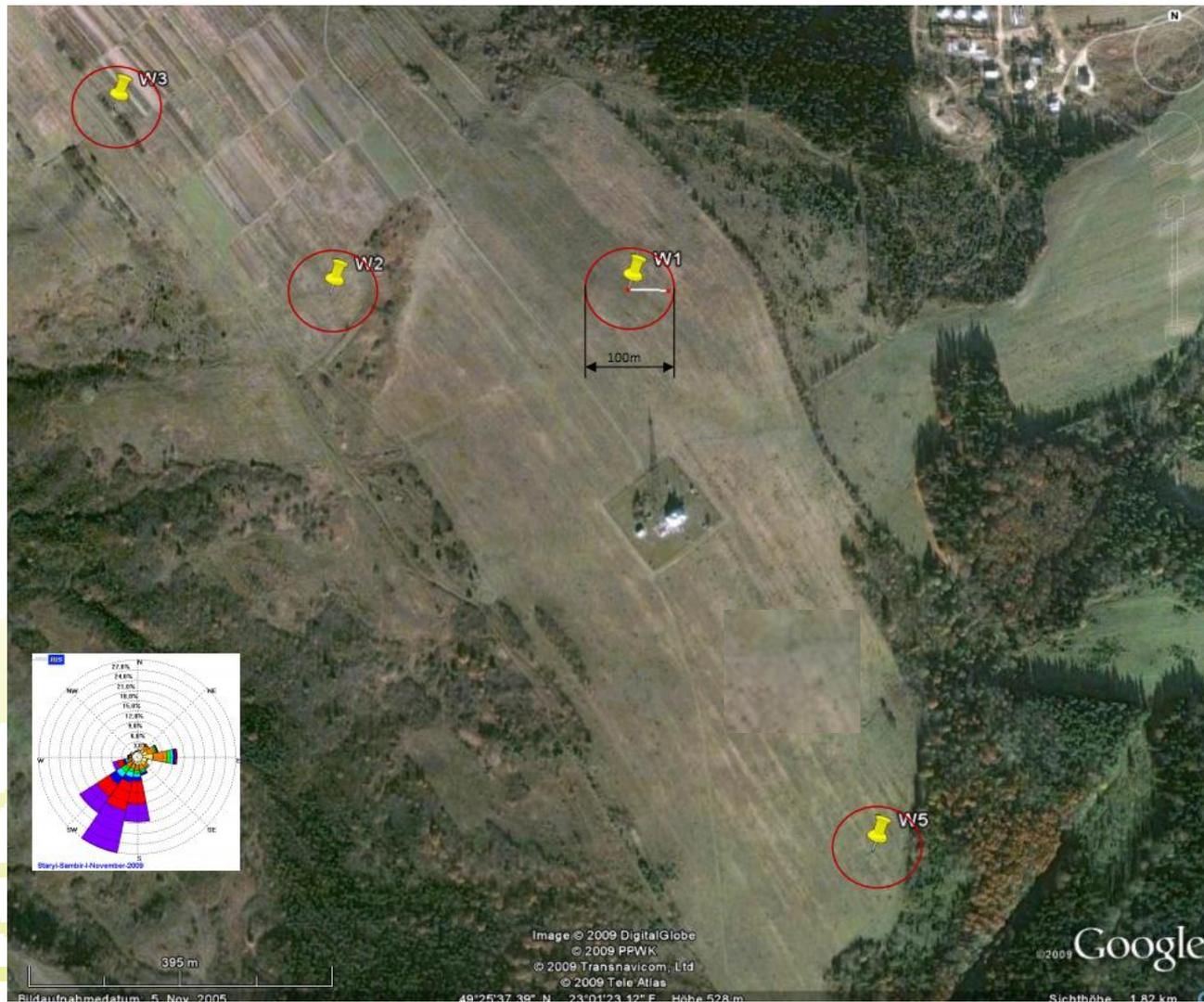


Map of Wind Zones in Ukraine



Wind of the Carpathians

Layout plan of wind turbines at WPP "Stary Sambir-1"



Scheme of Connection of WPP "Stary Sambir-1" to Electric Networks



Measurements of Wind Data and characteristic of Wind Potential

State Research and Design Institute of Nonconventional Energy and Electrical Engineering (1999 – 2000)

- Annual average wind speed - 7.64 m/s.2009-2010.
Austrian company IBS (2009-2010)
- Average wind speed – 6.2 m/s.
German company GEO NET (2011)
- Average wind speed – 6.3 m/s
Enerpark (2012-2013), mast height – 80 m
- analyses of measurements of wind data on the working site were carried out,
- analyses of measurements of wind data on meteo stations of Turka (Drohobych) were carried out,
- calculations with the use of FITNAH model were made.
- calculations of various options of layout of wind turbines FL 2500/100 and N 117/2400, Vestas V112 were made.

For technical and economic calculations wind turbine Vestas V112 was taken:
annual amount of generated electricity is 38 million kWh

Selection of Main Equipment

Negotiations were held

- Furhlander - wind turbine FL2500/100
- Nordex - wind turbine – N100-2500
- Vensys – wind turbine 2500 κBT
- PowerWind - wind turbine 2500 κBT
- Vestas- wind turbine V112

Key criteria for selection of equipment

- Projected amount of generated electricity
- Experience of company in manufacture of equipment
- Scope and cost of service maintenance
- Interest of companies in delivery of equipment in Ukraine

Taking into consideration the factors stated by wind turbine manufacturer for WPP “Stary Sambir-1”, company Vestas was selected

- wind turbine type - V 112/119,
- electric capacity - 3300 kW,
- tower height – 119 m.

Overall Performance

- Installed capacity – 13.2 MW
- Composition of main equipment – 4 x Vestas 112
- Annual electricity production – 38.0 million kWh
- Annual supply of electricity – 37 million kWh
- Capital investment - 20.5 million Euro
- Payback period – 7 years
- Reduction of CO₂ emissions – 32 thou.m³

Status of the Project

- 82 land lease agreements were made for a term of 49 years for facilities of the wind power plant and facilities of the scheme of connection to electric networks
- The WPP project was developed and a positive opinion of the commission for state expert appraisal was received
- The scheme was developed for connection of WPP to electric networks and a positive opinion of the commission for state expert appraisal was received
- Preparation of materials under the requirements of USELF
- The Declaration of the start of WPP construction was registered
- The letter-support to the joint implementation project under the Kyoto Protocol was received from the State Agency for Green Investments
- The agreement with Vestas was signed
- The first tranche of loan was received from EBRD
- The road was constructed and the first two foundations were concreted
- Putting in operation – October 2014
- Obtaining of NERC license and signing of agreement with SE “Energorynok” - October 2014,

Project Implementation Schedule

- Works on the foundations for wind turbines
 - April – June 2014
- Works on approach roads and installation sites
 - December 2013 - July 2014
- Transportation of wind turbine to the construction site
 - July - August 2014
- Installation of wind turbines, mounting
 - August – September 2014
- Connection to electric networks
 - May – July 2014
- Reconstruction, mounting and adjustment Open SWGR-35 of the 110/35/10 substation “Stary Sambir-tyaha”
 - February – June 2014
- Putting WPP in operation
 - October 2014

Thank you

