ČIBUK WIND POWER PLANT, SERBIA

Phase 2 – “Čibuk 2”

Environmental and Social Impact Assessment

Non -Technical Summary

November 2023

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1 Introduction

Čibuk 2 Wind Energy d.o.o Beograd (referred to in this document as “C2WE” or “the Developer”) intend to develop the second phase of the Čibuk Wind Power Plant in Vojvodina Province. The Čibuk Wind Power Plant is located in an extensive area of agricultural land and the owners of the land will continue to farm their plots throughout the operational life of the Project.

As C2WE is likely to seek financial support for the Project from an International Finance Institute or a major commercial bank, they have chosen to adopt Good International Industry Practice in the assessment of the environmental and social impact of the Čibuk 2 Wind Power Plant project. This means that in addition to the regulatory requirements of Serbia, an Environmental and Social Impact Assessment was completed to ensure compliance with the requirements of the Equator Principles and the environmental and social guidelines published by the International Finance Corporation.

This Non-Technical Summary (“NTS”) describes the key findings of the Environmental and Social Impact Assessment of the proposed Čibuk 2 Wind Power Plant (referred to in this document as the “Project” or “Čibuk 2” or the “WPP”). The NTS includes a description of the Project, its location and design, the benefits of the development to Serbia and the region, as well as the mitigation of any potentially significant negative environmental and social impacts identified during the impact assessment.

If you would like any additional information please visit the project website (http://www.cibuk2.rs/) or contact Čibuk 2 Wind Energy at:

Postal Address: Resavska 23, 11000 Belgrade, Serbia

E-mail: cibuk2@greenenergymotion.com

2 Context of the Čibuk 2 Wind Power Plant

The first phase of the Čibuk Project has been in commercial operation since April 2019. Čibuk 1 has 57 x 2.78MW wind turbines with a total capacity of 158 MW. Čibuk 1 is currently the largest Wind Power Plant in Serbia and during 2020 the operator (WEBG) exported 368.33 GWh of electricity to the national grid. The second phase of the Wind Power Plant, called Čibuk 2, will add up to 25 more turbines to the scheme, giving a total, maximum capacity of 313MW. The Čibuk site is in Kovin Municipality of Vojvodina Province, about 40 km from Belgrade.

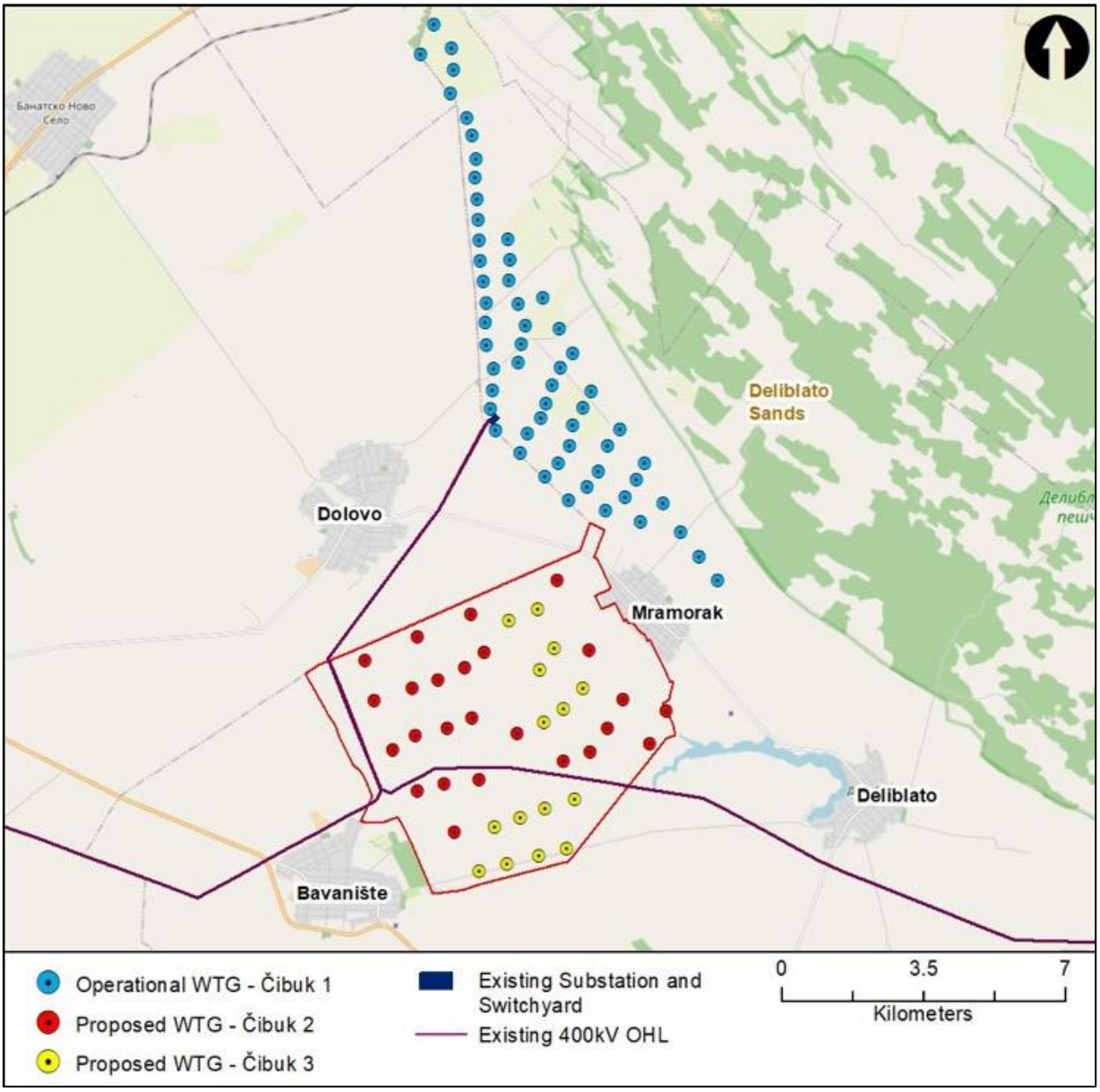
Figure 2-1 Čibuk 1 Turbines

Since the first phase of the Čibuk Wind Power Plant was designed, turbine technology has progressed quickly and the new generation of turbines are bigger and more powerful. C2WE propose to use a 6.1MW turbine for Čibuk 2 which means that the 155MW capacity of the WPP can be achieved with less than half the number of turbines used at Čibuk 1.

At some time in the future, the owner would like to construct a third phase of the Čibuk project ("Čibuk 3") that will add a further 15 turbines. The owner would have preferred to construct Čibuk 2 and Čibuk 3 at the same time but this is not possible as the local transmission network grid does not yet have enough capacity. It is important to note that the Čibuk 3 turbines are within the boundary of Čibuk 2.

Figure 2-2 shows the layout and boundary of the Čibuk 2 WPP; the C1 turbines are shown in blue (to the north) and that the C3 turbines are towards the centre of the C2 site.

Figure 2-2 Layout of the Čibuk 2 WPP



The Čibuk 2 site is very open, flat and there are several small drainage canals that cross the area. One large main drainage canal runs roughly south to north crossing the central part of the site. These ditches are dry for the majority of the year. Numerous rough tracks also cross the site and they provide access to farm land. These tracks are not surfaced and during the winter months, and following rain, they can only be passed all terrain and farm vehicles.

All of the land within the site boundary is farmed. The main crops are corn and sunflowers. There are no agricultural buildings within the site boundary and only one summer house.

Čibuk 2 will connect to the electricity network using the existing overhead power line. The additional infrastructure for Čibuk 2 will include:

- A small extension to the existing switchyard to allow for the installation of a new transformer.
- A new substation to connect the C2 turbines to the new transformer.
- Access tracks: Upgrading the existing access tracks in order to link the WTGs to the infrastructure on the site. The existing tracks will be surfaced with crushed stone.
- Underground cables: The cables taking power from the turbines to the sub-station will be buried in trenches running alongside the site access tracks. Communication links between each wind turbine, the meteorological mast and the control building/ substation will also be buried in trenches alongside the site access tracks.
- Areas of hardstanding: Each turbine would require a work area to accommodate the crane and turbine components during construction and operation (the “maintenance pad”).

The development of Čibuk 2 will require:

- Lease or purchase of land plots for the siting wind turbines;
- Improvement of existing forest tracks to allow access of construction equipment and then maintenance technicians during WPP operation;
- Clearance of land required for the wind turbine foundations and maintenance platforms;
- Creation of appropriate foundations for the wind turbines;
- Transport of turbine components to the site;
- Installation of the wind turbines using large cranes;
- Construction of appropriate infrastructure including underground power and communication cables, a substation and connection to the main grid;
- Operation of the wind turbines for 30 years; and,
- Replacement or decommissioning of the wind turbines once the WPP comes to the end of its operational life.

3 Why is Čibuk 2 WPP Needed?

The Čibuk 2 WPP is the second phase of the Čibuk Wind Power Plant. The purpose of the Čibuk WPP is to generate additional renewable electricity that will be supplied to the Serbian national grid. The Serbian energy sector is very dependent on fossil fuels and the use of reliable, renewable wind power will help Serbia to reduce its use of expensive, polluting fossil fuels. The Project will contribute to the Government of Serbia’s commitment to promote the development of renewable energy projects.

In summary, the Čibuk 2 WPP will:

- Deliver the next stage of an existing wind power plant;
- generate renewable energy that will contribute to national targets for reducing carbon emissions into the atmosphere;
- provide a valuable source of renewable energy for use within Serbia to support infrastructure development and the national building programme;
- strengthen Serbia’s energy sector by helping to diversify its energy sources (which proved to be of great importance after the serious floods in May 2014);
- reduce the need for Serbia to import energy from neighbouring countries;
- generate 430,000 MWh/per annum, providing enough electricity to power 150,000 homes;
- displace about 401,190 tonnes of carbon dioxide per year that would be emitted if the same amount of electricity was produced from a coal fired power station;

- reduce the annual emissions from existing coal fired power plant by 12,700 tonnes of sulphur dioxide, 1,470 tonnes of oxides of nitrogen and 512 tonnes of fine dust.

4 Project Alternatives

The conditions of the Project site are excellent for wind development and unfavourable for the majority of other renewable technologies. Solar energy could be exploited at the Čibuk site but this would mean the use of a much larger area of land and a significant increase in the loss of agricultural land. The Scoping Study concluded that a renewables project based on wind power generation was appropriate for the region and the site.

5 Meeting Serbian Regulations

Serbian EIA regulations require WPP developments of 10 MW installed capacity or over to be subject of an environmental impact assessment procedure. To initiate the Serbian EIA Study procedure, the local authority, in this case the Municipality of Kovin, must develop and adopt a Zoning Plan that includes a basic description of a new project. The approval of the Zoning Plan includes consultation with a series of national and regional statutory bodies that provide their conditions for the development of the Project.

The Zoning Plan is subject to a Strategic Environmental Assessment that has to be approved by the local Municipality. The permits for WPP developments (Location conditions, Building permit, Operation permit, Energy permit) are awarded by provincial and national authorities.

Once the Zoning Plan has been agreed, the Developer can proceed with a procedure for acquiring the Location Conditions for the project; essentially an environmental permit. The Location conditions ensure that the project can be connected to the existing infrastructure onsite. The Location conditions are provided by the same statutory stakeholders involved in the development of the Zoning Plan.

The Zoning Plan for Čibuk WPP was adopted in June 2021 and defined the wind power plant as comprising 41 wind turbines with a maximum height to blade tip of 240m and a maximum installed capacity of 315MW. A subsequent Strategic Environmental Assessment was approved by the Municipality of Kovin in June 2021.

Once the Zoning Plan was agreed, the Developer were given the Location conditions in July 2022. The Location conditions were issued for Čibuk 2 (but not C3) for maximum installed capacity of 155MW based on 25 turbines. Maximum height to blade tip has been set at 240m, the maximum rotor diameter is 190m, maximum blade length is 95m, and maximum hub height is 160m.

Table 5-1 provides a summary of the E&S conditions in the development permits that directly regulate the construction, operation and decommissioning the Čibuk 2 WPP.

Table 5-1 E&S Conditions and Permits

Permit	Date Obtained	E&S Conditions
Energy Permit	To be obtained	No E&S conditions are set by the permit.
Location Conditions	July 2022	**Design/ Pre-Construction:** • The WPP shall comprise up to 25 WTGs, the maximum height to blade tip shall not exceed 240m. • The horizontal distance between two turbines shall be at least one height to blade tip. • Blades must be painted and lighted in line with regulations on obstructions to air navigation. • Any waste dump (e.g. municipal or construction waste) shall be removed from the WPP site. • A minimum 5 metre setback shall be established between the underground cable route and a drainage canal. • Archaeological rescue excavation must be undertaken prior to commencement of the

Permit	Date Obtained	E&S Conditions
		earthworks for foundations of the WTGs No. 1, 8, 12, 18, 33. **Construction:** • Cable trenches and turbine foundations should be properly backfilled to keep out burrowing animals and prevent attracting raptors. • A drainage canal damaged during the construction must be restored to its prior condition. • WTG concrete foundations are not allowed to be built within wetland habitats (bogs, surface-water depressions, swamps, etc.). • Archaeological supervision shall be conducted during the earthworks for foundations of the WTGs No. 7, 11, 16, 19, 22, 23, 25, 27, 28, 31. • In case of chance finds, all work must be immediately halted and the area protected until the Institute for Cultural Heritage in Pančevo secures the findings. • If potentially valuable geological or paleontological features are discovered during the excavation works (e.g. fossils, minerals, crystals), the Developer must notify the national Ministry of Environment within 8 days. **Operation:** • To protect the migratory species, the WPP must be equipped for continual monitoring of bird and bat movements over the site area. • The post-construction bird monitoring must be undertaken for a period of at least 1 year and must be particularly focused on Saker falcon (*Falco cherrug*) and the WPP site area within 1km of the Special Nature Reserve 'Kraljevac Bog'.
Building Permit	Expected in Q2 2023	No E&S conditions are set by the permit. The EIA Study (unconsented) is included in the permit application.
Registration of Works	Expected in Q4 2023	The EIA consent is a prerequisite for the Registration of Works and requires implementation of mitigation measures listed in the EIA Study.
Water Permit	Upon completion of construction (Q1 2026)	The Water Permit will set requirements related to wastewater management during the WPP operation, including any activities which might have an impact on the local drainage canals.

6 How Does a Wind Turbine Work?

Wind turbines consist of three main elements: a hollow steel tower, the nacelle, and the fibreglass rotor blades (which are attached to a rotor on the front of the nacelle). The nacelle houses the main mechanical components of the turbine including the generator and the gearbox. The turbine transformer and the main control equipment are in the base of the tower (see Figure 6-1).

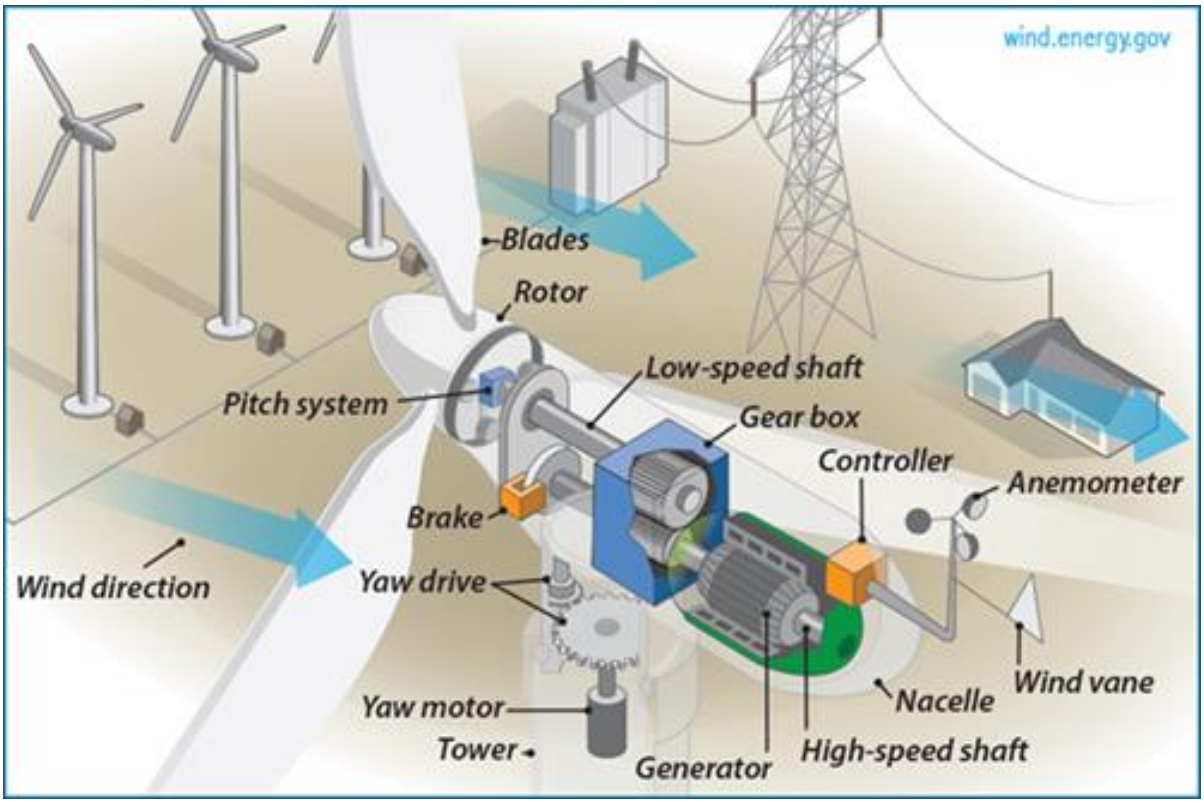
The five basic steps of electricity production from wind power plants are:

- Wind turbine blades are turned by the power of the wind;
- the blades turn a rotating generator in the nacelle which converts wind energy to electricity;
- a transformer in the base of the turbine tower increases the electricity voltage for transmission to the substation by underground cables;
- the substation increases voltage for transmission over long distances;

- the electricity is transferred to the grid and distributed to the power users.

The turbine nacelle is rotated by a motor so that the rotor points directly towards the wind. This is in the same way that the sails on a boat are oriented towards the wind by the crew. The direction of the wind is sensed by the wind vane and the wind speed is monitored by an anemometer. The WPP also has a tall mast where the meteorological sensors at mounted. This mast is typically much taller than the turbines.

Figure 6-1 Generic Wind Turbine Design



When the wind reaches and maintains constant speeds of over 3 m/s, the turbine blades will start to turn in a clockwise direction. The rotor shaft slowly drives the gearbox that converts the mechanical energy into electrical energy through an electrical generator (which spins at a much higher speed than the rotor).

At a constant wind speed of 3 m/s each turbine will generate about 20kW. At 6 m/s, the output is about 600kW but this rises sharply to the maximum power output at a wind speed of 10 to 12 m/s, when the turbine will generate the design or rated power, 6.1MW in this case.

The pitch control system alters the angle of the blades. This allows the blades to find the best angle, to deliver a safe steady rotation of the blades. The turbine's electronic controller checks the power output of the turbine several times per second and if the power becomes too high, the pitch mechanism will pitch (turn) the blades slightly out of the wind. Conversely, if the power becomes too low, the pitch mechanism will pitch the blades back into the wind.

At wind speeds above 25 m/s, the turbine blades are stopped by the control systems to prevent excessive wear and tear on the mechanisms. The blades are stopped by rotating the blades on the hub. This change of blade angle means that the blades are no longer driven by the wind; a process called "feathering" the blades.

Most of the electricity produced by the wind power plant will be transferred to the grid but a small amount of electricity is used by the turbines (e.g., the yaw motor and pitch controls) and on-site control facilities.

The basic operation of each turbine is controlled by its' own computer systems. The operation of the turbines is monitored from a site control room but all WTGs can also be monitored and managed remotely. It is normal for the wind turbine manufacturers to monitor each unit from a central or regional control room. This means that the turbines are monitored continuously, 24 hours per day, 365 days per year.

7 Description of the Čibuk 2 WPP

The Čibuk 2 site covers about 4,750 hectares of land which is used entirely for intensively managed agricultural production (mainly corn and sunflower). Importantly, the development of the WPP will take very small areas of land and more than 99% of the land will remain under cultivation.

At the time of writing, the turbine supplier or model had not been selected. C2WE are considering four suppliers, each company has been designing, installing and operating wind power plants for many years. The WTG suppliers currently under consideration are listed in Table 7-1, below.

Table 7-1 Potential WTG Suppliers and Models

Potential Supplier	WTG Generating Capacity (MW)	Overall Rotor Diameter (m)	WTG Hub Height (m)
General Electric (GE)	6.1	158	151
Nordex	5.7	163	107.5
Siemens Gamesa (SG)	6.2	170	165.0
Vestas	5.6	162	125.0

This table illustrates that the WTGs being considered for Čibuk 2 vary in generating capacity and physical dimensions. The GE 6.1MW 158 unit is the preferred WTGs and the ESIA has been based on this unit.

Due to the size of the turbines, it will be necessary to construct substantial foundations. Each WTG foundation is likely to be about 500 m^2 and at least 3.5m deep. Piling may be required for some of the WTG foundations depending on the local ground conditions. The location of the concrete batch plant that will provide concrete for the foundations has not yet been established but it is likely that it will be off-site.

The Čibuk 2 site is crossed by a 400kV power transmission line that runs in an East-West direction (coloured purple in The first phase of the Čibuk Project has been in commercial operation since April 2019. Čibuk 1 has 57 x 2.78MW wind turbines with a total capacity of 158 MW. Čibuk 1 is currently the largest Wind Power Plant in Serbia and during 2020 the operator (WEBG) exported 368.33 GWh of electricity to the national grid. The second phase of the Wind Power Plant, called Čibuk 2, will add up to 25 more turbines to the scheme, giving a total, maximum capacity of 313MW. The Čibuk site is in Kovin Municipality of Vojvodina Province, about 40 km from Belgrade.

Figure 2-1). This Overhead Line connects to the existing switchyard that serves the C1 WPP. This switchyard is owned and operated by EMS. The Čibuk 2 turbines will be connected to a new transformer by 33(35)kV underground cable. This new transformer will be close to the existing C1 transformers (see Figure 7-1. A new substation will be built for C2 and will connect the new transformer to the EMS switchyard, and then to the national power grid (via the existing OHL).

The C2 control room will be located in the new electrical sub-station. This control room will be staffed from 08:00 to 16:00 from Monday to Friday. The sub-station will include welfare facilities for the WPP operators and the Operation & Maintenance ("O&M") Contractor.

Figure 7-1 Čibuk Control Building Compound

7.1 Site Access

The site will be accessed from the municipal road Dolovo - Mramorak in the north-east and the state road No. 14 and a municipal road near Bavanište in the south. The Čibuk Control Building Compound can be accessed from the village of Dolovo (Detelinska Street).

The existing access tracks will remain open for use by local people and landowners. Where possible, C2WE have positioned the WTGs alongside these tracks. The tracks will need to be upgraded to allow construction vehicles, erection cranes and WTG component delivery. Once the WPP is completed, the tracks will be used by the maintenance teams. No new tracks or access roads will be constructed. The WPP will be provided 57km of upgraded tracks.

7.2 Construction

It is C2WE's current intention to appoint an Engineering, Procurement and Construction ("EPC") contractor to build the WPP on their behalf. It is likely that the EPC will appoint one or more separate contractors to undertake the civil work, including the turbine foundations, access roads and crane pads next to each turbine. Specialist contractors would be employed to construct the electrical sub-station and switchyard to connect the WPP to the grid.

Construction activities will include:

- Surveying of the site.
- Clearance of vegetation for:
  - Construction compound, including equipment and material storage areas.
  - Lay-down areas.
  - New access tracks.
- Upgrading of the site tracks and construction of new access tracks to each WTG.
- Establishment of the construction compound (includes offices, welfare facilities, parking, and secure stores).
- Levelling and excavation (for turbine pads and foundations).
- Installation of electrical infrastructure.

- Cement pouring (mainly for the turbine foundations).
- Installation of the turbines.
- Installation of the new transformer.
- Commissioning the WPP and control systems.
- Landscaping the turbine bases.
- Final surfacing of the access tracks and maintenance pads.

The construction compound is temporary and will be removed following the completion of the construction. This compound will be used for storage of construction machinery, materials and wastes as well as the location for site office and welfare facilities. It will also include an area for worker and visitor parking.

Due to the size of the turbines, it will be necessary to construct substantial foundations. Each foundation is likely to be about 500m^2 and at least 3.5m deep. Piling may be required for some of the turbine foundations depending on the ground conditions. About 1,000m^3 of concrete is required to complete the foundations for each WTG. The supplier of the concrete has not yet been established but it is likely that C2WE use it will be off-site. Steel reinforcement for the structural concrete is expected to be sourced from a local provider but this will be confirmed at a later date. The turbine maintenance pads, which each cover an area of 2,000 m^2. Each pad will be surfaced with compacted, crushed stone. The sand and gravel will be obtained locally (Belgrade, Pančevo or possibly Novi Sad), the crushed stone will be obtained from central Serbia (Valjevo, Lajkovac).

The installation of the turbines requires two, or possibly three, large cranes. The biggest crane is transported to the site by truck and assembled on site. A construction pad (of compacted crushed stone) will be prepared at each turbine for the cranes. These pads will remain in place for the life of the WPP and will be available for use by access cranes should any major repair be required to the turbine. The large crane will move under its own power ("crawling") from one to the construction pad to the next. The turbine components will be placed on the construction pad before being lifted into place. The base of the tower is bolted to the foundations. Each tower section is lifted into place and bolted to the section below. The blades may be bolted to the hub before being lifted to the nacelle or may be fixed once the hub is in place; this varies by turbine manufacturer.

The smaller, crawler cranes will be moved from one turbine location to the next along the site tracks. Existing tracks will be upgraded during the initial site preparation work and will connect the turbines and the substation compound. The roads will be constructed to a specification similar to the access road, including roadway preparation, stormwater controls, and placing gravel where needed. Roads connecting the compound to the turbines will be about 4 to 6 m wide, again similar to the access road.

A 33-kV underground power transmission line will be placed in a trench alongside each of the access tracks. These cables will be armoured with woven metal and buried to a depth of about 1m. Excavated material will be used to backfill the trenches.

The supplier of the WTGs has not yet been confirmed but they will be manufactured outside Serbia. It is likely that the WTG components will be brought to Serbia on the Danube River and off loaded at the port of Pančevo. It is likely that the WTG components will be off-loaded from barges docking at the port of Pančevo on the Danube River. The longest option (c. 45km) travels via Banatsko Novo Selo and Vladimirovac. Other shorter options (20-25km long) include the state road from Pančevo to Bavanište, municipal roads and dirt tracks

The turbine components will be transported from Pančevo using oversized road transporters and will comprise:

- Turbine tower sections – Five loads per WTG (top section, middle 1, middle 2, middle 3, bottom section), each transported separately.
- Hub – One load per WTG.
- Blades – Three loads per WTG, each transported separately.
- Nacelle – One load per WTG.
- Drivetrain - One load per WTG.

These convoys will have a police escort and will pass through a number of villages on their way to site. Residents of each village will be given prior notifictation of the date and time of each convoy.

7.3 Operation

It is likely that the Energy Permit for the Čibuk WPP will require C2WE to establish and maintain a small team to operate and maintain the WPP. The senior roles likely to be agreed under the Generating Licence are:

- General Manager;
- Operations Manager;
- Maintenance Manager.

The day-to-day responsibility for EHS matters lies with the Operations Manager (OM).

The WPP control room will be in the existing Control Building station. The operation and performance of the turbines will be managed by a specialist team provided by the O&M Contractor. The control room will be staffed from 08:00 to 16:00 from Monday to Friday. The control room team will also operate an out-of-hours standby system to manage breakdowns or emergencies.

The O&M Contractor will also provide continuous monitoring of the WTGs (including any fault or failure conditions) from an off-site Control Room. Should any operational issues arise then the O&M Contractor will try to resolve these from the Control Room and send an information email to their local team in Serbia.

The operation of the sub-station is the responsibility of C2WE, while the Interconnection infrastructure is the responsibility of the Serbian statutory transmission Electricity Supply operator, Elektromreža Srbije ("EMS").

7.4 Decommissioning or Re-powering the WPP

The operational life of the WPP is expected to be 30 years; this is the typical working life of a wind turbine blade. As the wind power plant approaches the last few years of operation C2WE will consider the closure or the continued operation of the WPP by replacing the wind turbines (called re-powering). Should C2WE choose to re-power the Čibuk WPP then the turbines could be replaced with new, higher capacity turbines. Re-powering can add another 30 years to the operational life of a WPP.

The decommissioning of a wind power plant is not a complicated process and largely comprises the dismantling of the turbines, removal of the turbine foundations and site clearance. Steel and other useful materials will be recycled. Inert materials that cannot be re-used or recycled will be taken to a suitable landfill.

It is unlikely that the turbine foundations will be removed completely. Instead, the concrete will be demolished and excavated down to a nominal depth of 1m. This will allow for agricultural activities to be undertaken safely once the excavation has been filled with top soil. All temporary roads, areas where the land has been compressed by heavy plant activities, and laybys and temporary platforms will be reinstated.

The sub-station may continue to be occupied, and the transmission line may continue to be used.

There will be no underground electrical cables laid less than 1m deep as, according to the local regulations and the conditions issued to C2WE, the minimum depth for laying the cables must be 1.2m. All electrical cables laid more than 1m deep will be abandoned in place and will not cause any long term significant environmental impact.

8 Project Timeline

At the time of writing, the construction timeline is expected to be:

- Start of construction: Q1 2024.
- Site tracks and roads construction: Q1 2024 - Q2 2024.
- Foundations and WTG crane pad construction: Q1 2024 - Q4 2024.
- Construction of the 400 kV connection and switchyard: Q2 2024 – Q3 2024.
- Connection to the existing OHL and grid: Q2 2025.
- WTG installation: Q2 2025 - Q4 2025.

9 Preparation of the ESIA

In line with Lender requirements, an ESIA Scoping Study was undertaken in December 2021. The purpose of the Scoping Study was to identify the environmental and social impacts and benefits of Čibuk 2 and to plan the completion of the ESIA.

The Scoping Study indicated that the development of the WPP could lead to a number of environmental and social impacts, both negative and positive. The ESIA considered each impact and proposed a series of design changes and control measures to mitigate the negative impacts. The ESIA was prepared in the summer of 2022.

The impact mitigations and management controls required by this ESIA are summarised in the Environmental and Social Management and Monitoring Plan, or "ESMMP", and will be delivered within the framework of the Project Environmental and Social Management System. The ESMMP is very detailed and is included in the main ESIA report.

The Scoping Study concluded that the ESIA should consider the following topics in detail:

- Ecology and Nature Conservation – potential impact on birds;
- Ecology and Nature Conservation – potential impact on bats;
- Cumulative Impact;
- Landscape and Visual;
- Shadow Flicker.
- Socio-economic;
- Traffic and Transport;
- Climate Change
- Operational Noise.

In addition, consideration would be given to:

- Noise during construction and decommissioning;
- Archaeology and Cultural Heritage;
- Surface Water and Effluent;
- Land and Groundwater;
- Aviation Safety and Radars Obstructions;
- Electromagnetic Interference and Telecommunication;
- Ecosystem Services;
- Air Quality;
- Community Health, Safety and Security.

9.1 Baseline Studies

A series of surveys and studies were planned to obtain the information that would be assessed during the ESIA. A summary of these surveys is provided in Table 9-1, below.

Table 9-1 ESIA Surveys

Key Issues for the ESIA	ESIA Surveys Undertaken
Ecology and Nature Conservation - Birds	Extensive survey work is required over a one-year period to ensure that a sufficient impact assessment and mitigation strategy can be developed within the ESIA. The surveys will include: • Vantage Point ("VP") Surveys, • Breeding Raptor Survey (walkover census), • Breeding Farmland Bird Survey (transects sampling),

Key Issues for the ESIA	ESIA Surveys Undertaken
	• Surveys to inform CHA. The VP surveys are designed to quantify the level of flight activity and its distribution over the survey area. Data can also be used to provide an overview of bird usage of the site, which will inform the overview of potential disturbance and displacement. The VP surveys will provide input data for the Collision Risk Model ("CRM"). Breeding Bird surveys will allow the evaluation of occurring population numbers, site's importance and help quantify impacts from disturbance and displacement. A CHA will be undertaken in accordance with IFC PS6/ EBRD PR6.
Ecology and Nature Conservation – Bats	Extensive survey work is required over a one-year period to ensure that a sufficient impact assessment and mitigation strategy can be developed within the ESIA. The surveys will include: • Investigation of roost sites. • Manual bat detector surveys at ground level (transects). • Automated bat detector surveys at WTG locations, • Automated bat detector surveys at height (if mast will be available for installation of the equipment).
Socio-economic	During stakeholder meetings, people were asked about general dependence of the local population on the affected land for livelihood related activities and if compensation which was provided to affected land owners corresponds to full replacement cost.
Landscape and Visual Impact	The landscape and visual assessment were based upon a desk study and field observations. The study area of 30km was used. Zone of Theoretical Visibility models were calculated for the worst-case turbine model. Fieldwork was undertaken to select the relevant viewpoints and take viewpoint photographs as a basis for visualisations.
Shadow Flicker	A Study Area of ten rotor diameters (1,700m) around each proposed turbine was considered. The shadow flicker model was developed using WindPro software. A field survey was undertaken to inspect the receptors predicted to be affected by more than 30 hours of shadow flicker per year.
Traffic and Transport Impact	A desk-based assessment of transport and traffic impacts was completed to: • establish the baseline traffic conditions along the route, • estimate the traffic levels likely to be generated during the construction phase, • conduct qualitative assessment of potential impacts, and • propose control and mitigation measures.
Operational Noise	A two-week baseline noise survey was undertaken at five representative locations which were representative of the nearest houses in the Mramorak, Dolovo, Bavanište and Bavanište Monastery. Two locations are chosen for Mramorak. The survey was undertaken in combination with anemometry measurements to determine the wind speed. The survey considered the range of wind speeds and wind directions during both daytime and night-time periods.

10 Potential Benefits and Impact of the Čibuk 2 WPP

The Čibuk WPP site was chosen due to the excellent wind resources, agricultural use of the whole site land and because the site is crossed by a 400 kV overhead power line. The Developer plans to extend the existing switchyard (adding a new transformer) and there is no need to construct a new overhead line to connect the WPP to the national power grid. Importantly, the development of the WPP will take very small areas of land and more than 99% of the land will remain under cultivation.

10.1 Generation of Renewable Electricity

The primary purpose of the Čibuk WPP, and other WPP projects in South Banat, is to reduce the national reliance on fossil fuels, in particular national coal resources and the import of natural gas. The Čibuk 2 WPP will generate about 155 MW; enough to power 150,000 homes.

The Čibuk 2 WPP will generate about 430,000 MWh of renewable energy each year and will displace about 401,000 tonnes of carbon dioxide during every year of its operation.

10.2 Land Take

The land required for the turbines and roads is very low and only 0.2% of the arable land within the site will be lost to the WPP infrastructure. In total up to 10 ha of land will remain permanently unavailable for agriculture after construction.

10.3 Habitats and Biodiversity

The Primary Mitigations proposed by the ESIA, and adopted within the Zoning Plan, has ensured that almost all potential negative impacts of the Project on ecological features are avoided or significantly reduced.

The ESIA concludes that, provided that the recommended mitigation measures are delivered:

- The construction of the WPP will have no significant impact on local or regional bird and bat species, although a European Bee-eater nesting location that will be lost will be replaced on site.
- the operation of the WPP will have no impact on any designated site, habitat, flora or fauna populations;
- the operation of the WPP will cause some disturbance to bird activities and the ESIA concludes that there will be negligible impact;
- the operation of the WPP is likely to have a minor impact on six bat species.

WTG operation will cause some disturbance to bird activities, though this cannot be considered displacement for most species and **no** impact can be ascertained. Detailed assessment of sustainability of several species populations of significant conservation value and potentially susceptible to displacement, undertaken as a precaution, clearly indicate that there will be a **negligible** impact at the most on the regional populations of Common Quail, Hen Harrier, Saker Falcon, and Tawny Pipit.

Some bird collision fatalities from WTGs are inevitable over the operational life of the WPP. The collision risk assessment and assessment of sustainability of the potentially affected populations concludes that there will be a **negligible** impact on the regional populations of Western Marsh Harrier, Hen Harrier, Common Buzzard, European Bee-eater, and Saker Falcon. The remaining species observed within the WPP site are considered not susceptible to collision mortality or of insignificant nature conservation value, or occur at the site only incidentally. Although incidental single collision fatalities of these species as well cannot be completely excluded, such a low (potential) additional mortality could not affect their populations even at the site level, and **no** impact can be ascertained.

Some bat fatalities from operational WTGs are inevitable. The impact on the majority of occurring bat populations from mortality caused by operating WTGs is assessed as **none**. The assessment of sustainability of the potentially affected populations concludes that the impact on the highly susceptible species regional populations, the Soprano Pipistrelle Bat, Kuhl's Pipistrelle Bat, Nathusius' Pipistrelle Bat, Parti-coloured Bat, Leisler's Bat, and Noctule Bat, including resident and migratory populations of Leisler's Bat and total population of Nathusius' Pipistrelle Bat of significant conservation value, is **likely negligible**, and, as a precaution, ***possibly low negative regional***. WTGs in the areas of established foraging areas and commuting routes of these species have been identified as potentially the most harmful are numbers 33, 25, and 22.

Between one and three years of post-construction bird and bat monitoring and mortality surveys will be undertaken in accordance with international best practice.

10.4 Socio-economic

Socio-economic impacts related to the construction phase are all assessed as having **minor significance**. Negative impacts include those in relation to land use, as up to 10 ha of arable land will be occupied during construction, and possible damages of crops or to road surfaces. All other impacts are **positive** and they are in relation to the creation of employment and procurement opportunities, causing further positive impacts on local livelihoods, as well as in relation to the upgrading of access tracks, enabling local land owners to access their land with more efficient agricultural machinery. The positive impacts are mostly short term and of a local character.

Following proposed mitigation measures, the residual impact rating for the key negative construction related impacts is reduced to negligible.

The most significant socio-economic impact during the operation phase is **moderate beneficial** and is in relation to revenue generation for the municipality and donor support for local initiatives. Minor beneficial impacts are expected as a result of regular maintenance of access tracks used by local owners of land. All

other impacts are negligible, including any possible economic displacement of users of land if they suffer any losses. The positive impacts are mostly long term and all impacts are of a local character.

10.5 Landscape and Visual

The large-scale, open and flat landscape is considered to be a good location for the proposed WPP. The turbines will dominate the landscape up to 2km from the site, and are expected to create a **major to moderate adverse** impact. As the distance from the site increases, the turbines would appear less prominent in the vast, flat landform, reducing the impact significance to **minor to negligible adverse**.

The Čibuk 2 turbines would be clearly visible and prominent in the view from a limited number of houses on the eastern edges of Mramorak, southern Dolovo, and northern and eastern Bavanište and it would constitute **major adverse** impact significance. Due to vegetation and buildings, many views within the villages would be obstructed or limited to upper parts of turbines resulting in a **moderate adverse effect**. From more distant views within a 5km radius (Dolovo, Bavanište, Deliblato) the incremental visual effect compared to the existing situation with the Čibuk 1 WPP would be medium to low adverse, resulting in a **moderate to minor adverse effect**. From more distant settlements (Kovin, Skorenovac, Gaj) the turbines will be visible from houses on the edges of the settlements, but not prominent and not significant.

The primary mitigation is embedded in the design of the proposed WPP. No specific landscape enhancement measures are proposed. Mitigation planting should be with native species, suitably protected, maintained and monitored during medium-term establishment for a minimum of 5 years upon completion of the proposed Čibuk 2 WPP.

Bespoke mitigation planting may be considered near a small number of houses in the east (Mramorak), north-west (Dolovo), and south-west (Bavanište) where there would be an open view of the turbines at a distance of less than 2km. Specific consultation should be undertaken with the effected people and where possible, targeted screening by woodland planting should be considered.

Provided that mitigation planting is successfully implemented, the significant adverse landscape and visual effects will be reduced to the acceptable level - **moderate to minor adverse**.

10.6 Shadow Flicker

The shadow flicker assessment indicated that the potential to exceed the worst-case threshold of 30 hours per year could be exceeded at 4 permanently occupied houses on the south western edge of Mramorak village. These residential houses are predicted to experience between 31 and 35 hours of shadow flicker per year from C2 WTG No. 22. Also, there are 4 permanently occupied houses in the same area where the amount of shadow flicker is predicted to be just higher than the daily threshold of 30 minutes. The effect will occur from November to February between 3pm and 4pm.

In addition, four residential houses in northern Mramorak are predicted to be impacted by the cumulative shadow flicker with the Čibuk 1 and Vetrozelena WPPs.

The assessment was based on a conservative estimate and no account was taken of typically less sunlight in winter months and existing screening features. It is therefore considered that the actual amount of shadow flickering is likely to be much less.

For the permanently occupied houses (highly sensitive receptor) the shadow flicker impact is thought to be significant **- moderate adverse effect**.

For the affected industrial and agricultural buildings as receptors of low to negligible sensitivity, the impact is not thought to be significant - **negligible adverse effect.**

To mitigate the effects of shadow flicker a number of mitigation options are available. There is no universal solution applicable to all receptors and some measures would be possible only with cooperation of the affected people. However, all mitigation measures can be applied or adjusted at the WPP operational phase. Provided that any potential shadow flicker effects can be mitigated through the implementation of the Shadow Flicker Management Plan, no significant residual effects are predicted during the operation of the proposed Čibuk 2 WPP.

10.7 Traffic and Transport

The transport of general construction material for Čibuk 2 would contribute to a negligible increase (between 7 and 18%) in HGVs movements along the 25km-long route between Pančevo and the WPP site. The potential

impact on traffic and transportation would be temporary and short-term, with **negligible adverse** significance impact on severance, driver delay, pedestrian delay and amenity.

The transport of turbine components is assessed to be a temporary change of a low magnitude and a **minor adverse** significance impact.

A Construction Traffic Management Plan (CTMP) should be developed in consultation with Roads of Serbia, Traffic Police Department in Pančevo and the municipality of Kovin.

Potential residual impacts would likely be minor driver delays as a result of temporary road closures or slow movement of HGVs. Increase of traffic flows of heavy vehicles would add to the risk of road wear and tear. No significant residual impacts are anticipated during the construction transport for the project.

10.8 Operational Noise

The assessment has indicated that all locations can meet the Serbian daytime and night-time noise limits. However, the properties at the two closes settlements will exceed the IFC night-time noise limits based on the background noise. However, at a small number of properties in Mramorak and Bavanište the predicted noise levels will exceed the IFC night-time noise limit. This exceedance is due to the existing low background noise levels at night. At Mramorak (but not Bavanište) the predicted exceedance at some locations is also due to a contribution from Čibuk 1 WTGs. However, it will be possible to meet the limits by running certain turbines in low noise modes at night.

Following proposed mitigation, the residual impact rating for the key impacts identified are **minor adverse**.

Other WPPs are proposed in the area including Vetrozelena which has turbines all around Dolovo and closer to it than Čibuk 1 and Čibuk 2. The Vetrozelena turbines are expected to have a greater impact on the residents of Dolovo than the Čibuk turbines.

11 Stakeholder Engagement Plan

An initial Stakeholder Engagement Plan (“SEP”) was prepared at the same time as the Scoping Study. The purpose of the initial SEP was to identify, and then guide the consultation, with project stakeholders. The key stakeholders were invited to contribute their views on the project and to provide any information that they considered would be important in the preparation of the ESIA. It is noted here that WEBG already has a very strong relationship with local stakeholders which was developed during the construction and operation of the Čibuk 1 project.

The Čibuk 2 SEP includes the following information:

- Public consultation and information disclosure requirements according to national legislation and international requirements;
- identification of stakeholders and other affected parties;
- overview of previous engagement activities carried out for the project;
- future stakeholder engagement programme including methods of engagement and resources; and
- a grievance mechanism that can be used by stakeholders to record and manage complaints, concerns, queries and comments.

The SEP is a “living document” and will be reviewed and updated throughout the construction and operation of the wind power plant. The latest updated version of the SEP is available on the WEBG website (http://www.cibuk2.rs/). All stakeholders are invited to read, and comments upon, the SEP if they wish. Reports from various stakeholder engagement activities are also available on the company website.

At the end of each year, an appendix will be added to the SEP which describes the stakeholder events that were held, comments made by the attendees, and a summary of any grievances raised during the year.

The initial SEP identified the key stakeholders as the residents of the municipality Kovin, in particular the villages surrounding the project site, Mramorak and Bavanište, as well as Dolovo which territorially belongs to the City of Pančevo. In addition, stakeholders included any people that may have been affected by land acquisition, active civil society organisations, representatives of relevant municipal departments and institutions, as well as other statutory stakeholders.

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