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- **Expert Opinion on the Expected Impact on shrikes**
as Part of the Environmental Impact Assessment
for the Proposed "Čibuk 1" Wind Farm
located near the Villages Dolovo and Mramorak
in the Municipality of Kovin (Autonomous Province of Vojvodina, Republic of Serbia)

Reported to:

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1. Introduction

With “Čibuk 1” a wind farm of 57 wind turbines is planned for construction near the villages of Dolovo and Mramorak in the Municipality of Kovin (Autonomous Province of Vojvodina, Republic of Serbia). In addition to the expert opinions on birds (cf. ECODA 2011a) Vojvodina Institute of Environmental Protection would like to have further information about likely adverse effects on “small raptors” caused by Wind Power Plants (WPPs). As Falcons are discussed in detail in the expert opinion (cf. ECODA 2011) the species group “small raptors” in this statement comprises three species belonging to genus *Lanius* (shrikes) which were observed in the study area (within the breeding period: Red-backed Shrike and Lesser Grey Shrike; within the resting period: Great Grey shrike)

2. Vulnerability of shrikes at WPPs

At present there are some scientifically substantiated findings on the influence of WPPs on shrikes. Several studies have shown that that Red-backed Shrike nested next to WPPs. Thus influence of WPPs on this species seems to be very low (cf. REICHENBACH et al. 2004, STÜBING 2001, SINNING 2004a & b, MÖCKEL & WIESNER 2007).

MÖCKEL & WIESNER (2007) found seven nesting sites of Great Grey Shrikes in the vicinity of WPPs. All of sites were located closer than 300 m to WPPs and three of them even closer than 50 m to WPPs. Thus influence of WPPs on Great Grey shrike can be assumed to be very low as well.

To date there is no information about vulnerability of Lesser Grey Shrikes. According to other species of this genus it seems to be very likely that vulnerability of this species (as for most of all passerines; cf. EU-COMMISSION 2010, REICHENBACH et al. 2004, MÖCKEL & WIESNER 2007) is expected to be low as well.

Normally shrikes hunt at altitudes below the rotor swept area of modern WPPs. In addition, shrikes navigate visually and are very agile hunters in the air, and thus should be generally able to recognize and evade wind turbines. Accordingly, the risk of birds of this species — just like other visually navigating birds that hunt insects in free airspace (swallows, swifts) — to collide with a modern wind turbine can be assessed to be low.

As of 10 May 2012 the following numbers of individual were found dead below WPPs in Europe (cf. DÜRR 2012):

Red-backed Shrike: 19 individuals

Great Grey shrike: 3 individuals

Lesser Grey Shrike: no individual

Taken all into account collision risk of shrikes can be assumed to be very low.

Consequently no shrike is listed in the table of bird species considered to be particularly vulnerable to WPPs (EU-COMMISSION 2010).

3. Vulnerability of shrikes at WPPs of the planned wind farm

Killing of individuals

Construction-related effects

Basically it can be assumed that adult individuals of this species should be able to actively avoid potential risks when they occurred (*e. g.* construction traffic). The risk that shrikes might be killed exists in the phase after egg deposition or in the phase nestlings are not yet capable of flight.

Shrikes breed in bushes (Red-backed Shrikes) or trees (Lesser Grey Shrike). It is planned to erect WPPs in agrarian fields which comprises no potential nesting sites for these species. Furthermore breeding density (Red-backed Shrikes) was low or occurrence in the study area was very rare (Lesser Grey Shrike) (*cf.* PAUNOVIĆ & KARAPANDŽA 2011). If a few trees or bushes must be cleared (*e. g.* for access roads) it is very unlikely that nesting sites are located in that certain trees or bushes.

Thus it is very unlikely that individuals are killed due to erection of WPPs.

Plant-related and operational effects (collision risk)

As stated above collision risk of shrikes is assessed to be very low. A collision of a single individual at a proposed wind turbine cannot be excluded but is unlikely. A significant collision risk (and thus, deliberate killing in the sense of article 5 of the Birds Directive) can be excluded for the planned wind farm.

Habitat loss due to avoidance behaviour (disturbance)

Construction-related effects

Temporary disturbances of shrikes related to construction can occur if the time of erection of the planned WPPs or required infrastructure and the breeding (Red-backed Shrike and Lesser Grey Shrike) or wintering (Great Grey Shrike) period of the species overlap.

It is very likely that the effects of short-term disturbance during construction can be compensated by appropriate reactions by affected individuals. It is not assumed that construction-related effects will lead to a deterioration of the conservational status of the local populations of shrikes.

Plant-related and operational effects

According to recent knowledge Red-backed Shrike and Great Grey Shrike do not avoid WPPs (see above). Hence, it can be assumed that Lesser Great Shrikes do not avoid WPPs as well. Therefore, significant disturbance of individuals of these species are very unlikely and will not lead to a deterioration of the conservational status of the local populations of shrikes.

Deterioration or destruction of habitats

Construction-related effects

Tower bases seem to offer suitable conditions for small mammals or insects and might be appropriate hunting sites for shrikes. Furthermore shrikes do not avoid WPPs. Therefore, loss of habitat is very small and restricted to tower foundation and will have neither effect on the ecological function of the area nor the conservational status of the populations of shrikes.

Plant-related and operational effects

According to recent knowledge Red-backed Shrike and Great Grey Shrike do not avoid WPPs. It can be assumed that Lesser Great Shrikes do not avoid WPPs as well (see above). Therefore, an operational deterioration or destruction of breeding / resting sites in the vicinity of the wind farm is very unlikely and will have neither effect on the ecological function of the area nor the conservational status of the populations of shrikes.

4. Conclusion

The construction and operation of the proposed wind farm will not lead to significant negative effects on shrikes (and will not violate article 5 of the Birds Directive or article 6 of the Bern Convention).

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