

## **COMMENTS ON DOCUMENTS: BIODIVERSITY MANAGEMENT PLANT for the area of HE Ombla and Assessment of the Impact of the Construction on the Ecological Network**

### **PUBLIC PARTICIPATION AND CONSULTATION PROCEDURE FOR BIODIVERSITY MANAGEMENT PLANT for the area of HE Ombla and Assessment of the Impact of the Construction on the Ecological Network.**

The consultation procedures which HEP and the EBRD implemented during the period from 11.03.2013. to 10.04.2013 were not launched by the competent authorities responsible for the implementation of legislation relating to the national ecological network and NATURA 2000 (that is the Ministry of Environment and Nature Protection). Therefore it is quite unclear how the comments and complaints of citizens and experts will have an impact on the final decision and appeal process. It is unclear how the results will be evaluated as HEP and the EBRD launched a parallel process separated from the Croatian authorities.

Therefore, the best solution for the case of HPP project would have been to create an integrated and comprehensive Environmental Impact Assessment and to integrate the impact assessment on the ecological network. The impact assessment on the ecological network would then have been part of a standard administrative procedure, while at the moment it is outside of the legal framework.

The State Institute for Nature Protection, Croatia's expert body for nature protection addressed the Ministry of Environmental Protection and Spatial Planning on 7 November 2008 with the following opinion:

*“Pursuant to the Regulations on the assessment of the impact on nature (NN 89/07) for the project of building Ombla HPP, it is necessary to conduct an impact assessment on nature (NIA), with the impacts of the planned project on the ecological network, including direct, cumulative (combined) and indirect impacts, given the structure, function and conservation objectives for specified areas.*

*For the project HPP Ombla, it is necessary to conduct an environmental impact assessment (EIA), and in such cases, NIA is carried within the EIA, according to the Regulation on the Assessment of Impact on the Environment (NN 64/08). The EIA procedure for this procedure was carried out in 1999, before the entry into force of the obligation to conduct an NIA in 2007.*

*Bearing in mind that Croatia joined the conventions in the field of nature conservation that protect species and habitats in the project area in 2000, which was after the completion of the EIA process; that the Croatian accession to the EU harmonized its legislation with the relevant directives and the preparation for the NATURA 2000 has been completed; and that there are a number of new scientific findings about the value of this area for the protection of nature, **we think that there are new***

**circumstances that require re-consideration and re-evaluation of the Ombla HPP project.**

**Since NIA was not done as part of the EIA back in 1999, it is necessary to implement it now as a separate procedure.**

*After examining the available documents, we can estimate that there is enough information and data for an NIA. The project can already be assessed as unacceptable intervention in nature, despite the mitigation measures proposed in the study on bats (Mrakovčić and Tvrtković, 2008). By carrying out this intervention, the ecological network would be irreversibly degraded, as the works are going to, directly and indirectly, change habitat conditions (immersion/drying of habitats and diversion of 90% of the main water flow in the tunnel for the HPP).*

*Therefore, in the NIA process it is necessary to assess the possibility of alternative solutions to the intervention and conduct a determination of overriding public interest, or to determine whether, in this case, priority is given to public interest of the protection of nature or the public interest of producing electricity. This decision is based on the Nature Protection Law and it should be decided by the Croatian Government after public consultation. If the project is approved by the Government, although it is not acceptable to nature, it is necessary to develop compensation measures in accordance with the Law on Nature Protection and Regulation of NIA.”*

#### **THE EIA FOR HPP OMBLA IS OUTDATED, INCOMPLETE AND LIMITED QUALITY**

The Environmental Impact Assessment study for Ombla HPP was done and approved in 1999. The Environmental Protection Act of 2007 stated that approvals of EIA are valid for only two years. While it is true that the Act is not applied retroactively, for eight years (1999-2007), HEP had more than enough time to build a hydroelectric plant. Since this was not done, it is inappropriate to use an outdated EIA now.

Furthermore, the EIA process and its approval did not proceed without a scandal, because Ph.D. Ognjen Bonacci, was dismissed from the EIA evaluation commission. He wrote in an expert opinion dated on 19<sup>th</sup> January 1999 that his ultimate conclusion about the EIA of Ombla HPP is that it cannot be accepted, for seven reasons. These are:

- 1) Ombla HPP is not a multipurpose hydro-power system,
- 2) The construction of dam curtains within the cave and raising the water elevation for 130 m is questionable, and if this were to succeed, the water would spill over in the catchment Zaton and other sources.
- 3) The catchment area of Ombla is not 600 km<sup>2</sup>, it is more likely that the size is 800-900 km<sup>2</sup>.
- 4) The borders of the Ombla watershed in the direction of the Zaton spring are incorrectly identified in Study
- 5) Low waters of Ombla are not specified correctly and may fall below 4m<sup>3</sup>/s
- 6) The formation of a permanent underground reservoir will aggravate seismic activity in an area that is prone to earthquakes
- 7) A special issue will be to protect the quality of drinking water of Ombla during construction, especially during the injection of the grout curtains. It is unclear whether it will be possible to effectively protect the quality of water used to as drinking water supply of Dubrovnik.

Further, Dr. Bonacci, in a letter to the Croatian Prime-Minister dated 8<sup>th</sup> December 1999 wrote the following: "The Croatian Government appointed me on 10<sup>th</sup> December 1998 as a member of EIA evaluation commission to assess the impact on the environment of the Ombla HPP. On 8<sup>th</sup> December 1999 I received a conclusion from the third session of the evaluation commission stating that I refused further work on the Evaluation commission. I must inform you that this statement is not correct. Apparently, it is a fact that the president of the Commission excluded me from the work, because I refused to accept the EIA study. As this is a high-risk construction project both from the economical and ecological point of view, my negative attitude is quite clear and has been submitted to the Commission in writing."

Despite the fact that those responsible for the project in HEP and the European Bank for Reconstruction and Development were aware of the above-mentioned facts, they decided not to re-do whole EIA, but just to assess the impacts on the ecological network.

Such a decision was not appropriate solution because the existing EIA does not:

- consider the impact on the local community
- take into account trans-boundary impact although the system Vilina Cave – Ombla Spring, as well as the River Ombla, are part of the Trebišnjica catchment
- consider the impact of groundwater reservoir on the tectonics of an area very prone to earthquakes
- examine the impact of increasing use (extraction) of water from 500 l/s to 1500 l/s for downstream ecosystem of river Ombla
- assess the impact of the construction of access roads and terraces on the protected landscape of the river Ombla
- consider the possibility of increasing landslides, land subsidence, and water flow disruptions
- adequately assess the contamination of spring waters of Ombla river during construction and due to planned increased water level in the cave.
- include the assessment of purifying the drinking water for the city of Dubrovnik (the cost of construction, type of treatment because of the specific risks of pollution).

## BIODIVERSITY OF THE CAVE SYSTEM VILINA CAVE – OMBLA SPRING

Biospeleological research of the Vilina Cave – Ombla Spring near Dubrovnik has shown that this is one of the places with the highest biodiversity in Croatia and beyond.

The research was carried out during 2012, at the request of the European Bank for Reconstruction and Development, 12 years after the EIA that claimed that underground Ombla "has no threatened and endangered species."

In the Vilina Cave – Ombla Spring system a total of 68 cave species have been found that are endemic to the so-called South-dinaric biogeographic region, and many of these are endemic to the narrower area of Popovo polje and Dubrovnik coast (the so-called Paleoombla area). There are also 14 species that are endemic to the system Vilina Cave – Ombla Spring.

These studies refute earlier claims in the EIA that Ombla fauna is not indigenous but has been drifted from Popovo polje and river Trebišnjica.

The EIA stated that "*in the Ombla system there is no legally protected plant and*

*animal species, or if they were found it was not their permanent residence, they have been brought by torrential waters from the catchment Trebišnjica and for their protection it is not necessary to implement any specific measures during the construction of a major hydro project such as Ombla. "*

This was not just the result of poor research and EIA procedure, but its purpose was to hide data. The members of the evaluation committee obtained a fauna list from prominent biospeleologist Branka Jalžić from the Croatian Natural History Museum, which was submitted to them by a member of the committee, Juraj Posarić, who was a representative of the State Nature Institute. The list contained names of 12 endemic and endangered groundwater species, which the Commission did not include. There followed a false, irresponsible and erroneous conclusion that there will be no negative impact on rare and endangered species.<sup>1</sup>

The Biospeleological Society found that, given the size of the cave system and the number of cave habitats, and the fact that the cave is a final part of this hydrological system, and the size and the constant presence of collected and identified aquatic fauna, it can be concluded that aquatic cave fauna Ombla is not only drift fauna from Bosnia and Herzegovina, but permanent and stable populations of cave fauna.<sup>2</sup> However, these results do not represent final results on Ombla's biodiversity, because the survey was conducted only for 3 months instead of one year, needed in order to explore habitats in all seasons. Although a year is minimum, many years of research work may be optimal in such cases.

The State Institute for Nature Protection, in its opinion on Ombla HPP of 7th November 2008 said the following.

*"The impacted area of Vilina Cave – Ombla Spring and the surrounding area between Dubrovnik and Slano form a single ecological unit, according to a new biospeleological study and it is a site of international importance for nature conservation under the name Paleoombla. It is a unique karst region through which rainwater from Popovo polje in the BiH underground drains to the Adriatic Sea, forms freshwater springs on the coast and the source of the shortest river in the World, Ombla. The majority of water passes through a relatively narrow belt – the Hum-fault and springs at the source of Ombla - and flows into the sea as the Dubrovacka river. This exceptional underground aquifer system is considered the richest cave fauna refugia in the world, as has already been confirmed in research for specific sections (Ozimec, 2008).*

*More than 10% of the troglobionata are stenoendemic, and there is also an extremely large number of organisms not known to science before, which highlights the great value and responsibility to protect this area. Thanks to extensive research, the Vjetrenica cave in Bosnia has almost 40 new species and about 100 species of troglobionata. The cave was nominated for the UNESCO list of World Heritage Sites. In other caves and pits in this area twenty more species have been described, especially in the cave system Vilina Cave – Ombla Spring.*

*In research of the Croatian part of the Paleoombla area in 2008, 60 caves were found and only 20 of them were researched. In them the same species that live in Vjetrenica and some presumably new to science have been found. **With Velebit and Biokovo, Paleoombla is a centre of endemism and one of the areas the richest in underground biodiversity in Croatia and abroad.** Numerous caves of this area,*

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Ivo Lučić: Zmajlović više ne može javno držat štangu HEP--u,  
[http://www.dubrovniknet.hr/novost.php?id=23194#.UVrJF82u\\_SE](http://www.dubrovniknet.hr/novost.php?id=23194#.UVrJF82u_SE)

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Dr.sc. Marijana Cukrov, Mr.sc. Roman Ozimec, BIOSPELEOLOŠKO DRUŠTVO, Stručni elaborat: Prirodoslovne značajke rijeke Omble, 2012, [http://www.dubrovnik.hr/data/1331719652\\_304\\_m.pdf](http://www.dubrovnik.hr/data/1331719652_304_m.pdf)

especially Vilina Cave, are rich in archaeological and paleontological sites. The area is already affected by operations at Trebišnjica river and Popovo polje in Bosnia and Herzegovina which took four billion m<sup>3</sup> of water necessary for the survival of the rich subterranean aquatic fauna (Mrakovčić and Tvrtković, 2008).”

The Vilina Cave – Ombla spring cave system stands out for its richness and diversity of subterranean species and habitats. Seven species of cave invertebrates were first described here (locus typicus - type locality). The area contains a number of endemic species, among them no less than 13 underground snails.

In Ombla's importance for the protection of nature, the following stand out:

- Bats

Vilina Cave is one of the nine most important bat caves in Croatia and is the most important site for bats in the Dubrovnik area. Seven species of bats have been recorded here: Blasius horseshoe bat (*Rhinolophus blasii*), southern horseshoe bat (*R. euryale*), large horseshoe bat (*Rhinolophus ferrumequinum*), the lesser horseshoe bat (*Rhinolophus hipposideros*) Schreibers' bat (*Miniopterus schreibersi*) lesser mouse-eared bat (*Myotis Blythii*) and legged bat (*Myotis emarginatus*). According to the Croatian Red List of mammals Schreibers' bat is endangered (EN), and the southern Horseshoe and Blasius horseshoe bat are vulnerable species (VU), while the larger and lesser horseshoe bat and legged bat are potentially endangered species (NT). Vilina Cave has special significance for maternity colonies of four species of bats. All seven species of bats are protected by international regulations (Bonn and Bern, EUROBATS Agreement, the EU Habitats Directive) and by the nature protection law as a strictly protected species.

- Amphibians

The olm (*Proteus anguinus*) (see below for discussion about its presence or not) is protected under the Habitats Directive (Appendix II.) and the Croatian nature protection law, and is linked to underground water habitats.

- Fish

The subterranean fish Popovo field minnow (*Delminichthys (Phoxinellus) ghetaldii*) is endemic in Bosnia and Herzegovina and Croatia, and is listed in Appendix II. of the Habitats Directive. The Croatian Red Book of Freshwater Fish categorises it as endangered (EN). The cave system Vilina Cave – Ombla Spring is the only location in Croatia, where this species was recorded.

- Aquatic invertebrates

Of the total of 49 recorded aquatic invertebrates (Tvrtković and Mrakovčić, 2008), 20 of them are troglobionata. Prominent among them are: shellfish *Congerina kusceri* (Appendix II. Habitats Directive) and cave worm (*Marifugia cavatica*) and pretneri cave shrimp (*Spelaeocaris pretneri*) that are on the Croatian Red List of subterranean fauna as a vulnerable species (VU).

- Land Invertebrates

Of the 28 recorded terrestrial invertebrates, 15 are troglobionatic species, five of which are known to science just from the Vilina Cave – Ombla Spring.

- Caves which are not open to the public (8310)

This habitat type is protected under the Habitats Directive, and includes caves rich in endemic and endangered species.

The locations Vilina špilja (Fairy Cave) (code: HR2000186) and cave system Vilina

špilja – Izvor Omble (Fairy Cave - Ombla source) (code: HR2000187) are areas of the ecological network declared by the Croatian Government Regulation on the National Ecological Network (NN No.109/07). The wider area Paleoombla - Ombla (code: HR2001010) is important for species and habitat types protected by the EU Habitats Directive and is a proposed Natura 2000 site.

A study for the City of Dubrovnik prepared by: Dr.sc. Marijana Cukrov, and M.Sc. Roman Ozimec, Expert study: natural features of the river Ombla, published in 2012, concludes that the construction of the HPP Ombla predicts flooding the entire cave system to the level of 7 m below the entrance to the Vilina Cave, which will destroy all terrestrial and aquatic cave habitat, except for the first 70 metres of the cave system, which according to current knowledge, includes over 3 km of cave channels. The study concludes: "We believe that the proposed construction of HPP Ombla is, from the ecological point of view, completely unacceptable and we appeal to the professionals and environmentally friendly public to use their authority and influence to prevent the construction of dam and irreversible destruction of the cave system."

In a study on the impact of HPP Ombla on bat fauna in Vilina Cave and protection measures, carried out by researchers from the Zoological Institute, Division of Biology, Faculty of Science, University of Zagreb in 2008, the following was concluded:

*"Although HEP claims that the Vilina Cave will be submerged, given that the lowest part of its sloping corridor between entrance hall and high hall, where a bat maternity colony of endangered species resides, is located within the dam and its ceiling is below 130 mN /m, we find that is still potentially possible that it will be submerged because of filtration through rock fractures. In this case, the survival of the existing colony of bats in the Vilina cave with envisaged intervention will be seriously threatened ... the existing maternity colony of bats would be lost for the surroundings of Dubrovnik, which would be a violation of the existing Nature Protection Law (NN30/94) and international obligations under the agreement on the protection of bats (EUROBATS agreement) signed by Croatia, and a deliberate violation of the measures prescribed for this area under the Ecological Network. This undertaking would be acceptable from the point of bat conservation only in the case of building of the drainage system of the lowest part of the sloping corridor between the hall and the first high halls."*

#### **ADDITIONAL STUDIES ON BIODIVERSITY**

The EBRD and HEP have prepared and presented to the public the following documents:

- Biodiversity Management Plan for the area of HE Ombla and Assessment of the Impact of the Construction on the Ecological Network (original document in English)
- Biodiversity Management Plan for the area of HE Ombla and Assessment of the Impact of the Construction on the Ecological Network (unofficial translation)
  
- expert background (input materials) for the development of the Biodiversity Management Plan for the area of HE Ombla and Assessment of the Impact of the Construction on the ecological network
  - ← Study on the impact of construction of HE Ombla on the ecological network
  - ← Sectoral Study on the impact of construction of HE Ombla on the bat fauna
  - ← Sectoral study on the impact of construction of HE Ombla on fish
  - ← Sectoral Study on the impact of construction of HE Ombla on cave fauna

← Video clips of 3D models

None of these documents is part of the procedures stipulated under the Act on the Protection of Nature or the Environmental Protection Act. Furthermore, the unofficial translation into Croatian of the Biodiversity Management Plan for the area of HE Ombla and Assessment of the Impact of the Construction on the Ecological Network is not of sufficient quality and renders some explanations incomprehensible, thus limiting the possibility of participation and understanding among the population who do not use the English original.

In these studies, as in the old Environmental Impact Study for the construction of HPP Ombla, the impact of increases of pumped water from the Ombla Spring on the downstream ecosystem is not considered, nor are the changes in rainfall and water due to climate change over the next few decades.

### **Insufficient research**

The field research on which the conclusions were made was carried out during 2012 only in March, April and June, which is insufficient to draw basic conclusions, because in this type of research a minimum of 12 months of research is needed. In addition, no research was carried out during the summer period of low water, nor was the main channel investigated.

The Sectoral Study on the Impact of Construction of HE Ombla on Cave Fauna states that the main feeder channel was not biospeleologically investigated. During the 3-month research, the presence of the olm was not confirmed, because it was not allowed to dive in the main inlet channel during the lowest tide. Only one sample of water was taken in order to confirm the presence of the olm, but due to a poor sample, the analysis could not be performed. The olm (*Proteus anguinus*), a species from the list of target species of the conservation objectives of the ecological network was last found in the Spring Cave of Ombla in 1986.

Despite this insufficient research, the Sectoral Study on fish concludes the following: *"Even with intensified efforts, no olm presence has been recorded in the tested system. This is probably the result of the cementation of the Trebišnjica chutes (1970) that drastically changed the water regime of the Popovo polje (Popovo field) and the underground water at Ombla. The species is listed on the list of target conservation species for the ecological network in the Ombla area and the list of species proposed for Natura 2000 for the Paleo Ombla area."*

This is just one example of how the conclusions in evaluating the acceptability of the HPP Ombla on the ecological network have been reached in a dubious manner.

### **Study on the impact of construction of HPP Ombla on the ecological network**

In terms of the impact of construction of HPP Ombla on the National Ecological Network (NEN CRO) and the European ecological network (Natura 2000) it is important to note that the Study on the impact of construction of HPP Ombla on the ecological network is not designed well and leads to the wrong conclusions.

### **The study did not examine alternative solutions**

The study says the following: Since the only possible realistic alternative solutions for HPP Ombla is not to do anything, there is no need to analyze the impact of the project alternatives on conservation objectives and integrity of the ecological network.

The described solution, ie. the zero option, is always considered in good quality environmental impact studies and studies considering a project's impact on the ecological network. Furthermore, other alternative solutions do exist, but they are not considered by HEP. For example, the impact of building only a water purification facility – a necessary investment for the city of Dubrovnik – should be considered, as a water management measure. A nearby wind farm and/or solar energy and/or energy efficiency measures to reduce energy consumption could be considered as energy measures. Moreover, with regard to peaks in the use of electricity, HEP considers hydropower more acceptable for electricity generation than renewable energy sources in the strict sense of the term (not including hydropower with reservoirs), however it does not consider the seasonal nature of electricity consumption in Dalmatia, in which there is increasing consumption in the summer months when, due to greater and more frequent droughts, hydroelectric is least productive.

The Conclusion of the Study on the impact of construction of HPP Ombla on the ecological network states the following: "The impact on the recorded species cannot be determined with certainty because of the lack of similar experience, and with adequate supervision during the construction and implementation of mitigation measures the negative impacts can be significantly reduced. **For 17 recorded aquatic species there is a possibility of destruction of the population**, which does not exclude the possibility of their survival in the remaining aquatic habitats, which altogether increase by raising the groundwater level. Specifically, most parts of the area of the middle levels, which is in present conditions periodically under water, will be permanently under water. **Also, next to the Spring Cave a new habitat will be prepared for the reception of species from this area during the construction works and operation of HPP Ombla.** Terrestrial species, will, due to this intervention, be less vulnerable due to the existence of habitat at higher levels of the cave system that remain dry, as well as the construction of new terrestrial cave habitats in the injection galleries 2 and 3.

The flooding of the terrestrial habitat and diverting underground water from the hinterland Ombla the turbines and raising the groundwater level will negatively affect populations of terrestrial and aquatic species in these habitats. **The biggest impact will be on the terrestrial habitats on the lower level and much of the middle levels of habitats that are flooded. "**

This paragraph clearly indicates that this Critical Habitat (as defined by the EBRD's Environmental and Social Policy) will be significantly altered and that there is a high probability of the destruction of 17 populations of aquatic species. Artificial channels and creating artificial caves by the Spring Cave are mentioned as measures to reduce the damage. However these measures cannot be applied under the EU Habitats Directive, because the Vilina Cave–Ombla Spring system is classified as target habitat for conservation under **Code 8310 Caves and Pits Closed to the Public** and as such belongs in the National Ecological Network and the proposal for the European ecological network Natura 2000. Because this habitat has 14 endemic species that are found only in this cave, it is clear there is no way to reduce harm or and no existence of alternative habitats. Artificially constructed caverns and tunnels cannot be classified as habitat 8310 Caves and Pits Closed to the Public, which relates to natural speleological sites and can not be counted as a substitute for the flooded and blocked up cave channels and interstitial habitats.

Flooding and concreting the cave system would cause irreversible damage and alteration of natural habitats. The impact assessment has not considered the management and impact of sediment. Specifically in surface reservoirs for



hydropower is known that river sediments fill reservoirs, which therefore have a limited lifespan, and it is possible that cleaning is needed. In the studies this issue is not addressed at all.

### **Impacts on fish and amphibians**

In the study on the impact on fish, it is not clear on what basis it is concluded that individual specimens of *Delminichthys ghetaldii* had been accidentally washed out of the Trebišnjica system. It also does not specify the size of the population found, and the research was conducted for only three months in 2012 (March, April and June) and was not conducted during low water. The conclusion is that the population is not native, and that the construction of the HPP will have no impact on it, which is a very bold conclusion with regard to the quality and timespan of the research.

The study does not include an assessment on the impact of contamination of waters on *Delminichthys ghetaldii*, and no research has not been done on the impact of increasing the capacity of water extraction for drinking water, climate change or the possible salinization of the Ombla river, or the lack of research during low water periods.

The Olm (*Proteus anguinus*) was left out of the study based on the fact that the last recorded sighting was in 1986, although the research in 2012 was limited in time and space because researchers were not able to dive in the main channel. The Olm is a target species for protection for this area, the National Ecological Network and the European ecological network Natura 2000, so leaving it out is legally unfounded since it was done without a systematic multi-year study.

### **Impact on bats**

The study says: "*Construction of Ombla HPP will have a negative impact on bats as a target conservation species and on integrity of the ecological network # HR2000186 Vilina Cave, however, the impact is assessed as acceptable with the prescribed measures to mitigate adverse impacts on the conservation objectives and integrity of the ecological network the proposed measures.*"

This is not adequately elaborated but only assumes that the measures to reduce the damage are acceptable and sufficient to maintain populations of bats and maternity colonies in Vilina cave. Based on these risks to populations of bats during the construction of the HPP, its operation and in crisis situations, the assessment suggests that there is a great likelihood that these populations will be jeopardized, if not destroyed because of habitat loss, disturbance, unplanned flooding and changes in the micro-climate.

### **EBRD Environmental and Social Policy**

In the EBRD's Environmental and Social Policy, Performance Requirement 6 states that 'critical' habitats and the species they contain require special attention.

*"Irrespective of whether it is natural or modified, some habitat may be considered to be critical by virtue of (i) its high biodiversity value; (ii) its importance to the survival of endangered or critically endangered species; (iii) its importance to endemic or geographically restricted species and sub-species; (iv) its importance to migratory or congregatory species; (v) its role in supporting assemblages of species associated with key evolutionary processes; (vi) its role in supporting biodiversity of significant social, economical or cultural importance to local communities; or (vii) its importance to species that are vital to the ecosystem as a whole (keystone species)."*

In relation to these criteria, the Ombla complex is considered 'critical habitat' because it meets at least the above criteria ii) and iii). The majority of bat species that use the Vilina Cave in the Ombla complex are listed as vulnerable on the Red List of the International Union for the Conservation of Nature (IUCN), however, one species of bats present, *Miniopterus schreibersi* (Schreiber's Bat), is listed on the IUCN's Red List as endangered in Croatia. It is also recognized that several species that use the cave systems are geographically restricted and endemic.

For critical habitat, Performance Requirement 6 stipulates the following conditions must be met before financing is approved for a development project:

Critical habitat must not be converted or degraded. Consequently, in areas of critical habitat, the client will not implement any project activities unless the following conditions are met:

- Compliance with any due process required under international obligations or domestic law that is a prerequisite to a country granting approval for project activities in or adjacent to a critical habitat has been complied with.
- There are no measurable adverse impacts, or likelihood of such, on the critical habitat which could impair its ability to function in the way(s) outlined in paragraph 13.
- Taking a precautionary perspective, the project is not anticipated to lead to a reduction in the population of any endangered or critically endangered species or a loss in area of the habitat concerned such that the persistence of a viable and representative host ecosystem be compromised.
- Notwithstanding the above, all other impacts are mitigated in accordance with the mitigation hierarchy.

**According to these criteria of the EBRD Environmental and Social Policy, it can be clearly concluded that the construction of HPP Ombla does not meet the EBRD's financing criteria.**

To begin with, a critical habitat, the Vilina Cave - Ombla Spring cave system would be drastically changed, mostly submerged, and cemented, and injected with compounds that may increase water pollution. Furthermore, there are high risks that apart from this habitat, a number of species, including endemic and endangered species that are on protection lists at European level may be destroyed.

Furthermore, the process of Assessment of the Impact on the Ecological Network was not conducted in line with the Nature Protection Act of the Republic of Croatia, and the Environmental Impact Study is outdated and does not meet today's standards of environmental impact assessment. Public participation in decision-making about the project was neglected, questions were never answered satisfactorily orally or in writing, and professional opinions were ignored.

Finally, there are tangible adverse consequences and prospects for consequences for this critical habitat, which would undermine its ability to function.

## **CONCLUSION ON ACCEPTABILITY OF BUILDING OMBLA FOR THE ECOLOGICAL NETWORK**

On the basis of the above, it can be concluded that the potential construction of HPP Ombla would have irreversible and permanent effects on the ecological network and NATURA 2000, and could permanently destroy one of the areas with the highest

biodiversity in Croatia. Some measures to minimize the damage exist - with uncertain consequences - for certain populations of target species, but not for the natural habitats.

In this sense, according to the European Habitats Directive and the Nature Protection Act, the construction of HPP Ombla would have to be of overriding public interest, ie. of such significance that it would bring very great economic and social benefits so that this immeasurable and lasting damage to the ecological network would be acceptable.

This has not been proven so far, and we can not say that the construction of Ombla HPP brings such an advantage, since it anticipates producing only 1.5% of energy, and thus will not significantly change the balance of energy production in Croatia. It represents yet an additional hydroelectric plant (Croatia has 34.9% of electricity production from hydropower plants, which are very sensitive to seasonal and climatic changes, and the construction of new hydropower plants will not change this trend).

Furthermore, the construction costs of Ombla HPP are estimated at 152 million euros, and drawing parallels with the comparison of the real cost with the estimated cost of building Lešće HPP (70 million rising to 97 million euros), we conclude that the real costs would be at least 211 million euros, not even taking into account the greater complexity of construction within a cave system and the potential opening of new caverns during construction, and accordingly incurring additional costs in cementing them. Remediation of damage which occurred during the construction of Lešće HPP or assessment of any damage repair costs that may arise eventual construction of HPP Ombla, are not included in these figures. Nor are unforeseen expenses repairing cracks, leaks and new caverns within Vilina Cave – Ombla Spring. It also seems that 10 million euros for the construction of a water treatment plant for the city of Dubrovnik is not included even though HEP is promoting it as part of the Ombla project. This is the most important investment in Dubrovnik at the moment and can be financed through EU funds without building Ombla HPP.

HPP Ombla will significantly change the groundwater regime. When surface water is managed in karst areas, a variety of unforeseen and surprising situations occur, and it is impossible to predict the consequences of sudden changes in groundwater flow. Even subsidence of soil in karst areas in the upstream catchment Ombla may be expected. In addition, Dubrovnik is an unstable area, and in case of an earthquake of the magnitude of the one that happened in relatively nearby Ston in 1996, this reservoir is a potential time bomb. Although HEP hired an expert committee to review the sensitivity of the dam to earthquakes, which have confirmed that there is no danger, however, there is suspicion towards Ombla HPP among local people in this regard. Therefore, the cost of construction must also include the cost of insurance with an insurance company for the plant for all households and people potentially affected (in the area of the River Dubrovnik) in the case of earthquakes or other disasters at the Ombla HPP.

HEP uses Grancarevo in BiH as an example of an underground hydroelectric plant, but in reality the situation is quite different for these two dams. It is true that during the construction of HPP Grancarevo worked grout curtain (a mix of cement and various additives that are injected into the ground under pressure) to prevent leakage of water - in this case from the Bileca reservoir below Grančarevo. This means that they stopped the undercurrents below the dam, which was bound to lead to the accumulation of water underground, but the situation at Ombla is totally different to Grančarevo. Grančarevo is an above-ground dam that forms Bilečko lake and below the dam are the grout curtains to prevent the flow of underground water below the

dam, while Ombla HPP is exclusively an underground dam, which makes Ombla more complex to create, manage and maintain. Mixtures from which the grout curtain (underground dam) is to be made may even be carcinogenic, so their use can contaminate ground water and destroy subterranean species.

Further doubts about the usefulness of this project are raised by the fact that at the conclusion of the study that was prepared for the EBRD by Tractabel Consultants and Projektni Bureau Split it is noted that "the project fails to recover any investment or running costs and could result in significant expense in a commercial sense," and that the project "could be made only if received substantial subsidies from the state." The study also notes that the problem could be solved by increasing electricity prices by as much as 200%! This was a study which leaked to the public and HEP and the EBRD claim that it was a draft, and that the final version is different. However, in spite of this claim, which might re-assure the public, neither HEP nor the EBRD has been ready to present the study to either the public nor to experts, which raises the question of whether HEP plans to make this investment profitable by selling electricity or – as has been rumoured – by selling water.

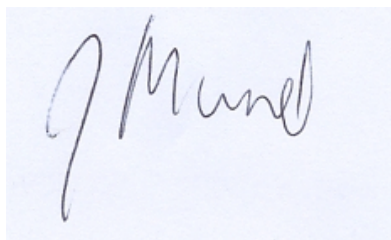
Based on the above we can conclude that the Ombla HPP project does not comply with the environmental and social policies of the EBRD, and therefore does not meet the criteria for financing by the EBRD.

Ombla HPP construction project would permanently destroy one of the greatest centres of biodiversity and endemism in Croatia, and its feasibility is questionable.

There is also the possibility of social damage, such as pollution of drinking water for the city of Dubrovnik, soil subsidence and the occurrence of landslides, and the possible aggravation of damage occurring in case of earthquakes.

Therefore, we believe that the Government and HEP should finally abandon this harmful project, which is advocated only by inertia, without good quality arguments.

*Comments prepared by:*

A handwritten signature in blue ink on a light blue background. The signature appears to read 'J Munic'.

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