



The importance of the Kappi area in the Gunung Leuser National Park and further support for its current *core area* status

The results of a recent report entitled ~ “Harmonization study into renewable energy development in the Gunung Leuser National Park” were presented by a field team from the University of Gadjah Mada (UGM) to the Gunung Leuser National Park Authority on 8th December 2016. The report describes the results of a rapid survey conducted between October 20th and November 6th 2016, aimed at evaluating the “harmonization” required to develop a major geothermal project in the Kappi region of the Gunung Leuser National Park (GLNP). This area has correctly maintained a status of *core area* (‘zona inti’), due to it meeting or exceeding all legal criteria highlighted below, namely its unique geological formations and exceptionally rich biodiversity, which includes the presence of all four of Sumatra’s most iconic Critically Endangered species, Sumatran elephants, orangutans, rhinos, and tigers.

Indonesia’s Minister of Environment and Forestry decree No. P.76/Menlhk-Setjen/2015 states in paragraph 10 on page 13 that the criteria for Zona Inti in and Indonesian National Park must:-

1. Have an ecosystem or support a type of ecosystem or phenomena/natural phenomenon and geological formation that is original and still natural.
2. Have a concentration of communities of target vegetation/biota and/or be an area high biodiversity.
3. Be a location used for reproduction or nesting by target animal species and/or spawning and growth target animal species/biota and/or...
4. A periodic resting area for migrant animal species.

Conversely, the criteria for Zona Inti are in direct contrast to the criteria for Zona Pemanfaatan from the same regulation (also paragraph 10, p 13-14) which states that Zona Pemanfaatan must:-

1. Be an area of natural beauty/attraction or historic value and/or an area with access able to support utilisation activities.
2. Be an area with the possibility to develop infrastructure among others to enable utilisation and management.
3. NOT be an area with a concentration of priority plant/biota communities
4. NOT be an area with high biodiversity; and/or...
5. Have potential environmental services that can be utilised.

The underlying recommendation from UGM’s short report suggests that there is potential for the development of a large geothermal project, as is proposed by PT Hitay Panas Energy in the area delineated in Figure 1. In particular, one section of the UGM report focuses on a legal appraisal of the proposed new plant stating that under the current situation, the project would be

illegal since the proposed site lies in the *core area* of the national park in which no such development is permitted under national law. Despite the clear and vital importance of the Kappi area to the integrity of the GLNP and all its biodiversity, the UGM team have suggested that if the *core area* status of the affected area was changed to *utilization area* ('zona pemanfaatan'), there would be no other legal obstacle preventing project development.

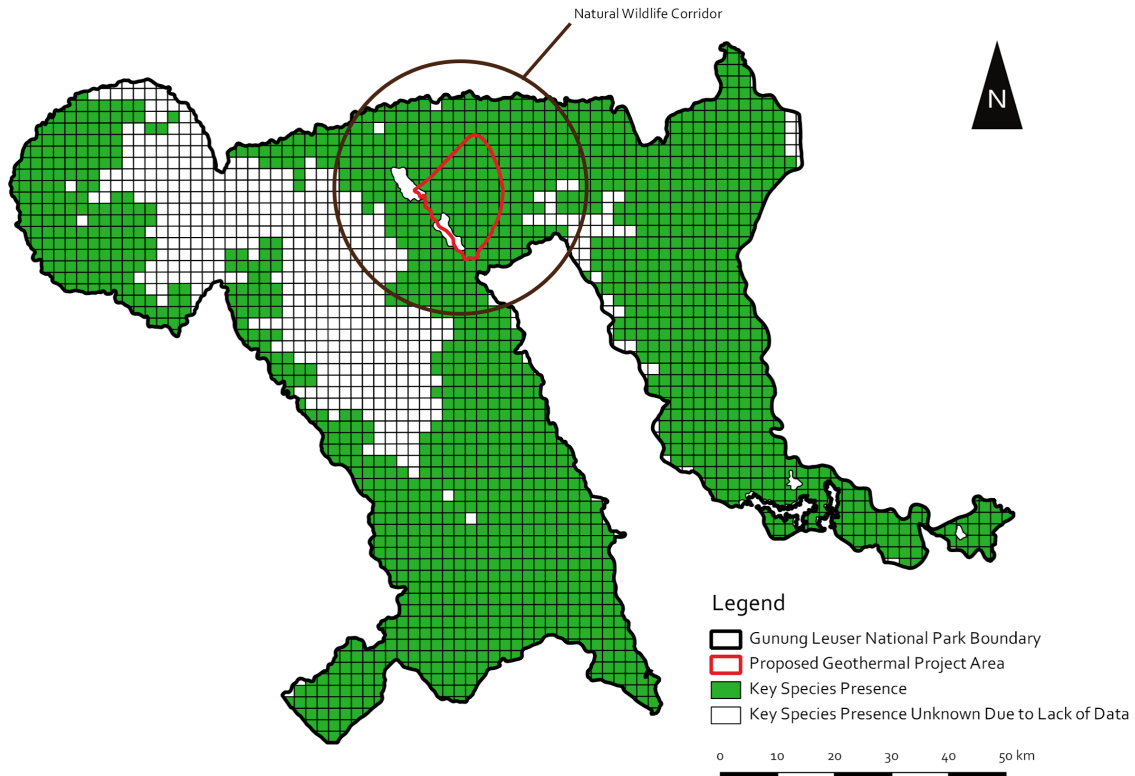


Figure 1. A map highlighting the documented presence of one or more of Sumatra’s iconic species, which include the Critically Endangered Sumatran elephant, rhino, orangutan and tiger, within the Gunung Leuser National Park. The presence of the key species are based on maps presenting survey data from the GLNP Authority and local NGO affiliates, in addition to previously published data on Sumatran orangutans, rhinos, and tigers. The presence of key species within the utilized survey grid, the boundary of GLNP, and the boundary of the proposed geothermal project area was digitized directly from public presentations (presented at the GLNP headquarters), previously published data, and a UGM report that was distributed in December 2016.

With this short review, we explain why the survey and report submitted by UGM is flawed on a number of levels, and is therefore inadmissible as the basis for a zonation change in the Kappi area of GLNP. In fact, this is already highlighted by the UGM survey team themselves, who conclude and recommend that further study is needed in order to adequately evaluate a change in the zonation of GLNP. We also provide data from over 10 years of research and field work in the park, by the GLNP Authority and local NGO affiliates that support the current status of the Kappi area as *core area* - data that was unfortunately overlooked within the UGM survey report. The key points are as follows:

1. The report submitted by UGM suggests that the operational and exploration zones for the proposed geothermal plant are roughly 500 and 5,000 ha, respectively. However, it is unclear from the study how and why the study area was chosen and/or demarcated. The only comment is that it is "representative" of the area of GLNP that requires "harmonization", due to potential "management conflicts". Thus, from a reviewer standpoint, it is impossible to know how representative the study area is with regard to the actual proposed geothermal project site. One additional glaring omission of the study area is that it does not incorporate any survey locations between Jl. Raya Blangkejeren-Kutacane and the proposed project areas despite the fact that the development of a geothermal project will require major access roads and the impacts of these areas must also be assessed;

2. The report submitted by UGM states that 6 transects of 1 kilometer in length were surveyed. However, the map presented as Figure 3.2 in the report shows 8 transects ranging from 400 - 1,000 m in length. Furthermore, the transects run in inconsistent directions, some east-west and some north-south. At no point is there any indication as to how the study was designed, other than the aforementioned transects were placed "in the area" of the proposed geothermal project. Given that there was no indication that scientific rigor was utilized in the development of the survey (e.g., statistically random placement of the transects), it is impossible for the survey team and current/future evaluators to extrapolate their results for the entire study area with any degree of confidence;

3. Given that the size of the study area was not clearly noted, and that the total length and number of the transects surveyed is highly enigmatic, it is impossible to know the actual extent of the survey effort involved in the UGM surveys. If the potential project area is 500 - 5,000 ha, then the 6 transects totaling 6 km, or the pictured 8 transects totaling 5.8 km, are highly inadequate as a representative sample. For instance, if one assumes that an absolute maximum strip width of 100 m could be surveyed along each transect (being the total of 50 m to the left and 50m to the right of the transect), which in typical forests in the region is already extremely optimistic, then the total survey area of the transect based surveys is 60 ha, or just 1.2%, of the 5,000 ha exploration zone of the proposed geothermal operation. Furthermore, if there were 5 survey points per transect as indicated by UGM, then the survey included 30 sample points (for bird based surveys), each with a potential radius of 50 m. The total point sample area could then be calculated as 23.6 Ha or 0.5% of the 5,000 ha exploration zone of the proposed geothermal area. In both instances, the maximum coverage of the survey area is far too small for any detailed assessment of the proposed project area;

4. The total study period was extremely short, with the report suggesting that the UGM team was in the field between 20th October to 6th November, allowing a maximum of only 17 days and probably less given rest days and the travel effort needed in such terrain and conditions. To expect any useful and comprehensive survey results over such a large area in such a short time is unrealistic and suggests only a tiny fraction of the biodiversity in the region would have been detected during these surveys. At best, the aforementioned survey could only

ever be taken as a very rapid and superficial “preliminary” exercise and a far longer and more scientifically rigorous survey would be needed to really understand the nature of the area;

5. Key biodiversity results are presented only as presence/absence tables and also as a Shannon-Weiner index. There was no attempt to present standard Shannon-Weiner indices for the greater GLNP, and hence there is no way to interpret whether the indices presented are high or low relative to the rest of the GLNP. In fact, given that the survey was such a short duration and covered such a small fraction of the area, the presence/absence figures presented for birds, mammals, and reptiles/amphibians are actually remarkably high, which of course supports the contention that it is an exceptionally rich area. Unfortunately, however, as there was no presentation of cumulative species numbers for transects or point sample locations, and no indication of survey effort, it is impossible to know how well the surveyors sampled the possible species within the study area. Nevertheless, that they contacted so many species in such a short time with such a small coverage area is indicative of a forested area with exceptionally high levels of biodiversity, further supporting the retention of its *core area* status;

6. The authors of the report rightly note that it is very difficult to detect the presence of animal species during a survey of this kind, and this is especially true for all four of Sumatra’s most iconic species, namely the Critically Endangered Sumatran elephants, orangutans, rhinos, and tigers known to inhabit the area. Common reasons for a lack of detectability include the secrecy/crypsis of the survey species, poorly trained observers, visual obstructions (trees, ridges etc), wind, weather, season, and/or duration of survey period. As they are so difficult to encounter directly, however, any evaluation of these key species requires data from far more long-term studies, and should include results from previous surveys conducted over many years by a number of institutions and individuals. Interestingly though, while the study presents data from the GLNP Authority in Figures 4.3-4.6, the results of previous surveys are notably overlooked by UGM, and the presence of these iconic species is subsequently greatly underestimated by the authors as a result, despite the availability of considerable good data. Figure 1 above also shows the above mentioned long-term survey data from the GLNP Authority and local NGO counterparts, in addition to recently published data on Sumatran orangutans, rhinos, and tigers. It highlights the fact that the GLNP is vital to Sumatra’s iconic species, as at least one or more of these key species can be found within the vast majority of the park’s total area, including the proposed geothermal project area. Of even greater concern is that the proposed development site is situated in the last remaining natural corridor connecting the east and west blocks of the GLNP. Any disturbance to this area (either direct or indirect) would be devastating to all of the 4 iconic key species known to occur in the area, in addition to the multitude of other species present in this highly biodiverse region, by massively impacting a main habitat area on which they depend for movement and reproduction (i.e., genetic transfer between what would otherwise be far more isolated populations with much reduced genetic flow).

Provided that the UGM survey was highly biased in terms of focal area and lacking in overall survey effort, and that it is not possible to determine exactly how much effort was actually put in by the survey team, we conclude that the survey cannot be interpreted as representative of the

survey area and cannot be used to address the question of a zonation change within GLNP. In fact, as noted earlier, the UGM team acknowledge this fact in their own recommendation section (point e) where they themselves state that a more detailed study is required in order to address a zonation change.

Given the facts detailed above and that the Kappi area of the GLNP is already designated as *core area* status, we recommend that the status of the Kappi area remains as such. We also highlight that the currently available data from the GLNP Authority and local NGO affiliates more than adequately supports rejection of the proposed zonation change necessary to enable the development to go ahead legally.