

EASEMENT OF FORESTS AND FOREST LAND FOR THE GROWING OF PERENNIAL CROPS - THE ANALYSIS OF (NON)FUNCTIONALITY REGARDING THE ECOLOGICAL NETWORK AND ECOSYSTEM FUNCTIONS

Konrad Kiš^{1*}, Nikola Geršak¹

¹ Dvokut-ECRO Ltd., Trnjanska 37, Zagreb, Croatia

*E-mail of corresponding author: konrad.kis@dvokut-ecro.hr

Abstract: By the Government's decisions from the period 2004 to 2013, a significant amount of state forests and forest land was eased for the growing of perennial crops (vineyards and olive yards) on a total surface of 24,310.24 ha throughout the state. Although greatly opposed by forestry professionals, since a vast amount of private agricultural land in the state is not utilized due to unresolved proprietary issues, these surfaces have become agricultural land by coming into force from the Forest Act of 2014. In case these dedicated surfaces are not put into function, the amount of non-utilized agricultural land is increasing and so is the danger from forest fires, and loss of biological and landscape diversity. On the other hand, if all these surfaces were utilized, a significant adverse impact on the ecological network would occur because on many ecological network sites more than 1% of the dedicated area consists of target habitat types (mostly maquis). The purpose of this paper is, to use GIS tools and analysis of the so-far signed easement contracts, to determine what amount of dedicated surfaces were utilized and point out the failure and environmental dangers that may arise from these decisions which can still be revoked, and the affected area can be brought back into the forest area of the Republic of Croatia, i. e. sustainable forest management can still be reinstated and forest functions restored.

Keywords: government's decisions, easement, perennial crops, national ecological network

Received: 01.03.2023. / Accepted: 11.04.2023.

Published online: 31.01.2024.

Professional paper

DOI:10.37023/ee.10.1-2.5

1. INTRODUCTION

This paper is the continuation of the work published in 2017 which dealt with the same issue but only as a case study of Dubrovnik-Neretva County (Kiš, 2017). Some of the crucial data were not available at the time (the most important, vector data of cadastral lots at the state level), but also the list of signed contracts and the surfaces (cadastral lots) to which they apply. Since these data are now available, it was possible to analyze the whole country and, most important of all, to determine which areas were used for the designated purpose. The core baseline is the same - in the period from 2004 to 2013, the Croatian Government issued 10 Decisions upon which a substantial amount of state-owned forests and forest land was designated for the easement to third parties for the raising of perennial crops, namely vineyards and olive yards. These Decisions were greatly criticized and challenged by forestry scholars, but to no avail - the Decisions were implemented and the whole designated area (altogether, 24,310.24 hectares) has become agricultural land since the amendments to the Forest Act from 2014 were enacted.

There is no real scientific or economic justification for this decision because substantial amount of land that is recorded as agricultural in the cadastral records is not being used for agricultural purposes, but due to unresolved proprietary rights and cadastral issues cannot be traded on the market and therefore the alleged rural development, predominantly in the Mediterranean, had to be triggered by designating a certain amount of state-owned forest land for this purpose. Although these lots mostly comprised degraded forest types such as shrubbery, maquis, and barren land, a significant amount of these areas were also target habitats of the newly designated NATURA 2000 sites, which no one was aware of at that moment.

Although in the work from 2017 which preceded this paper a greater emphasis was put on the impact on the ecological network sites (i. e. target habitat types), in this case, it shall be omitted from the analysis because of several reasons:

- the exact surface of specific target habitat types within an ecological network area is not determined, old habitat types map from 2004 is rather inaccurate (scale 1:100 000) and minimal mapping unit 9 hectares)
- the new habitat types map from 2016 does not include forest areas
- it is not legally determined what a "significant negative impact on the integrity of an ecological network site" would be - the only paper that briefly mentions what a significant negative impact on

the ecological network site would be (in terms of target habitat type surface loss) is a non-binding Manual for Ecological Network Impact Assessment.

Due to the reasons stated above, it was impossible to perform a satisfyingly accurate analysis of the impact of the easement on the target habitat types of the ecological network sites, but the estimate is that it did not occur due to a very low rate of utilization of the areas dedicated for the easement. However, the basic intention of this article is to determine the approximate amount, i. e. percentage of the dedicated area that was used for the designated purpose, in other words on which vineyards and olive yards were planted and prove the zero hypothesis that the whole idea was not feasible and a general failure.

2. METHODOLOGICAL FRAMEWORK

The analysis of the overall situation at the state level mostly comprised extensive desktop GIS work which lasted several months, due to a very large number of cadastral lots involved and the poor type and shape of the major input data - the Government's Decisions on the designation of forests and forest land for the easement were delivered as scanned .pdf files, often blurred and incomplete, so it took a lot of time to figure out what was written, i. e. printed. Three major sources of data were used in the analysis: the ten Decisions, vector data on cadastral lots (WFS of the State Geodetic Administration), and the list of signed contracts for easement acquired from the Ministry of Agriculture.

The first step was to digitalize all the lots into an Excel spreadsheet, thus making it possible for merging with the cadastral spatial data (shapefile) of the designated areas. Since cadastral data were provided as a WFS, it took a lot of time to download and organize the data by cadastral municipalities (i. e. group the lots by cadastral municipalities) because loading a whole WFS caused tremendous difficulties in data processing and, quite often, "freezing" of the computer. Another major problem was the presentation of the data - sometimes surfaces of several cadastral lots were merged as one, sometimes cadastral lots from two or more municipalities were merged, etc. which took a lot of "manual" work to determine a lot's spatial position and its dedicated surface. Having in mind that almost twenty years have passed since the initial Decision was published in 2004, lots of cadastral lots changed their numeration, were split or merged, or, in a very large number of cases, simply disappeared. This is the reason why it was impossible to generate the same surface as stated in the ten Decisions (altogether 24,310.24 ha) after compiling the shapefile of cadastral lots at the state level - the overall surface acquired in the shapefile amounts to 22,096.39 ha. Another major issue in the analysis was that cadastral lots of state-owned forests are usually very large - sometimes their surface amounts to more than 100 hectares, whilst the area dedicated for the easement is usually much smaller (approximately around 10 hectares of a lot, or less). Therefore, it is impossible to determine the exact position of a designated lot - what is known is only that it is positioned within a (large) cadastral lot of state-owned forests, but its exact location is to be determined by the forestry officials who are introducing the user with the area dedicated for an easement. Therefore, the final surface of the areas dedicated for an easement is much smaller than that presented in **Figure 1**, and their exact surface is stated in the ten Decisions.

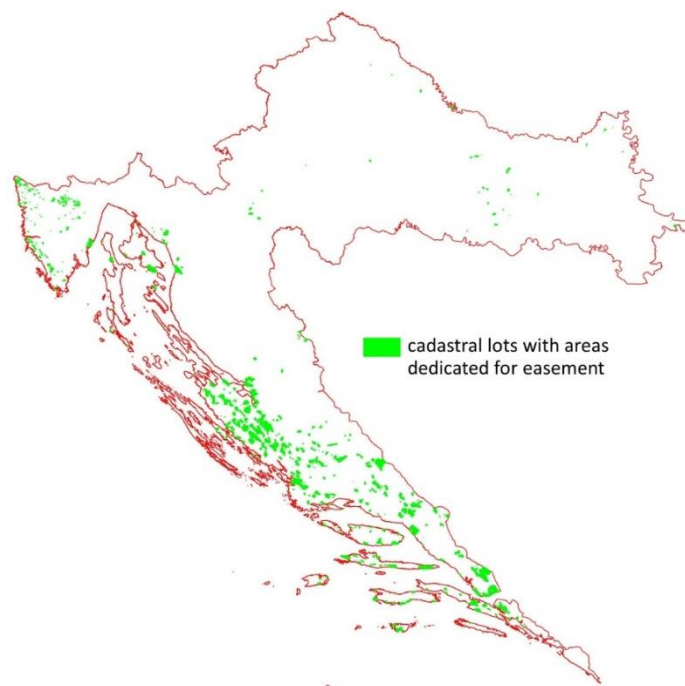


Figure 1. Cadastral lots containing areas dedicated for an easement by the ten Decisions

After all the lots were placed on the map, i. e. included in the shapefile, the next step was to determine which areas were brought to purpose, i. e. which areas were planted with olive yards and vineyards. For this purpose, data on contracts signed with third parties were acquired from the Ministry of Agriculture. Those data were comprised into an Excel spreadsheet, containing the date of signature, and dedicated surface (list of cadastral lots and cadastral municipalities). Using the spreadsheet, another shapefile was generated containing the data on the designated surface for which contracts were signed. This shapefile was compared against the recent orthophoto map of the State Geodetic Administration from 2019 to determine which areas were brought to purpose, i. e. which contracts were implemented (since the last contract was signed in 2018, orthophoto WMS from 2019 was recognized as a reliable and relevant source of information). This was also the final step of the data preparation, followed by the calculation of surfaces and the analysis of the data acquired.

3. ANALYSIS OF RESULTS

The major step of the analysis of results was to determine the surfaces that were brought to function, i. e. surfaces of which contracts were fulfilled, against the total area of the designated surfaces (**Figure 2**). As expected, this area is much, much smaller than the whole dedicated area - the area for which contracts were signed amounts to 5,422.79 hectares, which is only 22.31% of the whole dedicated area. After comparing this area (for which contracts were signed) with the orthophoto imagery from 2019, a conclusion was reached that only 62.52% of the area for which contracts were signed (3,390.3 ha) was brought to purpose, i. e. vineyards or olive yards were really planted. Altogether, it appears that eventually only 13.95% of the dedicated land was utilized for the purpose it was supposed to serve.

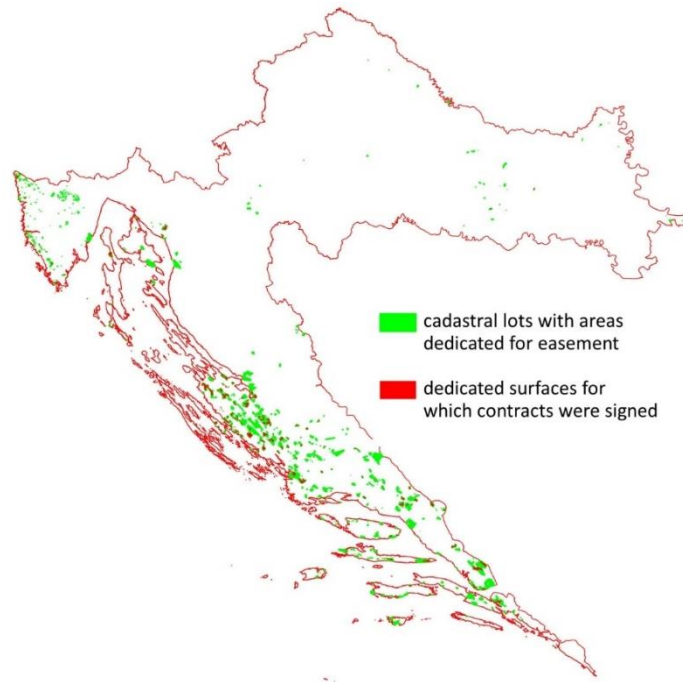


Figure 2. Dedicated surfaces for which contracts were signed compared against the whole dedicated area

When analyzing the dedicated area by Forest Administrations, the majority of surfaces were dedicated in the Forest Administration Split (**Figure 3**), which encompasses four counties (Zadarska, Šibensko-kninska, Splitsko-dalmatinska, and Dubrovačko-neretvanska). This is logical since this forest administration encircles almost whole Mediterranean area of Croatia, and it has the most appropriate climate and soil conditions for this purpose. Forest Administration Split is followed by two other coastal forest administrations (Senj and Buzet), while in the continental part very small areas or no areas at all were dedicated for an easement, which is natural since olives cannot succeed on the continent, therefore this area is only fit for certain sorts of the vine.

When analyzing the dedicated area by counties, most of the lots (in absolute figures) were dedicated in the Zadarska county, followed by the Splitsko-dalmatinska, Šibensko-kninska, and Dubrovačko-neretvanska counties, which is expected because these four counties are all encompassed into the Forest Administration Split (**Figure 4**).

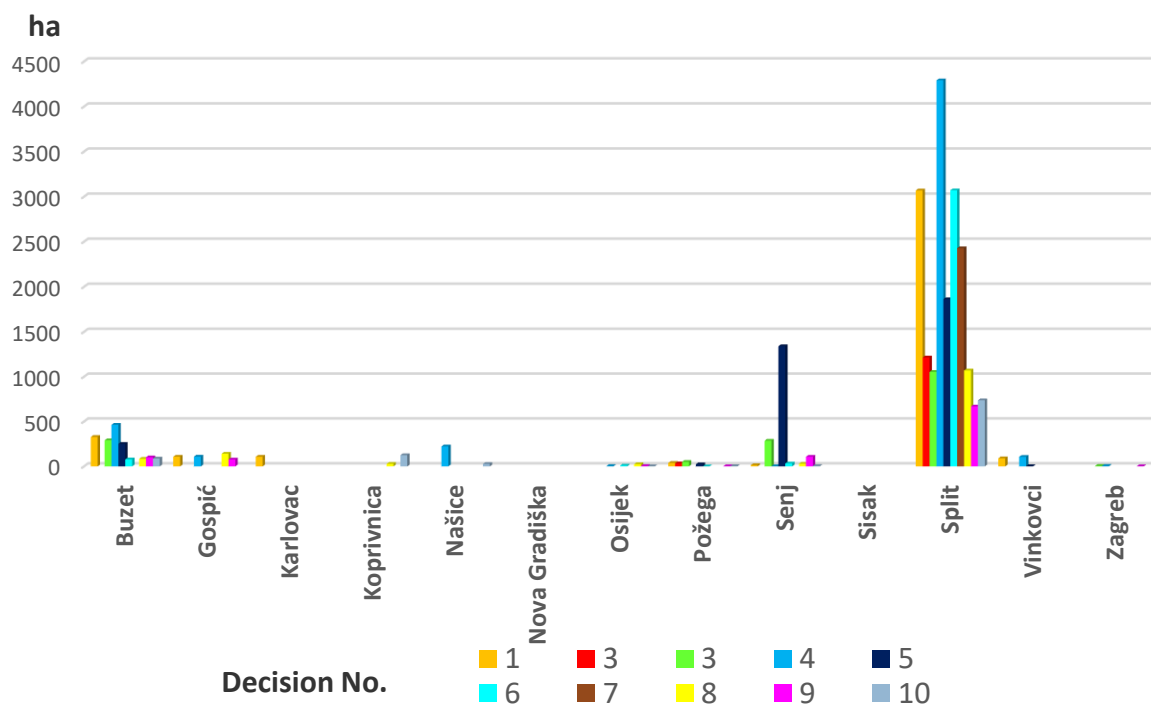


Figure 3. Dedicated areas by Decisions and forest administrations

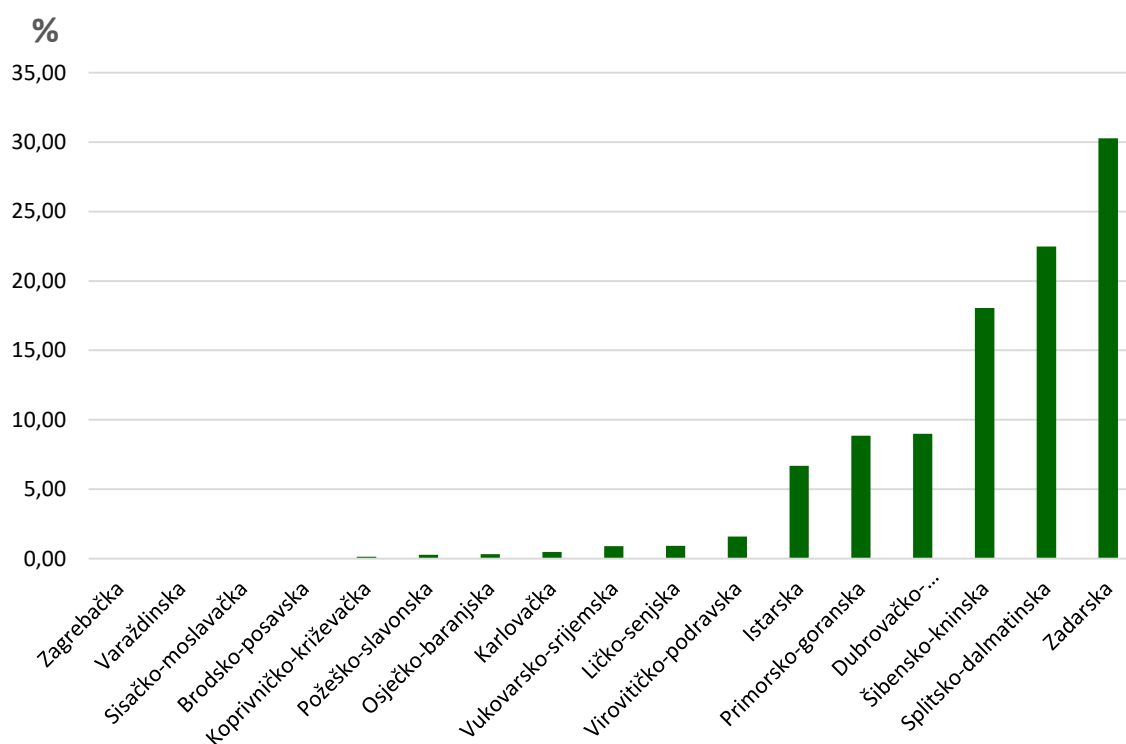


Figure 4. Dedicated areas by counties

4. CONCLUSIONS AND DEBATE

Although it was impossible, due to all the stated reasons, to determine the exact surface and positions of all areas dedicated for the easement, generated figures nevertheless clearly witness the state of the art of this endeavor which was, judging from the obtained figures, an ultimate failure. The ultimate question, raised by many eminent forestry professionals (Prpić, 2004), was why a substantial part of state-owned forest land was dedicated for this purpose when vast agricultural areas in the country are not being used. Possible answer lies in the fact that non-utilized agricultural land is mostly privately owned, which means that proprietary and

cadastral issues are in most cases unresolved, which makes such land impossible to enter the market. Many forestry professionals wondered whether this was a mere political decision intended to satisfy the interests of a small group of people and that the entire concept was just a facade to cover this fact, but this question is nowadays of zero importance - the damage has been done and the only thing that remains is to ponder on the options to resolve it.

The basic problem regarding this issue is that the whole dedicated area, after the issuance of the tenth decision, was by the amendments to the Forest Act from 2014 declared as agricultural land. In other words, land use had changed, but the land cover (mostly) remained the same - now instead of forests or forest land, we are dealing with approximately 20,000 additional hectares of non-utilized agricultural land. Concretely, this means the following problems: loss of forest fire prevention capacities (since the major task of foresters in the Mediterranean and Sub-Mediterranean region is the prevention of forest fires), loss of biodiversity and landscape diversity due to the lack of silvicultural works, a greater possibility of spreading of invasive species (since the area is not managed anymore in any way) and the loss of ecological and social functions.

Since the last contract was signed in 2018, the whole story has most probably ended and no new contracts are expected. Even if it were so, no one can show the new easement user where exactly the area for which the contract was signed is situated - because this is now agricultural land, "Croatian Forests" Ltd. does not consider itself eligible to perform any professional duties on these areas. Another fun fact arising from such a situation is that the Republic of Croatia is violating its law - according to Article 4 of the Agricultural Land Act, "...agricultural land has to be maintained to serve its purpose", which means that woody perennials should be clear-cut from such surfaces.

Eventually, the conclusion can be made that the zero hypothesis set in the beginning proved to be right, since only 13,95% of the dedicated area had been used, and the rest is now agricultural land overgrown with perennial crops. According to forest officials from the Split Forest Administration, some attempts have been made to reinstate some of these lots back into the forest management area of the Republic of Croatia, but it appeared to be a much more difficult process than taking them out - allegedly it takes a lot of financial, time and expert efforts to reverse the situation. It is, however, unclear why one simple signature sufficed to single out more than 24,000 hectares from the forest management area, and reversing this process is much more difficult. Instead of mobilizing unused agricultural land through solving proprietary and cadastre issues, the wrong path was chosen which showed to be utterly wrong neither feasibility nor any other study was made before the execution of the Decisions, which altogether points to the fact that this was a politically induced process.

Since no apparent political or any other prevailing reasons exist to support the current situation, the only right way is to reinstate the state-owned forest-covered areas into the forest management area of the Republic of Croatia, by all means necessary.

5. REFERENCES

- Agricultural Land Act (OG 39/13, 48/15)
- Bardi, A.; Papini, P.; Quaglino, E.; Biondi, E.; Topić, J.; Milović, M.; Pandža, M.; Kaligarič, M.; Oriolo, G.; Roland, V.; Batina, A.; Kirin, T. (2016). Map of Natural and Semi-Natural Terrestrial and Freshwater Habitats of the Republic of Croatia. AGRISTUDIO s.r.l., TEMI S.r.l., TIMESIS S.r.l., HAOP.
- Decisions of the Government of Croatia on the Easement of Forests and Forest Land for the Raising of Perennial Crops (2004 - 2013): Government of Croatia.
- Forest Act (OG 140/05, 82/06, 129/08, 80/10, 124/10, 25/12, 68/12, 148/13, 94/14).
- Kiš, K. (2015). Cadastre and Land Use Discrepancies Between Forestry and Agriculture - Case Study Town of Otočac, Second Regional Conference of Environmental Impact Assessments, Conference Proceedings, p. 162.
- Kiš, K. (2017). Unrecognized conflicts among forestry, agriculture and the ecological network: easement of forests and forest land for the raising of perennial crops - case study Dubrovnik-neretva county. *Environmental Engineering* 4.2: 102-108.
- Manual for Ecological Network Impact Assessment (ENIA)(n.d.): Croatian Agency for the Environment and Nature.
- Old digital map of habitat types (2002). State Institute for Nature Protection, available: <http://services.iszp.hr/wfs> (accessed: 10.10.2022)
- Ordinance on the List of Habitat Types, Habitat map, and Endangered and Rare Habitat Types (2014). Official Gazette of the Republic of Croatia, No. 088/14.
- Prpić, B. (2004). (Editor's Foreword): "Why is, according to the Decisions of the Croatian Government, between 1,000 and 2,000 ha of Mediterranean forests with accentuated ecological and touristic functions taken away for the raising of vineyards and olive yards", *Journal of the Forestry Society of Croatia*, No. 1 - 2
- Regulation on the Ecological Network (2013). Official Gazette of the Republic of Croatia, No. 124/13.