

The Pressure on the Coastal Area as a Factor of Sustainability of Croatian Tourism

Zoran Klarić

Institute for Tourism Zagreb, Croatia

zoran.klaric@iztzg.hr

Among MANY aspects of tourism sustainability, especially noteworthy is pressure on the coastal area, i.e. the number of accommodation establishments compared with the length of coastline and total area of the particular geographical units (counties, municipalities, towns or islands). This work elaborates changes in the pressure on the coastal areas in the previous ten years in the entire Croatian coastline in order to show the differences regarding the pressure on the coastal strip and the total areas of coastal administrative units. The first part analyses the number of beds in comparison with the length of coastline and the total areas of Croatian counties with some approximations for smaller spatial units. The second part reports on an analysis of data about secondary homes compared with the previous data in order to show that the pressure from this type of accommodation is in many areas more dangerous than the pressure caused by commercial tourist accommodation. The concluding part summarises all the previous results, emphasising the differences between various forms of pressures on the coastal areas and pointing out the parts of Croatia that are under especially dangerous pressure from tourism and housing development.

Keywords: sustainability, pressure on coastal areas, Croatian coastline, length of coastline, accommodation establishments, secondary homes

Introduction and Literature Review

The physical pressure on the coastal strip by different types of users is one of the most critical indicators for an assessment of tourism-carrying capacity and, therefore, of overall tourism sustainability. This is especially so in areas oriented towards sunbathing and swimming tourism (hereinafter: bathing tourism), such as Croatia with almost 95 per cent of its tourism oriented to Adriatic coastal areas (Croatian Bureau of Statistics, 2011b). Considering changes regarding the pressure on the Croatian coast as the most important tourist area, the main goal of this work was to analyse the changes over the previous ten years and to highlight the zones particularly exposed to unsustainable forms of development.

The analysis of the changes dealing with the phys-

ical pressure on the coastal strip was also a part of the engagement of the author on the project 'Master Plan and Strategy of the Tourism Development of the Republic of Croatia' (Institut za turizam, 2011). An important part of this project was analysis of tourism sustainability as a factor of tourism development in Croatia with the specific goal of determining the areas exposed to threats of uncontrolled development of tourism. An extremely useful tool for the analysis were recent data from the 2011 Census (Croatian Bureau of Statistics, 2011a), because it includes data about secondary homes on the settlement level for the whole of Croatia. This was especially noteworthy, because the building of secondary homes had already been indicated as one of the main factors of unsustainable development on the Croatian coast, probably more dan-

gerous than the building of tourist accommodation capacities, but there were no data available on their numbers and sizes after 2001 (the previous census year).

In order to indicate the locations showing undesirable forms of development, this work compares the changes of the number of accommodation establishments and secondary homes in the same period where both data were available: in 2001 and 2011. Those data were then related to the length of coastline and the total area of the particular geographical units: counties, municipalities and towns for the whole of Croatia. Since the number of accommodation establishments is especially suitable as an indicator for measuring tourism pressure from the spatial point of view, it was analysed from various aspects, including comparison with the territory, length of coastline, population, as well as considering various forms of accommodation establishments, i.e. tourist accommodation versus secondary homes.

Because it was more beneficial to analyse details regarding spatial context for the purpose of the project, other indicators dealing with tourist density such as the number of tourists, the number of overnight stays or the share of tourism in the overall economy were not included, although they are also noteworthy for the analysis of tourism importance (Osaragi, 2002). Other than their importance, there was a threat that the usage of other indicators could lead to some conclusions that could divert attention from main problems, which is caused by differences between performance of tourism in the coastal and continental parts of Croatia. That is clear in many works dealing with tourism density in Croatia as a country overly oriented towards coastal tourism.

This is seen in the article 'Contemporary Issues in the Regional Development of Tourism in Croatia' (Curic, Glamuzina, & Opacic, 2012) as the most recent example of spatial analysis of tourism dealing with the whole territory of Croatia. In this work, the authors have used seven indicators: the total number of beds, tourist arrivals, tourist nights, international tourist arrivals and tourist nights, and the number of tourist arrivals related to the territory and population of Croatian towns and municipalities. They also used the Jenks optimisation method in order to

minimise variations within classes (Jenks, & Coulson, 1963; Andrienko, Andrienko, & Savinov, 2001). The analysis in this work clearly indicated coastal areas as those with highest tourism pressure, but it has also highlighted some continental areas as critical from the tourist point of view, although tourism pressure there is not so high due to lower seasonality.

Since the basic purpose of the Master Plan and Strategy of the Tourism Development of the Republic of Croatia (Institut za turizam, 2011) was tourism planning over a longer period, the indicators based on the number of visitors and overnights were also less useful because they were more dependent on changes over a short time. Furthermore, there was a need to compare the development of secondary homes with the development of tourist capacities, and that was possibly only by comparing the number of beds. The importance of secondary homes for the tourism-carrying capacity of Croatian coast is evident in numerous strategic and planning documents, and they are already criticised as probably being a more dangerous threat to tourism sustainability than tourism accommodation capacities.

That becomes clear in many research papers dealing with tourism in Croatia, such as *Recent Characteristics of the Second Home Phenomena in the Croatian Littoral* (Opacic, 2009). However, in this and other works dealing with the spatial aspects of tourism development, the tourist accommodation capacities and secondary homes are analysed as separate phenomena, and secondary homes often as not directly related to tourism (Roca, Roca, & Oliviera, 2011). That is also caused by a fact that secondary homes are usually treated as a different type of housing and not as tourist accommodation; therefore, there are no official data about the number of visitors and overnights in those establishments. That is also the case with Croatian Bureau of Statistics (Croatian Bureau of Statistics, 2011a), which treats secondary homes as a type of dwellings 'not used for primary residence.'

In addition to possibilities for comparison with pressure from secondary homes, the importance of the number of tourist beds is also evident, because it is continuously used as probably the most useful indicator of tourism importance. That was a case both in

the past (Klarić, 1987) and recently (Banica & Camara, 2011).

The recent development of Croatian coastal tourism is characterised by the slow growth of accommodation capacities, but accompanied by the much higher growth of secondary homes. Due to their primary use for spending bathing holidays on the coast, secondary homes also represent a pressure on the coastal strip, and its importance with regard to the carrying capacity is extremely high. In many cases, this pressure is even higher than the pressure from hotels and similar establishments, because people in secondary homes are often spending more time on the beach due to the limited availability of other activities. That is especially so where secondary residences represent the main tourist structure (Klarić, 2007).

In many coastal areas, especially those less populated with a small number of tourist accommodation capacities, secondary residences are therefore more serious threat to the carrying capacity than the hotels and similar establishments. This problem is evident not only in Croatia, but also in many other countries in the Mediterranean, such as Spain, Greece, Cyprus, etc. (*Guide to good practice*, 2003).

In order to compare the consequences of those two forms of pressure on the coastal zone, this work elaborates the changes over the last ten years for the entire Croatian coastline.

The first part of this work is analysing the total number of beds in comparison with the length of coastline and areas of Croatian coastal counties, with some approximations for smaller spatial units. The second part includes current and past data about secondary homes, indicating the differences in its spatial distribution. The analysis of numerical data is carried out in order to emphasise the main problem, i.e. that pressure from tourism activities is different in particular areas depending of the main source of physical pressure – from commercial tourist accommodation capacities or secondary homes.

Methodological Approach

Since the main purpose of this work is the detection of the zones characterised with the highest unsustainability of tourism in the whole territory of Croatia,

the analysis is mainly based on the comparison of the change in the number of tourist beds and the change in the number of people in secondary residences between the year 2001 and 2011. An additional reason for performing this comparison was a possibility for using detailed and precise statistical sources, which are available for the secondary residences only in census years 2001 and 2011 (Croatian Bureau of Statistics, 2001a, 2011a).

Such analysis was especially useful because it was implemented as a part of the planning process in the project Master Plan and Strategy of the Tourism Development of the Republic of Croatia (Institut za turizam, 2011). Available statistical sources give access to data on a detailed local level, enabling the usage of GIS tools for the analysis. Therefore, it was possible to produce maps showing spatial aspects of tourism development for all 127 towns and 429 municipalities of Croatia and also to assess data for all 6,755 settlements in Croatia.

Besides the possibility of comparison of two different forms of pressure on the environment, the number of tourist beds was especially useful as an indicator of the specific circumstances of the tourism development of Croatia. The reason for this is that the number of beds reflects in the best way the pressure on the coastal strip as the most vital part of Croatia regarding tourism sustainability. Apart from the indicators based on the number of tourists or overnights, which are more salient for areas having year-round tourism, the number of beds is more suitable for coastal parts of Croatia, because it is focused on the period when almost all accommodation establishments are occupied.

Having in mind that the number of beds reflects the pressure in the summer period, it is especially representative for areas with extreme concentrations of tourists in the high season, i.e. during July and August. At the same time, the number of accommodation establishments related with the particular area or coastal zone is less exposed to changes in a short period of time and is less influenced by the typology of tourism than many other indicators. In fact, the number of visitors/tourists or overnights are much more exposed to changes in a short period of time due to exceptional circumstances, such as weather conditions or politi-

Table 1 Area and Population of Croatian Counties in 2001 and 2011

County	Area in km ²		Nr. of inhabitants		% in 2011	Per km ² in 2011	Δ 2011–2011, %
	Total	%	2001	2011			
County of Istria	2,813	4.9	206,344	208,055	4.9	74.0	0.8
County of Primorje-Gorski kotar	3,588	6.3	305,505	296,195	6.9	82.6	–3.0
County of Lika-Senj	5,353	9.5	53,677	50,927	1.2	9.5	–5.1
County of Zadar	3,646	6.4	162,045	170,017	4.0	46.6	4.9
County of Šibenik-Knin	2,984	5.3	112,891	109,375	2.6	36.7	–3.1
County of Split-Dalmatia	4,540	8.0	463,676	454,798	10.6	100.2	–1.9
County of Dubrovnik-Neretva	1,781	3.1	122,870	122,568	2.9	68.8	–0.2
Coastal Croatia	24,705	43.7	1,427,008	1,411,935	33.0	57.2	–1.1
Continental Croatia	31,889	56.3	3,010,452	2,872,954	67.0	90.1	–4.6
Croatia Total	56,594	100.0	4,437,460	4,284,889	100.0	75.7	–3.4

Notes Source: Croatian Bureau of Statistics (2001a, 2011a, 2012).

cal problems, and can show decidedly different results depending on the average length of stay and seasonal distribution of tourism in particular areas of Croatia.

For example, the same number of tourists represents a much higher pressure on the environment on Croatian islands (as additionally sensitive spatial entities) than in the continental urban areas (as generally less sensitive areas). This is because on the islands the average length of stay of tourists is usually longer than five days, and in urban areas the average length of stay is only a day or two. For the same reason, a relatively high number of overnights indicates much higher pressure on the environment in the areas where tourism is concentrated mainly in the summer months than in the areas where tourism is equally distributed throughout the year, and the usage of accommodation capacities is higher, what is a case in the majority of continental urban areas of Croatia.

For the same reason, the data about tourist accommodation capacities are comparable with the data about secondary homes, which are usually occupied in the same time as commercial tourist capacities, especially in coastal areas. Furthermore, it is possible to estimate the number of people in secondary homes based on their number and their average area, but it is much more difficult to estimate the number of people residing in them throughout the year, as well the number of nights spent. This is also significant be-

cause the pattern of usage of secondary homes is very different in coastal and continental parts of Croatia. In the coastal areas, secondary homes are usually occupied during the summer period as commercial tourist capacities, and in the continental part mainly during weekends except in the winter and rainy weather, which is different from commercial tourist capacities often occupied during the working week.

In addition to the basis of statistical data and maps produced by GIS sources, the conclusions in this work were also made on the basis of empirical methods and many other sources, which were part of the Master Plan and Strategy of the Tourism Development of the Republic of Croatia. Although the scope of those sources is enormous, they are not especially mentioned in this work, but they included numerous questionnaires, interviews with tourism experts and representatives of various institutions dealing with tourism, workshops with local authorities, various business associations, NGOs etc. Many conclusions were based on the experiences of the author and other experts involved in the preparation of the Master Plan and discussions about various findings.

The Pressure from Commercial Accommodation Capacities

Tourism in Croatia is distributed unequally in the country, showing an extremely high concentration in

Table 2 Croatian Coastal Counties According to the Number of Beds and Number of Overnights in 2001 and 2011

County	Beds in 2001		Beds in 2011		Overnights in 2001		Overnights in 2011	
	Total	%	Total	%	Total	%	Total	%
County of Istria	217,097	30.0	249,660	26.7	16,135,451	37.2	19,095,401	31.6
County of Primorje-Gorski kotar	164,736	22.8	201,704	21.6	10,143,298	23.4	11,741,692	19.5
County of Lika-Senj	20,086	2.8	33,831	3.6	770,486	1.8	1,697,107	2.8
County of Zadar	82,368	11.4	113,556	12.1	3,434,798	7.9	6,481,067	10.7
County of Šibenik-Knin	47,831	6.6	65,763	7.0	2,297,213	5.3	3,975,122	6.6
County of Split-Dalmatia	119,267	16.5	169,358	18.1	6,075,612	14.0	10,250,215	17.0
County of Dubrovnik-Neretva	47,976	6.6	69,898	7.5	3,128,798	7.2	4,775,161	7.9
Coastal Croatia	699,361	96.8	903,770	96.6	41,985,656	96.7	58,015,765	96.1
Continental Croatia	23,164	3.2	31,841	3.4	1,418,698	3.3	2,338,510	3.9
Croatia Total	722,525	100.0	935,611	100.0	43,404,354	100.0	60,354,275	100.0

Notes Source: Croatian Bureau of Statistics (2001b, 2001c, 2011b, 2011c).

the coastal zone. In seven coastal counties, representing 44% of the area and 33% of the country's population, there are 97% of total 935,611 beds in tourist accommodation capacities and 96% of total 60,354,275 overnights (see Tables 1 and 2). The remaining 13 continental counties and the city of Zagreb have only 3% of tourist accommodation capacities, although they comprise more than half of the total territory and two thirds of the population of Croatia.

Although the total number of beds in 2011 is 29% larger than in the year 2001 (935,611 in comparison with 722,525), only 12% of this growth reflects capacities in hotels and similar establishments. Therefore, the change is mainly the result of the growth of the accommodation capacities in households and camp sites, where previously unused capacities were made active again.

It is necessary to mention that the level of overnights in Croatia is currently approximately the same as 25 years ago, which is a result of the extreme decrease of tourism after the dissolution of the former Yugoslavia in 1991. The consequence is that the real growth rate of the accommodation capacities was relatively low, with the result in small change of pressure in comparison with ten years ago.

The concentration of tourism accommodation capacities and overnights is much higher in the northern part of the Adriatic coastline, especially in the county

of Istria at the northwest. In this county, representing less than 5% of the territory and population of Croatia, there are 27% of accommodation capacities and 32% of total overnights are realised. The county of Istria is also the most developed county in Croatia after the City of Zagreb, and the remaining six most developed counties are those on the Adriatic Sea with developed tourism. Bearing in mind that the county of Istria and other coastal counties (except mainly mountainous county of Lika-Senj) show increases or at least lower decreases of the population than the country's average, it is evident that tourism is an engine of development for the country as a whole.

Besides the counties of Istria and Primorje-Gorski Kotar on the north, a high concentration of tourism is evident only in the largest and most populated coastal county of Split-Dalmatia in the southern part of the Adriatic. In the remaining four counties, the number of beds and overnights is lower, especially in sparsely populated county of Lika-Senj. An analysis of the concentrations of tourism in greater detail shows the highest concentration of tourism on the western Istrian coast in the county of Istria, and the remaining zones of higher concentration refer to riviervas of Opatija and Crikvenica and island of Krk in the county of Primorje-Gorski Kotar, the Makarska Riviera in the county of Split-Dalmatia county and in the town of Dubrovnik in the county of Dubrovnik-Neretva.

Table 3 The Number of Tourist Beds per 1 km of Coastline and per Square Kilometre in Croatian Counties in 2011

County	Length of coastline*		Area in km ²	Beds in 2011	Beds per 1 km†	Beds per 1 km ²
	km	%				
County of Istria	550	9.4	2,813	249,660	453.9	88.8
County of Primorje-Gorski kotar	1,085	18.6	3,588	201,704	185.9	56.2
County of Lika-Senj	210	3.6	5,353	33,831	161.1	6.3
County of Zadar	1,280	21.9	3,646	113,556	88.7	31.1
County of Šibenik-Knin	810	13.9	2,984	65,763	81.2	22.0
County of Split-Dalmatia	870	14.9	4,540	169,358	194.7	37.3
County of Dubrovnik-Neretva	1,030	17.7	1,781	69,898	67.9	39.2
Coastal Croatia	5,835	100.0	24,705	903,770	154.9	36.6
Continental Croatia	0	0.0	31,889	31,841	0.0	1.0
Croatia Total	5,835	100.0	56,594	935,611	160.3	16.5

Notes * According to the latest data from the Croatian Hydrographic Institute, the total length of Croatian coastline including islands is 6,278 kilometres. Since there are no available data about the accurate length of coastline by counties and the counties still use the old data in their official information, new data are not available for specific counties. The old data are also more useful for the calculations regarding pressure on the coastal strip, because they do not include small indentations of the coastline unimportant for the beach usage included in the newest calculations. † Of coastline. Sources: Croatian Bureau of Statistics (2001a, 2011a, 2011b).

The analysis of pressure on coastal zone measured by the number of tourist accommodation per kilometre of coastline shows that the difference between the county of Istria and the remaining parts of coastal Croatia is even higher. In the county of Istria, there is an average of 454 tourists beds per one kilometre of coastline, in the counties of Primorje-Gorski Kotar, Lika-Senj and Split-Dalmatia between 161 and 195, and in the remaining three southern counties of Zadar, Šibenik-Knin and Dubrovnik-Neretva between 68 and 89 beds (see Table 3).

The difference is mainly caused by geographical conditions, especially with the fact that in the county of Istria the majority of the coastline is on the mainland and is close to the main tourism markets. In other counties, the majority of the coastline is on islands and the terrain is more often steep and therefore less suitable for building accommodation capacities, especially in the two northern counties of Primorje-Gorski Kotar and Lika-Senj.

Another reason for this disproportion is the lower level of tourism development of four southern counties belonging to the historic province of Dalmatia, which is more distant from the main markets due to its

position in the southern part of Croatia. Therefore, the majority of tourist accommodation in Dalmatia is situated on the mainland near the larger cities of Zadar, Šibenik, Split, Dubrovnik and on the Makarska Riviera, and much less on the islands. This is different from the northern part of the Croatian Adriatic, where a larger share of coastal zones suitable for tourism development is used for that purpose, including the islands.

The pressure on the coastal areas measured by the number of beds on the total area of the particular counties shows similar results: the highest pressure is evident in the county of Istria, the second highest pressure is in the county of Primorje-Gorski Kotar and in all other counties much less. The low pressure in the counties of Šibenik-Knin and especially Lika-Senj is caused also by inclusion of relatively large areas of the hinterland, and the relatively high pressure in the county of Dubrovnik-Neretva due to its maritime orientation.

The more detailed analysis of the pressure on the coastal areas measured by the number of beds on the total surface of the towns and municipalities indicates an especially high concentration in smaller municipi-

Table 4 Number of Dwellings Not Used for Primary Residence in Croatian Counties in 2001 and 2011

County	Dwellings not used for primary residence		Change 2001–2011, %	Share in total number of dwell. in 2011	Dwellings per 1 km of coastline
	2001	2011			
County of Istria	17,906	30,556	70.6	22.8	55.6
County of Primorje-Gorski kotar	33,879	50,565	49.3	25.9	46.6
County of Lika-Senj	8,182	15,480	89.2	33.5	73.7
County of Zadar	28,240	49,451	75.1	36.7	38.6
County of Šibenik-Knin	16,948	36,778	117.0	39.8	45.4
County of Split-Dalmatia	28,092	43,549	55.0	17.1	50.1
County of Dubrovnik-Neretva	6,769	12,022	77.6	18.5	11.7
Coastal Croatia	140,016	238,401	70.3	25.8	40.9
Continental Croatia	76,461	95,592	25.0	7.2	0.0
Croatia Total	216,477	333,993	54.3	14.8	57.2

Notes Sources: Croatian Bureau of Statistics (2001a, 2011a, 2012).

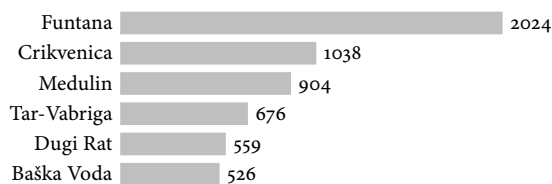


Figure 1 The Municipalities with the Highest Number of Tourist Beds per km² in Croatia in 2011

palities mainly in the northern part of the Adriatic. The most extreme case is the municipality of Funtana on the western Istria coast with a total 2,024 beds per square kilometre. High concentrations are evident in many other municipalities on Western Istrian coast, in the town of Crikvenica in the Kvarner Bay and on the island of Krk, connected with the mainland with the bridge (Figure 1). In the southern part of Croatia, higher concentrations refer almost only to the Makarska Riviera in Central Dalmatia, as probably the most attractive zone for bathing tourism in Dalmatia as a whole.

The Pressure from Secondary Homes

Besides the high pressure from accommodation capacities, the coastal zone is also the main target of building secondary homes. This kind of pressure has become especially prominent in the last ten years,

when the amount of secondary homes has greatly increased, as opposed to much slower increase of the number of commercial accommodation capacities.

Although the data about the number of secondary homes in the census of 2011 were not available during the preparation of this work, preliminary results about the number of dwellings not used for primary residence were. Since 84% of such dwellings in the census of 2001 refer to secondary homes, in the absence of more precise data this number can be relevant to the current situation and conclusions regarding future trends. In the 2001 census, the remaining 16% were dwellings used only for economic activities and for seasonal agriculture work. It is not expected that the final results will show a significant difference because in all previous censuses the difference between the first results and final data is usually smaller than 0.15%, which is considered unimportant for overall conclusions (Croatian Bureau of Statistics, 2001a, 2011a).

The total number of dwellings not used for primary residence in the year 2011 was 238,401 for the seven coastal counties and only 95,592 for the remaining 13 continental counties and the city of Zagreb. In comparison with the year 2001, the number of those dwellings increased by 54.3% for the whole Croatia and 70.3% for coastal counties (see Table 4). Although there are no data about the number of people staying



Figure 2 The Municipalities with the Highest Share of Dwellings Not Used for Primary Residence in Total Number of Dwellings in 2011

in those dwellings, in almost all calculations for Croatia it is estimated to average four people per one secondary home. According to this estimation in coastal counties, during peak tourist season there are more than 900,000 people staying in those dwellings, most of them particularly close to the coastline. Since there were 833,507 beds in all commercial accommodation capacities in 2010, it is clear that the pressure from secondary homes is becoming the most serious threat to the carrying capacity of coastal areas in Croatia.

Another significant issue is the spatial distribution of dwellings not used for primary residence, which have a different distribution pattern than that of commercial accommodation capacities. The biggest number of those dwellings was in the county of Primorje-Gorski Kotar followed by the counties of Zadar and Split-Dalmatia, and the smallest number in the counties of Lika-Senj and Dubrovnik-Neretva. Regarding the length of coastline, the biggest relative concentration was in Lika-Senj county with an average 74 dwellings not used for primary residence per kilometre of coastline, and all other counties except Dubrovnik-Neretva have available 39 to 56 such dwellings per kilometre of coastline.

The growth in the last ten years was especially fast in the counties of Šibenik-Knin and Lika-Senj. Those counties, as well as the county of Zadar between them, are showing also the highest share of dwellings not used for primary residence in the total number of dwellings. At the same time, the county of Dubrovnik-Neretva, in spite of relatively high growth in the last ten years, still has a relatively small number of such dwellings, a low share in the total number of dwellings and low density of those dwellings per kilometre of coastline. Although the county of Istria is the most de-

veloped in tourist terms, it has a relatively low number of such dwellings, both in total and relative terms.

The analysis of the spatial distribution of dwellings not used for primary residence on the local level is indicating that the main zones of concentration are on the island of Krk and Crikvenica Riviera in the county of Primorje-Gorski Kotar, on the islands of Pag and Vir in Lika-Senj and Zadar county, and in coastal areas near Zadar, Šibenik and Split in the three southernmost counties. Those areas also show high share of dwellings not used for primary residence in the total number of dwellings and high growth in the last ten years. The most extreme example is the island of Vir in the county of Zadar, where of a total of 12,750 dwellings, 11,453 or 90% are not used for permanent residence on an area of only 22 square kilometres.

Such development was caused mainly by the high interest for building secondary homes in Croatia in the period before the global economic crisis. The high growth was supported by favourable conditions regarding transport connections, i.e. building the 'Dalmatina' motorway from Zagreb to Dalmatia and finishing the previously partly built Zagreb-Rijeka motorway (important for the county of Primorje-Gorski Kotar). Therefore, the zones of the highest concentration and growth of secondary homes are areas easy to reach from the continent by motorway. That was a case with large stretches of coastline in Northern Dalmatia and on the islands connected with mainland by bridges, such as Krk, Pag and Vir. It is interesting that those areas were not simultaneously occupied with commercial accommodation capacities.

The relatively slower growth of the number of secondary homes in the counties of Primorje-Gorski Kotar and Split-Dalmatia between the years 2001 and 2011 was mainly caused by the occupation of most attractive building areas before the year 2001. At the same time, the low interest in building secondary homes in the county of Dubrovnik-Neretva is mainly a consequence of its position, as it is the most distant Croatian county from Zagreb and Western Europe and the only coastal county without motorway connections.

Considering such patterns of development, it is obvious that secondary homes were built generally everywhere possible in the coastal zone, with a conse-

quence of the occupation of most attractive areas suitable for commercial tourism and those with the most favourable transport connections. An additional problem is that the majority of secondary homes were built without respecting local traditions in architecture and often bypassing the planning procedures, with a consequence in reducing the value of many destinations for building hotels and similar establishments.

Main Conclusions

The coastal areas of Croatia are under physical pressure caused by building, both by commercial accommodation capacities and secondary homes. In the last ten years, the number of commercial accommodation capacities has been growing much more slowly than the number of secondary homes, and is mainly oriented to the already established tourism areas. In comparison with the period before 1991, the total growth was extremely small in comparison with all other Mediterranean countries, which is mainly a consequence of the slow recovery after the war in 1991. Considering the current global financial crisis and the strong decrease of interest in building new hotels and similar establishments, this kind of growth represents a relatively small threat for the sustainability of Croatian tourism.

Unlike the commercial accommodation capacities built mainly in the areas of general concentration of tourism from the past, secondary homes are built scattered in many small areas and throughout the country, but mainly in the narrow coastal zone. The biggest pressure was in the easy available and previously less occupied areas in the coastal zones with the highest potential for commercial tourism. That is causing a serious decrease of tourist attractiveness of many Croatian destinations, visible through the decrease in the number of tourist overnights in comparison with the period before 1991 in towns and municipalities like Crikvenica or Malinska exposed to extremely strong pressure for building secondary homes.

Such development leads to the conclusion that further spreading of secondary homes in attractive tourist areas will cause serious obstacles for future tourist development in many parts of Croatia and decrease the overall value of those areas for future investments in

commercial tourism. It is also evident that due to the occupation of large area of the most attractive coastal zones, the areas with a high concentration of secondary homes suffer from more serious saturation effects than the areas with a high concentration of commercial tourist capacities.

Besides visual pollution, areas with a high concentration of secondary homes are less productive than the areas with a larger share of commercial tourist accommodation and have more serious infrastructural problems. It is caused by generally extremely short average usage of secondary homes, often less than two months per year, causing serious pressure to local infrastructure in short summer period. Therefore, it is necessary to reduce the future building of secondary homes in the areas where they are endangering economic development, to redirect such aspirations to the areas more distant from the coast and to properly manage the infrastructural needs before any new development.

The areas where secondary homes could represent lower threat are mainly in the interior of Croatia, which is at the moment neglected in terms of tourist development. In many such areas, the building of secondary homes could represent a positive development pattern, especially in rural mountain areas exposed to strong depopulation. Restoration and adaptation of abandoned permanent housing units can even represent a positive trend through enabling subsistence of basic infrastructure and working places in many remote rural areas facing demographic extinction.

References

- Andrienko G., Andrienko N., Savinov A. (2001). Choropleth maps: Classification revisited. *Proceedings of ICA*, 2, 1209–1219)
- Banica A., & Camara M. (2011). Accessibility and tourist function development of the Romanian small towns. *GeoJournal of Tourism and GeoSites*, 7(1), 122–133.
- Croatian Bureau of Statistics. (2001a). *Census of population, households and dwellings*. Retrieved from <http://www.dzs.hr/Eng/censuses/Census2001/census.htm>
- Croatian Bureau of Statistics. (2001b). *Tourism in August 2001*. Retrieved from http://www.dzs.hr/Eng/Publication/2001/4-4-1_8e2001.htm
- Croatian Bureau of Statistics. (2001c) *Tourism – cumulated*

- ve data: Period January–December 2001. Retrieved from http://www.dzs.hr/Eng/Publication/2002/4-4-2_11e2002.htm
- Croatian Bureau of Statistics. (2011a). *Census of population, households and dwellings*. Retrieved from <http://www.dzs.hr/Eng/censuses/census2011/censuslogo.htm>
- Croatian Bureau of Statistics. (2011b). *Tourism, August 2011* (First Release 4.4.1/8). Retrieved from http://www.dzs.hr/Hrv_Eng/publication/2011/04-04-01_08_2011.htm
- Croatian Bureau of Statistics. (2011c). *Tourism – cumulative data: January–December 2011* (First Release 4.4.2/11). Retrieved from http://www.dzs.hr/Hrv_Eng/publication/2011/04-04-02_11_2011.htm
- Croatian Bureau of Statistics. (2012). *Statistical Yearbook 2012*. Retrieved from http://www.dzs.hr/Hrv_Eng/ljetopis/2012/sljh2012.pdf
- Curic, Z., Glamuzina N., & Opacic V. T. (2012). Contemporary issues in the regional development of tourism in Croatia. *Croatian Geographical Bulletin*, 74(1), 19–40.
- Guide to good practice in tourism carrying capacity assessment. (2003) Split, Croatia: Priority Actions Programme, Regional Activity Centre. Retrieved from <http://www.pap-thecoastcentre.org/pdfs/Guide%20English.pdf>
- Institut za turizam. (2012). Glavni plan i strategija razvoja turizma Republike Hrvatske: izvještaj 4; čimbenici razvoja turizma u Republici Hrvatskoj I: prometna i komunalna infrastruktura, održivost turističkog razvoja, podrška javnog sektora i integracija turizma u gospodarstvo. Zagreb, Croatia: Institut za turizam. Retrieved from <http://www.upuhh.hr/docs/upuhhHR/documents/87/Original.pdf>
- Jenks, G. F., Coulson, M. R. (1963). Class intervals for statistical maps. *International Yearbook of Cartography*, 3, 119–134.
- Klarić, Z. (1987). Neka razmatranja o turističkoj regionalizaciji Jugoslavije na temelju indeksa turističke funkcionalnosti. *Dela*, No. 4., pp. 157–170.
- Klarić, Z. (2007). *Carrying capacity assessment of tourism of the Larnaca District, Cyprus*. Priority Actions Programme, Regional Activity Centre, Split, Croatia. Retrieved from [http://www.moa.gov.cy/moa/environment/environment.nsf/717EFCF1F5A04E7AC22579130036F80F/\\$file/7.%20CCA%20Report.pdf](http://www.moa.gov.cy/moa/environment/environment.nsf/717EFCF1F5A04E7AC22579130036F80F/$file/7.%20CCA%20Report.pdf)
- Opacic V. T. (2009). Recent characteristics of the second home phenomena in the Croatian Littoral. *Croatian Geographical Bulletin*, 71(1), 33–65.
- Osaragi T. (2002). *Classification methods for spatial data representation* (Working Paper Series 40). Centre for Advanced Spatial Analysis, University College London, London, England.
- Roca, M. N., Roca Z., & Oliveira, J. A. (2011). Features and impacts of second homes expansion: The case of Oeste Region, Portugal. *Croatian Geographical Bulletin*, 73(2), 111–128.