

Assessing the Development of Hellenic small Islands

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SUMMARY

The Hellenic Archipelago takes up 11.242 km of our country's total 15.320 km coastline, consisting of 9.835 islands, islets and rocks, scattered in the Aegean and the Ionian Sea, 228 of which are inhabited. They are mainly divided into seven groups: Northeastern Aegean Islands, Sporades, Evia, Argo-Saronic Islands, Cyclades, Dodecanese and Crete, while many other sole islands and islets exist all-over the territory. The political, social, economical and cultural importance of these islands to Hellas is more than obvious. Considering the fascinating morphology, the diversity of the landscape, the clearness and the safety of the waters, the ideal climate and the short distances between ports and coasts, there is no wonder why the Hellenic Islands gather 58,5% of the country's lodging establishments and 62,6% of hotel beds.

Besides the famous tourist destinations at the big islands, thousands of other smaller islands, islets & rocky islands remain to be explored and the potential of their development to be assessed. This project aims to analyze the legal, technical and financial status of two major island categories, public and private, with a view to their sustainable development.

Data has been gathered from various sources, as the Army / Navy Geographic Departments, various Ministries, local Authorities, Public Services, Real Estate professionals, Tourism Institutions & the Press, including geographic vector and raster (maps, aerial/satellite images) background data, legal information and definitions, land-use restrictions, construction regulations, financial information, technical descriptions, etc. This descriptive data has been categorized and has populated a Data-Base with information as the current islands' ownership status, possession status, physical-planning conditions, special restrictions and every other piece of information that can be used for decision making of the islands' development.

An Atlas of the islands and islets of the Hellenic Archipelago has then been created using ESRI's, ArcGIS, providing geographic reference and general descriptive information. The group of Northeastern Aegean Islands was selected as a study area, because of the variety of island characteristics it consists of, where more detailed data has been inserted into the system. Based on that information, land utilization, building ability and development prospective have been researched, along with small islands valuation methods.

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1. HELLENIC ARCHIPELAGO

1.1 Geography

Contemporary Hellenic Republic covers an area of approximately 132 sq. km, extending for about 793 km from the northern to the southern border and 992 km from the eastern to the western border. In the South, the island of Gavdos (latitude 34°48'11'') constitutes the southern border of Hellas and Europe at the same time, while Othoni (longitude 19°22'41'E) at the west and Stroggili (longitude 29°38'39'E) at the east, are two small islands in the most distant locations of the Hellenic territory.

The Ionian Pelago (sea) to the west, the Lybic or Egyptian Pelago to the south and the Aegean Pelago to the east, all consist the Hellenic archipelago.

One of the results of the intense geoseismical activity in our country is the formation of many islands and islets scattered all over our seas. These islands, excluding Crete and Evia because of their great size and all their neighboring islets, are categorized by location into 8 main groups: Ionian islands covering the Ionian sea, Dodecanese - Cyclades - Sporades and North Aegean islands covering the Aegean sea, as well as the islands of the Saronic, the Laconic and the Argolic gulfs.

The total length of the Hellenic coastline is 15.320,5 km, from which only 4.078,0 km (\cong 26,6%) surround the mainland. 9.835 islands, islets, rocky islands & rocks (228 of which are inhabited), 1.354 gulfs & bays, 161 narrows & channels and 520 ports, scattered all over the 470 sq.km. (approximately 3,6 times the size of the mainland) of the Hellenic seas, compose the scenery of an extremely interesting and beautiful sea-based country.

1.2 Definitions

Sea, according to International Law, is every space that contains salty water and can originally communicate to each other.

Island is a physically formatted land mass surrounded by water, which stands over the water surface during the highest flood.

Practically there is no accurate distinction among the island types according to the Law of the Sea. Thus, the need appeared to categorize islands according to their size. An island covering a total area of less than 0,001 sq.km. is called a "rock", between 0,001 - 1 sq.km. is called a "rocky islet", over 1 sq.km and uninhabited is called an "islet" and over 1 sq.km and inhabited is called an "island". Consequently, rocks do not support human life but can contain sailing infrastructure as lighthouses, rocky islets could possibly under certain circumstances support limited human life, islets can easily be populated, while islands should be considered as part

of the mainland of a country. Every island, no matter how small it may be, is placed accurately on nautical maps.

Hellenic territorial waters extend to 6 nautical miles from the natural coastline in most cases. All types of islands, even rocks and reefs (ones completely inside our borders) have their own territorial waters. According to international law, both customary and contractual, Hellas has the right to extend her territorial waters to 12 nautical miles at any point in time. This right has already been exercised by many states including Turkey, which since 1964 has extended her territorial waters in the Black Sea and the Mediterranean to 12 nautical miles. Greece also has a coastal zone of 10 nautical miles serving aviation and air policing requirements.

1.3 Legal status

The most fundamental legislation, relative to the small Hellenic islands, is as follows:

Law 547/48: About the commandment of the Dodecanese, Law 3800/57: About the protection and commandment of Public Real Estate in the Dodecanese, Law 2971/01: About the coastal zone

1.4 Civil-planning status

In most cases, legislation (Presidential Commandment 24/31.05.1985) on building beyond areas with a city-plan, applies to constructions on small islands. If the island is located within the administrative borders of a traditional settlement or a place with special building conditions or restrictions, constructions comply with these special terms.

For example, many of the islets of the Aegean Pelago have been declared as areas of special beauty, in order to preserve their natural and cultural environment. Every human intervention is prohibited except from traditional agricultural activities (fishing, apiarism, farming, livestock), repairing & restoration of existing infrastructure, while construction of new is permitted only for national security, archaeology, scientific or environmental protection and management reasons.

Finally, every construction permit at the Aegean Pelago islands has to be approved from central land-planning council, besides the local civil-planning office.

1.5 Special legislation

Some of the Hellenic small islands are part of National Sea Parks or have been characterized as wild-life refuges, archaeological sites and non-hunting areas.

In the sea-parks for the Mediterranean seal (*Monachus Monachus*) and the sea-turtle (*Caretta Caretta*) activities very specifically described and permitted are among others: sailing (except tanker-ships), professional but not massive fishing, swimming, surfing and diving during daylight, cultivation, scientific research, security & maintenance tasks etc.

In the wild-life refuges, any intervention to the fauna and flora, as well to the soil and the waters is strictly forbidden.

2. SOURCES AND RELATIVE PUBLIC AGENCIES & SERVICES

Hellenic Navy Hydrographic Service of the Hellenic Navy General Staff, conducts research and collects information using special hydrographic and oceanographic ships and provides nautical maps and other relative information to the public. Among other responsibilities, definition of the coastal zone and of harbors, lighthouse management, shipwreck management and consulting on islets transaction are the most interesting.

Hellenic Public Real Estate Corporation is the manager of more than 100.000 public real estate properties, selling, leasing and conceding properties to the private sector, consulting, taking care of the accommodation needs of the public sector, and investing through a REIT. HPREC provided us with a list of the islands under its management, including information about their location, characteristics and legal status.

Under the Ministry of Tourism, Greek National Tourism Organization (GNTO) is the main state agency for the tourism sector, “owning” among other tourism properties, 9 islets or rocky islets, managed by the Tourism Development Company. TDC latter is responsible for their development and exploitation, along with over 350 other properties (casinos, marinas, hotels, beaches, natural springs, camping-sites, ski resorts, golf courses etc.)

The Ministry for the Aegean and Island Policy is responsible among others for cultural actions, ecological interventions and small harbor constructions on the Aegean islands and islets. During the project “Aegean islands Geographic System” a very important GIS has been set-up consisting of general digital maps, satellite images, soil & geological maps and other cartographic material concerning the Aegean Sea. Parts of this GIS have been provided and incorporated in this paper.

The Law-preparatory section of the Ministry for the Environment, Physical Planning and Public Works is confirming that any provisions apply to building beyond areas with a city-plan, apply also to any construction on islets.

Local Forest services, are responsible for applying (or not), the use “forest” to an area, usually when this area is about to be exploited. Although National Agricultural Research Foundation (N.AG.RE.F) of the Ministry of Rural Development and Food, keeps this information centralized on forest maps and conducts research, the current maps did not contain any islands or islets. Information from the local services was not of much detail as well.

Internationally, there is no substantiated method for the valuation of a small island. It depends on the experience of the assessor, usually of the Body of Sworn-in Valuers of Greece (B.S.V) or the Hellenic Institute of Valuation (H.I.V), based on the characteristics of the surrounding area and on the special features of the islet.

International Real Estate Federation (FIABCI), being the foundation of world-wide real estate agents, has an adequate view of the international real estate market of small islands, and especially of procedures and prices for a potential transaction.

Islets and rocky islets are being registered by the (under development by the Hellenic Mapping & Cadastral Organization (HEMCO) and Ktimatologio S.A.) Hellenic Cadastre, but all their descriptive information, apart from the area and the shape of the island, is not public due to the classified character of private properties.

A great part of information concerning small islands to be sold or to be developed, domestic or abroad, was retrieved from the internet, since real estate agents are rather reluctant to provide information about them.

Analytical data about the registration of the small islands of the Hellenic Territory was gathered from the books of George Yagakis, which are based on the archives of the Hellenic Navy Hydrographic Service.

3. PUBLIC ISLANDS

Most of the Hellenic Public Agencies own, manage or just use a number of public real estate properties. Among others, the Ministry of Economy & Finance, under the management of the Hellenic Public Real Estate Corporation, possesses the whole of the coastal zone and the beaches, a significantly large, unique and highly valued area.

Hellenic Public Real Estate Corporation keeps records of 634 islands with descriptive data about location, registration info, constructions and other information as flora & fauna, ports, accessibility etc.

According to the following chart, 88% of the registered Public Hellenic small islands are rocky islands with few exploitation options.

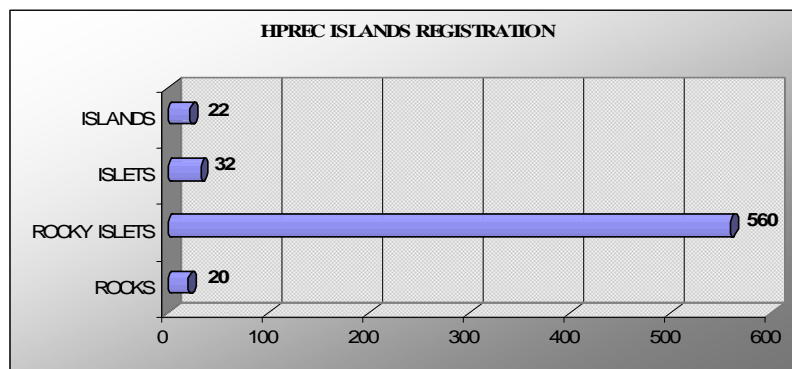


Fig.1: Public Islands categorized by size

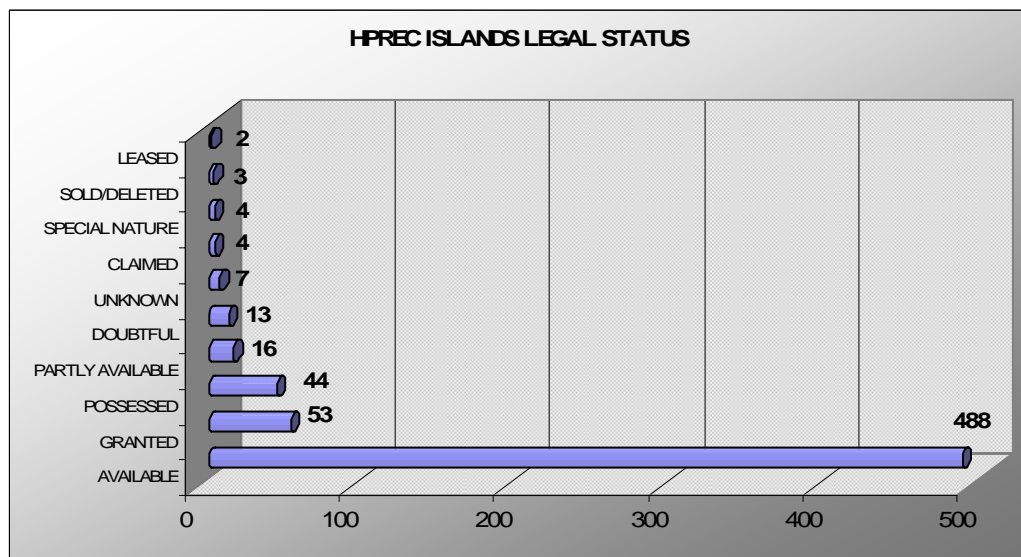


Fig.2: Public Islands categorized by legal status

According to its legal status, an island can be: available (for exploitation) possessed (illegally or arbitrarily), partly available (because of a partial private ownership), leased (to public service or private investor), granted (as for their use, not ownership), unknown (no data), doubtful (no legal status), claimed (in courts), of special nature or sold/deleted.

As we can see, most of the islands (77%) are available, followed with a great distance by granted (8,3%) and possessed (7,0%) islands.

Hellenic Public Real Estate Corporation proceeds to leasing an island only if it appears to be the most profitable way of exploitation, or else proceeds to selling it. Usually, a public competition takes place after the application of the interested party, but a direct agreement at a price assessed by the Body of Sworn-in Valuers of Greece, is also a strong possibility.

Exchanging properties of similar values with another public or private party, or cooperating in a PPP or PFI project with the private sector, are two more potential ways of development for the public real estate properties.

4. PRIVATE ISLANDS

Ownership of a private island might sound like a dream to anyone, some of them have become legends over the years, but it is a reality for the very few. During the research, many private islands came up with their description and selling price, but for most of them it was impossible to retrieve any kind of information.



Fig.3: Photos of Hellenic Private Islands to be sold

Through the description of the islands, we notice that most of them are rocky and covered with intense flora, leaving just a small part for exploitation.

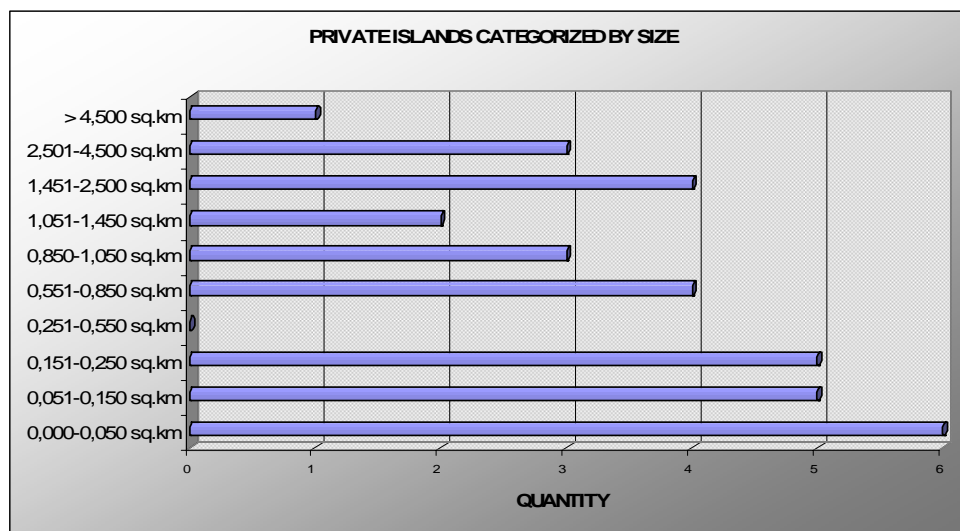


Fig.4: Private Islands categorized by size

The size of private islands varies: the smallest being “Gravari” covering only 0,0096 sq.km, while the largest being “Dokos” with an area of 12 sq.km.

In Table 1, we can see the size of each islet together with its price. Obviously, a connection between the two values cannot be established, leading us to the conclusion that other factors than the size alone, affect more the selling price of an island.

ISLAND NAME	AREA (sq.km.)	SELLING PRICE
St. Athanassios	0,010	814.000 €
Legia	0,128	651.000 €
Renia	2,220	2.000.000 €
Kythros	0,770	2.500.000 €
Aspronissi	0,130	6.400.000 €
Skyrooula	4,000	6.500.000 €
NoName (near Ithaki)	0,135	1.170.000 €
NoName (Korinthian Gulf)	0,011	1.450.000 €
NoName (Cyclades)	2,000	5.500.000 €
NoName (Diaporia islands)	0,930	10.000.000 €

Table 1: Private Islands’ listing of area and price

4.1 Real estate property rights, transaction procedure

In order to begin any negotiations, the ownership status of the island must be absolutely clear. The owner must submit any available contracts from previous transactions (sale, grant, donation, etc), certifications from public agencies, construction permits and charts of the property.

Generally, any transaction of islands is forbidden, according to the Hellenic Legislation. Selling islands is not permitted according to Law 3520/24 as it was modified by Law 2148/52, while buying an island is prohibited according to Law 1892/90.

So, first of all, a permit for selling a private island must be granted (or rejected) from the local Prefecture, under the condition that the transaction goes public in a local newspaper before it takes place.

After that, a buying permit must be issued from the Minister of Rural Development and Food, under the conditions that:

- the State does not claim any rights on the island
- the Hellenic Navy General Staff, certifies that no National Security issues are raised
- the coastal zone is defined and excluded from the transaction (as public property)
- potential forest areas have been delimited
- the Ministry of Tourism, the Ministry of Culture, the Hellenic Institute of Marine Archaeology (HIMA) and the Hellenic Navy Hydrographic service, do not object

4.2 Valuation of an island or an islet

The market value of an island is directly or indirectly affected by many factors:

- The most important factor that determines the value of an island is the development possibilities it has. First of all, is the “net” area of the island, excluding the coastal zone and the forest areas, which indicates the construction possibilities and the total of the

built-up surface. If it is too small (< 4.000 sq.m.), it cannot be built at all. Also, if other restrictions (environmental etc.) apply, complicating or prohibiting the development, the island has practically very low value.

- Probably one of the most important other factors is the location of the island. Distance from the nearest land (mainland or island), accessibility options (port, marine infrastructure) and land-values of the neighboring land, mainly define the final price.
- The topography of the island is also important. Physical, geometrical and special features, as the size, the shape, the coast, the surface, the relief, define the exploitation potentials of the island, mainly concerning the construction and infrastructure that can be materialized.
- Flora and fauna are usually a determining factor, since intense vegetation and existence of forest areas, leave small areas to be exploited, as well as rich (and possibly rare) fauna acts restrictively to the investor's master-plan.
- Infrastructure, mainly water-supply for consuming and even for fire-extinguishing purposes, electrification usually managed with generators and finally telephony network, are of great importance for the viability on the island.
- Medical support in case of emergency is another issue, considering the distance, the adequacy and the accessibility of the nearest first-aid station or hospital.
- General meteorological conditions and the climate of an island is of less importance concerning the Hellenic islands, since the weather is mostly nice and extreme phenomena rare, in opposition to tropical islands.
- If the island is going to be developed for tourism purposes, the duration of the tourism season is of importance, in order for the investor to calculate his expected revenues and to delimit the development potential.

There is no substantiated methodology for the valuation of a small island, so it usually depends on the experience and the specialisation of the assessor. The following steps are usually followed:

- gathering every piece of relative information from the local authorities, Prefecture, civil-planning office, tax office, land-registry office, cadastral office and all the Public services mentioned above
- determination of the level of development that can be achieved, through the calculation of the "net" area and the consideration of the building regulations, as well as the benefits, the restrictions and the difficulties due the features of the island
- calculation through comparable sales of the price per sq.m. of other islands, as well as of other nearby coastal properties
- calculation of the total price of the land plus the replacement cost for any infrastructures
- calculation of the taxable value, for control reasons

4.3 Private islands abroad

Private islands exist all over the world. In fact, islands within rivers and lakes are rather usual abroad, besides from the ones in the sea.

In Europe, most of the private islands were found in Croatia, and are pretty similar to the Hellenic ones. In France, Ireland, Italy, Sweden and Spain, most of the islands have residences or tourism facilities on them, therefore they are sold at higher prices.



Fig.5: Photos of Private Islands to be sold in Europe

In Africa, private islands were found in Uganda and Zambia, which are sold in lower prices than the Hellenic ones, due to less stability in the area.



Fig.6: Photos of Private Islands to be sold in Africa

In Asia, private islands were found in Indonesia, Malaysia, Sri Lanka, Thailand and the Philippines. They are smaller (between 0,010 – 0,520 sq.km.) and are sold at low prices. Some of them have begun to develop as tourism resorts.



Fig.7: Photos of Private Islands to be sold in Asia

In the Caribbean, private islands were found in the Antilles, the Bahamas, Belize, the Bermudas, Granada, the Honduras and Nicaragua, they are about the same sizes as in Hellas, but most of them have all required infrastructure that makes them integrated tourism destinations. Non-built islands though, are cheaper than the Hellenic ones.



Fig.8: Photos of Private Islands to be sold in the Caribbean

In South America, private islands were found in Brazil, Panama, Argentina and Costa Rica. In Brazil, most islands are already built-up and offered to foreign investors, without legal restrictions, only with tax-exemptions for tourism developments. Very big non-built islets of 10 sq.km. though, are sold in rather low prices, same as in Panama.



Fig.9: Photos of Private Islands to be sold in South America

In the United States of America, private islands were found in Alaska, Florida, Maine, Michigan, New York & N. Carolina. A 0,010 sq.km island costs from 190.000-1.500.000€.



Fig.10: Photos of Private Islands to be sold in the United States of America

In Oceania, private islands were found in Australia, Fiji islands, French Polynesia and New Zealand. Prices especially in Bora Bora & Fiji are high for islands with or without infrastructure, because they are a well known tourism destination.



Fig.11: Photos of Private Islands to be sold in Oceania

4.4 Advantages and disadvantages of the Hellenic small islands

The advantages of the Hellenic small islands compared to the ones abroad are:

- geographic location, with Hellas being in the crossroad of 3 Continents
- big number of the Hellenic islands, many of them being well-known tourism destinations. This way, the distances between the ports are small and someone can combine spending a relaxing vacation, being very near to the mainland or to a resort
- excellent climate of our country especially in the summer, permitting safe trips and pleasant stays on the islands, without any extreme meteorological phenomena

- crystal clear swimming waters and beaches (most blue flags in Europe), without the risk of industrial disposals or dangerous marine life-forms

The disadvantages of the Hellenic small islands compared to the ones abroad are:

- heavy bureaucracy, complex legal and civil-planning status, unclear ownership status, involvement of the State and of too many Public and Military Agencies in a simple transaction of legal rights
- impossibility of selling the eastern islands near our borders to Turkey for National Security reasons, especially to Turkish investors or to companies with complex shareholding schema
- lack of infrastructure (docks, water, electricity, lodgments) and of the prospects to establish one, drastically increasing the total cost of an investment

5. REGISTRATION OF HELLENIC SMALL ISLANDS

Hellenic islands are composed by a total of 9.835 islands, islets, rocky islets and rocks, according to the records of the Hellenic Navy Hydrographic Service. In this project, 3.302 of them (approximately 34%) have been completely registered in the database of a GIS, with information as: main name, alternative name, latitude, longitude, coastline, area, island-complex, Prefecture, Municipality, legal status, type of property, special beauty area, relative legislation, Natura area. All this information was retrieved from George Yagakis references (mainly about the location), from the database of the Hellenic Public Real Estate Corporation (legal status & property type of public islands) and finally from the internet (about restrictions and special areas).

If we add the term “unknown” to the island categories (see definitions) for those islands that we have no information on their area or their inhabitants, we get the following chart for these 3.302 registered islands:

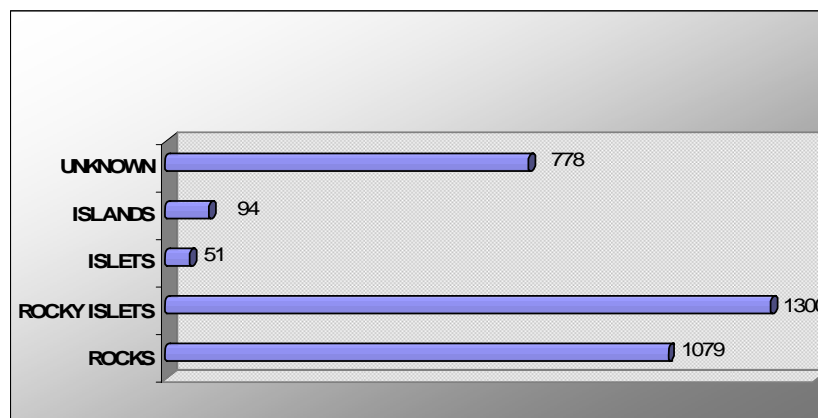


Fig.12: Registered Islands categorized by size

Another distinction between islands is whether they have been given a specific name or they remain unnamed and can only be located by their geographic coordinates. We can see that more than half of the registered islands (53%) have not been assigned a name, causing great difficulties to their instant and absolute identification and positioning.

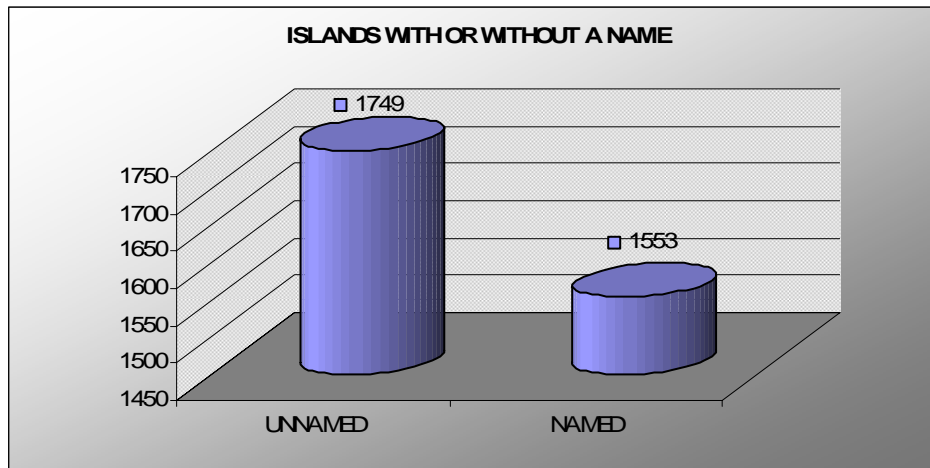


Fig.13: Registered Islands with or without a name

A project like that would surely run into some difficulties, such as the lack of information for many islands, double records for the same island and small differences to numeric fields as the area and the coordinates. These problems were exceeded according to the judgment of the team for each and every case accordingly.

5.1 Application on the Dodecanese islands

Dodecanese is an island complex near the SW coasts of Asia Minor, between Samos (N), Cyclades (NW) and Crete (SW), with great history, many beauties, geological and ecological interest and of great geopolitical importance. It contains 1.090 islands, mostly rocks in a percentage of 62,3% and rocky islands at 34,0%. 74% of them have not been assigned with a name even though some of them reach an area of 0,228 sq.km. (“NoName 128”)

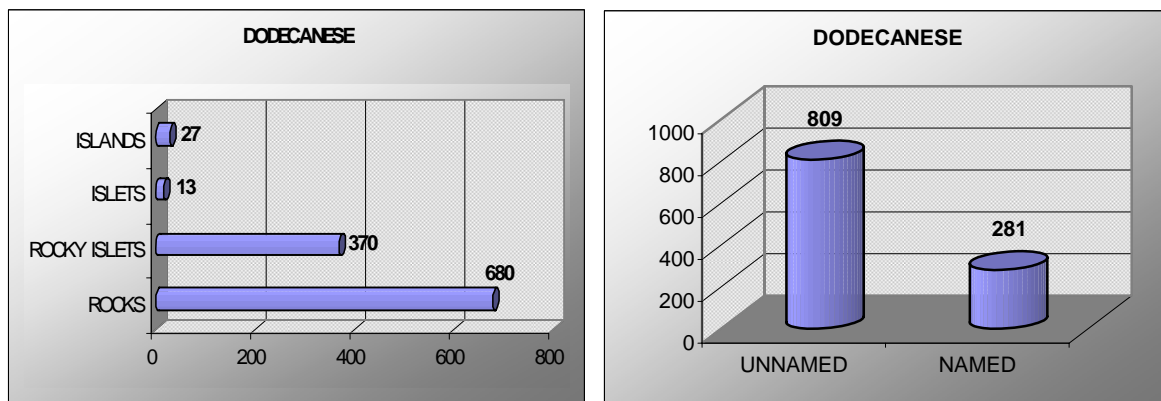


Fig.14, 15: Dodecanese Islands categorized by size and by given name

5.2 Exploitation of the Dodecanese islands

The need came up, to distinguish how many and which of these islands can be developed. As a first criterion, the island must have a “net” area of 4.000 sq.m. at minimum. The “net” area results if we subtract the coastal zone and other non-exploitable areas from the total area of

the island. Since every island has its own special size and shape, it is very difficult to make calculations, so we assumed that every island's coastline is a perfect circle. According to local legislation of the Dodecanese, an extra 12m zone is added to the depth of the coastal zone, which is estimated to approximately 20m considering all the particularities of the area. The beach zone depth is set to 50m. So:

$$E_{\text{minimum}} = \pi \times R^2$$

where $R = R_{(4.000 \text{ sq.m.})} + \text{Coastal Zone depth} + \text{Beach Zone Depth} = 35,7\text{m} + 32\text{m} + 50\text{m}$

So the minimum area of an island in order to be developed is 44.000 sq.m.

Since we want to develop an island from scratch, all the inhabited islands have been excluded from the list, leaving us with:

CATEGORY	NUMBER	PERCENT
EXPLOITABLE	100	9%
NON EXPLOITABLE	990	91%
ISLANDS TOTAL	1090	

Only 9% can be developed, from which 87 are rocky islets and 13 are islets.

If we now apply all the restrictions to constructions due to environmental protection reasons, retrieved from relevant Government Gazette issues, we have the final list of:

CATEGORY	NUMBER	PERCENT
BUILDABLE	49	49%
NON BUILDABLE	51	51%
EXPLOITABLE ISLANDS TOTAL	100	

Only 49% of the exploitable and 4,5% of the total islands can be built, from which 46 are rocky islets and 3 are islets.

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