

Protection of coastal areas in Italy

Where do national landscape and urban planning legislation fail?

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Title: Protection of coastal areas in Italy: where do national landscape and urban planning legislation fail?

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Abstract

Italian coastal areas have been subject to strong anthropogenic pressure and urbanization processes over the past 60 years. Urbanization of the protected 300-metre strip from shoreline has reached levels of over fifty per cent in some parts of the country. This article, by building on previous quantitative analyses and by providing some more quantitative data on the urbanization processes of coastal land at the provincial level, seeks to understand whether a con-cause that has led to a considerable urbanisation

process is to be found in the way national landscape legislation has been designed, in its relationship with urban planning, and in the institutional and administrative fragmentation that characterise the management of coastal areas in Italy. After analysing landscape legislation and assessing its relationship with urban planning functions, following an approach based on concept of nomotropism the article highlights, for Italy as a whole, that national landscape legislation while seeking to protect and safeguard coastal areas paved the way for increased urbanization and development. Drawing on regional data on illegal development, the concept of nomotropism is also used to emphasise the impact that building amnesty laws have had on the practice of illegal development so contributing to increased urbanization processes.

1. Introduction

Coastal areas in Italy have long been subject to a strong anthropic pressure since post World War II. The population of Italian coastal cities (see Table 1 Section 4.1), their population density, land consumption and urbanization rates have increased consistently from the 1950s to the Noughties and at a much higher pace than in other areas of the country (Romano and Zullo, 2014; ISPRA, 2015a).

The matter that concerns coastal areas protection in Italy is quite complex. Maritime domain laws, civil and sailing code, landscape and urban planning regulations, concession laws, and national strategies overlap to protect coastal areas and regulate human activities. However, despite several regulations and constraints on development (e.g. public domain laws, urban and landscape planning regulations), coastal areas are subject to illegal development all over the country which is caused by strong

anthropogenic pressure in various sectors such as residential development for second and holiday homes and tourism industry (see Table 2 section 4.2) (Berdini, 2010; Curci, 2012; Zanfi, 2013). As several authors highlight (Curr et al., 2000; Miccadei et al., 2011) degradation of the Mediterranean coastal landscape is striking as a consequence of patterns of urban growth and land consumption.

National gaps in policy design and implementation (Italy has yet to ratify the 2008 Integrated Coastal Zone Management Protocol, ICZM), lack of integration between agencies and sectors - urban planning, regional planning, sailing regulations, ports - and institutional fragmentation help explain the causes for the challenges facing coastal areas protection in Italy (Ioppolo et al., 2013; Zoppi and Lai, 2013). All such elements are also discussed as possible causes in other contexts (see for instance Allmendinger et al., 2002 and Cheong, 2008). O'Hagan and Ballinger (2010) and Flannery et al. (2015) emphasize the critical role that local governments can have in the successful management of coastal areas, especially with regard to land-based activities such as urban development.

However, they also stress that local government generally tends to implement national strategies and policies being reliant on central government for funds. This highlights the importance of national strategies, regional government regulations and laws for the safeguard of coastal areas.

In this article the main focus is on the relationship between national landscape and urban planning regulations and its potential consequences on the pattern of urbanisation of coastal land. The aim is to understand whether there are flaws in the regulatory and planning system, and lack of coordination in national strategies, that might be the cause of non-optimal coastal area protection and excessive urbanization.

In order to do this, and in the light of quantitative data on coastal land urbanization rates and illegal development, this work analyses national landscape laws and their relationship with urban planning regulations with reference to the concept of nomotropism as one possible interpretation of the phenomenon of high urbanization rates of coastal land. The concept of nomotropism helps explain the impact that rules and regulatory systems have on behaviours and actions, whether or not such actions are in compliance with the rules (Conte, 2000; Chiodelli and Moroni, 2014). The article, hence, seeks to highlight that national landscape planning regulations might have contributed to a non-optimal safeguard of coastal areas and indirectly favoured consistent urbanization processes of the coastal environment. Using the same concept of nomotropism, the paper also highlights that the building amnesty laws which aimed at the legalization of illegal development might have had adverse impacts and spurred successive illegal development, so underlining the role of regulations and laws in determining unwanted consequences. Overall, the concept of nomotropism, as a general concept, can be used to discuss and interpret the impact that any rules have on human activity. It could be used to interpret illegal development in general and not only in relation to coastal areas, urbanization patterns in other protected areas where development restrictions have been imposed (e.g. for hydrogeological safety reasons), or urbanization in other areas that area subject to similar restrictions as coastal areas (e.g. mountain areas above 1,600 metres). Because of higher population growth and density, better and more detailed data especially with regard to illegal development, and availability of previous quantitative studies (Romano and Zullo, 2014; Zoppi and Lai, 2015), coastal areas have been chosen as the object of this study.

This work places emphasis on issues and concerns directly related to anthropogenic pressure such as land consumption, population growth and illegal building activity, and does not deal with indirect issues, or *derived consequences* as Hansen (2010) calls them, which concern coastal zones (e.g. sea level rise and flooding) (for an account of the effect of climate change on the coastal zone see Hadley, 2009).

The article is organized as follows: section 2 discusses the lack of integrated governance and the excessive fragmentation that characterises the management of the coastal environment with consequent impact on action, or inaction, from local authorities. Section 3 reports on the research hypothesis and methodology. Section 4 builds on previous findings from quantitative research, adds supplemental analysis, and deals with trends of population growth in major coastal cities, consumption and urbanization rates of the 300-metre setback zones where development is restricted by national law. It also presents official statistics on illegal building activity along the coast over the last 13 years to emphasise and highlight the extent of the phenomenon and the negative impacts associated with it.

After the discussion of these main issues, the system of national landscape planning and its relationship with urban planning is presented and discussed in detail in section 5 emphasising the consequences that such regulatory system has on coastal areas. Section 6 therefore offers an interpretation of the effects and impacts of legislation and regulations on urbanization rates of coastal areas and illegal building activity based on the concept of nomotropism. Finally, conclusions are drawn on the whole picture to emphasise the impact that regulations and lack of integration and coordination have on the management of Italian coastal areas. Future research is needed to explore specific regional and local

case studies where urbanisation levels are higher for a better understanding of how regional and local planning regulations are dealing with management of coastal areas.

2. Lack of integrated governance and policy

Governance issues have a key role in the protection and management of the coastal environment (Hadley, 2009; Huitema et al., 2009; Schmidt et al., 2013, Pittman and Armitage, 2016). However, currently the Italian coastal environment is governed by a set of legal arrangements and administrative functions and powers (tourism and management of beaches, port authorities, concession laws of public domain land, urban planning and landscape regulations) that appear to be uncoordinated and fragmented on top of a substantial lack of national policy (Buono et al., 2015). As Zoppi and Lai (2013) and Ioppolo et al. (2013) highlight, in Italy there is a need to achieve an adequate level of integration, both vertical between different tiers of government and horizontal between different sectors to optimise resources, actions and governance.

Italy has not yet ratified the ICZM Protocol and, despite having ratified the Marine Strategy Framework Directive in 2010¹, it does not have a National Marine Strategy yet. The lack of national policy and integrated governance together with fragmentation of responsibilities seem to be at the root of the issues that the Italian coastal environment is facing. This is confirmed by the Italian Ministry for the Environment, Land and Sea (MATT) (MATT, 2015) which on its website, in relation to a future *National Strategy on*

¹ Article 5 of the ICZM Protocol sets out the objectives: facilitate sustainable development of and preserve coastal zones; ensure sustainable use of natural resources and preservation of the integrity of coastal ecosystems, landscapes and geomorphology, prevent and reduce effects of natural hazards such as climate change, achieve coherence between public and private initiatives and between all decisions of public authorities at all levels from national to local. The Marine Strategy Framework Directive aims to achieve good environmental status (GES) of the EU's marine waters. It establishes environment targets and associated indicators, a monitoring programme and a programme of measures.

Integrated Coastal Zone Management, admits the existing fragmentation but adds nothing more than:

“The MATT in order to overcome the fragmentation of competencies in Integrated Coastal Zone Management, has activated an agreement with the other institutional partners (regional governments and municipalities), with regard to planning and management of coastal areas in view of the definition of the necessary national strategy as well as the preparation of plans/programmes or guidelines for the ICZM Strategy”.

However, the *National Strategy for Climate Change Adaptation* (NSCCA) (Davide et al., 2013) seems to contradict the MATT guidelines by stating that the implementation of the measures on endangered species, infrastructure networks, water supply policies, limitations and restrictions on urban development is to be achieved through sectoral plans, which should identify the main actors and stakeholders, allocation of financial resources, monitoring and evaluation of the implementation process (MATT, 2014b: 5). No details are provided however as to the phasing of the implementation, monitoring and evaluation, governance actors, where the financial resources should be allocated and who will allocate the resources.

Fragmentation strongly characterises landscape and urban planning at the regional level too. Generally, three different plans regulate the safeguard and protection of the coastal environment at the regional level: Piano Territoriale Regionale (PTR) or Piano di Indirizzo Territoriale (PIT) (both can be translated as *Regional Territorial/Spatial Plan*); Piano Regionale Paesaggistico or Paesistico (PRP) (*Regional Landscape Plan*); and Piano Regionale delle Coste (PRC) (*Regional Coastal Plan*). However, despite this being the general structure, not all regions have both a PTR/PIT and a PRP in place.

The trend among Italian regions is to substitute the PTR/PIT with regional plans that look

specifically at the safeguard of landscape and environmental values such as PRPs, even though 8 coastal regions still have both PTR and PRP in place. PRPs are binding as regards development restrictions and local urban plans must conform to them.

With regard to regional coastal plans, all regions except Friulia Venezia Giulia have a PRC. Therefore, there are generally three to four plans to govern the coastal environment in coastal municipalities: PIT/PTR, PRP, PRC, and local urban plans. Perhaps, even more fragmented is the case of the Puglia region where municipal coastal plans (*piani comunali delle coste*) exist along with urban land use plans and regional coastal and landscape plans.

3. Research hypothesis and methodology

The hypothesis that guided this research is that the urbanization process of the protected 300-metre strip of coastal land and the illegal building activity along the coast have been favored respectively by national landscape and urban planning legislation and by three building amnesty laws passed over the years from the 1980s until the early 2000s. Moreover, the mismanagement of coastal areas is also to be ascribed to the lack of policy and governance integration and coordination as presented in section 2. To test this hypothesis, this article refers to quantitative analyses present in the literature (Romano and Zullo, 2014, Zoppi and Lai, 2015) and develops supplemental analysis of the urbanization process of coastal land at the provincial level as discussed in section 4. Data for developed coastal land and illegal building activities along the coast have been collected from the ISPRA database (2015b) and Legambiente reports (2013, 2014, 2016). After identifying and verifying the variation and amount of developed coastal land over

time, the current rates of developed coastal land at the provincial level have been calculated as two ratios: developed coastal land divided by total developed land; and developed coastal land divided by total coastal land. These two ratios represent degrees of urbanization of coastal land and are visualized through an open source GIS Software for each and every coastal province of Italy (Figures 2 and 3). They allow to verify the amount and clustering of urban development that is located along the 300-metre strip out of the total developed land and the level of urbanization of the 300-metre strip, so emphasizing a clear pattern of urbanization and human activities along the coast. This quantitative analysis is followed by a detailed assessment in section 5 of the mutual relationship between landscape and urban planning legislation and of building amnesty laws.

4. Population growth, land consumption and illegal development on coastal areas.

The aim of this section is to emphasise the anthropogenic pressure to which coastal areas all over Italy have been subject over the last fifty years. Building on available quantitative research (Romano and Zullo, 2014; Zoppi and Lai, 2015; Romano et al., 2017), this section firstly presents data on population growth in coastal cities, the urbanisation process and land consumption along the coast and in the set-back zone. It then moves on to investigate the magnitude of illegal development in coastal areas as an indicator of strong and unregulated anthropogenic pressure.

4.1 Population growth and land consumption in coastal areas.

As of 1st January 2013, Italy had a total of 8,092 municipalities. However, over a quarter of the Italian population (over 16 million people) lived in 644 coastal municipalities with a population density (388 pop/km²) twice as high compared to inland municipalities (166 pop/km²) (Istat, 2013a). In coastal cities with a 2011 population of over 50,000, to refer to the definition of cities provided by the OECD (Dijkstra and Poelman, 2012), the population has increased in the 60 years from 1951 to 2011 from 8,169,162 to 10,694,171. Table 1 shows the population increase and distribution in the 60 year-period 1951-2011 categorized by city-size: cities between 50,000 and 100,000 inhabitants; cities between 100,000 and 200,000 inhabitants; and cities over 200,000 inhabitants. The greatest increase is found in the years of the so-called baby boom from 1951 to 1981 (see Appendix A for the full list of coastal cities with a 2011 population of over 50,000).

Table 1 – Historical trend of coastal cities population (mln) by size category

Cities pop. (mln)	1951	1961	1971	1981	1991	2001	2011
> 0.2	5.347	6.449	7.300	7.347	6.858	6.414	6.339
0.1 – 0.2	1.035	1.271	1.532	1.619	1.603	1.569	1.597
0.05-0.1	1.786	2.081	2.403	2.594	2.657	2.673	2.757
Total	8.169	9.801	11.235	11.561	11.119	10.657	10.694

Source: Own elaboration on data from Istat (2015).

With regard to the urbanisation process of land that is in proximity of the coast (the 300-metre strip from the shoreline where coastal public domain land is found and development is restricted on the basis of national law), this has constantly increased over the past 50 years (ISPRA, 2011). 34% of the national territory that falls within the 300-metre strip is urbanised for a total of 692 Km² (ISPRA, 2011: 263). Romano and Zullo (2014) calculated urbanisation rates for coastal municipalities from the 1950s until the 2000s for the Adriatic regions. The authors highlight that in the 1950s the urbanized area

along the coast covered approximately 27,000 ha, while after the year 2000 this figure rises to over 106,000 ha. Substantial changes have occurred along the 500-metre-wide coastal belt which has witnessed massive urbanization with an average 300% increase in urbanization and peaks of 400 and 500% in certain regions such as Puglia, Veneto, Molise, and Abruzzi (Romano and Zullo, 2014). Zoppi and Lai (2015: 4-5), for the case of Sardinia and for the more recent years between 1990 and 2008, highlight that urbanization of municipal areas has a positive correlation with the municipal land that overlaps the coastal strip, indicating that the magnitude of urbanization is larger in cities and towns whose territory overlaps the coastal strip.

Land consumption in coastal areas at the provincial level has also been calculated in the context of this research using the most recent ISPRA open database (ISPRA, 2015b).

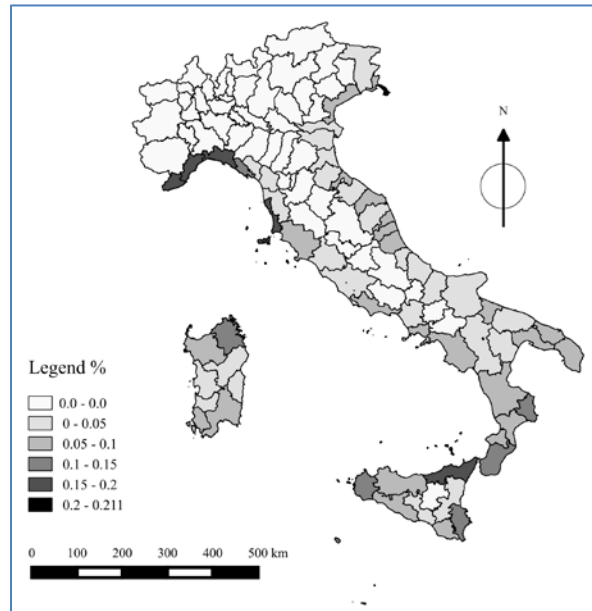
Figure 1 shows the level of protected coastal land (0-300 metre strip) that has been developed as a percentage of total developed land in the whole provincial territory. The percentage represents the ratio between two variables: developed coastal land and total developed land. In some cases, such as the provinces of Messina (Sicily), Liguria and North East Sardinia, developed coastal land amounts for a total of 11.2 to 21.1 %, highlighting the concentration of development and urbanisation along a narrow strip of coast. Figure 2 shows instead the amount of developed coastal land as a percentage of the total 300 metre coastal land. In this case too, the percentage was calculated using the ISPRA 2015 database (ISPRA, 2015b).

It becomes immediately clear that coastal land has been and still is subject to constant and increasing pressure, as Malavasi, et al. (2013) highlight for the Molise Region case study and Morri, et al. (2015) highlight for the case of Rimini. Regions such as Marche, Emilia

Romagna, Puglia and Liguria have percentages of over 50% (e.g. provinces of Rimini and Forli-Cesena).

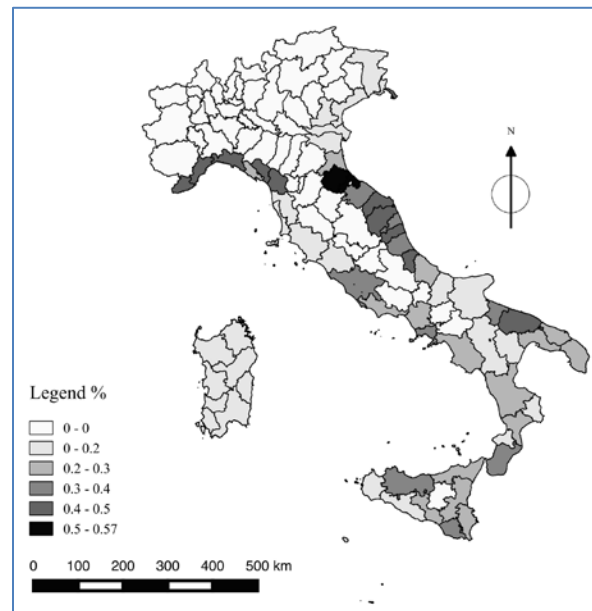
The next sub-section will deal with illegal development in coastal areas to show the trends and recent magnitude of illegal practices that negatively affect the Italian coasts.

Figure 1 – Developed coastal land as percentage of total developed land by Province



Source: Own elaboration on ISPRA (2015b) database

Figure 2 – Developed coastal land as percentage of total coastal land by Province



Source: Own elaboration on ISPRA (2015b) database

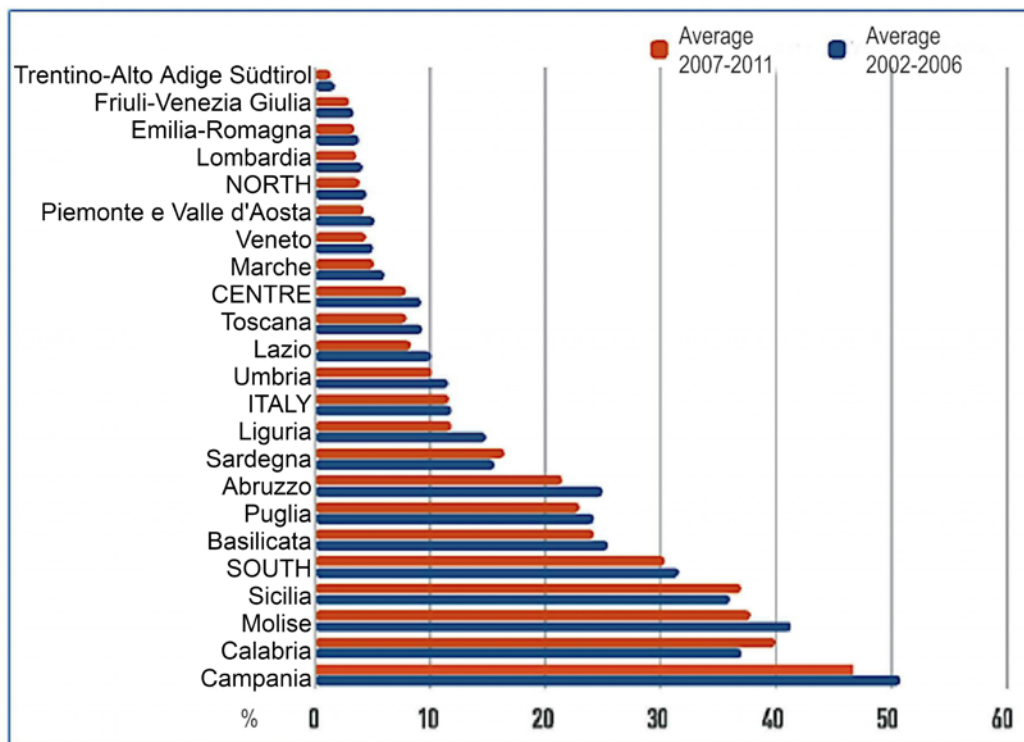
4.2 Illegal building activity

Illegal building activity has long since been a feature of the building industry in Italy. As data show, 12.3% of the total dwellings built between 1971 and 1984 were illegal (Comitato per L'Edilizia Residenziale and Ministero dei Lavori Pubblici, 1986). More recent data confirm the magnitude of such phenomenon in absolute terms and show that from 1994 to 2014 some 364,000 dwellings were built illegally (Legambiente, 2014a). Such a practice is common to all Italian regions (see Fig. 3), with peaks in the southern regions, while only 0.9% of all 8,062 municipalities has never received a request for legalization of illegal buildings in their territory (Sogeea, 2016). As reported in Galullo (2014), the total number of newly built illegal buildings in Italy in 2013 was about 26,000. A building can be illegal mainly for two reasons. Firstly, if it does not comply with land use and zoning regulations therefore being in violation of planning, landscape, and heritage restrictions. Secondly, even if in conformity with the development or zoning plans prescriptions, if it has not been granted a building permit or it is partially (e.g. height, number of floors, floor area, and so on) in violation of a planning permit granted by the local authority (for further discussion see Fried, 1973: 271). With regard to illegal buildings along the coast, both cases are possible: the construction of buildings in coastal public domain areas, property of the state, which is totally prohibited; and construction without a permit or not allowed by zoning. As Curci (2012:50) emphasizes in his work , illegal residential constructions along the coast serve mainly the purpose of second and holiday homes and generally belong to middle class members of the society. They differ from legal and authorized constructions in relation to the building's form, dimension, proximity to the sea and other urban centres (Curci, 2012: 75). On the contrary,

Cremaſchi (1990) with reference to the entirety of illegal buildings ſtates that it is hard to diſtinguiſh illegal from legal buildings on the baſis of form and dimension.

An account of the historical evolution of the phenomenon after World War II, reaſons and policies is alſo contained in Zanfi (2013:3428) who highlights that the phenomenon was particularly relevant from the 1960s to the 1980s, accounting for about a quarter of total conſtructions in thoſe years. Illegal development has negative conſequenceſ for the environment, in terms of lack of infrastructure – paved roads, ſtreet lighting, utilities hook-ups, underfinancing of public ſerviceſ and negative fiſcal impact for the national and local government (Zoppi, 2000; Curci, 2012). Many authorſ (e.g. Avarello, 1995; Salzano, 1985; Centofanti and Centofanti, 2015) have diſcuſſed the policies of *condoni edilizi* (building amneſtieſ by law), their impact on planning and the penaltyſ aſſociated with the crime. A thorough account of the debate around the policy of *condono* that developed in the 1980s and 1990s is given in Zoppi (2000). Zanfi (2013) argueſ that the policy of the three *condoni edilizi* of 1985, 1994 and 2003 encouraged further illegal buildings and increased urbanization related to a new and explicit demand for ſerviceſ. The impact of building amneſtieſ on ſubſequent illegal development activity is diſcuſſed in ſection 6 in relation to the concept of nomotropiſm. In more recent yearſ, overall, the phenomenon has decreased to a national average of juſt over 10%, probably mainly becauſe of the reduced building activity in major cities compared to the paſt decadeſ. However, it remainſ ſtill conſiderable eſpecially in the ſouthern regionſ where for the period 2007-2011 illegal conſtructions account for about 30% of the total, with peakſ of 40% and over in Calabria and Campania (Figure 3) (Iſtat, 2013b).

Figure 3 – Illegal building activity by Region



Source: Istat (2013b: 194)

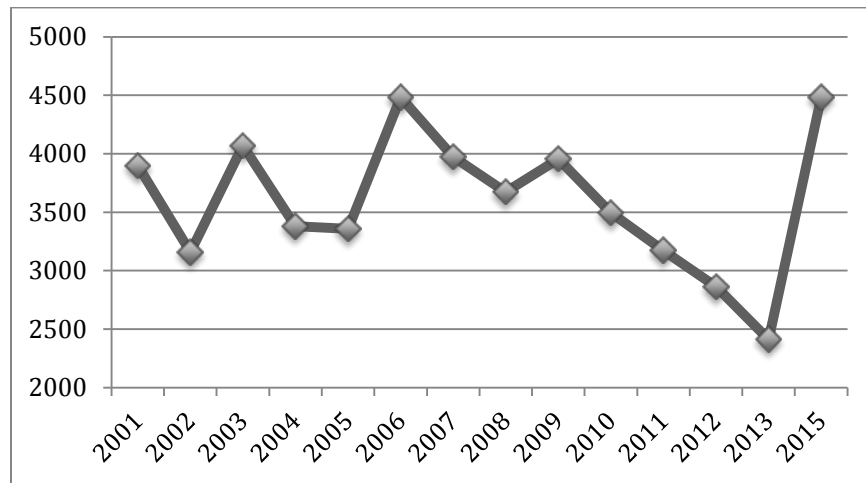
As regards the coastal environment, Legambiente (a national not for profit association established in 1980) produces the *Mare Monstrum* report on the illegal activity on the coasts and sea in the fishing, waste-water treatment, building, and sailing sectors.

It is interesting to notice that over the years, and especially from 2009 to 2013, the absolute number of building illegalities had steadily decreased, until 2015 when figures skyrocketed once again up to 4,482 (Figure 4) (Legambiente, 2016). The causes for this significant increase in 2015 are difficult to explain although it was suggested that the reasons for the steady decrease until 2013 were linked to the economic crisis, the lack of demand for second homes, and more frequent demolitions (Legambiente, 2013b).

As shown in Table 2, most of the illegal building activity along the coast is still located in the southern regions with Sicily, Campania, Calabria and Puglia accounting for 59.5% of

the yearly total. If Sardinia is also taken into account the percentage increases to 71.9%. Things change considerably if we consider the number of illegalities in the building sector per km of coastline (far right column of Table 2). Molise and Abruzzo regions move up while Sardinia and Sicily regions move considerably down.

Figure 4 – Building-sector illegalities per year on coastal public domain land



Source: Own elaboration on Legambiente data. Data for 2014 missing.

The next sections will describe in detail landscape planning regulations and their relationship with urban planning as a mandatory and binding form of planning. The role of such regulations as an unwanted driving force of urbanization of the coastal environment is discussed with regard to the concept of nomotropism and the impact that laws and regulations have on actions and behaviors.

Table 2 – Building sector illegalities on coastal public domain land in 2013 by Region (absolute number, percentage, number per km of coastline and per 100,000 population)

Region	Number	Percentage	Coastline length (km)	Illegalities per Km of coastline	Population	Illegalities per 100,000 pop
Sicilia	386	16.0%	1,623	0.24	4,999,932	7.72
Puglia	373	15.5%	865	0.43	4,050,803	9.21
Campania	363	15.0%	480	0.81	5,769,750	6.29

Calabria	314	13.0%	736	0.44	1,958,238	16.03
Sardegna	300	12.4%	1,897	0.16	1,640,379	18.29
Lazio	146	6.1%	290	0.43	5,557,276	2.63
Toscana	131	5.4%	442	0.23	3,692,828	3.55
Liguria	117	4.9%	466	0.34	1,565,127	7.48
Friuli Venezia Giulia	66	2.7%	111	0.21	1,221,860	5.40
Abruzzo	65	2.7%	125	0.52	1,312,507	4.95
Molise	46	1.9%	36	1.31	313,341	14.68
Emilia Romagna	39	1.6%	130	0.28	4,377,487	0.89
Veneto	30	1.2%	140	0.18	4,881,756	0.61
Marche	28	1.2%	172	0.17	1,545,155	1.81
Basilicata	8	0.3%	56	0.14	576,194	1.39
Total	2,412	100%	7,569	0.32	43,462,633	5.55

Source: Own elaboration on Legambiente (2014b), MATT (2014a: 556), and ISTAT (2013c) data.

5. Relationship between landscape planning and urban planning regulations

Until 1967, when the law n. 765 reformed the national planning law of 1942, the legislation on coastal public domain and its purposes were superordinate to urban planning legislation and urban plans (Casanova, 1986; Virga, 1995; Conio, 2010). The 1967 law reformed and overturned the system providing that for public works carried out on public domain land, including coastal domain, the responsible administration was to make sure that the works were in accordance with the provisions of the mandatory urban plan. As for the works carried out by private third parties on public domain, authorization from the mayor was required. This was a major change in the discipline of coastal public domain since it meant acknowledging that public domain areas were part of the municipal territory and therefore subject to urban planning regulations and purposes. General restrictions exist on private building and development activity in public domain areas and the setback zone of 300 metres from the shoreline. The discipline was first introduced in 1985 (law 431) and updated in 2004. It can be claimed that regulation of private building activity in setback areas has changed over the years. Generally, under the national law of

1985 no development was allowed in the setback zone. However, exceptions existed where the setback areas were zoned in local urban plans approved prior to 1985 as historic centres and “areas to be filled” (respectively A and B zones) on the basis of preceding laws of 1968 and 1971 (Decree 1444 of 1968 and law 867 of 1971). Of particular interest for our analysis of the impact of regulations on urbanization patterns is the inclusion of “B zones” in the exceptions. This meant that an area which had been developed for at least 12.5% of its total surface was not subject to development restrictions and could be further developed (e.g. an area that was 80% greenfield could be further developed). “B zone” areas were areas adjacent to historical centres and therefore the first ones to be subject to development pressure. It is clear that the inclusion of such an exception to development restrictions undermined the 1985 law’s aim of safeguarding the coastal environment. A change was brought about in 2004 as a consequence of full delegation to the regional governments for preparation of regional landscape plans. The 2004 decree, while maintaining the same measure relatively to areas zoned as A and B (article 142, section 2, letters a and b), provided that restrictions were to be updated on a regional basis through the so-called *pianificazione paesaggistica* (landscape planning) under section III of the 2004 decree. It can be said, therefore, that restrictions are no more absolute. Article 142 (section 4, letter a) states, in fact, that the regional landscape plan can identify, within protected areas (including the setback zone), areas where interventions and building activity is allowed as long as a special authorization is granted by the responsible authority (see also Luchetti, 2011). This has determined a fragmentation of regulation and safeguard at the regional level. Even if the setback zone of 300 metres from shoreline exists, and is determined at the national level through

national law, its regulation and safeguard is delegated to the regions and their landscape plans making it impossible to know a-priori whether an area has absolute restrictions on development or not. The provisions included in regional landscape plans are superordinate to local urban plans and the latter have to comply with the former. In cases where land uses designated in local urban plans do not conform with the provisions contained in regional plans, the latter always prevail. The next section discusses the impact that regulations and building amnesties might have had on consistent urbanization rates and illegal development along the coasts in the light of the concept of nomotropism.

6. Causes of urbanization and interpretation through the concept of nomotropism

This section will consider the concept of nomotropism (Conte 2000 and 2011, Chiodeli & Moroni, 2014) to interpret two different phenomena: excessive urbanization and illegal development in coastal areas produced respectively by national landscape and urban planning legislation and laws on *condono*. These two phenomena have unwanted and undesired effects on coastal zones that national landscape and urban planning regulations aim to avoid: the loss and degradation of the coastal environment.

Nevertheless, it seems necessary to clarify that while nomotropism proves a useful concept for the interpretation of the urbanization effects caused by the relationship between national landscape and planning regulations on coastal zones, it remains one of the possible interpretations of the phenomena of excessive urbanization and illegal development in coastal areas. Other causes of urbanization exist and have relevant impacts on coastal areas. As highlighted in section 2 with reference to academic literature

(Ioppolo et al., 2013; Zoppi and Lai, 2013; Schmidt et al., 2013; Buono et al., 2015), aspects such lack of integrated governance and national government strategies (ICZM and Marine Strategy), fragmentation of the administrative function of planning and legal arrangements are to be considered equally important in the mismanagement of coastal areas. As Zoppi and Lai (2010) highlight for the case of Sinnai municipality in Sardinia, adaptation of the municipal master plan to the provisions of the regional landscape plan is a matter of extreme importance, as much as conflictual, to control urbanization and guarantee protection of the coastal zone. Many authors (Secchi, 2006; Salizzoni, 2012; D'Ascola, 2013; Battino, 2014) underline the enormous impacts of recent developments in mass tourism in terms of considerable urbanization of coastal areas. A recent report produced by WWF (2012) emphasizes the urbanization of coastal areas due to over 12,000 beach resorts with gyms, restaurants, and pools along 900 km of coastline. Nicosia (year unknown) discusses the urbanization impact caused by refineries, chemical and petrochemical plants in the southeastern part of Sicily. Legambiente (2015) highlights the weight that infrastructure, and specifically port-related infrastructure, has on urbanization of coastal land.

As can be seen, there are many causes that contribute to the urbanization of coastal areas and national landscape and planning regulations are one among many. In the next subsection the concept of nomotropism is employed to discuss the impact that specific regulations might have on human actions and behaviors.

6.1 Nomotropism and the impact of landscape and planning rules on urbanization

The concept of nomotropism is used in this section as one possible interpretation of the

impact that such regulations (especially building amnesties in the case of illegal development and exceptions for A and B zones in the case of excessive urbanization rates) have had on the coastal environment producing actions that were unwanted and behaviors that undermined the objective of the legislation itself.

As Chiodelli & Moroni (2014, p. 162) highlight, nomotropism is defined as: “acting in light of rules (on the basis of rules, in view of rules, with reference to rules).”

However, “Acting *in light of rules*, does not necessarily entail acting in *conformity* with rules (i.e., acting in compliance with rules)”. As a consequence, the authors highlight, this can produce two different ways in which a rule can influence an action, determining therefore two different nomotropic behaviours². In the first case, one might usually think of, “the rule causally affects an action inasmuch as the action corresponds to what is prescribed by the rule”. In the second case, and this is the one that interests us here, (Chiodelli & Moroni, 2014, p. 162):

“the rule causally affects an action even when that action does not correspond to what is prescribed by the rule: in other words the action ‘takes account’ of the rule while not adhering to its prescriptions”.

In this second case, the action/behavior is *not* in conformity with the rule but it is the rule

² It is important to stress that, as can be seen by the definition, the concept of nomotropism can be used to study the impact that given rules can have on related human action. It is not limited to the study of planning rules and consequent behaviors of building illegally or applying for a planning permit. A simple example outside the planning domain can perhaps clarify the applicability of this concept to other domains too. For example, in the Netherlands, speaking is forbidden in certain train carriages where silence areas are provided. This simple rule can produce a nomotropic behavior influenced and determined by the rule itself that it is neither in compliance with the rule nor a regularly experienced behavior. It happens that some passengers speak in low voice in order to disturb other passengers as least as possible. Therefore, they break the rule in a “softer” way as if this would automatically be more accepted by fellow passengers.

itself, or another related rule, that influences or determines the unwanted action/behavior. This paper uses this concept, called second type of effectiveness of a rule, to interpret the impact of the law (building amnesties of 1985, 1994, 2003) on illegal development processes.

The first legalization of illegal development was allowed in 1985, which then constituted a precedent, by payment of a fine and local fees to service the land. As Zanfi (2013) underlines, this has indirectly determined and encouraged landowners and developers to develop illegally as they could expect a similar law to be passed again. Therefore, the building amnesties have determined an action, illegal development, which does not comply with other rules, namely planning regulations, but that is performed in light of rules such as the building amnesties from which the violators can expect their constructions to be legalized. As Zanfi (2013: 3430) highlights, the building amnesties

“prompted further waves of unlawful building by encouraging the belief (well-founded as it turned out) that further measures would follow to grant legal status to unauthorised buildings constructed in the intervening years. The condono (*the law*) thus paved the way for more deregulated behaviours” (Text in brackets added).

A second case of interest, and that the concept of nomotropism allows us to discuss, is the case of a nomotropic behavior *in conformity* with the rule that however produces unwanted results which are against objectives and provisions of the same or another rule. This is the case of the rule found in the laws of 1985 and 2004 discussed in the previous section. The laws allowed, and still allow, development to take place along the coast if it falls within areas zoned prior to 1985 as A and B zones where at least 12.5% of land is

already urbanized. In this case, considering the discretionary power of urban plans (politicians and administrators) to zone land (Chiodelli and Moroni, 2015) and the low percentage (12.5%) that applies to B zones, the development, albeit legal this time, produces an urbanization of the coastal environment which is in contrast with the declared objective of the same rule that aims to preserve the coastal environment. In this case the rule allows actions that are legal but that undermine the general principles of the law itself producing a nomotropic behavior in conformity with the law but at the same time unwanted. A link could perhaps be identified between the rule that introduces the exceptions and its intention to not distort and reduce economic rents that had already been allocated by the land use plans in A and B zones prior to 1985.

This section has sought to highlight how the law can have adverse effects and, in this specific case, might have contributed to encourage both illegal development and an excessive urbanization of coastal areas.

7. Conclusions

This research has sought to discuss the impact that national legislation and lack of integrated governance have on management, protection and urbanization of coastal areas in Italy. This hypothesis has been tested through official statistics on illegal development at the regional level, in general and in coastal areas, and quantitative data and analysis of urbanization rates of coastal land. Based on such quantitative analysis and on assessment of the mutual relationship between landscape and urban planning legislation, this article has discussed their impact through the concept of nomotropism which has been applied to explain the causes of both illegal development and high urbanization rates along the coast

within the 300-metre setback zone. The concept of nomotropism explains how actions and behaviours react to rules and are determined by rules. Such an application of the concept of nomotropism to understand the impact of regulations and legislation in terms of urbanization pressure could also be exported and applied to other spatial contexts where urbanization rates of coastal land are equally high, for example Costa del Sol and Costa Brava in the autonomous communities of Andalusia and Catalonia, Spain. As far as illegal development is concerned, a similar approach could potentially be applied to understand the causes of the phenomenon in contexts where it is significant such as Greece.

In this articles this has been highlight with reference to two different cases in Italy. In the first one, high urbanization rates, the action is in conformity with what the rule prescribes even though it produced unwanted effects against the rule's general aim. In the second case, illegal building activity, the action disobeys a rule in light of another related rule (building amnesty laws). Therefore, it can be said that rules have the power to shape our behavior, whether we decide to comply with or disobey them. This interpretation shows that building amnesties laws of 1985, 1994 and 2003 might have influenced the building industry and indirectly favored illegal development. Obviously, illegal development existed before the first building amnesty law was introduced, showing that the causes may be of different kinds (i.e., cultural, lack of housing after World War II). However, building amnesty laws provided developers and landowners with the expectation that new illegal development could be legalized one more time, which in fact occurred in 1994 and 2003. The same concept has been applied to landscape planning regulations which, while trying to safeguard coastal areas, provided exceptions for development that could take

place in already partially urbanized areas (designated in binding and mandatory urban plans as A and B zones). Thus, the action while being in conformity with the rule produced undesired effects against the aims of the rule itself. In order to control and possibly prevent these two phenomena from happening, it could be appropriate to point out some policy measures and recommendations that concern the planning as well as other domains such as public domain land and concession laws. From a planning point of view, its command and control function, in terms of personnel and allocated financial resources, should be strengthened since penalties already exist but do not seem to have any deterrent effect. Moreover, the need for more strict regional landscape and planning rules limiting development in the 300 metre coastal strip should be advocated.

Legambiente (2015) supports this position and three regions, Puglia, Tuscany and Sardinia, have started doing so forbidding coastal development along the 300 metre strip in their latest regional landscape plans. The positive effects of this kind of policy are confirmed by Zoppi and Lai (2014) who highlight for the case of Sardinia that urbanization of non-coastal land between 2003 and 2008 is higher and has occurred where more conservative planning rules were weakened. On the other hand, urbanization of coastal land in the same years was not a meaningful phenomenon due to more conservative regulations on coastal areas implemented within the regional landscape plan. From a non-planning point of view, public domain areas could be increased even though it requires a great expenditure on the part of public administrations, as it was the case for the 1988 Ley de Costas in Spain, to guarantee higher restrictions leading to a better protection of coastal areas. Furthermore, concession regulations have also an impact on urbanization. The jurisprudence is moving in this direction refusing automatic renewal of

concessions for beach resorts and a shorter duration, now around 6 years long, should have a positive impact on the ability to control and regulate tourism-related development. Finally, clear national strategies and policies on the coastal environment, responsibilities of governance actors, allocation of financial resources and functions should be prepared to provide a clear safeguard framework.

Following on from this study, the aim of future research is to verify in more detail the impact of landscape planning legislation and regulation through a set of local case studies.

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Appendix A – Population trend of Italian Coastal Cities with a 2011 population of over 50,000

City	POP1951	POP1961	POP1971	POP1981	POP1991	POP2001	POP2011
Roma	1.610.467	2.148.702	2.743.623	2.816.158	2.733.908	2.546.804	2.617.175
Napoli	1.010.550	1.182.815	1.226.594	1.212.387	1.067.365	1.004.500	962.003
Palermo	490.692	587.985	642.814	701.782	698.556	686.722	657.561
Genova	688.447	784.194	816.872	762.895	678.771	610.307	586.180
Bari	268.183	312.023	357.274	371.022	342.309	316.532	315.933
Catania	299.629	363.928	400.048	380.328	333.075	313.110	293.902
Venezia	316.891	347.347	363.062	346.146	309.422	271.073	261.362
Messina	220.766	254.715	250.656	260.233	231.693	252.026	243.262
Trieste	272.522	272.723	271.879	252.369	231.100	211.184	202.123
Taranto	168.941	194.609	227.342	244.101	232.334	202.033	200.154
Total	5.347.088	6.449.041	7.300.164	7.347.421	6.858.533	6.414.291	6.339.655
Reggio di Calabria	140.734	153.380	165.822	173.486	180.817	180.353	177.580
Livorno	142.333	161.077	174.791	175.741	167.512	156.274	157.052
Ravenna	91.798	115.525	131.928	138.034	135.844	134.631	153.740
Cagliari	138.539	183.784	223.376	233.848	204.237	164.249	149.883
Rimini	77.163	92.912	118.419	127.813	127.960	128.656	139.601
Salerno	90.753	117.363	155.496	157.385	148.932	138.188	132.608
Sassari	70.137	90.037	107.125	119.596	122.339	120.729	123.782
Siracusa	71.016	89.407	108.981	117.615	125.941	123.657	118.385
Latina	35.187	49.331	78.210	93.738	106.203	107.898	117.892
Pescara	65.466	87.436	122.470	131.330	122.236	116.286	117.166
Giugliano in Campania	26.310	30.429	35.757	44.220	60.096	97.999	108.793
Ancona	85.763	100.485	109.789	106.498	101.285	100.507	100.497
Total	1.035.199	1.271.166	1.532.164	1.619.304	1.603.402	1.569.427	1.596.979
Barletta	64.282	68.035	75.728	83.453	89.527	92.094	94.239
Pesaro	54.113	65.973	84.719	90.412	88.713	91.086	94.237
La Spezia	111.849	121.923	124.547	115.392	101.442	91.391	92.659
Lecce	63.831	75.297	83.050	91.289	100.884	83.303	89.916
Catanzaro	59.969	74.037	86.284	100.832	96.614	95.251	89.364
Brindisi	58.313	70.657	81.893	89.786	95.383	89.081	88.812
Torre del Greco	64.395	77.576	91.676	103.605	101.361	90.607	85.922
Pisa	77.722	90.928	103.415	104.509	98.928	89.694	85.858
Pozzuoli	41.457	51.308	59.813	69.861	75.142	78.754	80.357
Marsala	74.911	81.327	79.920	79.175	80.177	77.784	80.218
Grosseto	38.262	51.730	62.590	69.523	71.257	71.263	78.630
Gela	43.678	54.774	67.058	74.806	72.535	72.774	75.668
Lamezia Terme	*	*	56.018	63.989	70.114	70.501	70.336

Ragusa	49.459	57.311	61.805	64.492	67.535	68.956	69.794
Quartu Sant'Elena	17.579	22.916	30.700	43.896	61.636	68.040	69.296
Trapani	73.307	77.139	70.134	71.927	69.497	68.346	69.241
Massa	50.441	56.988	62.922	65.687	66.737	66.769	68.856
Fiumicino	*	*	*	*	*	50.535	67.626
Castellammare di Stabia	56.254	64.618	68.629	70.685	68.733	66.929	65.944
Carrara	62.287	64.901	67.758	68.702	67.197	65.034	64.689
Fano	36.329	41.033	47.857	52.116	53.909	57.529	62.901
Viareggio	41.764	47.323	55.737	58.263	57.514	61.103	61.857
Vittoria	43.239	45.035	46.130	51.240	55.280	55.317	61.006
Savona	67.806	72.115	79.809	75.353	67.177	59.907	60.661
Molfetta	55.962	61.684	63.625	65.625	66.839	62.546	60.433
Crotone	31.928	43.256	50.970	58.262	59.001	60.010	58.881
Agrigento	40.491	47.919	49.213	51.325	55.283	54.619	58.323
Pomezia	6.005	10.587	19.040	29.925	37.512	43.960	56.372
Manfredonia	31.391	38.723	47.521	53.030	58.318	57.704	56.257
Trani	34.279	38.129	40.700	44.510	50.429	53.139	55.842
Portici	35.325	50.373	75.897	80.410	68.980	60.218	55.765
Bisceglie	39.090	41.451	45.196	46.538	47.408	51.718	54.678
Bagheria	31.161	34.201	35.482	40.076	47.085	50.854	54.257
Sanremo	38.638	55.209	62.210	61.170	56.003	50.608	54.137
Modica	40.421	44.050	44.131	47.537	50.529	52.639	53.959
Ercolano	39.758	45.148	52.368	58.310	61.233	56.738	53.677
Olbia	14.587	18.788	25.668	30.787	41.095	45.366	53.307
Acireale	39.439	43.752	47.122	48.493	46.199	50.190	51.456
Civitavecchia	32.870	38.138	44.188	49.389	51.201	50.032	51.229
Battipaglia	16.896	25.992	33.277	40.797	47.139	50.359	50.464
Montesilvano	7.387	10.420	18.265	29.240	35.153	40.700	50.413
Total	1.786.875	2.080.764	2.403.065	2.594.417	2.656.699	2.673.448	2.757.537
TOTAL	8.169.162	9.800.971	11.235.393	11.561.142	11.118.634	10.657.166	10.694.171

Source: Istat (2015). *The city did not exist at the time and was created subsequently.