THE PROTECTION OF *POSIDONIA OCEANICA (L.) DELILE* AND THE MANAGEMENT OF ITS BEACH-CAST LEAVES. THE ITALIAN JURIDICAL FRAMEWORK

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Abstract – This work aims at reconstructing the complex network of rules that, also due to the implementation of obligations accepted at the international and european level, our legal system sets up for the protection of *Posidonia oceanica (L.) Delile* in the sea and for the management of the beach-cast leaves ashore, highlighting the many unsolved, highly problematic knots. For what concerns the protection in the sea, the laws protecting *Posidonia* as a species and as a habitat can only apply to clearly defined areas, outside of which the protection needs must be weighed against the other interests at stake – chiefly those related to the economic and social development.
As for the management of beach-cast *Posidonia*, the few interventions of the state legislator have left over the years a fragmentary and lacking legislative framework, the lacunae of which have been filled by ministerial circulars and guidelines, in a substitute operation that, however valuable, has made even more evident the need of a specific discipline.
The Regions as well have intervened on the subject matter, not only by means of circulars, guidelines and alike, but also through laws. It is the case of the Region of Sardinia, which, with regional law no.1/2020, has tried to introduce some rules aiming at giving priority to on-site preservation or recovery. However, many of these rules did not overcome the scrutiny of the Constitutional Court (Judgment no.86 of 2021).
The latest addition to this framework is Article 5 of Law no.60/2022, the so-called *Legge Salvamare* (*Sea-saving Law*), which, once again, appears still far from providing the long-coveted, well-structured rules.

1. *The protection of* Posidonia oceanica (L.) Delile

1.1 The ecological relevance of *Posidonia oceanica*

The endemic *Posidonia oceanica (L.) Delile* is the dominant seagrass in the Mediterranean Sea[1], where it forms extensive meadows that, *inter alia,* provide the main carbon sink in the Mediterranean, sustain coastal ecosystems, play a key role in preventing coastal erosion, and have a buffering effect against water acidification[2].

[1] According to article 1 (d) of the *SPA/BD Protocol* (cf. *infra* in the text) *endemic species* means «any species whose range is restricted to a limited geographical area».
[2] *Ex aliis*, Rotini A., Chiesa S., Manfra L., Borrello P., Piermarini R., Silvestri C., Cappucci S., Parlagreco L., Devoti S., Pisapia M., Creo C., Mezzetti T., Scarpato A., and Migliore L., *Effectiveness of the "Ecological Beach" Model: Beneficial Management of Posidonia Beach Casts and* banquette, *Water* 12(11):3238, with further bibliographical indications.

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Nevertheless, in addition to natural stress factors, *Posidonia* is quite frequently subjected to pressures deriving from anthropic activities based both on sea and land[3],the harmful effects of which are amplified due to its being a very slow-growing plant, so that its destruction or regression have long-term consequences.

And in fact, due to being very sensitive to anthropic pressures and to environmental changes, *Posidonia oceanica* is used as a general indicator in the assessment of the environmental status of marine and coastal waters, and its preservation is usually related to the quality goals (e.g. maintaining or achieving a good «ecological» or «environmental» status) required by the *Water Framework Directive (WFD*, 2000/60/EC) and the *Marine Strategy Framework Directive* (*MSFD,* 2008/56/EC), implemented by Lg.D. no.152/2006 and Lg.D. no.190/2010, respectively[4].

Its relevance being undeniable, *Posidonia oceanica* therefore enjoys special protection at international, European and national level, sometimes as an endangered species, in other cases as a habitat.

1.2 The protection of *Posidonia oceanica* at the international and the European level

As a species, *Posidonia oceanica* has been included among the *Strictly protected flora species* (cf. Appendix I, as amended in 1996) of the *Bern Convention on the conservation of European wildlife and natural habitats* (1979), signed under the aegis of the Council of Europe[5], ratified and implemented by Italy with Law no.503/1981. And it is worth noting that, due to its inclusion in Appendix I of the Convention, the protection of *Posidonia* as a species, according to Article 5[6], requires, according to Article 4, the protection of its habitats, as well.

Posidonia also features, once again as a species, in the *List of the endangered or threatened species* (cf. Annex II) of the *Protocol concerning specially protected areas and biological diversity in the Mediterranean* (the so-called *SPA/BD Protocol*), adopted in 1995 in the context of the *Barcelona Convention* (1976), ratified and implemented by Italy with Law no.175/1999[7].

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[3] As a mere example, it could be useful to mention the impacts deriving from fisheries, from maritime traffic, from *offshore* activities, e.g. for the extraction of hydrocarbons, from cable and pipe laying, from the realization of coastal infrastructures, from dredging activities, from the release of waste waters, etc., which could result in effects – again, just to mention a few – such as the release of contaminants and/or of substances which can increase turbidity or eutrophication, the destruction of *habitats,* the change of sediment fluxes, the spread of invasive species due to climate change.

[4] Cf. Tab A.2.4 of Annex 1 to Part III of Lg.D. no.152/2006, which refers to Angiospermae (and macro-algae as well) as quality elements for the assessment of coastal waters, and Tab.1 of Annex III to Lg.D. 190/2010, which recalls Decision (UE) 2017/848, that includes the assessment of *Posidonia oceanica* habitats among the criteria for the assessment of human-induced eutrophication of marine waters.

[5] It may be useful to remember that, as to the Mediterranean Sea and in addition to member States of the Council of Europe, the Convention has been signed and ratified by Morocco and Tunisia, too.

[6] According to Article 5, each Party should «take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild flora species specified in Appendix I» In any case, «[d]eliberate picking, collecting, cutting or uprooting of such plants shall be prohibited.».

[7] The *Barcelona Convention (Convention for the protection of the Mediterranean Sea against pollution)* had been ratified with Law no.30/1979. The *SPA7BD Protocol* has replaced the previous *Protocol concerning Mediterranean specially protected areas* (1982) adopted for the implementation of the *Barcelona Convention* and ratified and implemented by Italy with Law no.127/1985.

According to Article 3 (1) (b) of the *SPA/BD Protocol,* the Parties must take the necessary measures to, *inter alia,* «protect, preserve and manage threatened or endangered species of flora and fauna»; *Posidonia* included*,* as said.

In particular (cf. Article 4 et seq.), each State Party may set up Specially Protected Areas (SPAs) in the marine and coastal zones subject to its sovereignty or jurisdiction and may regulate and, if necessary, prohibit any activity likely to harm the species or to endanger the ecosystems and to adopt protection measures aimed at safeguarding ecological and biological processes[8].

Moreover, and that takes on particular relevance, Article 8 et seq. regulate the procedure to create a *List of Specially Protected Areas of Mediterranean Importance* (SPAMI list) to, among others, promote the protection of threatened species and their habitats. And it should be noted that SPAMIs may be established not only in the coastal and marine areas subject to the sovereignty or jurisdiction of the State, but also in zones situated, partly or wholly, on the high sea (cf. Article 9). For this purpose, the *SPA/BD Protocol* provides both the criteria for the choice of protected marine and coastal areas that might be included in the SPAMI list (cf. Annex I) and the procedure to be followed for the establishment of a SPAMI (cf. Article 9).

Posidonia enjoys special protection, in this case as a habitat, at the European level, too. *Posidonia* beds (*1120) are, namely, included (cf. Annex I) among natural habitat types protected under the so-called *Habitats Directive* (92/43/EEC), whose protection requires the designation of special areas of conservation[9].

Moreover, due to their being indicated by the asterisk, *Posidonia* beds are classified as *priority natural habitats*, that is natural habitats «in danger of disappearance», whose conservation, according to article 1 (1) (d), represents, for EU and Member States, a «particular responsibility in view of the proportion of their natural range which falls within the [European territory]».

1.3 The protection of *Posidonia oceanica* in the Italian legal system: a complex balancing of interests

As mentioned above, Italy has ratified and implemented both the *Bern Convention* and the *Barcelona Convention* and its protocols.

In the meantime, with particular regard to protected areas, Law no. 979/1982 had regulated the establishment of «marine nature reserves» («riserve naturali marine») in the marine environments (waters, seabeds and parts of the coast facing the sea) (cf. Article 25 et seq.).

[8] According to Article 6, the protection measures might consist, for example, in the prohibition of dumping or discharge of wastes, the regulation of the passage of ships and any stopping or anchorage, the regulation of the introduction of not indigenous species (in this regard see also Article 13), the regulation or prohibition of activities involving the exploration or modification of the soil or the exploitation of the seabed and its subsoil, the regulation or prohibition of fishing and harvesting of plants. In addition, according to Article 11, the State Parties could regulate or prohibit all forms of destruction and disturbance, including, for example, the picking, collecting, cutting, uprooting of the species and should adopt measures and plans with regard to *ex situ* reproduction.

[9] It is worth remembering that the protected areas established in accordance with the *Habitats Directive* and the *Birds Directive* (Directive 2009/17/EC, which has replaced Directive 79/409/EEC) as well, make up the *Natura 2000* network.

The matter is now regulated by Law no.394/1991, the so-called *Legge quadro sulle aree protette* (*Framework Law on protected areas*), of which Article 2 (4) regarding the classification of natural protected areas, specifies that, for what concerns the marine environment, these ones include both the specially protected areas and the marine reserves set up under Law no.127/1985 (that is, nowadays, Law no.175/1999[10]) and Law no.979/1982, respectively. And it is worth noting that some of the areas have also been recognised as SPAMIs[11].

With d.P.R. no.357/1997, Italy has also implemented the *Habitats directive,* introducing, in accordance with Article 4 of the Directive, the procedure for the establishment of the so-called Special Conservation Zones (SCZs), that is the areas requiring special measures of protection and management (cf. Article 3)[12], as well as the so-called *Valutazione di incidenza* (*Impact Evaluation*) for plans and projects likely to have a significant effect on these zones (cf. Article 5)[13].

Regarding the legislation on protected areas (as said, marine protected areas included) in particular, the law of 1991, although far from any 'museological' conception, undoubtedly aims at providing the protection-preservation of the natural heritage, albeit with a decreasing intensity depending on the zoning[14]. It follows that, at least for areas subject to enhanced protection – zone A (*Integral reserve*) and zone B (*General Reserve*) – the protection of *Posidonia,* as guaranteed by the tools provided by the Framework law[15], should prevail over any other interests involved, including those connected with the social and economic development of the country.

Likewise, also the protection requirements of habitats according to d.P.R. no.357/1997 should prevail over any other conflicting interests; so that, in the case of a proven and significant impairment of the conservation status of the habitat, preservation needs ought to be preferred. This implies that if no acceptable alternatives are found, the implementation or the carrying out of any conflicting projects and activities will be forbidden.

Such a conclusion is nevertheless mitigated by the provisions of Article 5 of d.P.R. no.357/1997, which allows to overcome a negative *Impact Evaluation*[16]. This possibility, provided for as a general rule by paragraph 9, is in fact permitted – albeit under a more stringent screening – also when the site concerned hosts a priority natural habitat type and/or a priority species, due to the occurrence of requirements related to human health and public safety or to requirements of primary importance for the environment or, further to an opinion from the European Commission, for other imperative reasons of overriding public interest[17].

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[10] Cf. *supra* note 7.
[11] Cf. http://www.rac-spa.org/spami.
[12] According to Article 4 of the Directive, on proposal of each Member State, which identifies the so-called proposed Sites of Community Importance (pSCIs), the European Commission establishes a list of Sites of Community Importance (SCIs). Once a site of Community importance has been adopted, the Member State concerned designates that site as a special area of conservation (SCZ for Italy), as soon as possible and within six years at most.
[13] It should be noted that the Impact Evaluation is required not only for SCZs, but also for pSCIs and SCIs.
[14] Cf. Article 12 (2) of Law no.394/1991.
[15] That is: Park regulations (Article 11), Park plan (Article 12), authorization measures (Article 13).
[16] The provision reproduces Article 6 of the *Habitats Directive.*
[17] In the case of sites which do not host priority habitats or species, the less restrictive provision of paragraph 9 allows to overcome a negative *Impact Evaluation* «for imperative reasons of overriding public interest, including those of a social or economic nature».

That said, in any case these provisions seem still plainly inadequate in offering effective protection for *Posidonia*, if only because they can at most ensure the preservation of spatially delimited areas.

We must indeed reach a completely different conclusion in the case of interventions carried out in the areas which are not subject to specific protection. In this hypothesis, in fact, the protection is (or should be) ensured, for example, by the legislation on the exploitation of natural resources, living and non-living, of marine waters and of the seabed and its subsoil or on land-based activities and through the enforcement of mechanisms such as environmental assessments and authorizations.

But in this case, in the balancing between competing interests, it cannot be ruled out that the protection of *Posidonia* might undertake a recessive character and turn out to be defeated.

1.4 Towards the new «ecosystem-based approach» of *Marine Strategy Framework Directive* and *Marine Spatial Planning Directive*

According to Article 1 of the *Marine Strategy Framework Directive* (*MSFD*, 2008) mentioned above, implemented, as said, by Lg.D. no.190/2010, to achieve or maintain good environmental status in the marine environment, Member States should have developed and implemented marine strategies applying «an ecosystem-based approach to the management of human activities», so to ensure that «the collective pressure of such activities is kept within levels compatible with the achievement of good environmental status and that the capacity of marine ecosystems to respond to human-induced changes is not compromised, while enabling the sustainable use of marine goods and services by present and future generations».

Following up on the *MSFD,* the *Marine Spatial Planning Directive (MSPD,* 2014)[18] has established a framework for maritime spatial planning, aimed at «promoting the sustainable growth of maritime economies, the sustainable development of marine areas and the sustainable use of marine resources» (cf. Article 1). In particular, by applying «an ecosystem-based approach» (again), the maritime spatial plans should «promote the coexistence of relevant activities and uses», so as to «contribute to the sustainable development of energy sectors at sea, of maritime transport, and of the fisheries and aquaculture sectors, and to the preservation, protection and improvement of the environment, including resilience to climate change impacts» (cf. Article 5).

Implementing the *MSPD*, Lg.D. no.201/2016 has regulated the procedure that, by 31 March 2021[19], should have led to the adoption of «management plans» («piani di gestione») (Article 5), aimed at identifying «the spatial and temporal distribution» of existing and future activities and uses in marine waters[20], in order to «promote and guarantee their coexistence» in

[18] Directive 2014/89/EU.

[19] The original deadline of 31 December 2020 had been extended by Decree-Law no.162/2019, conv. into Law no.8/2020.

[20] In the broad sense of Article 3 of Lg.D. no.190/2010, comprehensive, therefore, of waters, the seabed and subsoil on the seaward side of the baseline from which the extent of territorial waters is measured extending to the outmost reach where the State has or exercises jurisdictional rights (territorial sea, continental shelf, EEZs, ecological protection zones, fishing protected areas). Coastal waters are excluded in case they fall under urban and country planning, as long as this is mentioned in managements plans, in order to ensure the consistency of the provisions of each (cf. Article 2 of Lg.D. no.201/2016).

the light of the principle of sustainable development (Article 4)[21].

The overall aim is to use a holistic approach to draft comprehensive plans – in fact, sectoral plannings is, by nature, unable to consider all the variables – to encompass and/or harmonize all the other plans and programs concerning marine waters, their protection and the use of their resources, as well as relevant terrestrial activities due to land-sea interactions.

In short, plans should be built up like strategic and guide plans both for sectoral planning and for the granting of authorizations. And plans corroborated in their choices by their being subject to Strategic Environmental Assessment (SEA) and, possibly, Impact Evaluation (Article 5).

DPCM 1 December 2017 has approved the Guidelines aiming, in compliance with Lg.D. no.201/2016, at defining the 'stakes' for the drafting of management plans – one for each of the three identified marine regions[22] – relative to what is referred to by the Guidelines (see the Preface to the Annex) as the «Sea System» («Sistema Mare»), that is the organic governance of demands and needs, according to a sustainable development perspective, deriving from the multiple human activities that affects sea spaces.

Ambitious goals, as can be seen. But, unlike the sad destiny encountered by the Plan for the sea which had been introduced by Law no.979/1982 many years ago[23], this time the plans, albeit behind schedule (the deadline for adoption was, as said, 31 March 2021) are being drafted and the environmental assessment procedures have been started[24]. Time will tell.

2. *The management of beach-cast* Posidonia

2.1 Defining premises. Or even: on the difficult dialogue between science and law

As we shall see, the rules on the management of beached *Posidonia* refer in turn – as to their spatial scope – to different terms such as «spiaggia», «lido del mare», «arenile», «battigia» «litorale», but they never provide rigorous definitions.

Aside, for the moment, from the definitions used in scientific literature (on the point, see below), to give legal content to these terms it is necessary to look for laws or court rulings, if existing.

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[21] Hence, the (non-exhaustive) list of the typology of areas or activities that could be subject to plan provisions (fishing and aquaculture areas, installations and infrastructures for the exploitation of fossil energy sources or for the extraction of minerals and raw materials or for the production of energy from renewable sources, maritime transport routes, military training areas, nature and species conservation sites and protected areas, underwater cultural heritage, submarine cable and pipeline routes, scientific research, tourism) (Article 5 again).

[22] Three marine regions have been identified. They correspond to the three subregions referred to in Article 4 of *MSFD* (and subsequently in art.3 of Lg.D. no.190/2010), that is the Western Mediterranean Sea, the Adriatic Sea, the Ionian Sea and the Central Mediterranean Sea.

[23] According to Article 1, the Minister of the Merchant Marine (later, the Minister of the Environment) in agreement with the Regions, should have adopt a Masterplan for the defence of the sea and its coasts from pollution and for the protection of marine environment. As is known, the plan did not overcome the draft stage.

[24] In February 2022 a *scoping* procedure was initiated for the submission to Strategic Environmental Assessment and Impact Evaluation of the Plans for the three marine regions (divided into sub-regions). The documents are available on the site www.mite.gov.it.

As known, Article 822 of the Civil Code and Article 28 of the Maritime Code include in the so-called maritime domain both the «lido del mare» and the «spiaggia», however without defining them; the terms «arenile», «battigia», «litorale» are not even mentioned.

We have indeed a legal definition (or, better, two different definitions) for:

a) «battigia», which, as to its etymology, is the *line* (that is, *linea*) along which the wave beats on the beach[25]. And, actually, Article 142 of Lg.D. no.42/2004, on the protection of natural landscape, puts on the list of the areas protected by law, among the others, coastal territories included into a swath of land with a width of 300 meters «from the *linea di battigia*» (but without defining it). In other provisions, however, «battigia» is not a line but an *area*. It is the case, for example, of the provisions regulating the domain of the State[26], which define the «battigia» as the *area* situated in front of the zones subject to domain concessions and to which free and open access and transit must be guaranteed[27].

As for the other terms, in the absence of legal definitions, a contribution in giving content to, at least, some of them has been provided by jurisprudence. In particular, it is established case-law that:

b) «lido del mare» is the portion of the «riva» (no definition is provided[28]) in direct contact with marine waters, which normally cover it during ordinary storms, so that the only possible use is the maritime one[29];

c) «spiaggia» encompasses both the stretch of the inland close to the sea which is covered by water only during storms of exceptional severity and the so called «arenile»[30];

d) «arenile», in turn, is the stretch of inland resulting from the natural receding of the waters and remaining fit to the public uses –even if only potential and not current – of the sea[31].

Lastly, no juridical definition seems to exist as to:

e) «litorale»; in this regard, according to dictionaries, the term seems not to have a unique definition: in fact, it refers both to «lido del mare» and to «costa, zona costiera» (that is, «coast, coastal zone») generally of great extension[32].

The aforementioned definitions (and the partitions of the coast to which they relate) do not seem to match those in use in scientific literature This also includes English-language

[25] See www.treccani.it/vocabolario/ (*ad vocem*).
[26] Cf. Article 03 (1) (e) of Decree-Law no.400/1993, conv. into Law no.494/1993 and Article 11 (2) (d) of Law no.217/2011.
[27] It is worth noting, however, that this area is always identified by municipalities (which are competent on the point) as a strip, mostly 5 meters wide (reduced to 3 for beaches less than 20 meters wide) measured *from* the «battigia». See, for instance, the *Regolamento per l'uso del demanio marittimo* (*Regulation on the use of the maritime domain*) of the Città di Venezia (resolution of the City Council no. 65/2010).
[28] In dictionaries, *riva* is the land area delimiting a stretch of water, notably when the terminal zone is low and flat. See www.treccani.it/vocabolario/ (*ad vocem*).
[29] Supreme Court of Cassation, Joint Chambers, no.849/1962; more recently, V civil section, no.4769/2004; III civil section, no.10304/2004; I civil section, no.17737/2009, I civil section, no.6619/2015; II civil section, no.29592/2021 (ord.).
[30] Supreme Court of Cassation, III civil section, no.10304/2004; I civil section, no.17737/2009; I civil section, no.6619/2015.
[31] Supreme Court of Cassation, III civil section, no.6349/1991; II civil section, no.10817/2009; I civil section, no.17737/2009.
[32] See www.treccani.it/vocabolario/ (*ad vocem*).

publications, in which the terms are not always used univocally[33]. In general, anyway, the coastal zone is usually featured and defined according to figure 1 (see below).

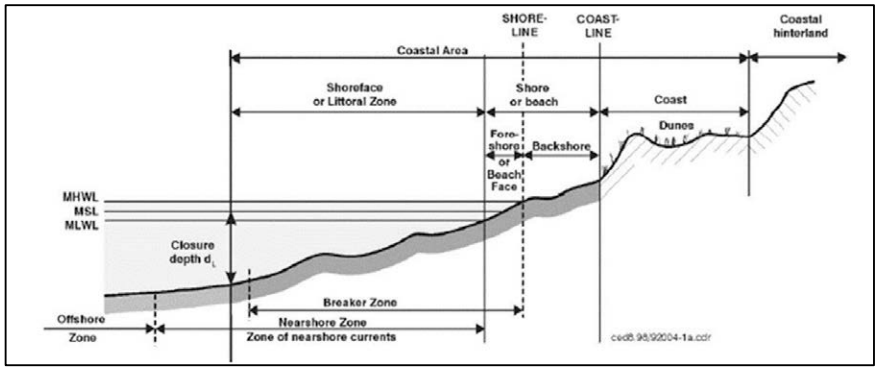

Figure 1 – *Definition of coastal terms,* in Mangor K., Drønen, N. K., Kærgaard, K.H. and Kristensen, S.E. (2017), *Shoreline management guidelines,* DHI, Hørsholm, Denmark, p.7

Glossaries offer a series of definitions, among which[34]:

beach or *shore:* the zone of unconsolidated material that extends from the Mean Low Water (MLW) line to the place with a marked change in material or physiografic form, or to the line of permanent vegetation (the effective limit of storm waves and storm surge), i.e. to the coastline[35]. It can be divided in the *foreshore* and the *backshore*;

foreshore or *beach face:* the zone between MLW and the seaward berm, which corresponds to the upper limit of wave uprush at high tide; it is the part of the shore which is wet due to the varying tide and wave run-up under normal conditions, i.e. excluding the impact of extreme storm waves and storm surge;

backshore: the part of the beach lying between the foreshore and the coastline; it is dry under normal conditions and is acted upon by waves only under extreme events with high tide and storm surge;

shoreline: the intersection between the MHW line and the shore; it is not easy to identify in natural settings (and definitions differ[36]);

land: the area located landward the *shoreline,* therefore consisting of the backshore, the coast and the coastal hinterland;

[33] Cf., among the others, Mangor K., Drønen, N. K., Kærgaard, K.H. and Kristensen, S.E. (2017), *Shoreline management guidelines,* DHI, Hørsholm, Denmark, p.7 et seq.; USACE (2002), *Coastal Engineering Manual - Appendix A Glossary of Coastal Terminology,* EM 1110-2-1100, *ad vocem.*

[34] See in particular the above mentioned *Shoreline management guidelines*, p.7 et seq.

[35] According to USACE (2002), *Coastal Engineering Manual,* cit, *beach* is used for shores of unconsolidated material only.

[36] For example, according to USACE (2002), *Coastal Engineering Manual,* cit., the *shoreline* is the intersection of a specified plane of water with the shore or beach. On charts, anyway, the shoreline approximates the MHW line.

littoral: the zone off the low water line, extending seaward from the foreshore, in which the littoral processes take place; but also another term for *shore,* or also «of or pertaining to a shore»[37].

Albeit obviously incomplete, this overview shows clearly that the terms and the definitions used by the Italian legislator and the nomenclature in use in the scientific field are not always perfectly equivalent.

Sometimes, they seem to match.

For instance, once it is clear (as we shall see) that, as regards beach-cast *Posidonia,* when the legislator refers to *battigia,* this cannot be but an area and not a line, it seems quite easy to use *foreshore*; it is anyway worth noting that not all problems are solved, given that the question remains as to whether the area is to be delimited according to a naturalistic criterion or according to the legal criterion, that is 'measuring tape in hand'.

Sometimes, on the contrary, they do not.

For instance, it proves to be much more problematic to find an adequate match for *spiaggia*, which does not seem to be *tout court* identifiable with *shore* or *beach,* given the fact that it encompasses not only the *backshore,* but also the *arenile*, that is an area the juridical definition of which does not seem to find a specific correspondence and which, in any case, might seem to fall within the notion of *land*[38].

Also for *lido del mare* the definition coined by the jurisprudence does not seem to find a correspondence in the terms in use in scientific literature.

Finally, as to *litorale,* the fundamental issue is probably the lacking of a juridical definition; so that it turns out to be impossible to decide if the term may find a correspondence in the definition, ambivalent indeed, offered by scientific literature.

That said, to avoid arbitrary and misleading translations, it seemed in any case more appropriate to maintain the terms used by the Italian legislator. With the hope that a dialogue between the legislator and the scientific community finally takes place…

2.2 The non-virtuous approach: the disposal as waste

That said, if the protection of the meadows of *Posidonia* in the marine environment still presents, as seen, some problematic knots, the protection is even less effective for beach-cast leaves of *Posidonia*, which can be found in coastal areas where extensive seagrass meadows occur, sometimes assuming the characteristics of permanent structures called *banquettes.*

In spite of being recognised as an important resource for coastal ecosystems and whilst its removal could negatively affect the sediment budget of the beach, beached *Posidonia* is often removed, primarily because it is believed to reduce the touristic appeal of the site, and subsequently managed as waste. Local authorities, often under the intense pressure from public maritime domain concessionaires, tend indeed to consider beach-cast *Posidonia* as a Municipal Waste, according to Article 183 (1) (b-ter) (4) of Lg.D. no.152/2006[39], not only removing it but, moreover, sending it to disposal sites (mostly landfills).

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[37] In this sense, for instance, USACE (2002), *Coastal Engineering Manual,* cit.

[38] So that *sandy inland* or *land* (and not *sandy shore*) could be the correct translation, consistent with the origin of the term: *arenile* from *arena,* that is *sand* (www.treccani.it/vocabolario/).

[39] According to cit. Article 183 (1) (b-ter) (4), Municipal Waste includes, among the others, «waste of every nature and origin, lying on […] sea beaches». Article 183 (1) (b-ter) (4) been introduced by Lg.D. no.116/2020. But a similar provision was also present in the previous legislation (Article 184 Lg.D. no.152/2006 and Article 7 of Lg.D. no.22/1997).

In this regard, it is worth recalling that, in addition to the provision of the above mentioned Article 183 (1) (b-ter) (4) about the management of beached *Posidonia* as Urban Waste, as seen, Article 183 (1) (n) of the same Lg.D. no.152/2006, as amended by Article 14 (8) (b-bis) of Decree-Law no.91/2014, conv. into Law no.116/2014, specifies that operations *in situ* (that is, gathering, mixing, preliminary sorting and preliminary storage for the purposes of collection) concerning natural materials deriving, among the others, from coastal storms, even if mixed with materials of anthropic origin, do not fall, for the strictly necessary technical time, under the purview of waste management activities.

Treating beach-cast *Posidonia* as waste to be disposed of is an approach absolutely not in line with the criteria of waste management under a circular economy, that is: prevention, recovery and finally, but only as a last option, disposal (the well-known «waste management hierarchy»)[40]. And it is in any case worth remembering that this approach is destined to be abandoned soon, considering that, starting from 2030, the waste suitable for recovery, notably urban waste, will no longer be allowed to be disposed of in landfills (cf. Article 5 (4-bis) of Lg.D. 36/2003, introduced by Article 1 (1) (d) of Lg.D. no.121/2020).

2.3 The unsatisfying answer of the legislator and the 'substitute' role of ministerial circulars and Guidelines.

In May 2022 the Parliament has approved the so-called *Legge Salvamare* (*Sea-saving Law*), Article 5 of which, as we shall see, deals with the legal regime of beached *Posidonia.*

The provision fits into a juridical framework characterized by a patchwork of sectorial and fragmentary provisions, and therefore devoid of any overarching order. At the time of its entry into force, in fact, there were currently in force, along with the aforementioned Article 183 (1) (b-ter) (4) and Article 183 (1) (n) of Lg.D. no.152/2006, just a few provisions which, listed in a mere chronological order (the sole applicable criterion, actually), testify, as a matter of fact, about the lawmaker's scant attention to the issue in the past.

And it is a quite singular and symptomatic thing that the first intervention of the legislator is a very sectorial one, concerning the reuse of beached *Posidonia* in agriculture. Lg.D. no.75/2010, regulating fertilizers, includes it, namely, among the organic matrices that can be used, up to 20 % in weight of the initial mixture, in the production of soil conditioners and organo-mineral fertilizers, after separation of the organic fraction from the sand that might be present (cf. Annex 2 and Annex 5, respectively)[41].

The slightly later Article 39 (11) of Lg.D. no.205/2010, in turn, lays down that, in any case without prejudice to the rules concerning both the protection of the marine environment and by-products, *Posidonia* (and jellyfish, as well) can be buried on site on the conditions that their presence on the «battigia» – and the «battigia» alone – can be unequivocally ascribed to storms and that no transport or treatment occur.

As a derogation from waste regulations, it follows that, as specified by the Supreme Court of Cassation: a) «transport» means the typical waste management activity according to Article 183 (1) (n) of Lg.D. no.152/2006, while «treatment» means recovery or disposal

[40] Cf., in this respect, Article 179 et seq. of Lg.D. 152/2006.

[41] Indeed, similar provisions were already present in the previous legislation: cf. Annex 2 and Annex 5 of Lg.D. 217/2006, as amended by M.D. 22 January 2009 of the Ministry of Agricultural Food and Forestry Policies (MIPAAF).

operations, including prior preparation for them, as referred to in Article 183 (1) (s), so that merely preparatory operations to on-site burial should be reasonably allowable; b) the burden of proving the fulfilment of the conditions set out by the law for the application of the derogation lies with the one who invokes it; c) the non-compliance with these conditions should result in the application of waste regulations, rules for the repression of the offences included[42].

One last point, concerning the reference to the rules on by-products. It is quite clear that, for what concerns beach-cast *Posidonia,* the conditions for the applicability of Article 184-*bis* of Lg.D. no.152/2006 (and of its implementing Decree, M.D. no.264/2016) are lacking[43]. And it is difficult to imagine an *ope legis* extension of the rule of Article 184-*bis* similar to the one provided by the same Article 39 of Lg.D. no205/2010, at paragraph 13, according to which, as a matter of fact, the provisions of Article 184-*bis* also apply to the material removed, for hydraulic safety reasons only, from the beds of rivers, lakes and streams. That said, the reference to Article 184-*bis* should probably be interpreted as meaning that – in compliance with the other conditions laid down by the provision – the on-site burial is certain and that it will not lead to overall adverse environmental or human health impacts.

Lastly, Article 185 (1) (f) of Lg.D. no.152/2006, as modified by Article 39-*quater* (1) of Decree-Law no.41/2021 (conv. into Law no.69/2021) and by Article 35 (1) (b) (2-*bis*) of Decree-Law no.77/2021 (conv. into Law no.108/2021), specifies that beach-cast posidonia, whenever released into the same marine environment or re-used for agronomic purposes or in substitution of raw materials in productive cycles, through processes or methods which do not harm the environment or endanger human health is excluded from the application field of waste management rules[44].

In this regard, some further remarks can be made.

One the one hand, it is worth noting that the provision encompasses two different hypotheses.

The first one, concerning the release of beach-cast *Posidonia* into the marine environment, ultimately allows the closing of the natural cycle of the plant, without this resulting as a waste disposal operation (it should be remembered that, according to Annex B to Part IV of Lg.D. no.152/2006, the «release to seas» integrates a case of waste disposal).

As to the second hypothesis (re-use for agronomic purposes or in productive cycles),

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[42] Cf. Supreme Court of Cassation, III penal section, decision no.3943/2015. The Court has held the existence of the crime of illegal waste disposal in a case in which some vegetal material had been moved from the foreshore, mixed with construction waste and deposited onto a nearby site (in the case in point it had not been clarified if they were algae or plants of *Posidonia*, but according to the Court the distinction was, at that point, irrelevant).

[43] According to Article 184-*bis,* by-products are substances or objects resulting from a production process the primary aim of which is not their production and that they shall be used in the same or in a different production cycle.

[44] When Decree-Law no.41/2021 (the so-called *Decreto Sostegni, Decree Subsidies*) was being converted, the Presidency of the Senate had imposed as a condition of proposability of Article 39-*quater* that the effectiveness of the provision should end on 31 December 2022 (cf. session n.324 of 6 May 2021). This was due to the fact that the Decree-Law concerned the introduction of temporary measures to cope with the Covid emergency. The reference to the date of 31 December 2022 has been repealed by Decree-Law no.77/2021, which instead bore a series of measures regarding the *governance* of the so-called *PNRR, Piano nazionale di Ripresa e Resilienza* (*National Recovery and Resilience Plan*) and specifically, as said, by Article 35, entitled «Misure di semplificazione per la promozione dell'economia circolare» («Simplification measures for the promoting of circular economy»).

it recognises that beached *Posidonia* may not be considered as a waste to dispose of, but as a resource that, despite no longer being able to play any ecological roles, can still offer ecosystem services. In this regard, it might be useful to remember that Article 3 of M.D. no.264/2016[45] expressly excludes from its scope substances and materials to which Article 185 of Lg.D. no.152/2006 does not apply.

On the other hand, given that the regulation refers to «beach-cast posidonia», both the release into the marine environment and the utilization in agriculture or in productive cycles will need to be preceded by the sieving of the sand and the removal of anthropic materials. And in any case, the above mentioned Article 183 (1) (n) regarding on-site operations will have to be applied[46].

Lastly, it must be highlighted how, once again, the legislator has simply added another piece to a puzzle still far away from being completed.

In the face of such an unclear and dismally lacking regulatory framework, with an operation which cannot be defined as anything other than actual 'substitution', a series of documents – Circolari ministeriali (Ministerial Circulars) of the then Minister of the Environment (MATTM) and Linee guida (Guidelines) of ISPRA – have been issued, in order to determine, in the light of the above mentioned priority criteria in matters of waste management, the correct approach to the management of beached *Posidonia.*

Going into detail, the following documents have been issued over the years, sometimes on the basis of field studies:

a) the MATTM Circular no.8123/2006 (*Gestione della posidonia spiaggiata*), addressed to coastal municipalities;
b) the ISPRA Guidelines no.55/*2010 (Formazione e gestione delle banquettes di Posidonia oceanica sugli arenili)*;
c) the MATTM Circular no.8838/2019 (*Gestione degli accumuli di Posidonia oceanica spiaggiati*), addressed to Regions and autonomous Provinces;
d) the ISPRA Guidelines no.192/2020 (*La Spiaggia Ecologica: gestione sostenibile della* banquette *di* Posidonia oceanica *sugli arenili del Lazio*).

In implementing the above mentioned principles of circular economy, all the documents provided a series of recommendations – also technical – for the management of both beached *Posidonia* and the so-called «anthropic accumulations» (on these latter, see below).

With reference in particular to beach-cast *Posidonia,* both the MATTM Circular no.8838/2019 and the ISPRA Guidelines no.192/2020 (the latest published documents and the 'ripest', indeed) listed, according to a descending order of priority, a series of possible options, that is:

[45] It is the decree introducing indicative criteria to facilitate the demonstration of the compliance with the requirements for the application of the rules concerning by-products. It also provides some specific provisions concerning the use of residual biomass for biogas production and for energy production through combustion.

[46] According to G. Amendola (2021), *Ultime notizie sulla posidonia: il «decreto sostegni»,* in osservatorioagromafie.it, by including beach-cast *Posidonia* in Article 185, the Italian legislator has gone beyond Article 2 of the *Waste Framework Directive* (Directive 2008/98/EC). It is worth noting that, as to the other materials regulated by both the Directive and Article 185 (i.e. straw and other natural agricultural or forestry materials), the exclusion applies on the condition that they are non-hazardous (hence the necessity of their characterization); according to the wording of Article 185, this is not necessary for beached *Posidonia*.

a) on-site preservation;
b) temporary displacement on the same beach or onto neighbouring beaches and repositioning on the foreshore of the beach of origin for the winter season;
c) on-site burial;
d) transfer to waste recovery plants;
e) transfer to landfills;
f) re-introduction into the marine environment (still considered, at the time of the emanation of the Circular and of the Guidelines, as a waste disposal activity, given that the above mentioned provision of Article 185 (1) (f) of Lg.D. no.152/2006, as modified in 2021, had not yet entered into force).

All the documents underlined however that the selection of the type of intervention should have been carried out on a case-by-case basis, taking into account both the specificities of the landmarks and the socio-economic conditions of the sites.

The issuing of these documents aimed, as said, at filling in the many 'gaps' left by the legislator. Nevertheless, it must be stressed that – in the absence of an appropriate primary or secondary discipline – this should not have been and should not be the solution, not least for the many issues related to their enforceability and perhaps, and even before, their own unlawfulness.

Referring to circulars, due to their assuming, in this case, an «inter-subjective dimension»[47], regardless of their nature – be it interpretative («interpretativa») or regulatory («normativa»)[48] – it is quite clear that these are acts the binding nature of which is fundamentally non-existent, given that they represent nothing more than a guidance, however authoritative[49]. The question would even shift to the level of their own admissibility and lawfulness if it should be assumed that the laws in force at the time of their adoption were not sufficient to uphold them (in this case, we would probably be dealing with actual circular-regulations, that is «circolari-regolamento», as they are defined by commentators[50]).

All the more reason, due to their not being contemplated or recalled by a legal provision, no effects should be ascribed to Guidelines, except, perhaps, those consisting in that *moral suasion* which is a distinctive trait of *soft law* instruments, also in this case correlated to the authoritativeness of the source.

In both cases, these are issues that, due to their complexity, should deserve a much deeper analysis and, therefore, can only be mentioned herein.

Instead, it must pointed out that, as this concise reconstruction would highlight, the lawmaker's initiatives up to 2022 have been circumscribed to some specific and sectoral

[47] That is, circulars addressed to public entities or subjects external to the administration that has adopted them. On this point and on the forthcoming considerations about circulars and guidelines cf. M. Clarich (2022), *Manuale di diritto amministrativo,* Il Mulino, p.89 et seq.
[48] The former aiming at harmonizing the implementation of rules by public administrations, the latter issued for the purpose of orienting the exercise of the functions within the margin of discretion left by the law.
[49] Basically, in this case, there would not even be the limited efficacy that circulars acquire towards those belonging to the administrations which issued them, the non-compliance with which – although they are not binding and therefore may be waived – implies at least a duty to provide adequate reasons, which can be assessed by the judge under the profile of the excess of power.
[50] Intended as atypical acts, containing general and abstract rules the addressees of which do not belong to the public administration that issued the act.

hypotheses only, neglecting – unlike it was supposed to do – to outline which actions ought to have been primarily undertaken and without providing an adequate and coherent set of rules (including technical ones). Leaving to ministerial circulars and guidelines the task to effectively regulate the issue; thus generating, in consequence, the above mentioned perplexities.

2.4 The undertakings of the Regions about the management of beached *Posidonia* and the 'restraints' of the Constitutional Court (judgment no.86 of 2021)

Given the lack, as seen, of a comprehensive discipline set out by the state lawmaker, the 'substitute' work carried on by ministerial circulars and guidelines has been joined by a conspicuous regulatory activity by the Regions in exercising their competences in regards of, for example, waste management, protection against coastal erosion, and tourism. This by means of a congeries of different acts, from Council resolutions to guidelines, to plans or programmes, etc.; such acts, in some cases, recall the ministerial circulars, thus contributing to give them, *de facto,* a sort of efficacy by virtue of the principle of effectiveness[51].

In an attempt to balance the needs of protecting beach-cast *Posidonia* and the demands related to the tourist use of the beaches and, alternatively, to promote the recovery of the detached leaves rather than their disposal, the Region of Sardinia had recently tried to regulate the matter in a more comprehensive manner than until then the statal lawmaker had done.

Recognising the importance of beach-cast *Posidonia* in contrasting coastal erosion and as a reusable resource (Article 1, par.1), regional law no.1/2020 had in fact provided that:

a) on-site preservation had to be considered the preferable solution (Article 1, par.1);
b) should the deposits of beached *Posidonia* impede the normal fruition of the beaches during the summer season (and only in that case), it was allowed to temporarily relocate the accumulations to suitable areas of the same «arenile» or, where not available, to specifically selected suitable areas within the municipal territory (Article 1, par.1); the removal should have been possibile within the month of April and the relocation – in the beach of origin or, should it not be possible due to new deposits, in a nearby beach – had to take place, with due regard to dunes and dune vegetation, within the month of November (Article 1, par.2);
c) should municipalities deem it necessary to opt for the permanent removal of the deposits of beached *Posidonia,* these would have to be delivered preferentially to installations for recovery, in particular to composting plants (Article 1, par.3); and, to promote recovery and re-use, the law made provisions for dedicated grants (Article 1, par.9 and Article 2);
d) landfill disposal was in any case prohibited (Article 1, par.4);

[51] So, as a mere example, we can mention, among the latest, the *Linee guida per la gestione del materiale spiaggiato* (*Guidelines for the management of beached material)*, issued by the Region of Friuli Venezia Giulia to regulate the fruition of State-owned areas for tourism purposes and the conservation of natural habitats and of biodiversity (cf. Council resolution no.1066/2017); the Executive note no.42595/2021 of the Region of Sicily concerning the cleaning of beaches, including those hosting beach-cast *Posidonia;* the *Linee guida per la gestione delle biomasse vegetali spiaggiate* (*Guidelines for the management of beached vegetal biomass*) issued by the Region of Puglia (adopted in 2015 and recently updated with Council resolution no.822/2022).

e) the Region should have to set up a Plan for the management of *Posidonia,* containing general information about «spiagge» and «litorali», detailed sheets on individual sites, and guidelines for management and maintenance (Article 1, par.11).

According to the law, all the operations of collection, removal and relocation were to be carried out after separation of the organic material from the sand – which should have been used for beach nourishment in the site of origin or in the site of new destination – and from man-made waste (Article 1, pars.5 and 6); the screening operations could have been carried out both in the site of origin and in the site of new destination (Article 1, par.5).

The law also regulated the operating methods for the carrying out of the activities on the beaches, with a series of prescriptions and limitations related, for example, to the use of machinery (Article 1, par.6).

Finally, the law introduced some *ad hoc* provisions for the management of both the so called «anthropic accumulations» (Article 1, par.1) and the vegetable matter from agriculture or forestry naturally laid down, among others, on the «battigia» (Article 1, par.8); two hypotheses which, as we shall see in brief, have also been regulated by Article 5 of the so-called *Sea-saving Law* (see *infra*).

Not few provisions of the regional law, however, have failed the scrutiny of the Constitutional Court, which has declared their unconstitutionality with a very articulated decision (the no.86 of 2021) which undoubtedly, for the many points of reflection that offers, would deserve far more space. That said, it might be worth retracing, albeit in extreme synthesis, the line of argumentation followed by the Court, with specific regard to the issues related to the management of beached *Posidonia.*

First of all, the Court acknowledges that, while the protection of *Posidonia* as a marine plant is entrusted to a substantial legislation, both national and supranational, the same cannot be said for its beach-cast remains, which, however, play a key role in the conservation of coastal areas and of their ecosystems (point 4 of the *considerato in diritto*).

In the face of an effectively inadequate national legislation – so much so that the important role in the protection of the environment has been played, as the Court underlines, by the Ministerial circulars – the regional law has intervened with «the highly commendable purpose» («il ben meritevole fine») to draw up a set of norms aiming at balancing the demands to make beaches more usable in the summertime – in the context of the exclusive regional competence over «tourism» – and the needs related to the protection of the environment and of the possible recovery of the *Posidonia* (point 4 and point 5 of the *considerato in diritto*).

But, for the Court, the «highly commendable purpose» is not good enough.

In fact, both disciplines – the one relating to the protection of *Posidonia* as a marine plant and the other concerning the remains deposited on the shoreline by the wave motion – fall within the exclusive competence of the state legislator over the subject-matter «protection of the environment [and] the ecosystem» according to Article 117 (2) (s) of the Constitution. Namely, it is up to the state legislator to decide whether or not beach-cast *Posidonia* must be subject to the rules on waste management; which, indeed, in the Court's opinion, should not come to have a negative connotation, given that it only expresses the legal qualification, from which it is possible to determine which rules apply (point 4, point 8 and point 10 of the *considerato in diritto*).

Recalling its own case law, the Court points out that the Regions are allowed to exercise their competencies for the fulfilment of interests which are functionally related to the strictly environmental ones, on the condition that the regional law provides higher and stricter levels of protection than those laid down by the State (point 8 of the *considerato in diritto*).

Thus, ultimately, a regional law will have to be declared unconstitutional should it turn out that it has overlapped and contrasted the discipline laid down by the State on the subject-matter of the protection of the environment, not widening but reducing the scope of the latter (or, in other words, derogating *in pejus* to it) (point 10 of the *considerato in diritto*).

And it is in the light of this criterion that, as said, many regional provisions have been deemed unconstitutional, and particularly:

a) Article 1, par.1, with regard to the *ex-situ* temporary displacement (that is, in areas within the municipal territory), because it introduces an *in pejus* derogation from the national rules regulating waste management (collection, temporary storage, transport);
b) Article 1, par.4, as regards to the absolute prohibition of the disposal in landfills, because in contrast with the national discipline, for which it is allowed should recovery turn out to be technically or economically infeasible (Article 182 Lg.D. no.152/2006) [52];
c) Article 1, par.5, in the part where it stated that the screening operations could be carried out also in the site of the new destination (again, an *in pejus* derogation from the national discipline).

So, as a result of the decision of the Court, the provisions of the regional law concerning the management of beach-cast *Posidonia* which are still in force are those which:

a) indicate the on-site preservation as the preferable solution;
b) allow, for the summer season, the temporary relocation of the accumulations, as long as this is done in suitable areas of the same «arenile»;
c) introduce a specific discipline regulating the activities of collection, transport, and repositioning, when allowed;
d) promote and encourage, also through incentives, the recovery of beach-cast *Posidonia*;
e) introduce an obligation, for the Region, to set up a Plan for the management of *Posidonia*.

In conclusion, it seems to me that the considerations and the evaluations of the Court can be fully subscribed[53]. Anyway, what it really stands out – and that seems to shine through the words of the Court itself – is that the Italian legislator could not delay anymore to regulate appropriately the management of beach-cast *Posidonia.* However, the long-awaited answer seems not to have arrived with the *Sea-saving Law.*

[52] In this case, however, it seems to me that the derogation introduced by the regional law should be actually regarded as *in melius,* so that, by referring to the national rules which allow landfilling also in case of economic infeasibility (assessed through a cost-benefit analysis and an evaluation of possible advantages), the Court, though not saying it openly, may have rather tried, as sometimes in the past, to balance all of the interests (cf. Judgements no. 214 of 2008; no.246 of 2006; no.307 of 2003). The question cannot but be mentioned, given that the issue of the inderogability, even *in melius*, of the national rules in the light of the Constitutional Court's case law – oscillating, actually – is too broad to be discussed here. In any case, it is worth recalling what said about Article 5 (4-*bis*) of Lg.D. 36/2003 about the prohibition of landfilling for urban waste starting from 2030.

[53] With the possible exception for the considerations concerning the unconstitutionality of the provision regarding the prohibition of landfilling (see above note 52).

2.5 The management of beach-cast *Posidonia* according to Article 5 of Law 17 May 2022, no.60. *Parturient montes …*

After a very long gestation (the draft law had been presented on 25 October 2019), in May 2022, as mentioned above, the Parliament has definitively approved the so-called *Legge Salvamare* (*Sea-saving Law*) which, at Article 5, bears, among the others, a series of measures aimed at the management of beached *Posidonia*[54].

First of all, it must be underlined that the provision, ultimately resuming the content of the MATTM Circulars and the Guidelines of ISPRA, appropriately makes a distinction between:

a) the management of vegetable biomass, deriving from sea plants or algae, naturally laid down on the «lido del mare» and the «arenile» (paragraph 1) (on this, see below);
b) the management of «anthropic accumulations» consisting of fully mineralized vegetable biomass of marine origin, sand and further inert material mixed with man-made material, resulting from the relocation and subsequent accumulation in given areas (paragraph 2)[55];
c) and finally – as a residual hypothesis, whereas paragraph 1 and paragraph 2 should not be applicable – the management of products consisting of vegetable matter from agriculture or forestry naturally laid down on the «battigia», deriving from the operations referred to in Article 183 (1) (n), that is, waste management operations, and specifically all the operations aiming at separating man-made waste from the vegetable matter (paragraph 3)[56].

As to vegetable biomass deriving from sea plants or algae (not only beach-cast *Posidonia*, in fact), Article 5, paragraph 1, states that, without prejudice to the possibility of on-site preservation or removal to waste management facilities, they can be repositioned in the natural environment, also by reimmersion in the sea itself or by relocation in retrodunal areas or in other zones in any case belonging to the same physiographic unit (in the latter case, after sieving the sand and removing anthropic waste from the organic material, with recovered sand being potentially reused for beach nourishment). In case of reimmersion in the sea, this operation should be carried out, on a trial basis, in sites deemed suitable by the competent authority.

That said, it is certainly to be positively welcomed that, for the first time, a primary source of law has intervened in the subject matter, trying to summarize in a single rule the possible destinations of beach-cast vegetable biomass, *Posidonia* included. At least, this is what should be expected reading the heading of Article 5, that is: *Norme in materia di*

[54] It must be underlined, however, that the macroscopical delay was actually due to the controversial approval of the other rules of the law, regulating the recovery of waste at sea and inland waters; the text of Article 5 went unchanged through the many passages from one Chamber to the other.
[55] According to Article 5 (2), the sandy material resulting from the sieving of anthropic accumulations may: a) be excluded from the application of the rules on waste management in accordance with Article 185 of Lg.D. no.152/2006; b) recovered (and specifically, according to Annex C to Lg.D.152/2006, code R10, subjected to land treatment resulting in benefit to agriculture or ecological improvement); c) considered as a by-product according to Article 184-*bis* of the same Decree. The decision on the applicable regime is up to the «competent authority» (presumably, the authority which should grant the authorization for recovery operations).
[56] According to Article 5 (3), in this case Article 185 (1) (f) should apply.

gestione delle biomasse vegetali spiaggiate (*Provisions on the management of beach-cast vegetable biomass*).

However, it is evident that the final result did not meet the expectations and that much more could be done (see, purely by way of example, bill S 1822 – introduced on 20 May 2020 and put aside following the approval of Article 5 – which consisted of 7 articles and contained a much more exhaustive discipline).

In my opinion, in fact, the provision of the abovementioned Article 5 (1) leaves several unresolved knots.

The first thing that clearly emerges is that the list of possible destinations appears to be actually far away from taking a clear stance, that is to say that it seems to have been drawn up in total disregard of the aforementioned «waste management hierarchy» and of its priority criteria on the basis of which, it is worth remembering, ministerial circulars and guidelines had been issued. This becomes patently obvious from the fact that in Article 5 the on-site preservation is followed by the removal to waste management facilities, with no distinction between recovery and disposal activities.

Furthermore, it would have been preferable for the legislator to precisely state under what conditions vegetable biomass (and, specifically, *Posidonia*) can be removed from the beach, even if for recovery. In this regard, in fact, it is definitely correct that recovery should be given priority, compared to disposal; however, the moment beach-cast *Posidonia* is considered a resource, and as such something susceptible of acquiring economic value (also thanks, possibly, to subsidies, as in the case of the law of Sardinia), it is also clear that the law should have provided for a set of strict requirements to prevent arbitrary removal (with ministerial circulars being too 'weak' for the purpose).

But there is more. With specific regard to beach-cast *Posidonia,* the list of the possible destinations of vegetable biomass referred to in Article 5 does not include some of the hypotheses regulated by the rules which were in place at the moment of the entry into force of the *Legge Salvamare*. So that it should be questioned whether the previous rules should have to be considered implicitly repealed or whether they keep being applicated; the latter option is, in my opinion, to be preferred, so as to avoid the formation of lacunae.

Embracing this second interpretation, the overall picture of the management options of beach-cast *Posidonia,* as resulting from the combined provisions of Article 5 of the *Legge Salvamare* and the pre-existing rules in the subject matter, reorganized in the light of the waste management hierarchy (prevention, recovery, disposal), should be recomposed as follows:

a) on-site preservation; this hypothesis should include the burial on site under the conditions of Article 39 (11) of Lg.D. no.205/2010;
b) repositioning in the natural environment, including reimmersion in the sea or relocation in retrodunal areas or in other zones belonging to the same physiographic unit, under the conditions of Article 5 (and, for reimmersion in the sea, Article 185 (1) (f) of Lg.D. no.152/2006, too);
c) re-use for agronomic purposes or in substitution of raw materials in productive cycles (see Article 185 (1) (f) of Lg.D. no.152/2006); this hypothesis should include the production of fertilizers according to Lg.D. no.75/2010;
d) removal to waste management facilities for recovery (Article 5) and consequent application of Article 184-*ter* of Lg.D. no.152/2006, according to which, in lack of specific European rules (and that is the case), end-of-waste criteria (for example,

processes and treatments permitted, identification of the specific purposes and of the technical requirements of the end-product) should be identified on a case-by-case basis with a ministerial decree of the Ministry of the Ecological Transition or, failing this, with the authorization issued to each recovery facility;

e) removal to waste management facilities for disposal (Article 5).

In conclusion, Article 5 of the *Legge Salvamare* leaves, as the saying goes, a bitter taste. Once again, in fact, the legislator seems to have made no more than a mere recognition – not only extremely succinct, but even lacunose – of the management procedures of beach-cast *Posidonia*, without providing any guidance on their priority order and without establishing a coherent system of rules (including technical ones) for their implementation.

So much for any (unrealistic) aspirations towards a comprehensive and systematic regulation of the subject matter…

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