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National ICZM strategies in Germany: A spatial planning approach

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Abstract

Driven by a range of developments, German marine and coastal areas are facing profound change. Of particular importance is the rapid expansion of the offshore sector, which is characterised by the emergence of new permanent large-scale uses, the intensification of land-sea interactions and also new conflicts of use. In Germany, these developments have served as a starting point for the development of a national ICZM strategy. The Federal Office for Building and Regional Planning and the Ministry of Transport, Building and Housing are funding a project to develop suggestions for a national ICZM strategy from the point of view of spatial planning. The project attempts to design a framework suitable for the specific German context, with conflict minimisation and flexibility as its core concerns. So far, a comprehensive stocktake has identified significant trends and likely impacts on the coastal zone, and also pointed out a range of structural needs that a national strategy will need to address. Final results are expected in autumn 2004. Whilst it is clearly important to adapt spatial planning instruments to implement ICZM at a national level, it is equally important to take a more comprehensive and long-term view. In order to effectively deal with the expected changes, economic, ecological and social impacts of future trends need to be understood. Two large-scale research projects have recently been launched to provide this much needed information to supplement the development of the national strategy.

1 Introduction

Contrary to other parts of the globe, ICZM did not gain prominence in Europe until the mid-1990s. The conclusions of the EU Demonstration Programme on Integrated Coastal Zone Management led to recommendations of the European Parliament and Council that each coastal State develop a „national strategy or, where appropriate, several strategies, to implement the principles for integrated management of the coastal zone“ (European Community 2002). Strategies should be based on a comprehensive stocktake in the coastal and marine environment and carried out in partnership with relevant stakeholders. Based on recognised principles of good practice, this should for instance comprise:

- clarification of the tasks of different administrative levels,
- development of a combination of instruments to implement the principles set out in the recommendations, with special focus on bottom-up initiatives and public participation,
- implementation of appropriate legal systems,
- establishment of appropriate monitoring systems for the coastal zone.

(European Community 2002)

2 ICZM from the point of view of spatial planning

As a country with a long tradition in spatial planning, it is perhaps not surprising that one of the first efforts towards a national strategy in Germany is co-ordinated by the German Ministry of Transport, Building and Housing (BMVBW) and the Federal Office for Building and Regional Planning (BBR). In March 2003, a small project was launched to explore the potential of spatial planning in ICZM and develop suggestions for a national strategy from the point of view of spatial planning. The project explicitly focuses on the national level, although it does explore links to both international and regional ICZM. What key uses are expected to characterise German seas and coasts in the near future, and what conflicts are likely to ensue? How will the national and international policy context, for instance the European Water Framework Directive, influence the planning context on the coast? And how can the tasks of a national ICZM strategy, and with it the role of spatial planning, be delineated from regional or local approaches?

Geographically, the study area encompasses all German coasts and seas, extending from the West of Lower Saxony via the North Sea and Baltic coasts of Schleswig-Holstein to the Polish border of Mecklenburg-Pommerania. On the seaward side, the study area comprises all coastal and territorial waters including the EEZ. The landward boundary of the coastal environment is less easy to define. Here, administrative units such as coastal Federal States or local authority districts serve as structural boundaries, as does the extent to which specific impacts - ecological or social - can be traced back inland. In case of agriculture or water-borne pollution this might encompass entire catchment areas and therefore include large areas of Germany and neighbouring countries. The project is a co-operative effort, involving scientists from the Social Science Centre Berlin (WZB), the Research and Technology Centre West Coast (FTZ, Büsum) and the Institute of Geography at the University of Kiel.

2.1 Project structure

The approach of the project closely follows the requirements set out in the EU recommendations for the development of national strategies. In order to answer the above questions, a comprehensive stocktake of the coastal environment was a required first step. This snapshot vision of the coast included a description of basic environmental, economic and social parameters (e.g. population density, economic mainstays etc), as well as a description of current forms of use and future trends. The stocktake also included a description of the administrative, instituional and legal framework, as well as informal ICZM structures, networks, research and knowledge bases and monitoring programmes. The stocktake was completed in March 2004 and will shortly be available as a published report (Gee et al. 2003a – c; in German).

From this descriptive first phase, individual trends and spatial planning demands can be specified for different administrative levels. This was done by contrasting the snapshot picture of the coast with recognised international standards for ICZM. Forms of use and their trends were ranked and prioritised to ensure that the national ICZM strategy focuses on national hotspots rather than regional and local issues. A draft list of national priorities and theses for ICZM was presented and discussed at a national workshop in October 2003. These will now be developed into suggestions for a national strategy, with results expected in autumn 2004.

The following outlines the main results of the stocktake and methods used for selecting national hotspots. It will also discuss the implications of some of the results for providing a structural framework within which a national strategy will ultimately be implemented.

3 First results of the stocktake: A snapshot of current challenges

3.1 New key forms of use offshore

During the last 5 years, offshore wind energy, marine protected areas, oil and gas pipelines and access to major shipping ports have emerged as new key uses on the German coast. Offshore zones have become highly dynamic areas of development, characterised by increasing pressure on fragile ecosystems, increasing competition and growing complexity of land-sea interactions. At the same time, conflicts are preordained. Of particular concern are permanent and large-scale developments such as offshore wind farms, which are hotly debated in terms of their potential impact on wildlife, tourism and shipping security. It is clear that German territorial waters and the EEZ are set to become intensely contended spaces, with regulatory mechanisms urgently required to balance different interests.

3.2 Growing disparities on land

The notable dynamism of offshore developments is offset by contrasting developments on land. With most of Germany's coasts still classed as rural, the effects of structural changes continue to be felt in the decline of traditional industries such as agriculture and fisheries. Whilst some areas have benefitted from investments in European transport routes, other peripheral regions, most notably in Mecklenburg, are facing continuing recession and depopulation. Spin-offs from the wind energy sector have led to local investment, particularly on Schleswig-Holstein's West coast, and tourism continues to represent an economic mainstay in many coastal areas. Generally however, disparities between centres and peripheral regions are growing, as are disparities between urban centres and their peripheral regions.

3.3 Sea change in perception

Although the potential benefits of ICZM were recognised as early as the 1990s (Gee et al. 2000), ICZM was not a serious topic of debate until very recently. Reason for this is a sudden change of perception, largely due to the surge of interest in the economic potentials in the marine environment. National dynamics offshore are complemented by increasing international activity, evident in new networks of interest, transboundary initiatives and cross-sea alliances that span the North Sea and the Baltic. With both Seas turning into hubs of commerce, the traditional boundaries between land and sea are beginning to blur. Due to the increasingly complex interactions between land and sea, old mechanisms differentiating between land- and sea-based activities no longer apply. Germany too is beginning to see land and sea as a real continuum, emphasizing the need for integrated management.

3.4 Structural challenges

Despite some positive developments, Germany is still relatively ill equipped to deal with these rapid changes. In order to counter some of the above issues and provide effective ICZM in the process, clear structures need to be established to regulate the interchange between the federal level, the federal states and the regions. Competencies for decision-making need to be clearly communicated, not least in order to facilitate investment in offshore developments. Participation of local structures in national decision-making also needs to be regulated. Offshore, there have been some improvements in offshore construction and concessioning, but the system is far from being effective, streamlined and transparent. Partly, this is due to Germany's highly complex administrative structure, encompassing the Länder as additional and powerful regional players. Co-existing with these are specific development regions, such as the K.E.R.N. region in Schleswig-Holstein or the trilateral management schemes for the Wadden Sea, including their respective national, regional and local institutions and networks like the EUREGIO "Die Watten", the Interregional Wadden sea cooperation and the Common Wadden Sea Secretariat. This turns Germany into one of the most complex and multi-layered administrative landscapes ICZM will need to contend with (Tab. 1).

International	= North and Baltic Seas (Regional Seas)
National	= federal level
Länder	= federal State level
Regional	= partial federal State level, some transboundary (e.g. K.E.R.N. – Region in SH)
Local	= communal level

Table 1: German interpretations of international spatial categories

The need for additional regulatory mechanisms is gradually being recognised at political level too. Schleswig-Holstein and Lower Saxony have responded to increasing spatial competition and conflicts offshore by providing a strategic framework for ICZM (SH) and extending their spatial planning competencies to the 12 sm territorial waters (LS). The federal level has also responded, recently amending the Federal Spatial Planning Act to extend national sectoral competencies to the EEZ.

4 Basic parameters of a national ICZM strategy

The list of challenges drawn up above suggests that spatial planning in the context of ICZM primarily needs to facilitate constructive management of change. This is a continuous and adaptive process that should aim to create multifunctional spaces on coasts and seas. Rather than prescribing particular functions or forms of use, ICZM – and with it, spatial planning – should serve to weigh up risks and opportunities inherent in different forms of use as part of a wider process of social consensus-building. ICZM however is not just about conflict management, but also about improving co-ordination and communication and developing common visions. In this context, the task of the national level can be summarised as:

- maintaining the integrity of ecological and socioeconomic systems,
- providing indicators and threshold values,
- formulating political aims,
- developing appropriate processes and instruments.

How can such a framework be achieved in the German coastal context? Looking at some of the peculiarities of the German situation, the following general theses are suggested.

Firstly, Baltic and North Sea are highly distinct ecosystems, guided by different physical and biological parameters. Each comprises a range of habitats with specific threats and management needs, linked together in complex systems of interchange. Due to the inherent fragility of ecological systems, maintenance of key ecosystem functions should constitute a primary objective against which other perspectives need to be weighed.

Individual habitat needs, pressure of use and levels of threat are coupled with the complexities of the German administrative system. Together they demand differentiated and tailor-made approaches to ICZM in specific spatial units of the coast. It follows that a national strategy should explicitly support the growth of smaller ICZM regions below the federal level. These could be made of local authorities, Federal State authorities, scientific institutes and NGOs working together to guide and implement ICZM and make the national strategic framework come alive.

Secondly, although it is a useful instrument for balancing different demands of use, spatial planning needs to adapt to the special complexity of the coastal zone. As an instrument within a national strategy, spatial planning needs to be flexible enough to respond to the high degree of variability on the coast. Rather than a fixed corset, planning in the coastal and marine environment needs to act as an enabling environment within which different developments can take place. The enabling environment is held together by standards of good practice in ICZM and the principles of sustainability. Spatial planning can assist in providing an enabling environment through making available measures and instruments improving co-ordination and co-operation between the national, Länder and regional level.

5 Setting national thematic priorities

During the stocktaking exercise, a total of 16 forms of use were identified for both land and sea (Tab. 2).

Offshore wind farms
Marine protected areas
Fisheries
The sea as a public good
Sea cables
Tourism
Ports and harbours
Agriculture
Dredging
Oil and gas exploration
Dumping
Aqua- and mariculture
Military use
Coastal service centres
Nature conservation
Coastal protection

Table 2: Current significant forms of use on the German coast

But which of these should be dealt with at a national level, and which are better left to regional or local levels? One way to identify nationally significant trends is to draw up a list of thematic priorities. This essentially means ranking current forms of coastal use according to predetermined criteria, which is not an easy task. Criteria form a much debated topic within ICZM as part of discussions on quality standards. At present, Germany at least still lacks an agreed set of ICZM criteria that could be applied in the context of a national strategy. Available suggestions rarely differentiate between the political and normative level on the one hand and the descriptive-analytical level on the other, leading to an arbitrary potpourri of evaluation criteria applied to a variety of contexts. In most cases, these are not even criteria in the scientific sense because they do not include any measurable variables or scales according to which 'good' or 'bad' could be determined. This is clearly a field of research that will need to be addressed if a national strategy is to be a success (Daschkeit & Sterr 2002).

Naturally, the remit of this project does not include the development of indicators that would meet the criteria of proper science. Instead, it chose to pursue a rather more pragmatic approach, in which a set of common sense 'dimensions' was drawn from the EU ICZM criteria and used to rank the above 16 uses. The choice of term is a conscious one to mark the differentiation from criteria. The following sets out the reasoning behind choosing these dimensions and presents the results of the ranking exercise.

5.1 Basic parameters

Ranking forms of use is based on the – obvious - recognition that different forms of use have different potential to affect the coastal and marine environment. This so-called potential impact can be measured in terms of spatial extent and intensity of impact. The impact of large-scale and permanent offshore wind farms for example is more significant on both counts than, say, a sea cable, although laying a sea cable certainly implies intense short-term localised impacts. As a measure, potential impact comprises both direct and indirect effects and can be determined through ecological, spatial and aesthetic criteria. What matters in the context of a national strategy is the severity of potential impact, which can be expressed on a scale from slight to severe for intensity and from local to national for spatial extent.

Whilst this makes intuitive sense, it is clear that potential impact is no absolute measure. Rather, it is influenced by the underlying systems, and in particular their innate susceptibility to change. Sensitive systems – whether ecological, economic or social – are more likely to be negatively affected by internal or external change than their more robust counterparts. Other factors influencing potential impact include the possible cumulation of effects, the presence of management measures or technological developments that could mitigate the intensity and extent of impact (e.g. pollution).

It is argued here that a national strategy should primarily focus on large-scale forms of use with significant – i.e. notable ecological, economic or social - impact on the North Sea and Baltic Sea. The need to maintain the ecological and social integrity of both systems and constituting sub-systems

should act as a guiding principle, so that all those forms of use become national priorities that could threaten the inherent integrity of large-scale ecological, social or economic systems. This essentially reflects the principle of sustainable development, which is a central vision for a national ICZM strategy.

Spatial significance and threat to systemic integrity alone however is not enough to determine which issues should form national priorities. A national strategy must also include all those forms of use that are of federal political significance, as well as those where the federal level bears exclusive administrative responsibility. These are issues that simply cannot be decided on any other than the national level. An example for the federal political significance is offshore wind energy development, which is currently receiving strong political support in terms of subsidies and new renewable energy legislation. An example of the federal level political responsibility is EU legislation (eg. implementation of the Water Framework Directive and Marine Protected Areas) or more recently, spatial planning competencies for the EEZ. The latter also includes representation of German coastal interests at the international level.

5.2 Refining national priorities

The following four ICZM dimensions are suggested to narrow down the spectrum of potential national hotspots.

- **Dynamics of development**, which is a measure of the speed and intensity of development in individual sectors. The more dynamic a form of use and the more significant its potential impact, the closer the compatibility of the sector with other forms of use and the need to analyse its potential knock-on effects on ecological and socio-economic systems. Since dynamics of development depend on external conditions, any evaluation of dynamics can only be a snapshot, underlining the need for continuous monitoring.
- **Interconnectivity**, which is a measure of interaction with other forms of use and possible knock-on effect on surrounding systems;
- **Compatibility** of forms of use with each other, which essentially measures potential for conflict (see below),
- **Absolute significance,** which recognises that individual forms of use can be of high local significance, although they may no longer be dynamic on the national level. An example could be coastal tourism in Schleswig-Holstein, which has recently shown some signs of stagnation but still represents the most significant form of income for local communities on the Schleswig-Holstein West coast. Absolute significance also includes the emotional significance of particular forms of use for the local population, for instance fishery.

National hotspots therefore comprise all themes, trends and uses that:

- are of high spatial significance,
- show highly dynamic development on a national or regional level,
- have significant knock-on effects on other forms of use,
- are of high political significance,
- are strongly incompatible with other forms of use/have high potential for conflict, and
- are of high emotional value.

5.3 Analysing compatibility

Although it is linked to other measures such as interconnectivity, compatibility is essentially a measure of potential conflict. It stands apart from the other dimensions in that it directly affects spatial planning or the allocation of space. Spatial planning needs to maximise compatibility, avoiding an overlap of incompatible uses in order to achieve multifunctional, sustainable coasts and seas. Two strongly incompatible forms of use that both enjoy national priority status will require stronger regulation and management and careful allocation of space than two compatible forms of use.

Compatibility can be divided into the following categories:

- directly incompatible uses,
- indirectly incompatible uses,
- neutral uses,
- compatible uses.

Directly and indirectly incompatible uses have strong potential for conflict, whereas compatible forms of use might even enhance one another or yield double benefits (eg. the secondary use of offshore wind farms through mariculture). Indirectly incompatible uses comprise more remote effects where two forms of use are not directly connected, such as long-range water- or airborne pollution of coastal seas (eg. riverine inputs). It is important to note in this context that perceived conflicts can be just as significant as actual compatibility. This is the case in most issues affecting aesthetic qualities of the landscape, the sense of identity of local communities or traditional communal structures on the coast. The installation of offshore wind farms for example might be classed as highly incompatible with life on the coast or tourism by local residents, whereas this is not necessarily the view of tourists themselves. Other conflicts result from the disappearance of significant elements of the landscape, such as working fishing boats or traditional cultural landscapes.

The following matrix is a first attempt at analysing the mutual compatibility of the existing 16 uses on the North and Baltic Sea. For ease of analysis, it only considers spatial compatibility and does not take account of social or aesthetic criteria. As such, incompatibility simply indicates that two forms of use cannot occupy the same coastal or marine space and does not exclude co-existence per se, for instance as ‘peaceful neighbours’. The matrix attempts to pinpoint decision-making priorities for spatial planning. Checked against the thematic list of priorities it can serve to refine the list of national priorities. It is also a helpful way of identifying areas in need of specific management measures and instruments.

Dynamic developments on coasts and seas require continuous monitoring of trends and compatibilities of individual forms of use. ICZM needs to be understood as a proactive, iterative tool box that can only succeed in the context of a long-term planning horizon and comprehensive ecological, economic and social monitoring system.

	Offshore wind farms	Marine protected areas	Fisheries	The sea as a public good	Cables	Tourism	Shipping routes	Harbours and ports	Agriculture/run-off	Sand an gravel extraction	Oil and gas exploration	Dumping of dredged material	Aqua- and mariculture	coastal service centres	nature conservation	coastal protection	Military use
Offshore wind farms	0	X	X	X			X			X	X	X					X
Marine protected areas	X	0	X	x	X	x	X	x	X	X	X	X	X				X
Fisheries	X	X	0	x	x		X		x	x			X				X
The sea as a public good	X	x	x	0			x			X	X	X	X				X
Cables		X	x		0		x		x	X	X	X			X		
Tourism		x				0									x	x	X
Shipping and shipping routes	X	X	X	x	x		0			X	X	X	X				X
Harbours and ports		x						0					x		X		
Agriculture/run-off		X	x	x					0				x		X		
Sand and gravel extraction	X	X	x	X	X		X			0	X	X	X		X	x	
Oil and gas exploration	X	X		X	X		X			X	0	X	X				X
Dumping of dredging material	X	X		X	X		X			X	X	0	X				
Aqua- und mariculture		X	X	X			X	x	x	X	X	X	0		x		X
Coastal service centres														0	x		
Nature conservation					X	x		X	X	X			x	x	0	x	x
Coastal protection						x				x					x	0	x
Military use	X	X	X	X		X	X				X		X		x	x	0

Table 3: Estimates of compatibility of individual forms of use on coasts and seas

X = incompatible; X = conditionally compatible; Blank field = compatible; 0 = not applicable

5.4 First selection of nationally relevant themes

Based on the stocktake and the ICZM dimensions described above, a matrix was compiled to rank each individual form of use as either high, medium or low. Spatially, they were also ranked, using local, regional or national importance as basic criterium (i.e. affecting sub-regions of the North Sea and Baltic Sea, the entire North or Baltic Seas or both seas). The following uses and developments emerged as national priorities:

- **Offshore wind farms** (highly dynamic developments, strong interaction between land and sea, federal administrative responsibility in the EEZ, high political relevance, and influence on shipping safety);
- **Marine protected areas** (highly dynamic developments, international responsibilities of the federal Government, federal administrative responsibility within the EEZ)
- **Fisheries** (high political significance, federal political responsibility internationally and nationally)
- **The sea as public good** (federal responsibility for establishing an administrative framework within the EEZ, federal responsibility for legal issues, high potential for conflicts)
- **Port development** and **access to ports** (responsibility of the federal level for developing transport infrastructure, high local potential for conflict, locally highly dynamic developments),
- **Shipping safety** (high risk potential for other forms of use, federal responsibilities within the EEZ and German shipping lanes, international networks)

6 Structural priorities on a national level

Acceptance of thematic national priorities needs to be matched by appropriate changes at the structural level. "Compatibility" for instance is also relevant in terms of administrative structures, where it can act as a measure for co-ordination and integration of decision-making. The following structural demands can be distilled from EU ICZM requirements:

- **Transparency** (incorporating vertical, horizontal and territorial integration as well as open structures of decision-making, participation and information flow between relevant actors and the public),
- **Legitimacy** (focusing on the role of informal and formal decision-making processes and structures, in particular processes that are not legally binding)
- **Efficiency** (i.e. the relationship between investment in planning processes and tangible results)
- **Flexibility** (i.e. the ability of individual processes to deal with uncertainty and changing framework conditions, which is considered a prerequisite for setting priorities and developing new instruments of management).
- **Holistic, systematic view** (i.e. a comprehensive understanding of ecological and social processes irrespective of the land-sea boundary, incorporating scientific as well as ‚soft' knowledge)
- **Integrated criteria for assessment** in the process of achieving consensus (ensuring that decision-making is based on clearly documented and transparent criteria).

7 Structural measures required to meet these demands

At a structural level, the following categories and areas of responsibilities exist in Germany:

- Regional Seas (administrative framework: OSPAR, HELCOM, VASAB, EU, federal responsibility)
- Federal level (relevant for federal policy and decision-making, e.g. Renewable Energy Act, national legislation, spatial and sectoral planning within the EEZ)
- Federal States (responsible for spatial and sectoral planning within 12 sm and inland)
- Regions and local areas (responsible for implementation and local ICZM projects).

In view of the authors, the following structural measures are required to ensure effective ICZM at a national level:

(1) Institutionalisation. ICZM should be institutionalised based on the above spatial categories without creating new formal structures. Suggestions include the creation of a hierarchy of forums, tasked with networking between existing structures, facilitating horizontal and vertical communication, overcoming institutional barriers and achieving greater transparency at all levels. Willingness to co-operate, as well as agreement on mechanisms for channelling informal decisions into legitimate frameworks, form pre-conditions for success.

(2) Management offshore. Within the EEZ, a clear allocation of spatial planning responsibilities is required. This includes cross-sectoral exchange and transparent decision-making systems that view land and sea as a continuum. A central co-ordinating unit could be useful to act as a national centre and first port of call or contact point for all matters relating to the EEZ and the coastal waters.

(3) International tasks. For Germany to be an international player in ICZM, the federal level needs to become more proactive, taking on more international tasks and showing increased presence at the international level. This must however be matched by support for national research and regional initiatives for implementing ICZM, with appropriate feedback systems to ensure a free flow of information.

(4) Monitoring. As a continuous process, ICZM requires continuous monitoring of the coastal and marine environment on an ecological, socioeconomic and institutional level. This requires the establishment of scientifically sound criteria which are able to integrate these three levels.

Institutionally, the implementation of ICZM recommendations might serve as an initial stepping stone for process-oriented monitoring.

8 Where next?

The way ahead for a national ICZM strategy in Germany and the role of spatial planning within ICZM strongly depends on the fundamental understanding of ICZM either as a planning and decision-making tool or a holistic ‚philosophy' of thought (Kannen et al. 2004). If we take the philosophy line of thought, implementation of ICZM will primarily be based on enabling a national strategy to act as a guiding framework within which integrative spatial and sectoral planning can take place. In this scenario, the strategy is focussing on a high degree of flexibility, which will enable measures to respond to regional developments and new trends. Spatial planning is one of the instruments to implement this philosophy throughout its various tools and methods. Meeting developing societal visions, as well as continuous adaptation to social developments and technological innovation are prerequisites for success, as is the international integration of the national strategy. The development of the national strategy should therefore be based on:

- specifying levels of activity,
- identifying responsible actors and key contacts,
- naming intersections between spheres of activity and instruments to ensure information flow between the intersections
- documenting the specific tasks and challenges facing spatial planning, sectoral planning, politics and civil society actors.

The national strategy thus:

- provides principles,
- outlines tasks of spatial and sectoral planning,
- specifies communication and information needs and recommends ways to meet these,
- recommends instruments and concepts including decision-making tools, evaluation criteria and monitoring.

At the same time, a national strategy requires a transdisciplinary and above all universally agreed visions for coasts and seas. These should include visions of development as well as socially accepted evaluation criteria and indicators, which in turn are based on societal visions and objectives. Essentially, this means taking a more comprehensive and long-term view than the horizon of the present project. Two large-scale research projects have recently been launched to probe the wider impacts of new trends on the coast, with focus on offshore wind energy on the West coast of Schleswig-Holstein and the Oder estuary on the Mecklenburg-Pommeranian coast. Both projects are now being launched and will significantly contribute to the development of the national strategy.

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