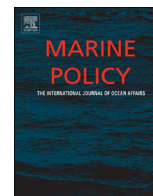




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## Marine informational governance, a conceptual framework<sup>☆</sup>

Ellen Hoefnagel<sup>\*</sup>, Birgit de Vos, Erik Buisman

LEI/Wageningen UR, Aquatic Resources, Alexanderveld 5, P.O. Box 29703, 2502 L.S. The Hague, The Netherlands

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### ABSTRACT

Marine governance involves interaction between networks and actors from different types and levels of organizations. The concept of multi-level or network governance steps away from the assumptions that supra-national and national government at the macro level is the dominant policy making unit. At all levels information is crucial, among others to overcome social dilemmas of collective action in marine resource use and management. In this paper theories of multi-level governance, of collective action, of trust and of information economics will be linked to the idea of the increasing importance of information, information technologies and information processes in environmental governance, which is termed 'informational governance'. This linking of theories and concepts results in a new and innovative framework to better understand the changing role of information in marine resource management, enterprises, institutions and actual practices of governance. The framework will help to investigate the effectiveness of informational governance in solving problems related to marine resources.

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### 1. Introduction

Marine governance is increasingly about the integration of policy objectives like responsible fisheries and the sustainable exploitation of other marine resources, attaining a good environmental status (GES), participation of stakeholders and taking account of market instruments like eco labeling. Marine governance can be defined as the sharing of policy making competencies in a system of negotiation between nested governmental institutions at several levels (international, (supra)national, regional and local) on the one hand and market parties and civil society organizations on the other in order to govern activities at sea and their consequences. Marine governance is thus about sectoral activities and policy domains, such as fishing, shipping, non-renewable and renewable energy production (oil and gas production and windmill parks), sand extraction, and nature conservation, to realize a sustainable use of marine resources, and the cooperation and involvement of market parties, civil society actors and governmental actors (UN, EU, national and sub-national) in a given marine region [1]

At all levels of marine governance information and information technology is crucial, among others to overcome social

dilemmas of collective action in natural resource use and management [2,3]. The role of information in marine governance has changed dramatically, and has partly caused the shift in governance from state governance to multi-level governance. According to Mol [4] information and informational processes, technologies, institutions, and resources linked to it are fundamentally restructuring processes, institutions, and practices of environmental governance, in a way which is essentially different from that of conventional modes of environmental governance. Where conventional governance highly relies on authoritative resources, belief in information control, and state power, in informational governance information is becoming a crucial (re)source with transformative powers for a variety of actors, although nobody is (totally) in control of information.

The term 'informational governance' can be seen as a parallel to the concepts 'information economy', or information society, which refer to the role information plays in economic and social processes. Informational governance points at the possibilities and practices of using information to visualize, emphasize, articulate, communicate and coordinate natural resource interests and rationalities about natural resources [4,7]. The link between informational governance and distribution of information is highly relevant, as access to information is not equally distributed within, or among countries. In informational governance ICT plays a vital role, as well as the idea that information is fundamentally restructuring processes, institutions and practices of resource management. Consequentially, the trend is that the (supra-)national state power tends to be replaced by a diversity of actors and multi-level networks. With new electronic equipment playing

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<sup>\*</sup> Corresponding author. Tel.: +31 703358231; fax: +31 703358196.

E-mail addresses: [ellen.hoefnagel@wur.nl](mailto:ellen.hoefnagel@wur.nl), [ellen.hoefnagel@chello.nl](mailto:ellen.hoefnagel@chello.nl) (E. Hoefnagel).

a central role and the increase in number of people and institutions having access to and making use of the information in a more globalized world, states tend to lose their monopoly as managers of public goods. Other actors, such as consumers, customers, NGOs, communities, producers are increasing their influence on policy making. For instance the information economy or society can make use of 'informational regulation' [4]. Standards for informational regulation, like informational disclosure of behavior of firms, are not anymore mainly enforced by governments, but may also very well be enforced by market parties, citizen groups or public opinion. These non-governmental powers supply regulatory pressure through market dynamics, private litigation, or moral persuasion [5]. Examples are online information via social media, websites, and (eco-)labels and benchmarks. They have the purpose of informing, persuading and convincing or tempting, and they create social support and increase awareness [6]. The conventional powers of (state) authority in environmental protection are partly replaced by informational resources, flows, and processes in new governance arrangements and networks [4]. As a consequence of these multi information flows, scientific information becomes one of the many sources of environmental information.

Within the marine research literature, the idea of informational governance is relatively novel. Several authors have stressed the importance of information in environmental governance [1,8]; however they have not elaborated on the role of information in marine governance. This paper will fill this gap by linking theories of multi-level governance, of collective action and of information economics to the concept of informational governance with the aim to understand the ways information technology restructures marine governance and changes (power) relationships. This linking of different theories will create a new and innovative framework that helps to understand the changing role of information in marine resource management, (marine) enterprises, institutions and actual practices of governance. This paper starts with a literature review on multi-level governance; information economy and regulatory information; informational governance; trust and collective action theory. Thereafter it focuses on marine informational governance and a framework to study informational governance in the marine environment is proposed.

## 2. Shifts in governance

Modern societies have in recent decades seen a destabilization of the traditional governing mechanisms and the advancement of new arrangements of governance. Noticeably, this has occurred in the private, semi-private and public spheres, and has involved local, regional, national, transnational and global levels within these spheres. Shifts have taken place in the forms and mechanisms of governance, the location of governance, governing capacities, and styles of governance [9]. The first shift that the concept of governance builds upon is the fact that political processes increasingly involve multiple actors [10]. Not only formal public institutions and organizations govern the world order, but also multinationals, private and non-governmental organizations. Secondly, the political process has increasingly become multi-level. Within the European Union sub-national actors participate in policy making and engage in interactions with EU institutions directly [11], next to interacting at the national level. The diversification of rules that shape policy practices is the third shift within governance. The state is now subject to new and informal rules itself [10], like criteria for good governance. The fourth shift is that of an increasing variety in steering mechanisms. New types of law and regulation are emerging, the so-called soft law and procedural regulation [12] e.g. resolutions and

declarations of the UN General Assembly, for example, the Universal Declaration of Human Rights; and statements, principles, codes of conduct, codes of practice. Fifthly, governance is characterized by its multiple spheres of authority. There are new loci of authority and new spaces of politics besides the conventional nation-state system of politics. Examples of actors involved in these spheres of authority are: intergovernmental bodies, multinationals, municipalities, NGOs [11]. The shifts in forms and mechanisms of governance have triggered the building of networks<sup>1</sup> of actors and interactions that go beyond the conventional boundaries of politics. The result has been the blurring of boundaries between the state, market and civil society.

## 3. Informational governance: internationalization and increased complexity

From the previous section it has become clear that from the 1990s onwards scholars see nation states no longer as governing powers, able to impose outcomes on all dimension of policy within a given territory by their own authority, but as loci from which forms of governance can be proposed, legitimated and monitored [13], pp. 190. States, societies, and physical space are no longer the core concepts for understanding modern society in the information age [14]; flows and networks replace these core concepts [7], pp. 44. Castells [14] has analyzed how a new social morphology emerged through globalization and information technology development, and coined this transition as the coming of the 'global network society' [4]. The global network society is a new way of structuring time and space through reintegrating the functional unity of different elements at distant locations, made possible by modern transport, and ICT [14].

The concept of informational governance refers to institutions and practices of (environmental) governance that are to a significant extent structured and 'ruled' by information, informational processes, informational technologies and struggles around access to, control over, and production and use of (environmental) information [7]. Mol [7] distinguishes four wider social developments that, together, have influenced the new mode of environmental governance (see Fig. 1). First, it is dependent on new information and communication technologies (ICT). An increasing number of people and institutions have access to and make use of information. ICT improves capacities and abilities of monitoring, measurement and collection of environmental information and helps to make this information publicly available through the internet in a shorter timespan than ever.

Second there is an intimate relationship between the ICT revolution and processes of globalization. Increasingly, environmental information sources are global, the information processing is global, interpretation of environmental information is global and information circulation and consumption are global. An important reason for this is that it becomes nearly impossible to define environmental problems and issues as only place bound or national, e.g. climate change, air pollution or marine contamination. The importance of international cooperation in approaching transboundary environmental problems has long been acknowledged through multilateral environmental treaties and regimes [15].

This globalization process is closely related to the third parallel development which is that of the redefinition of states roles in the management of the environment (and other domains). In 1980s nation state institutions were increasingly questioned for their deficiency in sustaining trust; loss of legitimacy; and poor

<sup>1</sup> Many authors stress the importance of policy networks that are organized across policy areas and government levels [16], and therefore they prefer to use the term 'network' governance instead of 'multilevel governance' [17].

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