Chapter 17
E-Governance and Management of Inland Water Ecosystems Using Time-Series Analysis of Fishery Production

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ABSTRACT

Governance of inland water ecosystems incorporates many components, such as the policy designation for the monitoring in a systematic basis of valuable biological parameters of the ecosystem regarding planning for the collection, assembly, organization, analysis, and dissemination of time-series fishery data in respect to forecasting for decision-making purposes from local and government stakeholders towards sustainability. E-governance engages an amplified dependence on stored data characterized by shared access to, and transmission of, in the form of digital data by public institutions using contemporary ICTs. Decision-making purposes for sustainable fishery management in inland waters whether at local, national, or regional levels, impose an improved forecasting process designed to ensure the long-term sustainability of fishery resources at levels which promote the objective of their optimum utilization and availability for future generations. Time series data concerning fishery production are often used in order to assess the present situation and consequently to forecast and enhance planning and consequently decision-making. ICTs new broadband Internet connections provide the middleware to effectively accomplish the goal of fishery data collection, their transfer to various government levels, higher levels or equal levels, the organization within a standard IT data structure, and further, the dissemination of either the results or the raw data.

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INTRODUCTION

Information and communication technologies (ICTs) are key elements supporting the growth of e-government initiatives. Public administration refers to the products and procedures that the government implements to interact with its constituents: citizens, businesses, employees, and other governments. To address the needs of these different constituents, a wide variety of government services are necessary (Rhoda & Kitlan 2008).

E-Governance is defined by UNESCO as the public sector's use of ICT aiming to improve information and service delivery, to encourage citizen participation in the decision-making process and to make government more accountable, transparent and effective (UNESCO 2010).

The use of electronic media, Internet, intranets, devices by governments aiming to interact with their citizens and manage resources is another view of e-governance. However, e-governance can be analyzed as the process for creating and adding public value with the use of ICT (Capati-Caruso, 2006).

E-governance projects occur at many levels throughout the world while e-governance has become the leading trend for achieving growth. The wider access of information for all citizens is the area of emphasis while implementing ICT tools and services for e-governance purposes with focus on the upgrading of service delivery methods and development of production efficiency **(**Prathab & Joshi 2010). Nevertheless, wider access of information for decision-making purposes can serve the arising need of the society and for the future generations for sustainable development, which is defined as the simultaneous development of quality of life for the people, social aspects, economic standards and protection of the environment. On the other hand, e-governance deals with sensitive information, such as social services, taxes, and environmental scientific data as the fishery data that should not be made available to third party private for-profit businesses.

Within that framework, the governance and management of inland waters ecosystems is another contributing factor to the "environmentally aware" society. Inland waters have been always anticipated as a significant nutrition source, especially for populations living close to lakes, rivers and other inshore water bodies. Moreover, the need for inland water is continually arising and imposes more pressure to relative activities practiced in inland fresh waters, although usually in conflict uses.

Additionally, man activities have been the main cause for the substantial alteration of most inland aquatic ecosystems. Dam construction constitutes historically a key human impact that has modified most of the rivers globally, along with draining of secondary wetlands and straightening, deepening and encasing main channels. Although lake ecosystems have been less affected, eutrophication, acidification, siltation and species introductions have as well considerably altered their character. In a number of cases the success of introduced species resulted from physical modifications of the system, which selected against native species, while in other cases a variety of suitable new species were introduced aiming to colonize new water bodies such as reservoirs, because native species could not adapt to the new ecosystems. Change of the inland ecosystems has been a major condition to be considered within the framework of sustainability. Sustainability is yet achievable although baseline sometimes changes and frequently sustainability concerns a background of new species and altered habitats. Strategies should, therefore, be based on this assumption rather than on vain attempts to restore a substantially altered ecological balance (FAO 1997).

Biologists have always defined "sustainable development in inland fisheries" with reference to the yield, which can be removed from a fish stock in infinity. However, the sustainability of a fish stock is affected by its habitat and its interrelationship