



# Electronic Governance for Sustainable Development – Conceptual framework and state of research

Elsa Estevez\*, Tomasz Janowski<sup>1</sup>

Center for Electronic Governance, United Nations University International Institute for Software Technology, P.O. Box 3058, Macao SAR, China

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## ABSTRACT

Electronic Governance (EGOV) research studies the use of Information and Communication Technologies to improve governance processes. Sustainable Development (SD) research studies possible development routes that satisfy the needs of the present generation without compromising the ability of the future generations to meet their own needs. Despite substantial progress in advancing both domains independently, little research exists at their intersection – how to utilize EGOV in support of SD. We call this intersection Electronic Governance for Sustainable Development (EGOV4SD). This paper: 1) proposes a conceptual framework for EGOV4SD, 2) proposes EGOV4SD research assessment framework and 3) applies both frameworks to determine the state of EGOV4SD research. The main contribution of the paper is establishing a foundation for EGOV4SD research.

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## 1. Introduction

The twentieth century witnessed tremendous increase in the world's population from 1.65 billion in 1900 to 6.79 billion expected in 2010 (United Nations Department of Economic and Social Affairs Population Division, 2006) and exponential growth in development – industrial output increasing by a factor of 40, energy usage by 16, and carbon and sulfur dioxide emissions by 10 (Dasgupta, 2007). It also witnessed severe environmental consequences of the chosen development paths through air and water pollution, destruction of ecosystems, extinction of wildlife and other forms of ecological degradation; and uneven progress between the nations, some showing significant increase in material wealth while others facing worsening poverty and desperation (Kemp, Parto, & Gibson, 2005).

Both problems – ecological degradation and uneven development – gave rise to the concept of Sustainable Development (Kemp et al., 2005). According to the Brundtland Report, Sustainable Development (SD) is the development that satisfies “the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987). The report recommended urgent actions focusing on population and human resources, industry, food security, species and ecosystems, urban challenges, managing the commons, energy, conflict and environmental degradation. All focal areas were further discussed at the

United Nations Conference on Environment and Development in 1992, producing, among others, global action plan called Agenda 21 (The United Nations Programme of Action from Rio, 1992) and 27 principles for environment and development as part of the Rio Declaration (United Nations Conference on Environment and Development, 1992). Other international summits followed. Most recently, governments reaffirmed their commitment to implementing Agenda 21 and the Rio Declaration (United Nations, 2012). Following such commitments, many countries around the world are formulating SD strategies and creating structures to facilitate their implementation. However, the implementation faces various challenges, from intrinsic complexity of the SD problems, through the impact of multiple crises affecting the world, to specific local challenges affecting African countries, least developed countries, landlocked developing countries, and small island developing states (United Nations, 2012).

In addition, the failure of development efforts, the inability of nations to sustain growth in most parts of the world, and limited effects of economic progress, where available, on poverty reduction and social progress all highlight the importance of governance for development. In general, governance represents the means through which government as an institution of the state acts to perform its functions – representation and regulation of societal actors, delivery of public services and policy-making (Coleman, 2008; Finger, 2005) by interacting with various societal actors (Kemp et al., 2005). Governance for development comprises economic governance with growth promotion, accountability, transparency, and pro-poor growth, all facilitating higher incomes, and political governance with empowerment, participation, access, accountability and transparency, all facilitating service availability (United Nations Department for Economic and Social Affairs, 2007). Likewise, the report highlights that the linkage between development and economic or

\* Corresponding author. Fax: +853 28712940.

E-mail addresses: [elsa@iist.unu.edu](mailto:elsa@iist.unu.edu) (E. Estevez), [tj@iist.unu.edu](mailto:tj@iist.unu.edu) (T. Janowski).

<sup>1</sup> Fax: +853 28712940.

political governance is established via good governance: pro-poor policy framework, public administration and civil service reform, and decentralization and service delivery. The World Bank and the Organization for Economic Cooperation and Development also refer to: political stability, rule of law, control of corruption and accountability (Nanda, 2006), and openness, participation, accountability, efficiency and sensitivity to the local context (Organization for Economic Cooperation and Development, 2002). Since governance is central to any development effort and good governance is a necessary condition in achieving any form of development, governing the SD process is critical. This includes (Kemp et al., 2005): engaging citizens in the SD process, ensuring long-term inter-generational perspective in policy-making, and facilitating horizontal and vertical policy integration to ensure coherency in government decision-making processes.

Increasingly, governance processes are supported by Information and Communication Technologies (ICTs), with new governance paradigms emerging due to progress in ICT, globalization and increasing influence of non-governmental organizations (Coleman, 2008; Finger, 2005). These include: redistribution of powers hitherto concentrated within government among citizens; enhanced mechanisms for government-wide coordination in policy and information exchange; stronger regulation due to co-production of public goods and services between public and non-public actors; and relying on social networks for citizens to express their collective voice and pursue action. In general, Electronic Governance (EGOV) entails strategic use of ICT to support governance processes including ICT-enabled transformation in the relationships between government and citizens, businesses and other arms of government. In particular, EGOV helps to: deliver public services over electronic and traditional channels, engage various social actors in decision- and policy-making processes and regulate the activities of such actors (Coleman, 2008; Finger, 2005), as well as generate and circulate official communication in digital forms (Coleman, 2008) to reduce information asymmetry in the society (Finger, 2005).

Given the relevance of governance to SD processes and the relevance of ICT to governance, this paper applies the EGOV concept to support the SD domain – Electronic Governance for Sustainable Development (EGOV4SD). EGOV4SD focuses on the use of ICT to enable the governance of the SD process (Janowski, Ojo, & Estevez, 2010) through: enhancing the efficiency of internal government operations with SD-oriented ICT strategies, processes, architectures and infrastructures; applying ICT to support the provision of accessible services needed by the poor and small businesses, delivered at the minimum environmental cost; using ICT to increase participation of the poor in government decision- and policy-making processes; and others. However, despite substantial progress in advancing the EGOV and SD domains independently, we are not aware of any efforts to define, conceptualize and landscape the EGOV4SD domain, to explore how EGOV could support the SD process. This paper fills this important gap. First, it presents a conceptual framework for EGOV4SD that helps define the boundaries and dimensions of the domain based on the boundaries and dimensions of the main

contributing domains – EGOV and SD. Second, it defines a methodology for analyzing EGOV4SD research, based on the conceptual framework. Third, it presents how the methodology was applied to review related literature and the outcome of this review – the landscape of EGOV4SD research.

The rest of the paper is structured as follows. Section 2 provides the conceptual framework for EGOV4SD. Section 3 explains the methodology followed in this paper to assess the state of EGOV4SD research. Section 4 proposes the EGOV4SD research assessment framework. Sections 5 documents how the data for EGOV4SD research assessment was collected while Section 6 documents the analysis of this data. Section 7 presents the state of EGOV4SD research, Section 8 contains a discussion, and the final Section 9 provides some conclusions and plans for future work.

## 2. Conceptual framework

The current section gradually develops the conceptual framework for EGOV4SD applied in this paper, from EGOV (Section 2.1) through SD (Section 2.2) to EGOV4SD (Section 2.3).

### 2.1. Electronic Governance

Both Electronic Government and Electronic Governance received numerous definitions in the literature, none of them becoming an accepted standard. For example, Organization for Economic Cooperation and Development (2003 on pp. 23) introduced four definitions of Electronic Government: 1) internet service delivery and other internet-based activities by government; 2) all uses of ICT by government; 3) transforming public administration through the use of ICT; and 4) the use of ICT, particularly the internet, as a tool to achieve a better government. As depicted in Fig. 1, Grönlund and Horan (2005 on pp. 721) further mapped these definitions into a democratic model of society with interrelated spheres of the political system, administrative system and civil society and the four definitions of Electronic Government mapped into these spheres: definition 1 belongs to the intersection between the administrative system and the civil society, definition 2 belongs to the administrative system, definition 3 belongs to the intersections between the administrative and political systems and between the administrative system and the civil society, and definition 4 belongs to the intersection between all three spheres.

Grönlund and Horan, (2005) also pointed out the difference between Electronic Government referring to what is happening within government, and Electronic Governance (EGOV) referring to the whole system involved in managing the society. Similarly, “e-Governance comprises the use of Information and Communication Technologies (ICTs) to support public services, government administration, democratic processes, and relationships among citizens, civil society, the private sector, and the state” according to Dawes (2008, pp. 586).

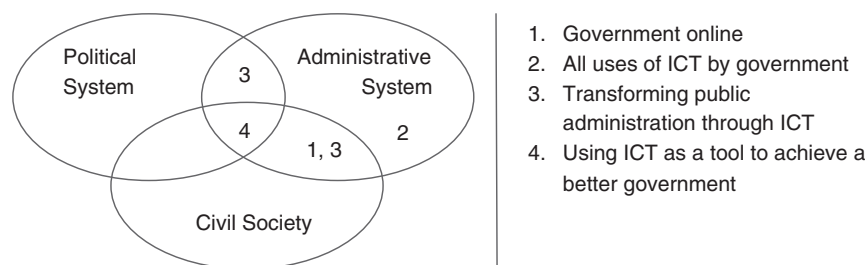


Fig. 1. Democratic model of Society and Electronic Government (Grönlund & Horan, 2005; Organization for Economic Cooperation and Development, 2003).

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