A THEORETICAL DISCUSSION ON CLIMATE CHANGE, PORT ADAPTATION STRATEGIES AND INSTITUTIONS

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Introduction

Climate change is at the forefront due to its potential catastrophic risks posed to human lives and activities (Keohane and Victor, 2010; UNECE, 2010; Intergovernmental Panel on Climate Change, 2012). Schaeffer *et al.* (2012) warn that by 2100, sea level may be up to 80 cm higher than today. It is now probably too late to avoid all the deleterious effects of climate change, in no small part due to uncertainties on how the problem should be addressed (Applegate, 2010). Thus, adaptation is not a choice but a necessity.

Located along shorelines, ports are especially vulnerable to the risks that climate change can pose to their facilities and operations (Becker *et al.*, 2012). Despite some strong evidences suggesting that institutional systems will influence climate change adaptation due to ambiguity and competing political interests (Wheeler *et al.*, 2009; Keohane and Victor, 2010; Preston *et al.*, 2011; Osthorst and Manz, 2012), with UNCTAD (2012) calling for both 'hard' and 'soft' strategies to develop resilience to climate change impacts, most attention focuses on physical layouts and technical details of capital-intensive engineering projects, e.g., elevation, levee, dykes, etc. (National Research Council of the USA, or NRC, 2010). Adaptation is clearly under-researched especially in terms of the reduction of uncertainties in decision-making, the development of effective public policies and institutional practice.

Recognizing such a problem, this paper theoretically discusses the dilemmas of climate adaptation planning from the institutional perspective. It queries whether climate change adaptation has catalyzed a transformation of the nature and practice of planning in this case study. This study enriches institutional theory and initiates new thought in planning and decision-making, both in climate change and other public policy choices. It is a germane reminder to planners and policymakers that effective climate change adaptation is not limited to engineering technicalities but is an ideological issue that requires a fundamental shift of the existing political, economic and social paradigms.

A Theoretical Discussion on Institutions and Climate Change Adaptation Planning in Ports

An institutional system consists of standard practices that structure relationships between agents, both public and private. It imposes preceding constraints on policymaking choices and strategic directions (March and Olsen, 1989; Steinmo *et al.*, 1992; Hall and Taylor, 1998). It countervails dramatic changes, restricts alternatives and diminishes the rationalities of decision-making to predictable paths according to norms and practices based on culture and hegemonic values of the time (Fuchs and Scharmanski, 2009; Glassman, 2004) even when they may have become obsolete (North, 1990; Hodgson, 1993). Institutional systems solidify generally accepted values into predictable practices so as to deter undesirable social outcomes due to individual actions. Having say so, it can 'stretch' (Strambach, 2010; Notteboom *et al.*, 2013) to deal with changing circumstances. The stretching usually involves two components, namely the institutional environment and the institutional arrangement. The former refers to informal conventions and norms of which organizations, being parts of a given community, should conform so as to gain legitimacy and general support, and sometimes made compulsory through legally binding rules and regulations (Martin, 2000). It also includes the mindsets of individuals and political elites. The institutional environment forms the basis for compromise (Gutmann and Thompson, 2012), operational characteristics, and receptiveness to new knowledge (Boxer, 1991). The institutional arrangement refers to

agreements and organizational structures between agents so as to achieve certain objectives or programs governed by the institutional environment, like firms, bureaucracy, policies and cooperative networks.

Indeed, the influence of the institutional system on port planning has been widely studied (for instance, Buitelaar *et al.*, 2007; Ng and Pallis, 2010; Notteboom *et al.*, 2013). However, these authors largely follow a neo-institutional approach that investigates how established institutional environments structure cognition and guide decision-making. How and why the institutional system matter has remained largely untouched. Facing new circumstances like climate change, institutional agents may take spontaneous initiatives to restructure the institutional arrangements, as exemplified by the neoliberal institutional and management reforms among ports around the world in the past two decades.

However, decision-making gets more complicated within an uncertain institutional environment consisting of individual mindsets, ambivalent interests and diversified localities with individualistic and pluralistic traditions (Fishman, 2000). Climate adaptation planning possesses such an uncertain environment due to scarce legal standards, direct precedents and readily transferrable scientific knowledge. This causes inadequate understanding, and thus inadequate input, from stakeholders and the general public. With no direct paths to depend on, the institutional environment is actually a vacuum yet to be filled. Planning should provide clear guidance and practical actions to lead the direction of development, especially in the generation of first plans with many (untried) alternatives to choose from (cf. Wheeler, 2008; Preston *et al.*, 2011; Sager, 2011). Further problems arise when the new circumstance has yet to reach a critical juncture (Buitelaar *et al.*, 2007) and all parties do not yet deem significant transformation necessary or immediate.

Conclusion and Implications for Future Research

From the above discussion, it is clear that institutions will play a significant role in affecting the process of climate adaptation planning,

as well as its effective implementation. Hence, without doubt, it would be a far-reaching attempt for any ports to address climate change adaptation. By doing so, it would trigger some restructuring within ports' institutional arrangements and demonstrated planners' awareness that paradigm shift from previous planning norms and practices were necessary.

However, uncertainty in the institutional environment and the likely speculative attitude of major participants would strengthen the perception that political controversies would hinder future implementation. Without resolving these challenges, climate adaptation plans might become more of a visionary guidance tool rather than a real action plan, and planners might be forced to 'muddle through' the planning process by undertaking a highly evolutionary approach. Perhaps this should not be surprising, as the objective of the institutional system was to deter undesired shocks to societies due to individual actions (Weber, 1922). Under such an uncertain institutional environment, the neoliberal ideology, which emphasizes minimal public intervention (Harvey, 2005), might continue to dominate planning decisions. Under such influence, planners might be forced to adopt an evolutionary approach in climate adaptation planning, even if they favor a more revolutionary approach.

Last but not least, the paper is an early attempt to theoretically dissect at climate change adaptation from an institutional perspective. The authors believe that institutional systems would affect the planning process, and institutional deficiency might hinder the effective tackling of climate adaptation. It highlights various important structural principles of climate adaptation planning, and existing loopholes that require paradigm shift solutions. The impacts posed by climate change to the world would likely become even more explicit in the foreseeable future, and continuous research germane to reduce uncertainty in decision-making dedicated to climate adaptation is necessary. Understanding such, further research is urgently required on investigating how institutional systems affect climate adaptation planning. The impacts of the findings can be substantial and critical for the long-term well being of our future generations.

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