Chapter 1
Complexity and Uncertainty in Late-Stage Technocracy: The Case of Urban Sustainability

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ABSTRACT

As sites of economic, political, and social convergence, cities absorb the earliest effects of global crises. These dynamics are observable also in environmental crises and resilience – longer-running challenges to legacy models of urban governance. Shifting epistemic and practical contexts invite scholarship to more thoroughly examine the dynamics of urban policy with regard to the 'localization' of the Sustainable Development Goals (SDGs) and the contribution of city governments to global environmental policy. This chapter examines urban sustainability as an ontologically complex or 'wicked' policy problem, a framing concept with a history in the urban planning and policy literatures but deserving fresh revisitation. The argument is that a 'complexity science' approach that avoids narrative capture is needed to better understand global environmental crisis and its manifestation in cities. This approach seeks to challenge the predominance of linear, atomistic, and reductionist perspectives that remain embedded in policy thinking.

1. INTRODUCTION

Urban policymaking is characterized by the increasing convergence of complex problems. These include not only local challenges like housing affordability and traffic management but also the localized impacts of global crises like pandemics, climate change, investment and capital flow dynamics, and others. This chapter explores how urban problems and the localization of global problems can be understood and addressed through the perspective of complexity science. This conceptual orientation is one way to

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unseat the predominance of linear, atomistic, and reductionist approaches to managing urban crises that engage only what is measured, focus on optimization of decontextualized metrics, and fail to recognize systemic interconnectedness.

This chapter outlines policymaking approaches regarding complex problems in an urban context, explores the application of complexity science to crisis response, and applies the complexity science approach to urban policy through soft systems methodology. The analysis illustrates how a crisis can be explored thoroughly for its complexity and used to draw practical insights. The chapter begins with a review of the mechanics of urban management in the current era, focusing on two salient issues: technology (e.g., 'civic technology' and Fourth Industrial Revolution technologies) and external engagement by government parties (e.g., bilateral and multilateral global urban networks). These issues are selected because they play the greatest role, according to the current urban sustainability discourse, in helping cities fortify themselves against climate threats and meet certain SDG targets (e.g., through adoption of SDGs in urban plans – or, 'SDG localization'). The chapter then examines the theoretical dimensions and applicability of a 'complexity mindset' as a crisis response frame for urban sustainability and crisis management. Examples of complexity mindset applications are outlined, including leadership, collaborative policymaking, and systems-thinking tools. The conclusion brings these ideas together under the broader political theme of public trust in expertise and technocracy, populist 'pushback' against science and technology, and the implications for new ways of thinking about urban resilience, smart cities, and the 'wickedness' of the global sustainability crisis.

2. MECHANICS OF URBAN GOVERNANCE IN THE MODERN ERA

2.1 Technology

The evolving role of technology in daily life, urban planning, and policy practice has substantial implications for SDG localization efforts. Technology's contribution to urban policy (particularly monitoring and forecasting) and to sustainability efforts more generally is evident in the near ubiquitous use of data and its integration into decisionmaking processes. At the same time, the potential for technology to advance SDG localization goes beyond data. AI is already transforming how information is gathered and processed. In the realm of industry – where much of the sustainability crisis originated – the advent of the so-called 'fourth industrial revolution' (hereafter, '4IR') presents some opportunities for technology to reduce the impact of production on the environment (e.g., through better monitoring and analysis and efficiency gains; for further discussion, see Herweijer et al., 2018). It is clear that the narrative concerning the role of technology in urban sustainability is largely sanguine. For example, at a UN Industrial Development Organization (UNIDO) conference in 2019,[1] the director of Adapt, a South Africa-based organization focused on sustainable development, stated that "this digital revolution, like the industrial revolutions before it, promises jobs, increased livings standards, and better health for more people." A 2017 PwC report[2] describes ten types of emerging 4IR technologies (p. 2) and recommends several policy interventions including robust governance structures and safeguards, policy development support to individual countries, and additional research.

The potential of 4IR to transform industrial platforms and the future of work enjoys an already copious body of research (Ślusarczyk, 2018; Hattingh, 2018), and most discussion focuses on application in industry and the private sector. However, there is growing anticipation that 4IR and other emerging