

Translational Systems Sciences 3

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Systems Science for Complex Policy Making

A Study of Indonesia

 Springer

Translational Systems Sciences

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In 1956, Kenneth Boulding explained the concept of General Systems Theory as a *skeleton of science*. He describes that it hopes to develop something like a “spectrum” of theories—a system of systems which may perform the function of a “gestalt” in theoretical construction. Such “gestalts” in special fields have been of great value in directing research towards the gaps which they reveal.

There were, at that time, other important conceptual frameworks and theories, such as cybernetics. Additional theories and applications developed later, including synergetics, cognitive science, complex adaptive systems, and many others. Some focused on principles within specific domains of knowledge and others crossed areas of knowledge and practice, along the spectrum described by Boulding.

Also in 1956, the Society for General Systems Research (now the International Society for the Systems Sciences) was founded. One of the concerns of the founders, even then, was the state of the human condition, and what science could do about it.

The present Translational Systems Sciences book series aims at cultivating a new frontier of systems sciences for contributing to the need for practical applications that benefit people.

The concept of translational research originally comes from medical science for enhancing human health and well-being. Translational medical research is often labeled as “Bench to Bedside.” It places emphasis on translating the findings in basic research (*at bench*) more quickly and efficiently into medical practice (*at bedside*). At the same time, needs and demands from practice drive the development of new and innovative ideas and concepts. In this tightly coupled process it is essential to remove barriers to multi-disciplinary collaboration.

The present series attempts to bridge and integrate basic research founded in systems concepts, logic, theories and models with systems practices and methodologies, into a process of systems research. Since both bench and bedside involve diverse stakeholder groups, including researchers, practitioners and users, translational systems science works to create common platforms for language to activate the “bench to bedside” cycle.

In order to create a resilient and sustainable society in the twenty-first century, we unquestionably need open social innovation through which we create new social values, and realize them in society by connecting diverse ideas and developing new solutions. We assume three types of social values, namely: (1) values relevant to social infrastructure such as safety, security, and amenity; (2) values created by innovation in business, economics, and management practices; and, (3) values necessary for community sustainability brought about by conflict resolution and consensus building.

The series will first approach these social values from a systems science perspective by drawing on a range of disciplines in trans-disciplinary and cross-cultural ways. They may include social systems theory, sociology, business administration, management information science, organization science, computational mathematical organization theory, economics, evolutionary economics, international political science, jurisprudence, policy science, socio-information studies, cognitive science, artificial intelligence, complex adaptive systems theory, philosophy of science, and other related disciplines. In addition, this series will promote translational systems science as a means of scientific research that facilitates the translation of findings from basic science to practical applications, and vice versa.

We believe that this book series should advance a new frontier in systems sciences by presenting theoretical and conceptual frameworks, as well as theories for design and application, for twenty-first-century socioeconomic systems in a translational and trans-disciplinary context.

More information about this series at <http://www.springer.com/series/11213>

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About This Book

This volume has applied a systems science perspective to complex policy-making dynamics, using the case of Indonesia to illustrate the concepts. Indonesia is an archipelago with a high heterogeneity. Its people consist of 1340 tribes that scattered over 17,508 islands. Every region has different natural strengths and conditions. In the national development process, all regions depend on one another while optimizing their own conditions. In addition to this diversity, Indonesia also employs a democratic system of government with high regional autonomy. A democratic government puts a high value on individual freedom, but on the other hand, it has caused conflicts of interest to occur more frequently. High regional autonomy also often causes problems in coordination among agencies and regional governments. This uniqueness creates a kind of complexity that is rarely found in other countries. These daily complexities require intensive interaction, negotiation processes, and coordination. Such necessities should be considered in public policy making and in managing the implementation of national development programs. In this context, common theories and best practices that generated on the basis of more simplified assumptions are often failed. Systems science offers a way of thinking that can take these issues into account and potentially overcome these complexities. However, the efforts to apply systems science massively and continuously in real policy making by involving many stakeholders are still rarely carried out. The first part of the book discusses the gap between the existing public policy-making approach and the needs in the real world. After that, the characteristics of the appropriate policy-making process in a complex environment and how this process can be carried are described. In later sections, important systems science concepts that can be applied in managing these complexities are discussed. Last but not least, the efforts to apply these concepts in real cases in Indonesia are described.

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Supporting Decision Making for a Republic Under a Complex System

Kuntoro Mangkusubroto, Dhanan Sarwo Utomo, and Dyah Ramadhani

Abstract This article discusses the complexity of policy development at the national level in the real world. In this discussion, an action research conducted by the authors in the REDD+ case in Indonesia is presented. In this action research, we give descriptions on how to orchestrate the interaction among various actors at international, national and local level. These efforts have produced many benefits, e.g. various sustainable development programmes that have been implemented in various regions in Indonesia.

Introduction

Indonesia stretches from Aceh to Papua (one-eighth of the globe circle), consisting of more than 13,400 islands and territorial waters extending up to 3,257,483 km².¹ The archipelago contains more than 400 ethnics who speak different languages. The country's population has reached 245 million in 2014. Economically, the country has been developing briskly. The GDP was USD 870 billion in 2013, making it one of the 20 largest economies around the world. The GDP per capita (in constant 2005 USD) rose significantly from only USD 840 in the early 1990s to USD 1810 in 2013.² Indonesia may well be considered a giant compared to its neighbouring countries in Southeast Asia.

¹Data from Badan Informasi Geospasial, Republik Indonesia. Accessed from <http://tanahair.indonesia.go.id/home/> on 9th April 2015

²GDP is in constant 2005 US dollars. Source: World Development Indicators database, World Bank. Accessed from <http://data.worldbank.org/indicator> on 9th April 2015

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Yet the immense growth does not translate into any distinction on how the government of Indonesia works compared to its peers. Government bureaucracy approach is sectoral in nature. Ministries are designed to fulfil only a single sector or purpose such as the Ministry of Infrastructure, Ministry of Health or Ministry of Energy. In reality, challenges are becoming more cross-sectoral and multidimensional. One cannot separate the issue of health from poverty nor solve an environmental issue without hinging on energy and education. Simply creating solutions for one sole purpose will deem to beat its own goal. The Indonesian government like most governments is still struggling to adapt to the complexity of problems where factors are intertwined more than ever.

As the fourth largest democracy, Indonesia is faced with definite coalition in the government and constant compromise in the cabinet. It is even more severe in a divergent political condition reflected by the multiparty system adopted by Indonesia. With fifteen (15) parties recognised in the 2014 election, the multiparty system requires the need to develop a coalition in the government, which led to compromise in day-to-day cabinet decision-making. One ruling government is usually consisted of four to five party coalitions with one to two major parties as opposition. Despite the 2009–2014 administration that has managed to have six supporting parties within the cabinet, the government coalition is only supported by four parties. Moreover, the winning party of 2014 controls only less than 30 % of the parliament. Thus, more compromise in both the executive body and legislative body is given. Following the reform in 1998, Indonesia has chosen to embark on democratisation and decentralisation at the same time. This is a momentous change in the country's political reform from a centralised and top-down system to a decentralised and bottom-up mechanism.

The people directly elect the president, governors, and heads of districts. Indonesia, now comprising 34 provinces and 506 municipalities and districts, conducts more elections for each of the governance levels from national to district leaders including their legislative counterparts.

This situation is complicated by the implementation of the decentralisation system whereby the local government has been given certain power and authority and the central government has no direct control over it. Starting with Regulation No. 22 of 1999 and subsequently with Regulation No. 32 of 2004, the central government's authority has shrunk into foreign affairs; defence; security; judicial, religious, and national monetary; and fiscal affairs. The sectoral approach is also mimicked by local governments as government budget and disbursement is structured and based on the existing ministries. Silo mindset and work process coupled with lack of understanding to intricacy of challenges led to poor delivery of public services and slow debottlenecking of obstacles, if any. Indonesia has potentially delegated more authority to local leaders than what they are now capable to manage.

One observed conclusion is for a policy to be made, whether in the local or national government; it needs more than just data and analysis. Policy is a product of rigorous interplay between actors, subject to their compromise and coalition.

Policy Making in National Complex

This section discusses the definition of the policy development process that is used in this chapter, its scope, and the stages in this process. The terms strategy and policy are often used interchangeably. In the strategic management literatures, for example, Rao et al. (2004) have stated that a strategy is defined as a comprehensive plan of action that is designed to meet specific objectives, in a certain time limit. On the other hand, a policy is defined as guidance for an organisation to make appropriate decisions in the long run. Although both terms imply a decision-making process, the term policy is often considered to have a broader meaning and also used in more fields. For simplicity, this paper uses the term policy in referring to the decision-making activities that are carried out to achieve the desired objectives.

At the national level, authors observed that there are at least three types of triggers for the policy development process, i.e.:

1. The need to improve the administration performance. For example, to improve the performance of the bureaucracy in Indonesia, the President established a working unit known as the President's Delivery Unit for Development Monitoring and Oversight (UKP4). The objectives of this unit are to oversee the progress of ministry and agency programmes, to synergise the working process across ministries and to solve the occurring bottleneck. The authors are actively involved in this unit.
2. The need to respond to state emergencies, for example, the reconstruction process in Indonesia (Aceh and Nias region) after the 2004 tsunami. Some of the authors were directly involved in the Rehabilitation and Reconstruction Agency for Aceh and Nias. This agency was responsible for managing international aid in the reconstruction effort. Some policies, such as the geographic information system to show how the aid is used, are made in an effort to transparently manage the received aid.
3. The need to respond to global challenges, for example, the policies that are made as efforts to address the climate change. Some of the authors are actively involved in the REDD+ task force which is responsible for designing and implementing policies of sustainable forest use.

Although the policy development process may have different triggers, the activities that are carried out and the requirements in each activity are generally the same. Summarising the information from several literatures, the policy development process can be depicted as a cycle as shown in Fig. 1.

Setting Direction This stage aims to decide the future that will be pursued, as well as issues and problems that can arise in achieving this desired future. In the public policy field, this activity is often known as agenda setting (Jann and Wegrich 2007). There are many reasons that may trigger this activity. In the public sector, this activity could be triggered when there are stakeholders who feel that the current

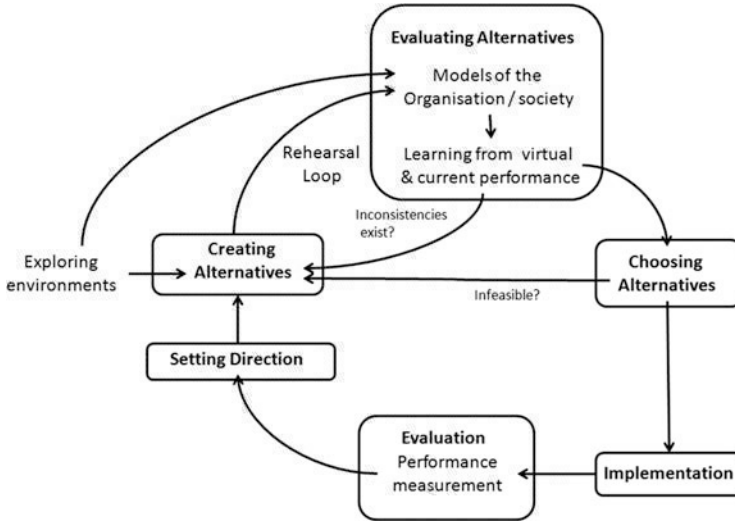


Fig. 1 Stages in policy development process

conditions do not meet their expectations or if there are several stakeholders whose interests are conflicting with each other (Jann and Wegrich 2007). In an organisation, this activity might be triggered when there are gaps between their vision, mission or goals and their performance (Dyson et al. 2007). These two reasons imply that the stakeholders already know the desired future or the conditions that may happen in the future. However, this activity may also be performed by stakeholders to design the future conditions that may be good and more desirable to them. The latter pattern is also known as interactive planning (Ackoff 1974; Ackoff 2001).

Creating Alternatives This stage aims to identify various alternatives that may help in achieving the desired future. In public policy, this stage is often called as the policy formulation stage (Jann and Wegrich 2007). At this stage the stakeholders require information that may help them to understand the features and the uncertainties of the problem they are facing. This information gathering effort is often known as shaping (Friend and Hickling 2005) or exploring internal and external environments (Dyson et al. 2007).

Evaluating Alternatives In their book Friend and Hickling (2005) call this stage a comparing stage. In this stage, stakeholders construct and agree on the criteria that will be used (Friend and Hickling 2005) and then compare the performance of each alternative based on these criteria. This performance can be evaluated based on the social, environmental or economic impacts (Milano et al. 2014) of each of the alternatives, costs and benefits, the necessary coordination and conflict resolution if there are any (Jann and Wegrich 2007). This performance can also be measured by