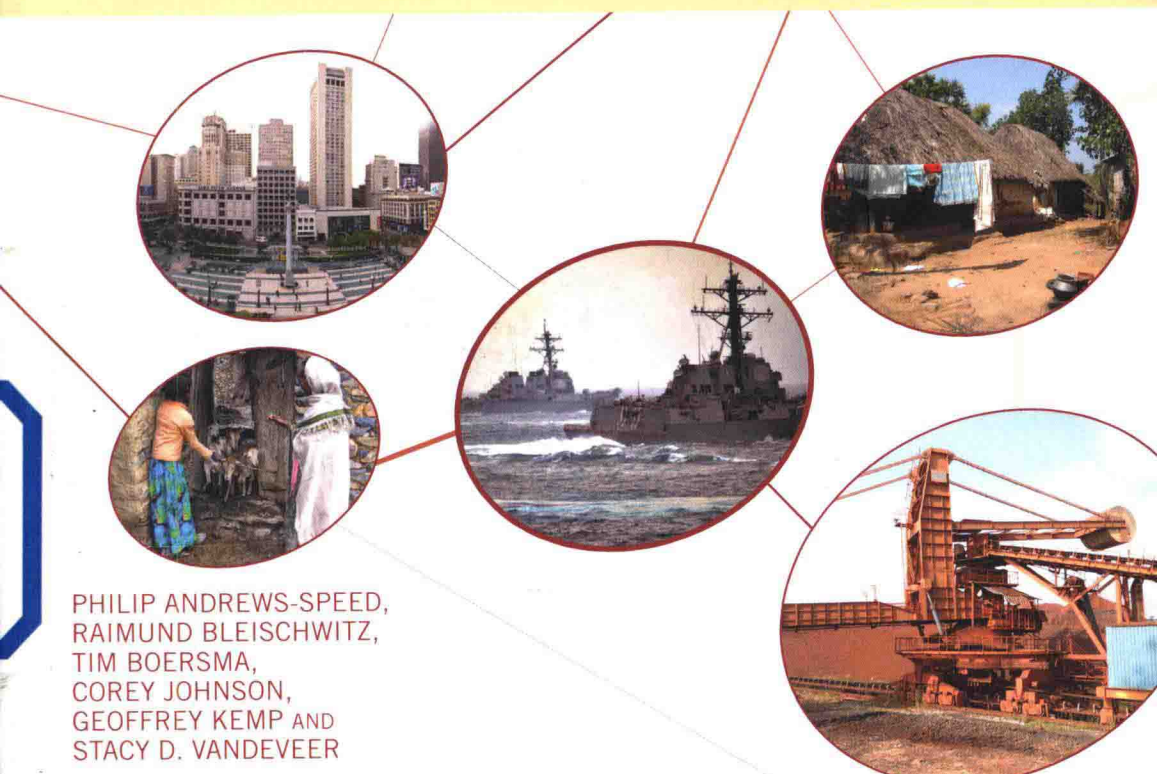


WANT, WASTE OR WAR?

The global resource nexus and the struggle for land, energy, food, water and minerals



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WANT, WASTE OR WAR?

In addition to environmental change, the structure and trends of global politics and the economy are also changing as more countries join the ranks of the world's largest economies with their resource-intensive patterns. The nexus approach, conceptualized as attention to resource connections and their governance ramifications, calls attention to the sustainability of contemporary consumer resource use, lifestyles and supply chains. This book sets out an analytical framework for understanding these nexus issues and the related governance challenges and opportunities.

It sheds light on the resource nexus in three realms: markets, interstate relations and local human security. These three realms are the organizing principle of three chapters, before the analysis turns to crosscutting case studies including shale gas, migration, lifestyle changes and resource efficiency, nitrogen fertilizer and food systems, water and the Nile Basin, climate change and security and defense spending. The key issues revolve around competition and conflict over finite natural resources. The authors highlight opportunities to improve both the understanding of nexus challenges and their governance. They critically discuss a global governance approach versus polycentric and multilevel approaches and the lack of those dimensions in many theories of international relations.

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PART 1

Struggling in the global resource nexus

1

INTRODUCTION

Resource struggles and hard choices

Globally, consumption of nearly every resource – oil, gas, metals, construction materials, agricultural commodities, water and land – increases each year. The material throughput of the global economy and the consumer lifestyles driving it rises inexorably, if unevenly. Meanwhile, most resources are wasted in staggering quantities along their life cycles, as illustrated by food markets, water and fertilizer use, energy and other raw materials. As global demand for most resources grows and the supply of some of these resources diminishes, the interconnections among energy, minerals, water, food and land become more complex and more difficult to understand and anticipate. These interlinkages risk creating conditions for a perfect storm – events that seem to occur all of a sudden across many locations. Political tensions in the South China Sea have obvious roots in access to fishery rights, but also in access to fuels and minerals, and are likely to have international ramifications on global shipping lanes. What happens if people start rioting because prices for food, water and energy skyrocket? And what if all this happens in fragile countries that supply the world economy with strategic resources? Can this complex global resource nexus be governed? What happens to our thinking and our governance institutions when we add the growing list of impacts and threats posed by climate change?

All of the upward trend lines related to human use of resources and transformation and degradation of the global environment cannot continue forever, leading to a host of important questions: What governance arrangements can help to address the growing economic, security and humanitarian struggles surrounding the global use of resources? Which existing governance arrangements are impediments to more efficient and equitable resource governance? The business cases for saving money in commodity purchases and resource use are legion and well documented: So what alliances and interventions would be needed right now to disseminate good practices widely and encourage strategic choices for innovations? What roles exist for policy makers, civil society, business and other stakeholders? And perhaps most radically, can

4 Struggling in the global resource nexus

we ‘govern for less.’ In other words, should reductions in resource consumption – or the material throughput of national and global economies – be a specified goal of governance? Taken together, these questions suggest that policy makers in the public, private and civil society spheres face many hard choices now and in the years ahead. Without effective and equitable resource governance, we suggest, the risks for increased waste, want and war look higher in the future.

Beyond the scale and rate of ecological change, the structure and trends of world politics and the global economy are also changing as Asian, Latin American, African and Middle Eastern states join the ranks of the globe’s largest economies with their resource-intensive patterns. Rather than join a chorus of doom-crying pessimists or Pollyanna-inspired optimists, this book argues that improved understanding of resource nexus issues, potential impacts and governance options provides a basis for better choices.

The nexus approach is conceived of in this book as a way to focus attention on resource interconnections and their ramifications for lifestyles, livelihoods, technologies and governance. It calls attention to the unsustainability of contemporary consumer lifestyles and supply chains. The book explores an analytical framework for understanding these nexus issues and the related governance challenges and opportunities. In doing so it sheds light on the resource nexus in three realms: markets, interstate relations and local human security. The nexus approach, outlined in the next chapter, specifies what is new and what it contributes to ongoing debates, seeking to add insights to analysis of what governance seems to work, what is challenging, what level of action is needed, what key actors are there and what institutional changes might be desirable. In more general terms, it will critically discuss global governance in polycentric and multilevel terms, and the lack of those dimensions in many published theories and analyses of contemporary politics.

The word *nexus* has recently become trendy, producing a kind of cottage industry of conferences, workshops, books and reports. The nexus approach in itself is not new, but most studies have focused on two and sometimes three resources and their linkages. To the best of our knowledge, our approach is original in that it studies the nexus across five different sets of resources: land, energy, food, water and minerals. What is also new is the explicit analysis of governance challenges, as well as the intersections among resource efficiency, security and development.

Examples of nexus challenges already abound: EU and US policies designed to spur biofuels production to help reduce carbon emissions had significant impacts on food and land prices, as well as land and water use around the world. The fact that people tend to demand more meat in their diets as they get wealthier drives massive environmental and social changes across continents as it adds substantially to the carbon footprint of our food. Chinese government decisions to crack down on illegal, unsafe and environmentally disastrous rare earths processing creates ripple effects in corporate boardrooms, defense and commerce ministries and think tanks around the world. The examples are legion.

In our age of often volatile resource prices and ever-increasing consumption, there are many titles focused on a single type of resource – water, energy and so

on – or a single commodity such as coltan, coffee, tuna or tungsten. In addition, a few texts focus on the security, economic or environmental aspects of global resource completion and cooperation. To our knowledge, no other book attempts to draw this group of five major resources and their physical, economic and governance linkages to each other into a single framework that speaks to economic, security, humanitarian, development and environmental concerns at the same time. It adds to the ongoing academic work on resource nexus issues, which is expected to continue, if only because it is going to take time and effort to move away from the more traditional pillared or stovepiped thinking in policy making circles. Therefore resource nexus issues are bound to stick around. As such, the book grapples with the connections and governance challenges regarding land, energy, food, water and minerals, and it tries to connect these issues to readers whose interests lie in the private sector and economics, international security and human security and sustainable development.

The interdisciplinary and international team of six authors conducted collaborative research for over three years, seeking a common language and building a common framework along the way. We are grateful for the generous support of the Transatlantic Academy, located in Washington, DC, within the German Marshall Fund of the United States. All six authors were 2011–2012 Transatlantic Fellows, and the book was further supported by grants from the Stiftung Deutsch-Amerikanische Wissenschaftsbeziehungen and the Carnegie Corporation of New York.

The book seeks to engender debate and discussion. Its title is not meant to suggest that waste, want and war are the only alternatives in our increasingly resource constrained world. Instead, waste, want and war represent our current and potential future outcomes resulting from actors' choices, and the design and effectiveness of governance institutions. Effective and equitable governance of resources and the communities that depend on them hold the potential to reduce all three outcomes – so the ideal or 'win-win' outcome is much less want, much less waste and much less war. While it seems reasonable to doubt that humans can create a utopian world of perfect efficiency, great wealth for all and universal nonviolence, certainly we can all agree that a world with considerably less waste, want and war is desirable. Our argument, in short, is that governance that fails to grapple with the complexities of the resource nexus can in fact make any of the three – or all three – much worse. Conversely, better governance holds the keys to reduce all three.

Our fellowship produced a joint report and a host of individually and jointly authored reports (Andrews-Speed *et al.*, 2012). The original 2012 report, shorter and more general, is where we originally developed the nexus approach and the idea of three arenas (Chapter 3 on markets, Chapter 4 on interstate geopolitics and Chapter 5 on dealing with human security). This manuscript is substantially different and expanded. We make progress on the analytical framework of the resource nexus. All six case study chapters and the conclusion are new. Finally, the 2012 report was framed primarily in 'transatlantic' terms, given the remit of its funders. This book is not.

Why the resource categories of land, energy, food, water and minerals? Many combined years of working on such issues has taught us that some people always

want to tell others why ‘X’ – their specialty – is simply different from everything else, and quite often also labeled as ‘especially important.’ Well, yes, and so too is each human gloriously unique. But these various resources are produced, refined, traded, consumed and competed over in markets and within political institutions (at local, national and global scales). This set of facts by itself makes it useful to explore their connections to each other and to human well-being, irrespective of their many differences. Each set of resources – land, energy, food, water and minerals – has a somewhat difference physical and institutional character. And each is connected to the others. Leaving one out would impoverish analysis of the other four.

Forward into the nexus . . .

In the following chapter we elaborate on the analytical framework of the resource nexus. The three realms through which we explore the nexus – markets, interstate relations and human security – are the organizing principles of Chapters 3 through 5. Next, the analysis turns to crosscutting case studies (Chapters 6–11) including those focused on shale gas, climate change and security, migration, water and the Nile Basin, nitrogen fertilizer and food systems, and lifestyle changes and resource efficiency. Each case chapter explicitly connects to the three arenas, exploring aspects of each (and their interaction with the other arenas) in some detail. In each case study, the risks of at least one of the concepts in the title – waste, want and war – figure prominently. Why these cases? Some are more local or region specific (and not ‘global’), while others are more globally or generally framed. Our hope is to have a set of cases focused on different scales (from local and regional to global) and to have an overall set that illustrates the numerous interactions among resource nexus issues at different scales and the resulting governance challenges and opportunities. The book does not claim that these cases are ‘the’ most important issues, nor the most illustrative. In any event, such claims would be very difficult to measure, assess and support. Rather, each case seeks to illustrate nexus challenges and governance opportunities (at various governance scales). Each demonstrates that massive waste, appalling want, violence and the risks of war are deeply connected to governance – often, but not always, to governance failures. The manuscript concludes by drawing lessons from the preceding analysis, highlighting opportunities to improve both the understanding of nexus challenges and their governance.

2

UNDERSTANDING THE RESOURCE NEXUS

The earth abounds with resources on which people have depended for millennia. Yet we have long struggled to overcome scarcities – to supply ourselves with the resources we need in order to survive and the ones we want in order to thrive. Demand for nearly every resource we use continues to grow. In fact, for many resources, demand grows much faster than the human population and continues to accelerate. Such trends place ever larger demands on governance from local to global levels, and on ecological systems on every scale, from earth's atmosphere to individual water wells. Can such trends continue? Should we just assume that resource concerns will sort themselves out? Certainly, concerns about scarcity are not new. It can trigger price increases, protest and political instability, conflict and violence – but also cooperation, innovation and commerce. Yet some of the conditions that may influence resource supply in the future have not been present during past scares about scarcity.

Today, resources are a high priority in politics and are high priority concerns in corporate boardrooms and local communities. Fears about resource prices and access are back in vogue. They flow from academic publications, the lips of policy makers and the headlines of old and new media sources (Gilding, 2011, Kemp, 2010, Klare, 2008, 2012, McKinsey, 2011, SERI *et al.*, 2009, VanDeveer, 2011, World Economic Forum, 2011, Yergin, 2011). Some concerns are long-standing: oil supplies and dependence on the Persian Gulf region; the relationships between resource competition and war; agricultural productivity, food costs and questions about the ability to feed a growing human population; deforestation; and freshwater supplies. Other stories are newer: the impacts of rapidly growing resource demands from the economically dynamic parts of the developing world; shale gas reserves and the technologies and practices to extract them; the relationship of 'green' technologies to minerals mining and markets; or the concerns about Chinese dominance of rare earth metals production and other critical materials. About each of these issues,

some analysts are steadfastly pessimistic, seeing violence, suffering, oppression and ecological catastrophe in our future. Others, of course, may be equally extreme in their optimism, expressing unshaking faith in human innovation, technological development or markets to bring peace and prosperity to all.

With respect to debates about scarcity, this book seeks a middle ground among alarmist hyperbole, predictions of global catastrophe and blind faith that markets and technology will transcend scarcities for all in the future. Rather than focus on the scarcity of individual resources, it examines the nexus of resource issues and acknowledges that rapidly increasing consumption multiplies the resource interconnections. We explicitly recognize that complex webs of connections exist among different resources. The nexuses of water, land, food, energy and mineral resources occur from a local to a global scale. This chapter describes the nexus approach, identifies important ways in which our world politics and economics are changing, and explains the importance of effective governance at multiple levels for meeting challenges arising from the resource nexus.

The resource nexus approach: understanding challenges and finding opportunities

The resource nexus comprises the numerous linkages among different natural resources and raw materials that arise from economic, political, social and natural processes. This research conceptualizes the nexus as a set of interactions, including important drivers of existing and future risks, threats and opportunities. While the nexus approach conceivably includes all resources, this analysis focuses on five essential resources: water, energy, minerals, food and land.

The nexus approach analyses physical, technological and social/institutional connections in a more integrated manner. Human needs all require bundles of resources – for food, shelter and so on. Human aspirations as they are played out currently require far more resources. Even the most acute demand, for freshwater, usually is connected with energy, which is required to produce and transport the resource. In more general terms, resources serve as direct or functional inputs in the production process of another resource, or they can substitute the use of another resource. Indirect effects also have to be taken into account: claims for one resource can compete with other useful demands (think of land used either for the production of food or for bio-energy). The environmental dimension of the resource nexus thus stems from the geo-chemical-ecologic conditions as well as from their socio-technological-economic-political contexts. These dimensions are intertwined at many levels of social and ecological systems. Our approach claims that one needs to understand the basic decision-making processes of key actors over how those resources are managed. Looking at such processes of companies and their supply chains, of politicians and public administrations in their strategic planning, as well as of local populations trying to serve their basic needs, positions a resource nexus approach closer to governance processes on the ground as well as to timeframes between now and the years to come.