

groundwater and subsurface waste disposal while Part four focuses on groundwater policy development and its economic analysis using neoclassical economics and other economic instruments. Part five is focused on groundwater use and management in the future with reference to sustainable development, transboundary and climate change considerations. The ecological capacity of groundwater systems, and their occurrence and usage, are analysed through macroeconomic models when regional or continental aspects are dealt with and through microeconomics in case of specific local situations. This treatment approaches the question of political decision for groundwater affairs again at two different levels, those dealing with large ecological and societal systems and those of more reduced size of special interest to local communities. It is worth mentioning that the author stresses in this context the need for additional research dealing with applied groundwater topics. Unfortunately economic aspects related to the need for stronger investments in groundwater research and protection of groundwater ecosystems are not dealt with. Another slight weakness of the book is the lack of discussion about economic aspects related to public education in perceptions of groundwater systems and exploitation of groundwater resources. These omissions do not diminish the value of the book, which is remarkable, reflecting the unusual interdisciplinary approach the author chosen, deviating from traditional economic texts to present complex problems associated with groundwater development, management and its sustainable use, analysing them using economic fundamentals. The book will be invaluable to economic analysts, improving evaluation of the complex and/or subtle groundwater issues, and make non-economist engineers, hydrologists, hydrogeologists, environmental biologists and ecologists more familiar with economic fundamentals. Additionally to the book aids both planners and decision makers working on environmental conservation projects.

The book makes a valuable contribution to groundwater science and we are confident that it will be widely used.

References

- Griebler, C., Danielopol, D.L., Gibert, J., Nachtnebel, H.P. & Notenboom, J., eds (2001) *Groundwater Ecology. A Tool for Management of Water Resources*. Luxembourg: Office for Official Publications of the European Communities.
- Quevauviller, P., ed. (2010) *Groundwater Science and Policy, An International Overview*. Cambridge, UK: RSC Publishing.

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Treasures of the Earth: Need, Greed, and a Sustainable Future

BY SALEEM H. ALI

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Oil, gas and mining projects are among the most significant challenges to the conservation of biodiversity worldwide. The penetration of extractive industries into areas valued from their biological and/or cultural significance raises challenging questions about the nature of development, the scarcity and sustainability of resources, and the most effective way of ensuring material standards of living for many of the world's poorest people. *Treasures of the Earth* is a highly readable book that examines these and other big questions surrounding mineral extraction. Saleem Ali, Professor of Environmental Studies at the University of Vermont, takes aim at what he sees as an unwarranted polarity in discussions about the Earth's natural resources, where the extraction and use of non-renewable resources is too often represented as only either virtue (development) or vice (exploitation and degradation). The author's goal is not critique, however, but constructive intervention: to put contemporary debates over the extraction and consumption of resources onto a new footing by providing a nuanced account of the social and cultural roles played by minerals.

The book is made up of nine chapters, plus an introduction and short epilogue and is divided into three whimsically titled parts. 'The pleasure of treasure' highlights the cultural mystique that surrounds many minerals (think diamonds, amber or gold), the desires that motivate individuals and groups to acquire materials which have high social value, and how the search for mineral wealth has driven technological and social innovation and the creation of new economies and geographies of settlement (think Johannesburg, San Francisco or Melbourne). 'Toil and treasure' outlines the material economy of resource mobilization, and the environment and development challenges associated with extraction. Ali is particularly critical of the resource curse literature for a 'fatalistic rhetoric' that 'exonerate(s) cultural factors and nuances of development' by not giving full consideration to the social context through which resources (and the revenues they generate) are managed. The final part, 'Measure for measure', closes the loop by considering the opportunities for material recycling and the restoration of extractive landscapes, and how the desire for materials might be creatively re-tooled. *Treasures of the Earth* is impressively interdisciplinary in scope, and perhaps necessarily so. The author draws on intellectual traditions as diverse as chemistry, psychology and philosophy to express the complexity of a material world in which 'attempts at building human order out of random natural chaos require us to manipulate material in a myriad ways.' There is a similarly expansive fluidity to the book's historical and geographical scope, with plentiful use of examples and vignettes that go beyond the standard fare of familiar cases and which capitalize on the author's rich experience.

For some, the account of mining and mineral consumption that Ali provides will be too relentlessly even-handed: it pulls its punches when it should be landing them and, in bending over backwards to undo the stigma that has become attached to extractive resources, it inevitability over-reaches. This willingness to consider all perspectives and suspend the calling of villains and saints may be the necessary result of the author's broader project, one that prioritizes a politics of engagement and deliberative dialogue over one of judgement (the author founded the *ecominerals* listserv a few years ago which engages mining firms and activist non-governmental organizations alike, and which will be familiar to some readers). Indeed, the book's analytical register is strikingly different to either the statistical abstractions or muscally structural accounts of exploitation that are normally associated with work on 'need and greed' around mining. Ali casts oil, gas and other mineral resources as an 'intimate relationship' between humans and materials centred on what he terms 'the treasure impulse'. This term refers to the psychological and cultural

attachments that humans make to minerals, and the way these attachments drive the discovery and innovation of new materials. To Ali, the quest for minerals is a fundamental part of common history as human beings and ‘the balance between digging deep for resources and respecting the fragility of our earthly resource base has been our most seminal challenge as a species.’ The true potential of this impulse remains to be tapped, however, as it will be key to the ‘sustainable future’ alluded to in the subtitle. Accordingly, he concludes mankind should ‘embrace our impulses for treasures’ and direct it towards increased efficiencies in material consumption and the search for synthetic alternatives.

The cultural and historical perspective that distinguishes *Treasures of the Earth* from most other works on the extractive sector is one that reveals and occludes in equal measure. Its considerable advantage is its capacity to collapse the cognitive distance between the familiar routines of daily life for mineral consumers and the extraction of raw materials. Ali’s account neatly captures the awesome scale and complexity of the contemporary material economy, and brings society (as consumers) face-to-face with the often paradoxical outcomes that desire for fragments of the inanimate natural world can produce. However, this perspective significantly underplays the political economy of extraction and material consumption, and how structural inequalities in wealth and power are in part produced and sustained through the extraction and consumption of raw materials. *Treasures of the Earth* prefers to render the causes of prodigious increases in resource consumption (which outstrip population growth and whose geographies map only weakly onto those of population) as cultural and/or psychological impulses rather than the product of social organization or the ‘logics’ of speculative finance and accumulation. For this reviewer, this amounts to a misdiagnosis of the problems for which the book seeks to account. Other readers may find its interest in history and its concern to distil basic principles insufficient, as the book stops short of discriminating among contending and quite different policy approaches for securing a more sustainable material economy. These issues aside, Saleem Ali’s book provides an original, entertaining and ultimately optimistic account of society’s complex relationship to non-renewable resources.

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The Expropriation of Environmental Governance. Protecting Foreign Investors at the Expense of Public Policy

BY KYLA TIENAARA

xi + 327 pp., 23 × 15 × 2 cm, ISBN 978 0 521 11487 5 hardback, GB£ 50.00/US\$ 80.00, Cambridge, UK: Cambridge University Press, 2009

Once upon a time there was colonialism. After World War II, independence became increasingly prevalent. As nations gained their independence, they became starkly aware that large swathes of their wealth were tied up in the ownership of foreign companies. What followed was a rash of nationalizations of these companies across

the world. International investment agreements (IIAs) are in part an instrument to create a body of law that protects foreign firms from being nationalized in the contemporary era.

Why should readers of this journal be concerned with economic nationalization and IIAs? Over the past twenty years, according to Teinharra, foreign firms have been interpreting new environmental regulations as being analogous to expropriation and are thereby ‘expropriating environmental governance’. That’s why.

IIAs have numerous features and have a close to 30-year history in their contemporary form. While there is significant variation among these treaties, they often share a handful of common elements, such as the requirement that there is a ‘minimum standard of treatment’ for foreign companies (meaning they get equal access to opportunities in the host state relative to domestic firms and the foreign firms of other nations); that expropriation is not permitted with penalty, among other provisions.

What is more, in terms of resolving disputes that arise from an IIA, these treaties more often than not have ‘investor-state’ dispute resolution, whereby the foreign investor may directly file a claim against a host government. Such a dispute could result in a semi-private arbitral panel where the host state could pay damages. Such a method stands in stark contrast to the World Trade Organization, where private investors have to convince national governments to take another national government to an international dispute panel.

For the majority of this book, Kyla Tienhaara outlines the substantive issues around foreign investment and the environment, and how IIAs work. The last third of the volume is most interesting as it offers an analysis regarding the extent to which IIAs make environmental governance more difficult to deploy in a globalizing world. The book’s title gives away her conclusion.

Tienharra walks through numerous cases where foreign firms use IIAs and contracts to take action against host states for environmental regulations. Whether it be gold mining in the USA, toxics in Mexico and more, Tienhaara documents how foreign firms use IIAs to extract retribution from host states. Tienhaara’s best chapter may be the one that documents how foreign firms use the potential of an investor-state claim to threaten host states into changing or ignoring environmental policy. The book paints a dirty picture of foreign firms using IIAs to circumvent domestic environmental law and therefore ‘chill’ the development of environmental governance.

The volume condenses all the background and documentation necessary for academics and policy makers to learn about the environmental interactions between policy and IIAs and to begin thinking critically about such interactions. The two main contributions of the volume are assembling all this data and the highly original documentation of the use of IIAs to threaten governments into changing policy. That said, the volume could be more developed on two fronts. First, Tienhaara could more clearly lay out the defence of IIAs with respect to the environment and confront such arguments head on. Second, the volume would be even more significant if it offered an analytical approach to thinking about the relationship between IIAs and environmental governance. Nevertheless, the book makes a fine contribution in fully documenting the existing cases and analyses their outcomes. Even if Tienharra did confront her critics more directly, her thesis would remain the same.

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