**INTRODUCTION TO INTERNATIONAL ENVIR-ONMENTAL LAW**. Timo Koivurova. 2014. Oxford: Routledge. xxx + 218 p, softcover, illustrated, ISBN 978-0-415815-741. £34.99.

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International environmental law is a complex field of law within the diverse universe of international law. Writing a textbook on this topic that is useful to both beginners and seasoned professionals is a daunting task, but Timo Koivurova has accomplished this feat with his most recent textbook. Introduction to international environmental law was initially published in Finnish in 2012, and was the first textbook on international law published in Finland in 20 years. Following its success in Finland, Routledge agreed to publish an English translation of the text to make it available to a wider audience. Although there are not many direct polar references in the book, it is nevertheless of interest to a polar audience because of the important role of environmental law for the polar regions. By looking to what has been done in the realm of international environmental law, policy makers will have a guide to assist in determining what steps to use when forming agreements and policies and also have the ability to learn from mistakes already made in other regions.

Koivurova's ability to distil the basic principles of international environmental law in a clear and concise way demonstrates why he is such a highly sought after speaker on the topic. His writing style is very accessible, and while his explanations are detailed enough for a professional with a strong background in this topic, they are also simple enough for even a beginner to understand the points he is making. Koivurova admits in his introduction that additional readings would be a good idea for anyone not already familiar with international law, but still does an admirable job making the material as straightforward as possible.

Instead of replicating the approach taken by numerous other texts on this topic, Koivurova states that he intends to provide a 'generalized account' (page xix) of international environmental law. In his introduction he explains that he wants to inspire students to go out on their own and find all of the treaties and legal documents that make up this body of law instead of devoting countless pages to these documents, thereby allowing more space for analysis and examples. One of the techniques that Koivurova employs to provide such inspiration is to use current, real life examples to illustrate the challenges existing in international environmental law today. For example, Koivurova gives examples of the challenges in upholding the United Nations Convention on the Law of the Sea (UNCLOS). In one example, Koivurova discusses the explosion of the BP oilrig in 2010. Several workers died and approximately 100,000 cubic metres of oil spilled into the sea. UNCLOS has a provision obliging states to protect the marine environment; however, the guidance is still too general to be binding. Koivurova uses this example to show readers that even a major disaster will not always be sufficient to instigate change. Since the disaster, suggestions have been made that more specific rules regarding the administration of oil rigs should be set, but nothing concrete has yet been developed (pages 151-152). He goes on to discuss how the difficulty of 'flag of convenience states' that do not always observe international regulations

(page 152), questions about port state jurisdiction to monitor and prevent vessel contamination (page 152), and the regional discretion for coastal states to control marine pollution (page 153). All of these challenges that are yet to be defined or adequately resolved are directly related to the language found in UNCLOS. Since UNCLOS is currently the only international treaty governing all of the Arctic states (including the United States, even though they have not yet signed the treaty) the examples raise important questions about how the application or lack of enforcement of UNCLOS provisions will impact future Arctic governance and conflict resolutions. These types of real world applications allow material to become more meaningful to students trying to understand the purpose behind the various treaties and regulations developed when they can see the real world applications.

Koivurova gives readers not only a background overview of the issues and principles connected with the field of international environmental law, but also the tools necessary to pursue personal studies and in-depth research within this field. Again, this is something that would be particularly of interest to those studying the Arctic. At the end of each chapter, he includes a list of possible research questions. The questions are designed to stimulate discussion and encourage readers to delve deeper into topics within international environmental law that appeal to them personally. The questions will be particularly useful to instructors looking for ideas to deepen and personalize classroom studies and discussions. Furthermore, Koivurova's systematic approach to explanations demonstrates not only differences between topics within international environmental law, but also the similarities that link them to each other and provide readers with a sophisticated way of approaching these research topics. When discussing the challenges surrounding the regulation of both the Arctic and Antarctic, Koivurova compares the similarities and differences between the regions to help students comprehend why attempting to regulate these two poles in the same way cannot succeed. After explaining the governance regimes and challenges of the two regions, Koivurova challenges readers to continue searching for a more sustainable solution to Arctic governance and uses the research questions at the end of the chapter as prompts for further research on the Antarctic treaty, mining in the region, and other legal principles that could lead to important research on polar law and policy (pages 101-104, 135-136).

The structure of the book itself assists readers in gaining a deeper understanding of the structure of international environmental law. Koivurova manages to take this somewhat fragmented field of law and organise it into a coherent system bound by common principles. He clearly understands the systems within this body of law so thoroughly that he is able to make the connections, acknowledge the differences, and explain how they work together as part of the same system. Chapters 1 and 2 give a strong overview of the basic issues and historical development of international environmental law. Koivurova discusses the global awakening to international environmental problems and the emergence of issues such as ozone depletion and climate change that can be traced to more than one actor or country. He also highlights key arguments for why this body of law had to be developed. Then, in Chapters 3, 4, and 5, Koivurova creates the connection between those foundational issues and historical experiences and how they work together in the modern body of international environmental law. He highlights how treaty regimes and international regulations may at least mitigate problems that may not be solvable. Koivurova also demonstrates how this body of law has been built up through not only international treaty regimes and international judicial bodies but also through domestic cases and regulations. Chapter 6 moves into the more complex legal issues surrounding both the difficulties and possible precedents that would allow a party to hold any group legally liable for existing environmental damage while Chapter 7 provides ideas for mitigating the damage and why all is not lost despite extensive physical evidence.

Koivurova does not shy away from discussing controversial topics. For example, he devotes a great deal of attention to climate change. He portrays it as one of the most dangerous threats currently facing the world and also one of the most difficult to mitigate. Throughout the book he assigns responsibility for many of the environmental disasters facing the world today, including the changes associated with climate change, to humans. He uses data and evidence to support his assertions that many of these disasters were either created or exacerbated by man. His focus on this topic and on the human responsibility for environmental disasters serves as another conduit for student-driven research and provides an opportunity for readers to disagree with the author and search for sound legal arguments to corroborate their disagreements.

The book ends on a hopeful note. It does not make false promises that there are any easy fixes. Instead, it encourages readers to make changes and work toward policies that could lead to something better. Koivurova's support for the idea of creating a World Environmental Organisation with the power to resolve disputes is worth considering. This idea has also been explored by others such as Zakri Abdul Hamid in his Perspectives on RIO+20: a world environment organization to serve developing world nations (Hamid 2012), and seems to provide a concrete response to some of the acknowledged weaknesses in this body of law. While reading and listening to international media coverage regarding environmental issues, it is difficult at times to feel hopeful. This book provides realistic ideas and strategies and allows even the most cynical reader to find some cautious optimism. (Victoria Sweet, Senior Policy Analyst, National Council of Juvenile and Family Court Judges, PO Box 8970, Reno, Nevada USA, (victoria.g.sweet@gmail.com)).

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## UNDERSTANDING EARTH'S POLAR CHALLEN-GES: INTERNATIONAL POLAR YEAR 2007–2008.

Krupnik Igor, Ian Allison, Robin Bell, Paul Cutler, David Hik, Jerónimo López-Martínez, Volker Rachold, Eduard Sarukhanian and Colin Summerhayes (editors). 2011. Rovaniemi: University of the Arctic (digital), Edmonton: CCI Press in collaboration with University of the Arctic and ICSU/WMO Joint Committee for International Polar Year 2007–2008 (print). xxiv + 695 p, illustrated, hard-cover. ISBN 978-952-484-403-1 (digital), ISBN 978-1-896445-55-7 (print). Free of charge.

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Uncertainty is the driving force of science; the transmitter that moves our knowledge to the new, greater level of understanding. The title of the book takes up the main question to be addressed. Do we completely understand the Earth's polar challenges? How do we perceive and react to these challenges, and pass them along through generations from the known past to the unknown future? What lessons should be learned? What legacy will we pass on to the future? These are the central conceptual reflections covered by the collective piece of science analysis summarising the activities of over 60 nations involved in more than 200 international projects for the past 10 years of planning and implementing of the International Polar Year (IPY) 2007–2008.

The book consists of 5 major parts that individually and combined make an important contribution to broaden our knowledge and understanding of the boundless Polar science puzzle.

The authors thoroughly introduce the history of previous IPYs; and planning and implementation strategies that re-

peatedly emerged over the past 125 years in organisation of such a tremendous polar initiative. They look back at the initial ideas nurtured by the early polar explorers and champions during the 1882-1883 IPY, ideas of the following IPYs and up until the recent IPY. The importance of such ambitious international efforts that mobilised the science community four times during these large transdisciplinary initiatives is convincingly shown. As authors discuss: 'The historical backdrop is needed....to elucidate the factors that were critical in successful planning and implementation, ...thus the history of polar science was included as a 'bona fide' component in IPY 2007-2008' (page 5). In support of this claim, the reader has an opportunity to follow all the steps of collaborative planning efforts of the fourth IPY that brought together scientists, nations and a number of international organisations. The book introduces the reader to all the main actors that made a valuable contribution to the planning and implementation of the IPY 2007-2008: the Joint Committee, the International Programme Office, the Subcommittees and emerged IPY projects. Included in the history chapter are illustrative examples of collegial work, documentary archives, lists of various meetings and conferences, case studies, descriptions of contributions from various committees and national secretariats that all combined in a joint effort to plan, promote, implement and fund 'the major milestone in the history of science' (page 2).

One distinguishing feature of science is its universality, allowing us to follow interdisciplinary approaches and methods to address the large, existing challenges. The overview of all scientific achievements and legacies are addressed through the five parts of the book which are structured along the main research aims as defined by the polar science community: determining the present environmental status of the polar regions; understanding of past and present environmental changes in the polar regions; understanding the links and interactions between