

Reproduced from *Global Oil Trends* edited by Shankar Sharma and Joseph L.H. Tan (Singapore: Institute of Southeast Asian Studies, 1991). This version was obtained electronically direct from the publisher on condition that copyright is not infringed. No part of this publication may be reproduced without the prior permission of the Institute of Southeast Asian Studies. Individual articles are available at < <http://bookshop.iseas.edu.sg> >

## **GLOBAL OIL TRENDS**

The **ASEAN Economic Research Unit** (AERU) is an integral part of the Institute, coming under the overall supervision of the Director who is also the Chairman of its Management Committee. The Unit was formed in 1979 in response to the need to deepen understanding of economic change and political developments in ASEAN. The day-to-day operations of the Unit are the responsibility of the Co-ordinator. A Regional Advisory Committee, consisting of a senior economist from each of the ASEAN countries, guides the work of the Unit.

The **Energy Project** undertakes studies on energy demand situation and supply options including trading opportunities of energy sources and evaluates the various energy and oil security policies in the region. The focus of the project is on ASEAN countries, but the issues are examined in a broader regional and international perspective.

The **Institute of Southeast Asian Studies** (ISEAS) was established as an autonomous organization in 1968. It is a regional research centre for scholars and other specialists concerned with modern Southeast Asia, particularly the many-faceted problems of stability and security, economic development, and political and social change.

The Institute is governed by a twenty-two-member Board of Trustees comprising nominees from the Singapore Government, the National University of Singapore, the various Chambers of Commerce, and professional and civic organizations. A ten-man Executive Committee oversees day-to-day operations; it is chaired by the Director, the Institute's chief academic and administrative officer.

# GLOBAL OIL TRENDS

---

## The Asia-Pacific Market in the 1990s

---

edited by

**Shankar Sharma**  
**Joseph L.H. Tan**

Published by  
Institute of Southeast Asian Studies  
Heng Mui Keng Terrace  
Pasir Panjang Road  
Singapore 0511

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the Institute of Southeast Asian Studies.

© 1991 Institute of Southeast Asian Studies

*The responsibility for facts and opinions in this publication rests exclusively with the authors and their interpretations do not necessarily reflect the views or the policy of the Institute or its supporters.*

---

**Cataloguing in Publication Data**

---

Global oil trends : the Asia-Pacific market in the 1990s / edited by Shankar Sharma and Joseph L. H. Tan.

1. Petroleum industry and trade--Asia.
2. Petroleum industry and trade--Pacific area.
3. Petroleum industry and trade--Environmental aspects.

- I. Sharma, Shankar.
- II. Tan, Joseph Loong Hoe.

HD9576 G56 1991 sls91-142553

ISBN 981-3035-96-X (soft cover)

ISBN 981-3035-92-7 (hard cover)

---

Typeset by International Typesetters  
Printed in Singapore by Kin Keong Printing Co. Pte. Ltd.

# Contents

<i>List of Tables</i>	vi
<i>List of Figures</i>	vii
<i>Foreword</i>	viii
<i>Acknowledgements</i>	ix
1. Introduction to the Global and Asia-Pacific Oil Markets in the 1990s <i>Shankar Sharma and Joseph L.H. Tan</i>	1
2. Understanding the 1990 Oil Crisis <i>Philip K. Verleger, Jr.</i>	17
3. The Shape of World Oil Markets in the 1990s <i>John L. Kennedy</i>	38
4. Prospects for Oil Product Trading in the Asia-Pacific Region <i>Kiyoshi Takahashi</i>	56
5. Development of the Oil-Refining Industry in the Asia-Pacific Region: Trends and Outlook <i>Shankar Sharma</i>	69
6. Oil and the Environment <i>Onnic Marashian</i>	87
<i>Keynote Address by H.E. Datuk Dr Sulaiman Hj. Daud</i>	107
<i>Keynote Address by H.E. Korn Dabbaransi</i>	114
<i>Glossary and Acronyms</i>	122
<i>Contributors</i>	132

## *List of Tables*

1.1 Oil Demand by Region, 1973, 1979, 1983, and 1989	3
1.2 World Energy Demand by Source, 1973 and 1989	7
1.3 World Energy Production, 1973 and 1989	8
2.1 Comparison of Changes in Retail Prices Exclusive of Taxes in Gasoline and Heating Oil in Eight Countries	30
2.2 Comparison of Spot Prices of Light Petroleum Products in Rotterdam and the U.S. Gulf Coast	32
3.1 World Oil Reserves	42
3.2 Post-Invasion Forecasts	44
3.3 Non-OPEC Production	46
3.4 World Gas Reserves	54
5.1 Development of the Asia-Pacific Region's Refining Capacity and Configuration	72
5.2 Asia-Pacific Region's Oil Demand	73
5.3 Ratio of the Value of Output to the Value of Inputs, Singapore Refineries, 1975-88	75
5.4 Product/Crude Price Ratios, Singapore/United Arab Emirates	76
5.5 Asia-Pacific Region's Oil Demand by Product Group	78

## *List of Figures*

1.1	Chart of Events in the Oil Industry	2
A1.1	Steps in Petroleum, Gas and Oil, and Petrochemical Industries	12
A1.2	Oil Products and Uses	13
2.1	Term Structure of Crude Oil Prices, End of January, June, and April 1990	20
2.2	Supply-of-Storage Curve Relationship between Stocks and Spreads	21
2.3	Supply-of-Storage Curves: Comparison of Pre-Crisis and Post-Crisis Relationships	28
3.1	U.S. Import Dependency	40
3.2	OPEC Supply and Demand	43
3.3	Supply Outside the Centrally Planned Economies	45
3.4	U.S. Oil Production	47
3.5	Asia-Pacific Crude Production versus Export Availability	49
4.1	Oil Product Demand for the Asia-Pacific Region, 1988 versus 1995	57
4.2	Demand Structure by Country in the Asia-Pacific Region, 1988 versus 1995	59
4.3	Oil Product Demand for the Asia-Pacific Region by Product, 1988 versus 1995	60
4.4	Crude-Refining Capacity in the Asia-Pacific Rim, 1990 versus 1995	61
4.5	Grading-Up Plans of Refining Units in the Asia-Pacific, 1990–95	63
4.6	Product Demand versus Topper and Upgrading Capacity, 1995	64
4.7	Inter-Regional Oil Product Trading Flows, 1988	66
4.8	Increases and Decreases in Inter-Regional Oil Product Trading Flows, 1988–95	67

## ***Foreword***

Even after two decades of dramatic changes in oil supply and prices, there are no signs that this volatility in the oil market is diminishing. Countries are still vulnerable to upheavals in energy prices and supply, as demonstrated by the energy problems triggered by the Iraqi invasion of Kuwait in 1990. Among other things, the crisis disrupted oil supply, raised oil prices, fuelled inflation, and adversely affected economic growth, especially in oil-importing developing countries in the Asia-Pacific and beyond.

Market volatility adds to the complexity of analysing and predicting the oil market. Non-economic factors, such as the Gulf crisis, further complicate the analysis. Nevertheless, the strong relationship between oil and the economy makes evaluation of the oil market essential.

This book, one of the first few volumes about the oil market published in the aftermath of the Gulf War, provides insight into current issues and challenges facing the oil market. It focuses on the Asia-Pacific, an economically dynamic region. The region's oil demand has been *the highest* in the world for the last two decades and this is expected to continue into the future. Although the region accounts for only about one-fifth of world oil consumption, almost one-half of the increase in world oil demand is expected from this region.

We hope that the book will be of use to those interested in the global oil market in general and the Asia-Pacific market in particular.

*K.S. Sandhu*  
Director  
Institute of Southeast Asian Studies  
Singapore

## *Acknowledgements*

The editors take this opportunity to express their gratitude to all those who provided help and encouragement in various ways and at different stages in the publication of this volume. We are most appreciative of the time and effort committed to the revision and polishing up of the regional conference papers by the authors (in alphabetical order): John L. Kennedy, Editor, *Oil and Gas Journal*; Onnic Marashian, Editor-in-Chief, *Platt's Oilgram News*; Kiyoshi Takahashi, Chairman, Showa Shell Sekiyu Kaihatsu K.K., Japan; and Philip K. Verleger, Jr., Visiting Fellow, Institute of International Economics.

The original versions of the papers (with the exception of Shankar Sharma's contribution) were first presented at the Sixth Asia-Pacific Petroleum Conference, 17–19 September 1990, Singapore, organized by Times Conferences (a member of the Times Publishing Group, Singapore), under the auspices of the Institute of Southeast Asian Studies and supported by the Singapore Economic Development Board, Singapore Trade Development Board, and the Port of Singapore Authority. We would also like to thank particularly Mr Michael Liew, Senior Vice-President, Education, Conference and Travel Division of Times Publishing Group, for his help and co-operation in this endeavour.