

CENTRALASIA ATLASS OF NATURAL RESOURCES

Asian Development Bank

CENTRAL ASIA ATTAL ASIA OF NATURAL RESOURCES



CENTRAL ASIA ATTICAL ASIA OF NATURAL RESOURCES

Central Asian Countries Initiative for Land Management Asian Development Bank Manila, Philippines

2010

© 2010 Asian Development Bank

and the second second second

All rights reserved. Published 2010.

Printed in Hong Kong, China.

The spelling of place names in this atlas generally follows Asian Development Bank (ADB) usage in those maps approved by the ADB country program specialist concerned and the editing group in the Office of the Secretary. ADB base maps were used for the regional and country profiles and thematic maps. Additional names and features on thematic maps were added by the cartographers, GIS Cartography, Bishkek, Kyrgyz Republic. These names were reviewed by the respective countries and amended based on reviewers' comments.

Remote-sensing images are Landsat Enhanced Thematic Mapper Plus (ETM+) images; Moderate Resolution Imaging Spectroradiometer (MODIS) images; Global Inventory Modeling and Mapping Studies (GIMMS), Land Cover Facility images; and Shuttle Radar Topography Mission (SRTM) images. Data on protected areas were from the World Database on Protected Areas; and on waterlogging from Raisa Taryannikova, head of the national secretariat of the Central Asian Countries Initiative for Sustainable Land Management. Details are provided in the References section of the atlas.

The major sources of social, economic, and natural resource statistics throughout the atlas were ADB *Key Indicators 2007*, World Bank *World Development Indicators 2009*, United Nations *Human Development Report 20007/2008*, and United Nations *Millennium Development Goals Indicators* (website). Statistics on agriculture, fisheries, and forestry are based on data reported by the countries to the Food and Agriculture Organization (FAO) of the United Nations.

The spelling of geographic features, animals, and plants follows generally accepted scientific usage. However, effort has been made to reflect common usage in the countries of the region.

Tabulated data are for years up to and including 2007. Unless stated otherwise, weights in tons are metric tons throughout, and maps showing the Aral Sea are based on different years, depending on the source. A separate map of the Aral Sea showing its decrease in size from pre-1960s to 2009 is provided.

The views expressed in this atlas are those of the contributors and do not necessarily reflect the views and policies of ADB or its Board of Governors or the governments they represent.

ADB does not guarantee the accuracy of data included in this atlas and accepts no responsibility for any consequences of their use.

By making any designation of or reference to a particular territory or geographical area, or by using the term "country" in this document, ADB does not intend to make any judgments as to the legal or other status of any territory or area.

ISBN: 978-971-561-886-1 Publication Stock No. BBK101663

Asian Development Bank 6 ADB Avenue, Mandaluyong City 1550 Metro Manila, Philippines Tel +63 2 632 4444 Fax +63 2 636 2444 www.adb.org/projects/CACILM

Contents

| Foreword | vi |
|--|----|
| Amid Deserts, Steppes, and Mountains | 1 |
| A Bowl of Sand in a Rocky Cradle | 3 |
| Extreme Environments | e |
| Deserts: Land that Makes Demands | 11 |
| Steppes | 15 |
| Piedmont | 16 |
| Mountains | 18 |
| Agriculture to Uranium: Natural Resource Powerhouse | 22 |
| The Five Countries of Central Asia | 24 |
| Facts and Figures about the Countries of Central Asia | 26 |
| Kazakhstan - A Rich and Varied Landscape | 3(|
| A Society Making Gains | 30 |
| Endowed with Natural Resources | 31 |
| Dynamic Agriculture Sector | 32 |
| The Need for Environmental Protection | 32 |
| Kyrgyz Republic - The Spirit of Welcome | 34 |
| Achieving Solid Goals | 34 |
| A Biodiversity Hot Spot | 35 |
| Tapping the Country's Water Potential | 36 |
| Making the Most of Its Resources | 37 |
| Tajikistan - Proud Mountain Nation | 38 |
| From Growing Pains to Growing Economy | 38 |
| Economics and the Environment | 35 |
| Immense Water Resources | 40 |
| Rich Biota in Need of Protection | 40 |
| Turkmenistan - Making the Most of Desert Resources | 42 |
| An Uncompromising Terrain | 42 |
| Specialized Wildlife | 43 |
| Energy to Share | 43 |
| Dry Lands, Thirsty Crops | 44 |
| Uzbekistan - Crossroads of Central Asia | 46 |
| Growing and Diverse Economy | 47 |
| Sustaining Citizen Well-Being | 48 |
| Protecting Environment and People | 48 |
| Energy Resources - Enormous Development Potential | 50 |
| Petroleum - Fueling the Region's Growth | 53 |
| Natural Gas - Vast Potential Waiting to be Tapped | 55 |
| Coal - Energy Diamond in the Rough | 57 |
| Nuclear Energy - A World Leader in Reserves | 58 |
| Renewable Energy | 59 |
| Mineral Resources - Geologists' Paradise | 62 |
| A Rich Mineral Mix | 63 |
| Impacts of Mineral Extraction | 67 |
| A COMPANY AND A CARD OF A DATA OF A CARD OF A DATA | |

| River Basins | 71 |
|---|--|
| Two Inland Seas | 82 |
| Outstanding Lakes | 87 |
| | |
| Living Resources | 92 |
| Ecosystems and Ecoregions | 93 |
| Protected Areas | 97 |
| Selected Regions of Unique Biodiversity | 98 |
| Forest Resources | 108 |
| Flora and Fauna | 112 |
| Agriculture | 120 |
| A Sector in Transformation | 120 |
| Agricultural Lands | 121 |
| Irrigated Farmlands | 122 |
| Irrigated Crops | 123 |
| Agricultural Standouts | 128 |
| | 120 |
| Fisheries and Aquaculture | 138 |
| Peoples and Cultural Traditions | 142 |
| Rich and Turbulent Past | 143 |
| Tribes and Languages | 147 |
| Cultural Icons | 148 |
| The New Nomads | 149 |
| and the second se | and the second second |
| Natural Deservation Frankson and Devents | 10 |
| Natural Resources, Environment, and Poverty | 150 |
| Overstretched Water Resources | 151 |
| Overstretched Water Resources Land Degradation | 151 153 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution | 151 153 159 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change | 151 153 159 160 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters | 151 153 159 160 161 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change | 151 153 159 160 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development | 151 153 159 160 161 162 16 4 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds | 151 153 159 160 161 162 164 165 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future | 151 153 159 160 161 162 164 165 168 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future Regional Economic Cooperation | 151 153 159 160 161 162 164 165 168 169 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future Regional Economic Cooperation Achieving Millennium Development Goals | 151 153 159 160 161 162 164 165 168 169 169 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future Regional Economic Cooperation | 151 153 159 160 161 162 164 165 168 169 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future Regional Economic Cooperation Achieving Millennium Development Goals | 151 153 159 160 161 162 164 165 168 169 169 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future Regional Economic Cooperation Achieving Millennium Development Goals Population and Urbanization | 151 153 159 160 161 162 164 165 168 169 169 176 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future Regional Economic Cooperation Achieving Millennium Development Goals Population and Urbanization | 151 153 159 160 161 162 164 165 168 169 169 169 169 178 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future Regional Economic Cooperation Achieving Millennium Development Goals Population and Urbanization Information Resources Statistical Tables | 151 153 159 160 161 162 164 165 168 169 169 176 178 178 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future Regional Economic Cooperation Achieving Millennium Development Goals Population and Urbanization Information Resources Statistical Tables Bibliography Abbreviations | 151 153 159 160 161 162 164 165 168 169 169 176 178 178 201 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future Regional Economic Cooperation Achieving Millennium Development Goals Population and Urbanization Information Resources Statistical Tables Bibliography | 151 153 159 160 161 162 164 165 168 169 169 176 178 201 207 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future Regional Economic Cooperation Achieving Millennium Development Goals Population and Urbanization Information Resources Statistical Tables Bibliography | 151 153 159 160 161 162 164 165 168 169 169 169 176 178 201 207 208 |
| Overstretched Water Resources Land Degradation Industrial, Transport, and Urban Pollution Climate Change Natural Disasters Poverty and Environment Toward Sustainable Development Healing Environment Wounds Developing a Sustainable Future Regional Economic Cooperation Achieving Millennium Development Goals Population and Urbanization Information Resources Statistical Tables Bibliography Abbreviations Acknowledgments Contributors | 151 153 159 160 161 162 164 165 168 169 169 169 176 178 178 201 207 208 208 |

al al a sur

140

the second

Foreword

entral Asia, made up of Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan, is a vast land mass separating the countries of Eastern Europe and the Caucasus from East and South Asia. It is a region rich in natural resources, including oil and gas, and has a surprising variety of animals and plants. And it is a region long shrouded in mystery, known by most for its role in ancient trans-Asian commerce via the Silk Road.

This Atlas brings to readers a sense of the beauty and wealth of Central Asia's natural resources, some issues its peoples face in using and conserving them, and the progress being made toward sustainable development.

The Atlas is an output of the Central Asian Countries Initiative for Land Management (CACILM) Program, a 10-year partnership between the Central Asian countries and the international donor community that began in 2006. Its aim is to restore, maintain, and improve the productive functions of land in Central Asia, leading to better economic and social well-being, while preserving the ecological functions of the land. The initiative has set in motion an integrated approach to sustainable land management that will have local, national, and global benefits.

I would like to express sincere thanks to the many colleagues in the Asian Development Bank and those working on CACILM, and in institutions in the countries of Central Asia for their help in bringing this Atlas to life.

I hope that the Atlas fulfills its dual purpose of setting out the diversity and importance of the region's natural resources and the need to maintain them while offering a fascinating glimpse into this very special part of our world.

luan Miranda

Director General Central and West Asia Department

