





International Human Dimensions Programme on Global Environmental Change

# Inclusive Wealth Report 2014

Measuring progress toward sustainability

The *Inclusive Wealth Report 2014* is a joint initiative of the UN University – International Human Dimensions Programme (UNU-IHDP) and the UN Environment Programme (UNEP), in collaboration with the UNESCO-Mahatma Gandhi Institute of Education for Peace and Sustainable Development (UNESCO-MGIEP), ASCENT Africa Sustainability Centre, the Malaysian Industry-Government Group for High Technology (MIGHT), Science to Action (S2A), the Ministry of Environment – Government of Japan, the UN University – Institute for the Advanced Study of Sustainability (UNU-IAS), and endorsed by the Science and Technology Alliance for Global Sustainability.

**This volume may be cited as:** UNU-IHDP and UNEP (2014). *Inclusive Wealth Report 2014. Measuring progress toward sustainability.* Cambridge: Cambridge University Press.

# Inclusive Wealth Report 2014

Measuring progress toward sustainability







**CAMBRIDGE UNIVERSITY PRESS** 

Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo, Delhi, Dubai, Mexico City

Cambridge University Press
The Edinburgh Building, Cambridge CB2 8RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org

© United Nations University – International Human Dimensions Programme on Global Environmental Change 2014

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2014

Printed in the United Kingdom at the University Press, Cambridge

A catalogue record for this publication is available from the British Library

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication, and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

The views and opinions expressed herein do not necessarily represent the position of the United Nations University – International Human Dimensions Programme on Global Environmental Change, the United Nations Environment Programme, nor those of their sponsors.

**Editorial consultants**: Carmen Scherkenbach, John Tkacik

Cover illustration: Katja Cloud © INKeye, Bonn

Design and layout: Katja Cloud, Louise Schenk

Project assistants: Elorm Darkey, Cecília Fernandes,
Kira Petters

## Contents

Contributors

хi

Health capital Foreword by Partha Dasgupta xiv Preface by Anantha Duraiappah xix Kenneth J. Arrow, Partha Dasgupta, and Acknowledgements Kevin J. Mumford xxii xxiv Abbreviations xxvii Executive summary INTRODUCTION Part III: New insights 1 137 **CHAPTER 6** Part I: What does the data say? Forest wealth of nations Haripriya Gundimeda and Giles Atkinson 15 CHAPTER 1 Accounting for the inclusive wealth of 159 **CHAPTER 7** nations: key findings of the IWR 2014 Challenges to ecosystem service valuation for wealth accounting Pablo Muñoz, Kira Petters, Shunsuke Managi, and Elorm Darkey Edward B. Barbier 179 **CHAPTER 8** 63 CHAPTER 2 Using inclusive wealth for policy The IWR and policy lessons evaluation: the case of infrastructure Anantha Kumar Duraiappah, Cecília Fernandes, capital Pushpam Kumar, and Rodney Smith Ross D. Collins, Vivek Sakhrani, Noelle E. Selin, Adnan Alsaati, and Kenneth M. Strzepek Part II: Human capital 201 Annex 1: Conceptual framework CHAPTER 3 83 Human capital measurement: 207 Annex 2: Methodology a bird's eye view Annex 3: Data Gang Liu and Barbara M. Fraumeni 109 **CHAPTER 4** Glossary of terms 323 Human capital: country estimates using alternative approaches 326 Contributing organizations Barbara M. Fraumeni and Gang Liu

**CHAPTER 5** 

# Figures

CHA	APTER 1	6.	Energy projections by energy source	
1.	A three-capital model of wealth creation18	7.	Energy demands until 204073	
2.	Schematic representation of the Inclusive	8.	Reserves-to-production: remaining extract years	
	Wealth Index ( $\!W\!$ ) and the Adjusted Inclusive		of fossil fuels74	
	Wealth Index (Wadj)20	9.	Oil crude prices74	
3.	Annual average growth rates in W, W per	10.	Change in oil wealth per capita (in percentage),	
	capita and <b>W</b> adj for the 140 countries assessed		2010/199075	
	in the IWR 2014 during the time period between	11.	Germany: natural capital per capita – annual	
	1990 and 201022		growth rates76	
4.	Annual average growth rate in $\mathbb W$ and $\mathbb W$ per	12.	Germany: consumption of solar energy (ter-	
	capita23		awatts-hours)76	
5.	<b>W</b> growth rates before per capita adjustment	13.	The fossil fuel, natural capital, renewable energy,	
	disaggregated by capital form, annual average for		inclusive wealth cycle7	
	1990-201024			
6.	Changes in worldwide inclusive wealth per capita	CHA	APTER 3	
	and other indicators for 1992–201027	1.	Human capital: a sketch of its formation, com-	
7.	Percentage of human, produced, and natural		position, and benefits generated8	
	capital in total wealth, annual average for 1990-	2.	A taxonomy of different measuring	
	201029		approaches9	
8.	Developments in the composition of wealth by			
	capital form, 1992–201030	CHA	CHAPTER 4	
9.	Percentage shares of human capital and natural	1.	International comparison of J-F human capital	
	capital in total wealth, average 1990-201030		per capita, individuals aged 15 to 64, 2006116	
10.	Average annual growth rates of <b>W</b> adj disaggre–	2.	Average years of education 2005 compared with	
	gated by the three adjustments34		human capital per capita 2006, individuals aged	
11.	Average annual growth rates of $ \mathbb{W} $ per capita,		15 to 6411	
	GDP per capita, and HDI, period 1990–2010 (in	3.	Comparison of education attainment, 2005.	
	percentage)36		Between ages 25–34 and 55–64, with ages 15–64	
12.	Comparing annual avarage growth in ${ m W}$ per		average comparison11	
	capita, GDP per capita, and HDI, period 1990–	4.	2005 Educational attainment comparisons, ages	
	201037		25-34 vs. ages 55-64118	
		5.	Cross tabulations of younger vs. older educa-	
			tional attainment, 2005 and human capital per	
CHAPTER 2			capita, 2006119	
1.	Average education levels attained across coun-			
	tries66	CHAPTER 5		
2.	Growth rates of investment in education per	1.	Life expectancy at birth125	
	capita across countries, 2010/200967	2.	Use of capital in production126	
3.	Change in cropland wealth per capita, 2010/1990			
	69	CHA	APTER 6	
4.	Changes in pastureland wealth per capita,	1.	Growth (measured in GDP) vis-à-vis forest area	
	2010/199070		(in hectares) accumulation in different countries	
5	Change in cropland wealth per capita 71		1990_2010 1/1	

2.	Trade-offs between economic growth and forest	7.	Wealth-based scenario analysis should search
	quality (measured by growing stocks in cubic		for near-term policies that will perform reason-
	metrics)148		ably well across the landscape of plausible
3.	Trade-offs between growth (measured in GDP)		futures and values195
	and forest wealth149		
4.	Decadal average change in wealth to change in		
	GDP152		
5.	Composition of forest wealth in selected coun-		
	tries, 2010153		
6.	Relation between change in population and		
	change in forest wealth (in percentage), 1990-		
	2010154		
СН	APTER 7		
1.	Adjusting GDP for reproducible, human, natural,		
	and ecological capital161		
2.	Valuing ecosystem goods and services and		
	ecological capital depreciation162		
3.	Replacement cost vs. expected damage function		
	estimation of protective value168		
CH	APTER 8		
1.	Inclusive wealth of an economy represented as a		
	dynamic, interconnected system182		
2.	Infrastructure-adjusted human capital may be		
	lower than the baseline projection due to health		
	related reductions in the adult population and/or		
	life's working period186		
3.	Percent change in capital stocks per capita in		
	China compared to the base year (1990 to 2008);		
	reproduced using data from the UNU-IHDP and		
	UNEP (2012) Data annex187		
4.	Mean monthly Nile flow at Aswan and growing		
	seasons; the dam resulted in larger and more		
	stable flows in the summer growing season.		
	Reproduced with permission from Strzepek et al.		
	(2008)189		
5.	1000 oil price trajectories (1990 to 2008) mod-		
	eled using GBM192		
6.	The distribution of 2008 oil wealth in Saudi		
	Arabia under oil price uncertainty193		

## **Tables**

**CHAPTER 5** 

CHA	PIER1
1.	Relative contribution (in percentage) of human,
	produced, and natural capital to $ \mathbb{W} $
	growth by sub-regions, regions, and total world
	average26
2.	Regional and subregional composition (in
	percentage) of wealth by capital form, average
	1990-201031
3.	Wealth composition (in percentage) based on
	income-based country classification, average
	1990-201031
4.	Decomposition analysis of the three terms
	accounted in for human capital and their contri-
	bution to the changes in human capital41
СНА	PTER 3
1.	Key findings about country practices on
	measuring human capital95
2.	A list of selected national studies applying
	income-based approaches97
	CHAPTER 4
1.	Ranking of countries by J-F per capita lifetime
	income116
2.	Cross tabulations of younger vs. older
	educational attainment and human capital per
	capita119

### CHAPTER 7

services and valuation studies.....164 Valuation estimates for the storm protection

Examples of estuarine and coastal ecosystem

- benefits of coastal restoration, Louisiana.....165
- Valuation of storm protection service of mangroves, Thailand, 1996-2004 ......169

#### **CHAPTER 8**

Decomposition of welfare loss in 2005; these estimates represent the difference between what historically occurred and what would have occurred under a cleaner infrastructure scenario. Reproduced with permission from Matus et al. (2012)......187

预览已结束,完整报告链接和二维码如下:

Total health expenditure (percentage of GDP) 124 Estimated value of the average annual increase

https://www.yunbaogao.cn/report/index/report?reportId=5\_8851



