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Accelerating Equitable Achievement of the MDGs

Closing Gaps in Health and Nutrition Outcomes

Asia-Pacific Regional MDG Report 2011/12

in collaboration with

UNFPA unicef World Health Organization

The Economic and Social Commission for Asia and the Pacific (ESCAP) promotes regional cooperation for inclusive and sustainable economic and social development in Asia and the Pacific, a dynamic region characterized by growing wealth, diversity and change, but also challenged with persistent poverty, environmental degradation, inequality and insecurity. ESCAP supports member States with sound strategic analysis, policy options and capacity development to address key development challenges and to implement innovative solutions for region-wide economic prosperity, social progress, environmental sustainability and resilience to external shocks. ESCAP, through its conference structure, assists member States in forging a stronger, coordinated regional voice on global issues by building capacities to dialogue, negotiate and shape development agenda in an age of globalization, decentralization and problems that transcend borders. A key modality for this strategy is the promotion of intraregional connectivity and regional integration.

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.8 billion people who live on less than $2 a day, with 903 million struggling on less than $1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration. Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

UNDP partners with people at all levels of society to help build nations that can withstand crisis, and drive and sustain the kind of growth that improves the quality of life for everyone. On the ground in 177 countries and territories, we offer global perspective and local insight to help empower lives and build resilient nations.

Accelerating Equitable Achievement of the MDGs

Closing Gaps in Health and Nutrition Outcomes

Contents

Foreword vii

Acknowledgements viii

Abbreviations ix

OVERVIEW

Accelerating Equitable Achievement of the MDGs: Closing Gaps in Health and Nutrition Outcomes 1

Diagnosing disparities 1

Disparities between countries 1

Disparities within countries 2

Closing the health gaps 3

1. Address the social determinants of health 3
2. Expand access to primary health care 3
3. Integrate child and maternal health into a continuum of care 3
4. Act on the health needs of the urban poor 4
5. Devise sustainable financial strategies 4
6. Improve the governance of health systems 4
7. Enhance the affordability of medicines through generics 4
8. Strengthen international partnership and regional cooperation 5

Mutual inspiration 5

CHAPTER I

MDGs in Asia and the Pacific: where we stand 7

Asia and the Pacific on the global stage 12

Health – diagnosing the deficits 12

Feeding our children 12

Preventing child deaths 12

Preventing maternal deaths 15

Providing safe drinking water 23

Ensuring access to basic sanitation 23

Number of people in off-track countries who will gain if targets are reached 27

Chapter I Endnote 28

CHAPTER II

Diagnosing disparities 29

The extent of disparities 30

Measuring disparities between countries and over time 30

Why some countries do better than others in health 35

Economic growth 36
Health expenditure 36
Better governance 36
Number of health personnel 36
Gender equality and women's development 38
Infrastructure 38
Child immunization 40
Sanitation and water supplies 40
Population growth 40
Literacy 40

Accounting for disparities 40

Disparities within countries 41

Raising the attainment levels while reducing disparities 45

Explaining disparities within countries 46

Urban-rural gaps 49
Caste, ethnicity and language group 53
The importance of economic status 53
Regional differences in policies and programmes 53

Mining the data 55

Chapter II Endnotes 55

CHAPTER III

Closing the health gaps 57

1. Address the social determinants of health 57
2. Expand access to primary health care 59
3. Integrate child and maternal health into a continuum of care 61
4. Act on the health needs of the urban poor 62
5. Devise sustainable financial strategies 63
6. Improve the governance of health systems 69
7. Enhance the affordability of medicines through generics 70
8. Strengthen international partnership and regional cooperation 71

Mutual inspiration 72

Chapter III Endnotes 73

CHAPTER IV

Way Forward 75

MDGs Beyond 2015 76

Chapter IV Endnotes 77

BIBLIOGRAPHY

78

STATISTICAL APPENDIX

Technical Note 1: MDG progress classification 81

Technical Note 2: Factors explaining disparities between countries 85

Technical Note 3: Accounting for disparities between countries 88

Technical Note 4: Analysis of disparities within countries 90

Technical Note 5: Selected MDG Indicators 97

BOXES

Box I-1 Ensuring comparable data 8
Box I-2 Data on HIV 10
Box I-3 Reproductive health 28

Box III-1 Unlikely alliances for reducing HIV-related stigma 58
Box III-2 Primary health care in China 59
Box III-3 Expenditure on preventive and public health 60
Box III-4 New facilities reduce infant mortality in Bihar, India 60
Box III-5 Mongolia's success in reducing maternal mortality 63
Box III-6 Total health expenditures as a share of gross domestic product 64
Box III-7 Out-of-pocket expenses as a share of private health expenditures 65
Box III-8 Health expenditure gaps 68
Box III-9 Marginal budgeting for bottlenecks in Pakistan 69

TABLES

Table I-1 Country groups on and off track for the MDGs 9
Table I-2 Countries on and off track for the MDGs 11
Table I-3 Rate of progress needed for off-track countries to meet the child nutrition target 15
Table I-4 Rate of progress needed for off-track countries to meet the under-5 mortality target 17
Table I-5 Rate of progress needed for off-track countries to meet the maternal mortality target 19
Table I-6 Rate of progress needed for off-track countries to meet the skilled birth attendance target 21
Table I-7 Rate of progress needed for off-track countries to meet the antenatal care target 22
Table I-8 Rate of progress needed for off-track countries to meet the safe drinking water target 23
Table I-9 Rate of progress needed for off-track countries to meet the basic sanitation target 26
Table I-10 Potential gains if off-track countries can meet their targets 27

Table II-1 Gini and Theil indices of inter-country distribution of MDG indicators 34
Table II-2 Factors considered to explain disparities for selected MDG indicators 43

FIGURES

Figure I-1 Asia and the Pacific compared with Sub-Saharan Africa and Latin America and the Caribbean 13
Figure I-2 The Asia-Pacific share of the developing world's deprived people 14
Figure I-3 Progress in reducing the proportion of under-5 children underweight 14
Figure I-4 Progress in reducing under-5 mortality 16
Figure I-5 Progress in reducing maternal mortality 18
Figure I-6 Progress in increasing skilled birth attendance 20
Figure I-7 Progress in expanding antenatal care 22
Figure I-8 Progress in improving access to safe drinking water 24
Figure I-9 Progress in expanding access to basic sanitation 25
Figure I-10 Progress in contraceptive prevalence rate and adolescent birth rate in Asia and the Pacific 28

Figure II-1 Proportion of population below $1.25 (PPP) per day, per cent, 2004 30
Figure II-2 Net enrolment in primary education, per cent, 2009 31
Figure II-3 Infant mortality rate per 1,000 live births, 2010 31
Figure II-4 Under-5 mortality rate per 1,000 live births, 2010 31
Figure II-5 Maternal mortality rate per 100,000 live births, 2008 32
Figure II-6 Incidence of underweight children, per cent, latest year 32
Figure II-7 HIV prevalence among population 15-24 years old, per cent, 2009 32
Figure II-8 Inter-country disparity in prevalence of underweight children under 5, 1995-2005 33
Figure II-9 Contribution to disparities by subregion, selected MDG indicators 35
Figure II-10 Cross-country variation in under-5 mortality explained by differences in per capita health spending 37
Figure II-11 Cross-country variation in maternal mortality explained by differences in corruption control 37
Figure II-12 Cross-country variation in maternal mortality explained by differences in percentage of births attended by skilled health personnel 38
Figure II-13 Cross-country variation in child mortality explained by differences in gender development 39
Figure II-14 Births attended by skilled health personnel and the extent of paved roads 39
Figure II-15 Contributions to inter-country disparities for three MDG health-related indicators 41
Figure II-16 Health disparities across sub-national jurisdictions in two large countries 42
Figure II-17 Health-related disparities across jurisdictions in two small countries 42
Figure II-18 Disparities and attainment in health-related MDG targets 44
Figure II-19 Drivers of disparities in underweight prevalence among under-5 children 46
Figure II-20 Drivers of disparities in the prevalence of under-5 mortality 47
Figure II-21 Drivers of disparities in the coverage of antenatal care (at least one visit) 48
Figure II-22 Drivers of disparities in access to improved sanitation 49
Figure II-23 Under-5 children underweight, urban and rural, by household wealth, India and Nepal 50
Figure II-24 Access to water and sanitation, urban and rural, by household wealth, the Philippines and Indonesia 51
Figure II-25 Access to antenatal care, urban and rural, by household wealth, Azerbaijan and Timor-Leste 52
Figure II-26 Access to skilled birth attendants, urban and rural, by household wealth, Maldives and Bangladesh 52
Figure II-27 The potential for reducing regional disparities within countries 54

Figure III-1 Under-5 mortality and per capita expenditure on health 66
Figure III-2 Association between public health expenditure and GDP, selected countries 67

Foreword

At a time of widespread financial uncertainty and economic slowdown the world is turning to the Asia-Pacific region as a source of global economic growth. As the year 2015 approaches, the world will also be looking towards our region to sustain a much broader set of objectives – the Millennium Development Goals (MDGs).

The reason is partly demographic. The Asia-Pacific region has more than 60 per cent of global population. Strong achievement in our region, whether in poverty reduction, or in education, or health, or environmental protection will inevitably bolster the global averages. In many respects, Asia and the Pacific has indeed been leading the way. Thanks to strong economic growth, the region as a whole is well on track to meet the goal of halving poverty between 1990 and 2015 – the year by which all the goals are to be achieved. For some of the other goals, however, regional progress has been less impressive – and there are often striking contrasts in achievement both between countries and within them.

This is the latest in a series of Asia-Pacific MDG reports produced since 2004 by the Economic and Social Commission for Asia and the Pacific/Asian Development Bank/United Nations Development Programme (ESCAP/ADB/UNDP) regional partnership to support the achievement of the MDGs. Employing a now-familiar system of colour-coded 'traffic light' charts, the reports have tracked progress on each indicator – signalling which countries and subregions are on- or off-track to meet each of the goals.

In addition, this year's report underlines the extent of disparities across the region, looking especially at the wide gaps in the goals related to health and nutrition where the region is particularly under-performing. Even countries that have been making rapid economic progress still lose shocking numbers of children before their fifth birthday as well as thousands of mothers who die unnecessarily, as a consequence of the natural process of childbirth. The report also reveals many opportunities for improving health outcomes – highlighting the policies and programmes which, when backed by commitment and adequate resources, could help make the Asia-Pacific region a driving force behind the global achievement of all the MDGs.

The MDGs are very diverse and inevitably transcend the interests and responsibilities of any single international organization. The report has therefore emerged from wide consultations, not just within and between the three partner organizations, but also many other UN agencies, particularly this year UNAIDS, UNICEF, UNFPA and WHO, and we are grateful to everyone who has contributed data, analysis and insights. We hope that the resulting report will stimulate further debate and above all the sustained action needed across the region to accelerate equitable achievement of the MDGs.

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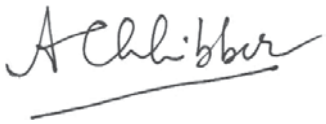

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This is the sixth report that has been prepared under the ESCAP/ADB/UNDP regional partnership programme on achieving the Millennium Development Goals in Asia and the Pacific region. The report continues to be the most authoritative regional assessment of the progress so far achieved and obstacles encountered in achieving the MDGs in Asia and the Pacific region. It provides a basis for conducting policy dialogue at senior level and generating regional consensus on some of the most pressing development issues facing the region.

The report has been prepared under the direct supervision and guidance of Dr. Noeleen Heyzer, Under-Secretary-General of the United Nations and Executive Secretary of ESCAP, Dr. Ajay Chhibber, UN Assistant Secretary-General, UNDP Assistant Administrator and Director for Asia and the Pacific, and Dr. Ursula Schaeffer-Preuss and Dr. Bindu N. Lohani, former and present Vice-Presidents, Asian Development Bank.

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Abbreviations

ADB	Asian Development Bank
AIDS	acquired immunodeficiency syndrome
ASEAN	Association of South-East Asian Nations
CIS	Commonwealth of Independent States
CO_2	Carbon dioxide
DHS	Demographic and Health Survey
ESCAP	Economic and Social Commission for Asia and the Pacific
FAO	Food and Agriculture Organization
FDI	foreign direct investment
FTA	free trade agreement
GAVI	Global Alliance for Vaccines and Immunization
GDI	Gender-related development index
GDP	gross domestic product
HIV	human immunodeficiency virus
IAEG	Inter-Agency and Expert Group on MDG Indicators (IAEG)
ILO	International Labour Organization
IMF	International Monetary Fund
LAC	Latin America and the Caribbean
LDC	least developed country
LLDC	landlocked developing country
MDGs	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
NCD	non-communicable disease
NGO	non-governmental organization
ODA	official development assistance
PPP	purchasing power parity
SAARC	South Asian Association for Regional Cooperation
SIDS	Small island developing states
TB	tuberculosis
TRIPS	Trade Related Intellectual Property Rights
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WDI	World Development Indicators
WFP	World Food Programme
WHO	World Health Organization

OVERVIEW

Accelerating Equitable Achievement of the MDGs: Closing Gaps in Health and Nutrition Outcomes

The Asia-Pacific region has registered impressive progress on many Millennium Development Goal (MDG) indicators, but is still lagging on some important targets, particularly those related to health. Across the region there are striking disparities in achievement, both between and within countries. If they are to reach the MDG targets many countries will need to step up their efforts to extend health services to their most vulnerable people.

The Asia-Pacific region has already taken considerable strides towards achieving the MDGs. Between 1990 and 2009 the region as a whole reduced the proportion of people living on less than $1.25 per day from 50 to 22 per cent, and as a result is firmly on track to meet the poverty goal. The region has also achieved the targets for a number of other goals. On gender, for example, it has successfully reduced gender inequality in primary, secondary and tertiary education. On health, it has begun to reduce the prevalence of HIV and has stopped the spread of tuberculosis. And on the environment, it has increased the proportion of land area that is covered by forests or has protected status, while also reducing the consumption of ozone-depleting substances. At the household level, it has more than halved the proportion of people without access to safe drinking water.

On the other hand, Asia and the Pacific region is still lagging in some major areas. Indeed it is behind schedule for ten of the 22 indicators for which reliable data is available and therefore assessed in this report. It has, for example, yet to ensure that all children complete primary school. Nor has it managed to extend basic sanitation sufficiently rapidly with over 1.8 billion persons remaining deprived in this respect. It has also failed to reduce CO_2 emissions.

Most disturbing of all however, it has been slow to prevent people going hungry, stop children dying before their fifth birthday, and prevent mothers dying from causes related to childbirth. Moreover, on most indicators, because of the region's large population, it is also home to a high proportion of the world's deprived people.

Nevertheless, many countries in the region are within reach of several MDG targets. With accelerated efforts substantial progress can still be made in the time remaining.

Diagnosing disparities

Disparities between countries

In addition to speeding up progress, efforts will be needed to bridge the wide disparities that prevail in social attainments between countries which the regional averages conceal. Across Asia and the Pacific there are striking disparities in the MDG attainments. Many people have prospered while large numbers still live in miserable conditions. This is not just unacceptable, it also poses threats to national economic and social stability – and can lead to friction between countries while hampering the prospects of greater regional cooperation.

Even for poverty there are marked differences in achievement. The regional average for the proportion

of the population living below the $1.25-per-day poverty level is around 22 per cent, but the rate ranges from 0 per cent in Malaysia to 55 per cent in Nepal. For education, for which most countries have performed fairly well, the gaps tend to be narrower. But for health indicators the gaps are often much wider. For infant mortality, for example, the regional average is 36 per 1,000 live births, but the rate ranges from 103 in Afghanistan to 10 or less in some of the more advanced developing countries.

Worryingly, in some respects, the situation is deteriorating. Cross-country disparities have widened for some indicators: population in poverty, for example, underweight children, infant and under-5 mortality, maternal mortality, and TB incidence and prevalence. More hopefully, for other indicators, the disparities have been reduced – for HIV prevalence, for the environmental indicators, and for all the education indicators.

The analysis in this report shows that these disparities are largely accounted for by gaps between countries within subregions. In the case of underweight children, for example, around 44 per cent of the inter-country disparity results from differences between subregions; but the remaining 56 per cent comes from disparities between countries within subregions, with the widest gaps evident within Central and West Asia, followed by those within South-East Asia, and East Asia.

Why have these health gaps arisen? One of the most significant factors is differences in health spending. In countries with faster economic growth governments have been able to raise more revenue for expanding public health provision, and households have had more income to pay for services from both public and private providers. The analysis in this report shows that countries that spend more per capita on health, public and private combined, have lower rates of under-5 and maternal mortality and have a smaller proportion of children underweight. But public and private provision may have different outcomes: private health expenditure was seen to impact less in reducing child malnutrition while public expenditure was more helpful in that – highlighting the value of preventive public health measures such as immunization and control of diseases such as malaria and diarrhoea. But for reducing under-5 and maternal mortality, the picture was reversed: private expenditure was more effective.

These results underline the importance of not just increasing public health expenditure but also improving its quality and effectiveness – by strengthening the governance of health systems and ensuring sufficient trained staff. Other important factors are better infrastructure along with access to improved water supplies and sanitation. Also vital for children's health is the status of their mothers: women who are literate, well informed and empowered are in a much better position to care for themselves and their children.

Disparities within countries

Just as there are wide disparities in MDG achievement between countries, so there can be equally wide disparities within countries. Indeed, while the better off people in Asia-Pacific developing countries have health standards comparable to those in richer developed countries their fellow citizens are very much worse off. There are also differences related to location: typically the less healthy are those living in the poorest provinces or states. There are also striking health gaps between urban and rural areas, between boys and girls, and between more and less educated sections of the population.

As those that are left behind catch up, i.e. disparities narrow, overall levels of health increase. The reverse, however, is not necessarily true. Many countries have, for example, made significant improvements in access to safe water supplies but still have wide gaps between the most and least advantaged households.

Generally the different types of disparities overlap and interact. Poorer and less educated families are also likely to be those without adequate access to water and sanitation and their children are at greater risk of malnutrition. As a result, improvements in just one aspect of their lives might not make much difference to their health. The benefits of better access to water, for example, might still be outweighed by the effects of poverty or the lack of mothers' education. But in some cases, even a single factor could become a stumbling block. In some countries, for example, just improving a mother's level of education could on its own lift household health standards.

For most indicators rural areas generally do worse than urban areas. However, most of these differences correspond to differences in household wealth. Wealth is assessed in household surveys by noting the ownership of selected assets, such as televisions and bicycles, and other factors such as the materials used for housing construction. For access to water and sanitation, for example, almost all the rural-urban differences reflect differences in household wealth. Similarly, for mothers at similar wealth levels the likelihood of a birth being attended by a skilled health professional is similar in both urban and rural areas.

Nevertheless, lower health standards among the poor and disadvantaged groups are not just the result of lower incomes. They arise from a more general lack of material resources, including food, housing and safe water supplies. Poorer people are also more likely to live in places with limited or low-quality health services. And with less education, poor households may know little of the benefits of medical treatments and interventions. Indeed, poor health can also be a result of a general lack of empowerment.

Differences in household wealth or levels of education may also account for some of the large, and sometimes dramatic, disparities between provinces and districts. But this is not the whole story. Above and beyond these differences there are factors tied to specific regions – perhaps reflecting the policies and programmes of local administrations.

Closing the health gaps

If governments are to reduce these disparities and raise standards of health they will have to focus much more sharply on the needs of the poor and vulnerable. This will also require a more integrated approach, looking beyond health to address other issues such as poverty, nutrition, water supplies and sanitation, and women's empowerment. Fortunately, the region now has a wealth of knowledge and expertise on how to overcome health deficits. This suggests eight priorities.

1. Address the social determinants of health

Many countries that have boosted economic growth and household income have had less success in assuring health for all. Clearly there are many other factors at play – notably a range of social barriers and determinants. These can be related to gender, class, ethnicity, caste, language, and religion – arising from ingrained social structures, norms and processes that accept and even encourage unfair distributions of wealth and social resources. For example, people living with HIV and some other chronic illnesses, face high levels of stigma and discrimination that hinder their access to medical testing, treatment, care and support.

One of the most significant social determinants is gender norms. Governments aiming to improve health standards will therefore want to improve the status of women, provide effective reproductive health services, implement comprehensive breastfeeding programmes in line with current recommendations and increase community-based pressures against sex-selective abortion.

Social determinants are also major drivers of non-communicable diseases (NCDs) – notably diabetes, cardiovascular diseases, cancer and chronic respiratory diseases. Poor people, lacking education and information, or the funds for healthier options, are more vulnerable to the impact of NCDs than the rich and are likely to die earlier. Directly and indirectly, NCDs will have far-reaching impacts on progress towards the MDGs.

2. Expand access to primary health care

A number of countries have put greater emphasis on primary care with supporting basic infrastructure such as connectivity to roads, electricity and access to clean water and improved sanitation. But implementation has been uneven; indeed many have instead invested heavily in specialized curative care and relied more on private provision. This leaves many poor people behind who face severe financial hardships because they have to pay for health care.

Some countries have sought to implement primary health care through an 'Essential Service Package' comprising maternal care, child health care and action against some communicable diseases. But funding has been insufficient, leading to long waits and the introduction of unofficial fees, and leaving some areas underserved.

In the Pacific WHO has promoted the 'Healthy Islands' approach. This comprehensive package includes: safe water and sanitation, food security, waste management, human resource development, prevention and control of communicable and non-communicable diseases, reproductive health services, and primary health care. Recently there have been calls to reposition this approach as a broader development initiative which would incorporate other elements such as food security and climate change.

3. Integrate child and maternal health into a continuum of care

A robust health system focuses on the needs of various groups along the continuum of care. Health systems can, for example, reduce inequities in maternal and under-5 mortality by adopting a lifecycle approach – improving access and addressing the vulnerabilities and risks that women, adolescents and children face throughout their lives. If mothers face emergencies during pregnancy and birth, for example, it is vital that they have timely support from skilled attendants, and if necessary from doctors who can treat obstetric complications. Other simple and cost-effective

measures could reduce child deaths by around two-thirds. These include implementing comprehensive breastfeeding programmes (early initiation of breastfeeding and exclusive breastfeeding in particular), controlling vector-borne diseases, and strengthening immunization programmes.

Governments also need to take a rights-based approach to the laws, policies, social norms, customs and practices that impoverish and disempower women. This should involve specific action against gender-based violence.

4. Act on the health needs of the urban poor

The urban poor are often underserved by health and other services. People in slums often live in squalid conditions that expose them to disease and to high rates of morbidity and mortality.

Better urban health services require strong institutional frameworks that can deliver cross-sectoral, inter-agency services. This requires capable and inclusive governance that focuses on basic rights – to health, education and other social services. Health interventions are unlikely to succeed if they are not embedded in broader efforts to respect the rights of their citizens and serve their basic needs.

5. Devise sustainable financial strategies

Though much can be achieved at relatively low cost, some health interventions are expensive. In the case of access to a skilled professional at birth, for example, reaching the projected value for MDG 5 has been estimated at $8 billion for the region, though if the off-track countries are to close their gaps they would need a further $13 billion. Similarly, closing the gap for safe water supplies would cost an additional $2 billion and for safe sanitation an additional $8 billion.

Where are the funds likely to come from? As incomes rise, more people should be in a position to finance their own health needs. In fact, however, experiences show that as countries develop, the balance of expenditure tends to shift from private to public. This is happening because as countries develop they also collect lots of taxes from the public which enable them to provide public health services. Private health expenditure also rises, but not always to the same extent. Richer societies can afford to offset rises in income inequality by providing more health services as public goods.

But increasing health expenditure does not necessarily demand high national income. This is clear from cross-country analysis which shows that countries with similar per capita GDPs demonstrate different levels of health expenditure.

Some countries should be able to spend more on health by mobilising more taxes through tax reforms and improving tax administration as well as increasing fiscal deficits while keeping within accepted limits. Another option is to reprioritize government budgets by switching resources from other government expenditures. Governments can also gain resources through more efficient management of health services.

6. Improve the governance of health systems

In many developing countries health services are poorly managed. Resources can also drain away through corruption and staff absenteeism. Also linked to corruption is the spread of fake, counterfeit, and substandard medicines.

Action is needed from above and below. Governments will need to ensure more transparent and better managed services, while users will need to work together to resist demands for bribes. It is also vital to ensure more effective regulation. When the public health sector fails to perform, the private sector does not perform either. The government therefore needs to set the rules of the game with regulations that guarantee quality of care and ensure fair pricing of health services.

7. Enhance the affordability of medicines through generics

Ensuring affordable access to medicines is an important issue for the spread of medical care in developing countries facing resource constraints. A number of countries, including India, Malaysia and the Philippines have pursued diverse policy options such as focussing on production of generics and compulsory licensing for importation of antiretroviral medicines to keep the prices of medicines within the reach of the poor. Use of generic alternatives to patented medicines had, for example, reduced the cost of HIV/AIDS treatment, from $10,000-$15,000 per year per patient to under $80 for certain first line regimens now.

The least developed countries can retain the flexibility on introduction of product patents until 2016 and seek further extensions of the transition period. These flexibilities need to be retained and buttressed by supportive and harmonized regional trade agreements. Countries also need to cooperate on accelerating research and development (R&D) on affordable drugs to treat the infectious diseases that afflict low-income countries in particular.

8. Strengthen international partnership and regional cooperation

There is considerable potential for greater regional cooperation through the exchange of information and experience and, where appropriate, flows of development assistance. The Asia-Pacific already has some mechanisms. The South Asian Association for Regional Cooperation (SAARC) has a SAARC Development Fund which has, for example, initiated a Maternal and Child Health Project. But this is still on a small scale and needs greater momentum and publicity. Similarly, the Association of South-East Asian Nations can focus more of its heath work on effective health policies and programmes among its least developed members.

Governments in LDCs should also be able to rely on some official development assistance which can be used to finance new initiatives that fit into well-functioning primary health care systems. Official development assistance can be supplemented by other, innovative international financing mechanisms such as the UNITAID and the solidarity levies on airline tickets, International Finance Facility for Immunization and the Advance Market Commitment for pneumococcal vaccines. In the context of international partnership for health related MDGs especially for the poorest countries a major new initiative is the United Nations Secretary-General's Global Strategy for Women's and Children's Health, 2010.

Mutual inspiration

Across Asia and the Pacific there are wide disparities in health achievement. But the region is also a rich source of positive experience. No single generic approach will work everywhere. Every country has to address its own specific circumstances. Nevertheless countries can be inspired by their neighbours to drive their own experiments and innovations.

CHAPTER I

MDGs in Asia and the Pacific: where we stand

The Asia-Pacific region has registered impressive progress on many MDG indicators, especially in reducing poverty and achieving gender parity in education. But the region is lagging on some important targets, particularly those related to health, which is the main focus of this report. Many Asia-Pacific countries will need to step up their efforts to reduce hunger, prevent the deaths of millions of women and children, and ensure that all households benefit from basic sanitation.

One of the region's greatest successes has been in propelling people out of poverty. Between 1990 and 2009, Asia and the Pacific reduced the proportion of people living on less than $1.25 per day from 50 to 22 per cent – or from 1.57 billion to 871 million people.[1] The MDG objective over this period was to halve the proportion of people living in extreme poverty; the Asia-Pacific region as a whole has thus already surpassed the poverty goal.

The region has also achieved the targets for a number of other goals. On gender, for example, it has successfully reduced disparities in primary, secondary and tertiary education. On health, it has begun to reduce the prevalence of HIV and has stopped the spread of tuberculosis. And on the environment, it has increased the proportion of land area that is covered by forests or has protected status, while also reducing the consumption of ozone-depleting substances. And at the household level, it has more than halved the proportion of people without access to safe drinking water.

On the other hand, the region is still lagging in some major areas. Indeed it is behind schedule for ten of the 22 indicators assessed in this report. It has, for example, yet to ensure that all children complete primary school. Nor has it managed to extend basic sanitation sufficiently rapidly, or reduce CO_2 emissions. Most disturbing of all however, it has been slow to prevent people going hungry, stop children dying before their fifth birthday, or extend maternal health care services and prevent mothers dying from causes related to childbirth. Moreover, on most indicators, because of the region's large population it is also home to a high proportion of the world's deprived people.

To assess progress, this report uses the United Nations internationally comparable dataset, which may in some cases show data that differ from those published by national statistical offices (Box I-1).

The trends up to 2010 are summarized in Table I-1 – for the region as a whole, for some subregions, and for the least-developed countries. For selected indicators, based on trends of progress since 1990, the report places each country or country group into one of four categories:

- ● *Early achiever – Already achieved the 2015 target*
- ▶ *On track – Expected to meet the target by 2015*
- ■ *Off track: Slow – Expected to meet the target, but after 2015*
- ◀ *Off track: Regressing/No progress – Slipping backwards or stagnating*

Box I-1 – Ensuring comparable data

For a global or a regional report, cross-country data should be strictly comparable. The progress assessments as contained in this report rely on the latest available data from the global database on official MDG Indicators — the United Nations MDG Indicators database (see http://mdgs.un.org/unsd/mdg/).

The United Nations MDG Indicators database is the product of the Inter-Agency Expert Group on MDG Indicators (IAEG), coordinated and maintained by the United Nations Statistics Division. The IAEG includes various Departments within the United Nations Secretariat, a number of UN agencies from within the United Nations system and outside, various government agencies and national statisticians, and other organizations concerned with the development of MDG data at the national and international levels including donors and expert advisers.

The IAEG is responsible for the preparation of data and analysis to monitor progress towards the MDGs at the global level. The Group also reviews and defines methodologies and technical issues in relation to the indicators, produces guidelines, and helps define priorities and strategies to support countries in data collection, analysis and reporting on MDGs.

The data contained in the United Nations MDG Indicators database are typically drawn from official statistics provided by ministries and national statistical offices to the respective international agencies. In some cases, nationally reported figures are adjusted by international agencies to ensure comparability across countries. For data not produced by the national statistical system, the responsible international agency often seeks to fill the gap by using data collected through surveys sponsored or carried out by international agencies. In addition, countries sometimes have more recent data that have not yet become available in the global database.

Due to such time lags and the necessary adjustments or estimation made by international agencies, discrepancies may occur between national and international data series for a given MDG indicator. Such discrepancies could result in differences in the assessment of a country's progress in reaching certain MDG targets.

Another issue is that international agencies continuously refine their methods and extend the sources of the data they collect. This has resulted in better quality data, but it has the disadvantage that the results in this 2011/12 Asia-Pacific MDG Report are not comparable to those in previous editions. For details of the classification method, see http://www.unescap.org/stat/statpub/mdg-progress-classification/.

Source: Most of this box is based on E/ESCAP/CST(2)/INF/5, available at http://www.unescap.org/stat/cst/2/CST2-INF5.pdf, paragraphs 4-8. Annex I of E/ESCAP/CST(2)/INF/5 lists the international agencies responsible for the compilation of international data on the official MDG indicators.

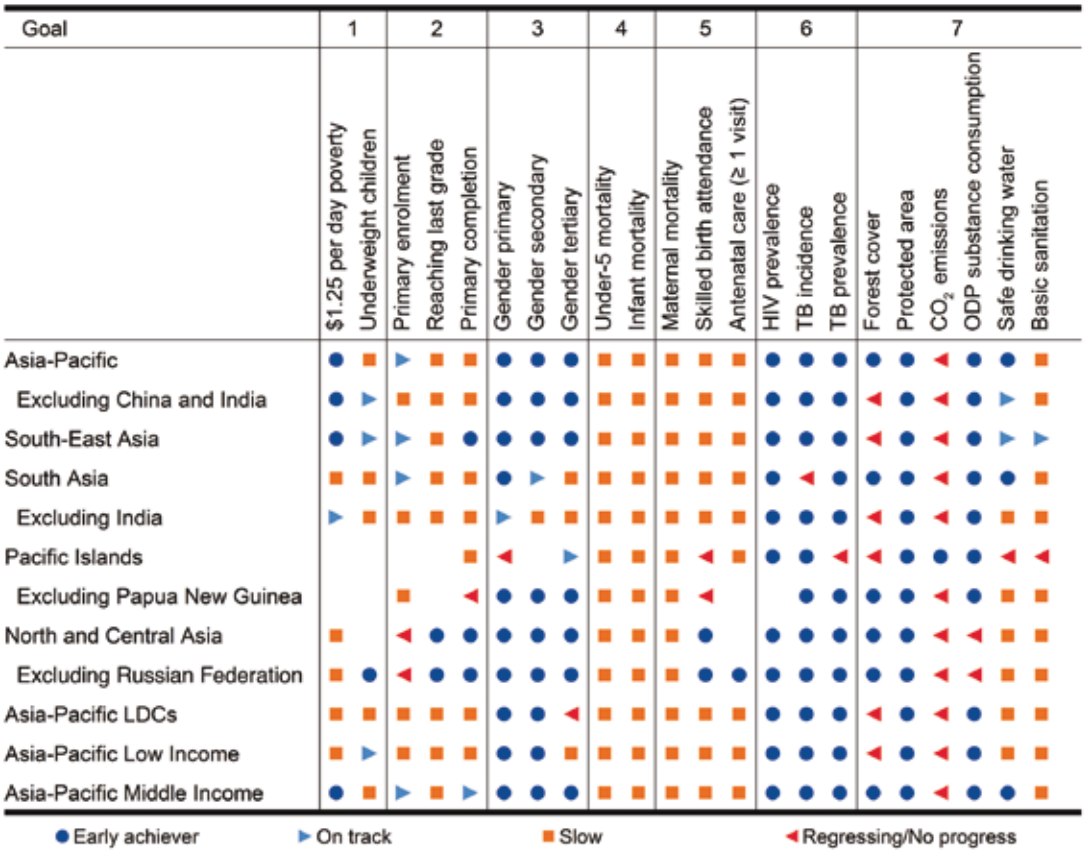
To offer more precise profiles, some rows in this table exclude the largest countries. This is because the overall regional and sub-regional achievement will be heavily influenced by their performance. Table I-1 therefore also shows the performance of the region and sub-regions without these large countries. As can be seen, 'Asia and the Pacific excluding China and India' has in some cases performed worse than the region as a whole – on forest cover, for example, it is regressing, and on extending access to safe drinking water it is only on-track. On the other hand this group of countries has fared better on child nutrition, as measured by the proportion of under-5 children underweight.

Table I-1 also tracks the progress of the region's 13 least developed countries (LDCs). On 15 indicators the LDCs have had slow progress or none at all – performing well only on gender equality in primary and secondary, stopping the spread of HIV and TB, increasing the proportion of protected land areas and reducing consumption of ozone-depleting substances.

The table also highlights significant differences between subregions. The greatest progress has been in South-East Asia, which has already achieved ten of the 22 assessed indicators and is on track for another four. The North and Central-Asian countries as a group have already achieved 11 of the indicators, and if the Russian Federation is excluded they have achieved 13 – though even then they are progressing slowly on another six and making no progress on CO_2 emissions, the consumption of ozone-depleting substances, and ensuring that all children go to primary school.

South Asia started from a low base on many indicators. Although it has made good progress on nine of them

Table I-1 – Country groups on and off track for the MDGs



Source: Staff calculations based on the United Nations MDG Database and World Population Prospects 2010; UNESCO Institute of Statistics for the education-related indicators under Goals 2 and 3, except 'Reaching last grade'.

but is progressing only slowly on many others. Given the population weight of India it is also useful to consider 'South Asia without India'. As can be seen, this grouping is on track for poverty and for TB incidence is an early achiever, but is progressing slowly on the provision of clean water, and is regressing on forest cover.

Table I-1 also summarizes the achievement of the Pacific Island countries. As a group they have been successful in indicators related to gender parity in tertiary education, HIV prevalence, TB incidence, protected areas, CO_2 emissions and the consumption of ozone-depleting substances. But on six indicators they have been regressing or making no progress and in another five have been advancing too slowly.

The Pacific Islands also have their own 'regional giant': Papua New Guinea is home to almost 70 per cent of the Pacific Island countries' population, so its performance inevitably sways subregional achievement. Table I-1 therefore presents estimates for the Pacific Island countries excluding Papua New Guinea. This group has made better progress on gender equality in education, TB prevalence and forest cover. It has also been advancing, albeit slowly, on sanitation and safe drinking water.

Just as there are significant differences between Asia-Pacific subregions, there can be even greater disparities within subregions. This is clear from Table I-2. For example, whereas South-East Asia as a whole is on track or is an early achiever for 14 of these 22 indicators, Cambodia manages this for only 11 and Lao PDR for only eight – the latter having made slow progress in primary completion, for example, and on gender parity at secondary education. At the other end of the spectrum, Sri Lanka notably outperforms the subregional average: South Asia as a whole is on track or is an early achiever for only nine indicators, while Sri Lanka manages this for 15.

It should also be noted that even the country-level achievements profiled in Table I-2 mask many subnational disparities, between regions or between social groups. This issue is explored in detail in Chapter II.

Box I-2 – Data on HIV

To assess commitments to reduce both sexual and injection-drug transmission of HIV, UN member states, through the 2011 Political Declaration on HIV/AIDS, now place even more emphasis on tracking new infections. Such data respond more rapidly to changes in protective behaviour than do data on prevalence which largely reflect past behaviour. People living with HIV who have better access to antiretroviral treatment are living longer, so even when new infections decrease prevalence may not decline.

Between 1990 and 2009 some countries managed to reduce the number of new HIV infections, despite population growth. Elsewhere, however, the number of new HIV infections remains unacceptable.

A number of countries have seen increases in both number of people living with HIV and the number of new infections – as in Bangladesh, Bhutan, China, Fiji, Indonesia, Lao PDR, Malaysia, Maldives, Mongolia, Pakistan, Papua New Guinea, Philippines, Republic of Korea, Singapore, Sri Lanka, and Viet Nam.

Other countries did not show such clear patterns. In Thailand and Cambodia, the number of people living with HIV increased between 1990 and 2000. They had decreased by 2009, but were still higher than in 1990. During the same time period, the number of new infections decreased.

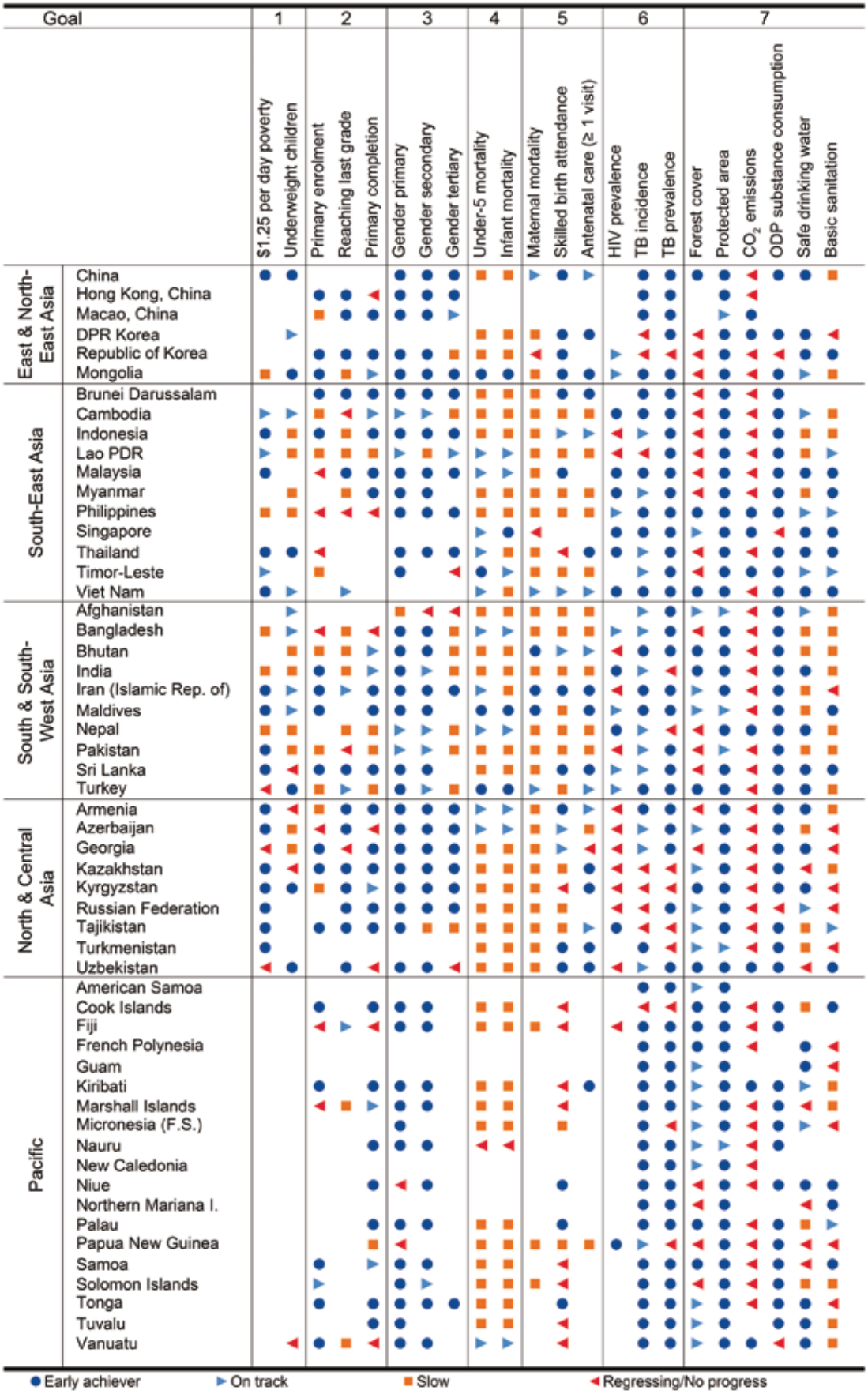
In Myanmar and India, the number of people living with HIV increased between 1990 and 2000, but remained the same in 2009. In Nepal, the number of people living with HIV increased from 1990 to 2009. In all three countries, the number of new infections increased from 1990 to 2000 but decreased by 2009. Complete data on all Asia and Pacific countries can found at http://www.aidsinfoonline.org/.

Burden of HIV 1990-2009, selected Asia-Pacific countries

		Number of people living with HIV			Number of new HIV infections		
		1990	**2000**	**2009**	**1990**	**2000**	**2009**
India	low bound	190,000	2,200,000	2,100,000	75,000	260,000	110,000
	estimate	250,000	2,400,000	2,400,000	92,000	290,000	140,000
	high bound	320,000	2,700,000	2,800,000	110,000	330,000	160,000
Cambodia	low bound	13,000	65,000	42,000	9,200	3,500	<1000
	estimate	23,000	95,000	63,000	17,000	6,200	1,700
	high bound	51,000	130,000	90,000	36,000	10,000	4,200
Myanmar	low bound	44,000	190,000	200,000	12,000	21,000	14,000
	estimate	58,000	240,000	240,000	20,000	25,000	17,000
	high bound	70,000	300,000	290,000	24,000	30,000	20,000
Nepal	low bound	15,000	48,000	51,000	4,000	5,000	2,700
	estimate	20,000	58,000	64,000	4,900	6,900	4,800
	high bound	27,000	70,000	80,000	6,700	8,600	7,800
Thailand	low bound	250,000	500,000	420,000	110,000	22,000	9,800
	estimate	320,000	660,000	530,000	150,000	28,000	12,000
	high bound	400,000	850,000	660,000	200,000	36,000	15,000

Source: AIDSinfo Database accessed on 24th August 2011

Table I-2 – Countries on and off track for the MDGs



Source: Staff calculations based on the United Nations MDG Database.

Asia and the Pacific on the global stage

Using the global MDG Database also makes it possible to compare Asia and the Pacific with two other developing regions: Sub-Saharan Africa and Latin America and the Caribbean. Figure I-1 illustrates this comparison for six indicators. In these charts, the size of the bubbles is in proportion to the number of people currently affected. The sloping line divides each chart into two parts: if the bubble is above the line, since 1990 the values on that indicator have increased; if it is below the line they have decreased. The colours correspond to the on- or off-track progress symbols introduced earlier. As Figure I-1 indicates, Asia and the Pacific is generally making better progress towards the MDG targets than Sub-Saharan Africa, but is lagging behind Latin America and the Caribbean. But because of its larger population size, on most indicators, the Asia-Pacific region has the greatest numbers of people affected.

The total number of Asia-Pacific people who remain deprived is detailed for 10 indicators in Figure I-2. For safe drinking water, for example, the region has made remarkable progress: between 1990 and 2008 the number of people without access to safe drinking water fell from 856 million to 466 million. Nevertheless the region is still home to more than half the developing world's total deprived population. And in the case of sanitation, the region in 2008 had almost 1.9 billion people without access – more than 70 per cent of the developing world's deprived population.

Health – diagnosing the deficits

It is rather surprising that a region as economically dynamic as Asia and the Pacific should still fall short when it comes to ensuring that its people are healthy. The remainder of this chapter will therefore focus on critical health deficits, identifying the indicators for which progress has been too slow, indicating the speed of change required to hit the targets and pointing out how many people would benefit.

Feeding our children

A key failure has been to ensure that children in Asia and the Pacific are well-nourished. Figure I-3 illustrates the task ahead by showing for a selection of countries what proportion of under-five children are underweight – weighing less than they should for their age. For each country progress is represented by an arrow. The tail of the arrow is at the starting point – 1990 or the first subsequent year for which data are available. The tip of the arrow shows the proportion of children underweight in the latest year for which data are available. The colour of the arrow corresponds to this report's on- or off-track colour coding. The vertical line shows the 2015 MDG target – which for each country is half the rate of the starting point.

In some cases, the arrows point to heartening progress. Bangladesh, Afghanistan, Cambodia and Viet Nam, for example, started at very high levels, and are on track to meet their targets. However four other countries in which more than 30 per cent of children were underweight in 1990 remain off track. On the current trend, by 2015 the Asia-Pacific off-track countries still have more than 60 million children underweight.

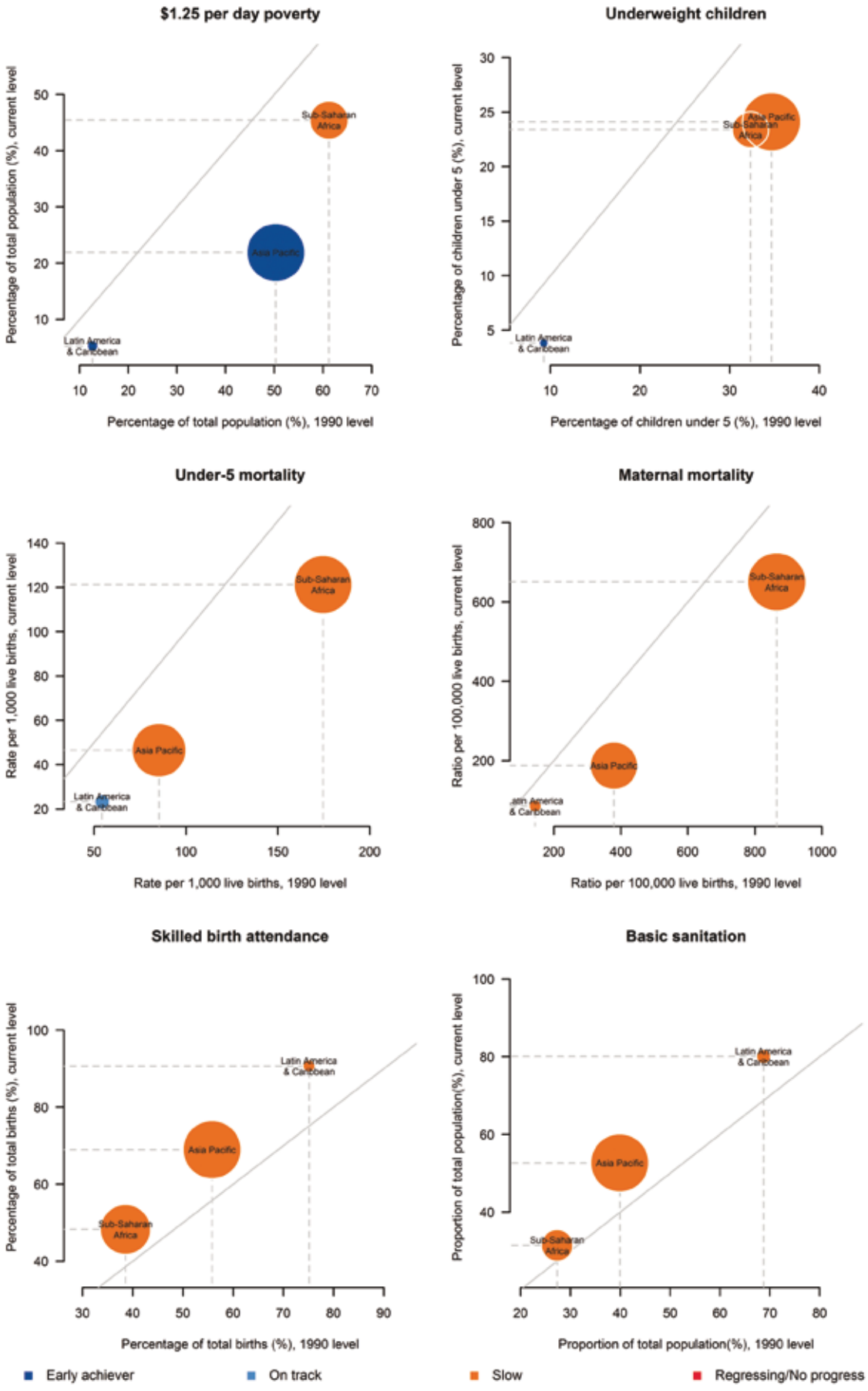
Nevertheless, many of the off-track countries should still be able to turn things around. This is indicated in Table I-3 which shows that a number of countries in Central and West Asia could still meet the target by reducing their proportion of underweight children by less than one percentage point per year. But all the off-track countries, including India, could meet the target by reducing the prevalence of underweight children by 2 percentage points per year.

Preventing child deaths

A very disturbing consequence of MDG shortfalls in Asia and the Pacific is that more than 3 million children across the region died before reaching their fifth birthday in 2010. The current picture is shown in Figure I-4.

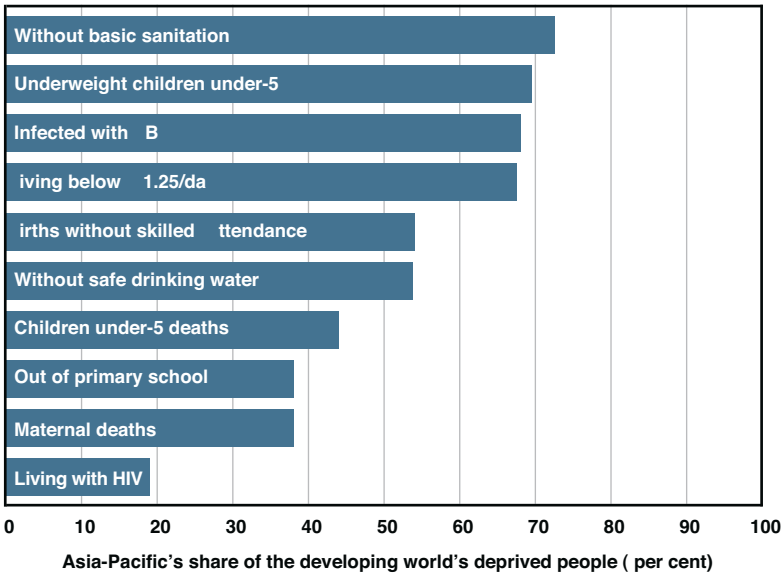
Some countries had very high mortality rates in 1990 – around 100 per 1,000 live births – but have made striking progress. These include Timor-Leste, Lao PDR, Bangladesh, Nepal and Maldives. But the overall outcome is clearly unacceptable of 48 countries for which data are available, 32 are off track. Nevertheless, as indicated in Table I-4, half the off-track countries could still meet the target if they managed to reduce further their under-5 mortality by around 2 deaths per 1,000 live births per year.

Figure I-1 – Asia and the Pacific compared with Sub-Saharan Africa and Latin America and the Caribbean



Source: Staff calculations based on the United Nations MDG Database and World Population Prospects 2010.

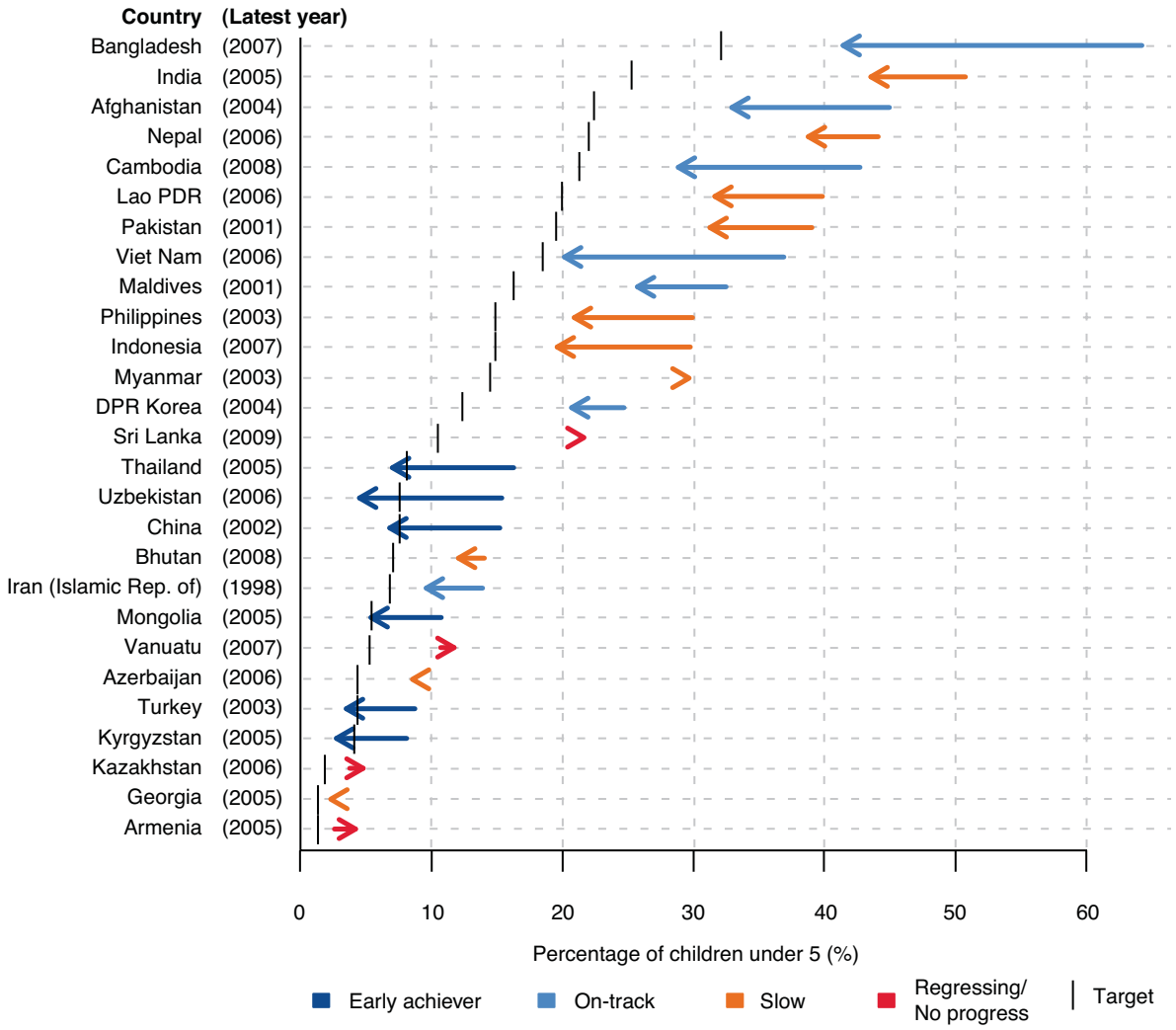
Figure I-2 – The Asia-Pacific share of the developing world's deprived people



Number of people deprived (in millions)	
1990	Latest
1,878	1,863
134	83
11	9
1,574	871
36	22
856	466
7	3
48	25
0.31	0.14
1	7

Source: Staff calculations based on the United Nations MDG Database and World Population Prospects 2010.

Figure I-3 – Progress in reducing the proportion of under-5 children underweight



Source: Staff calculations based on the United Nations MDG Database.

Table I-3 – Rate of progress needed for off-track countries to meet the child nutrition target

Country	Underweight children in 2015 on current trends, thousands	Number of children who would benefit if the target was reached, thousands	Average annual reduction in underweight prevalence required, percentage points
Georgia	4	1	0.1
Armenia	9	6	0.3
Kazakhstan	81	50	0.3
Azerbaijan	65	26	0.4
Philippines	1,825	95	0.5
Indonesia	3,267	178	0.6
Bhutan	7	2	0.7
Vanuatu	4	2	0.8
Pakistan	5,000	692	0.8
Myanmar	1,076	519	1.3
Lao PDR	188	55	1.3
India	47,592	15,313	1.8
Sri Lanka	384	197	1.8
Nepal	1,287	516	1.9
Total	60,789	17,652	

Source: Staff calculations based on the United Nations MDG Database and World Population Prospects 2010.

Preventing maternal deaths

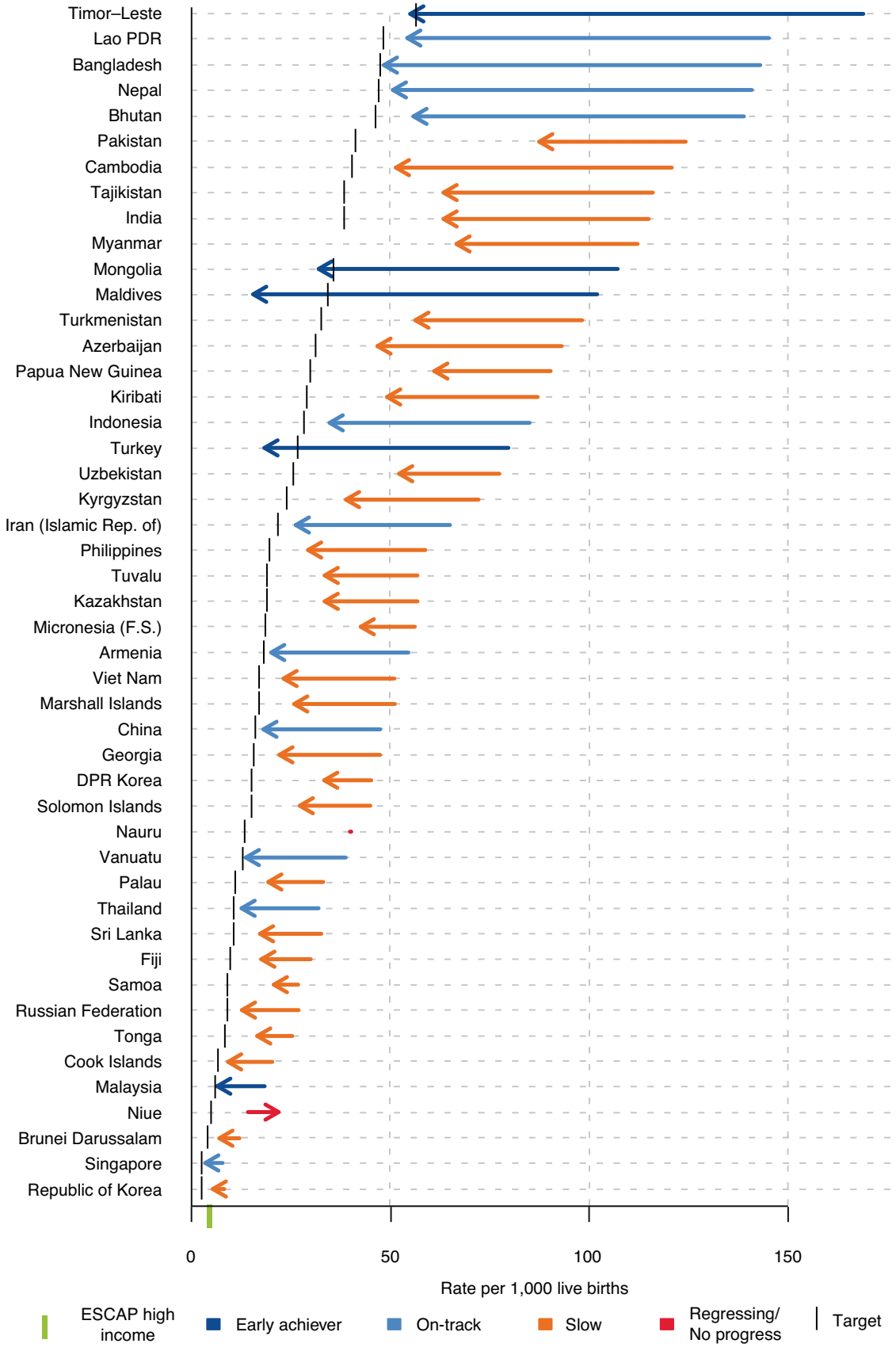
Another disturbing MDG statistic in Asia and the Pacific concerns the needless deaths of mothers. Across the region around 140,000 women died from causes related to childbirth in 2008. As is clear from Figure I-5, when it comes to reducing maternal mortality few countries in the region are making real headway. Of the 37 that offer sufficient data to estimate a trend, only six are making good progress: Bhutan, Maldives and the Islamic Republic of Iran have already met the target, while Viet Nam, China and Turkey are on track.

However, as indicated in Table I-5, a number of off-track countries with significant numbers of maternal deaths could reach the target by further reducing only two to three maternal deaths per 100,000 live births per year. But if Afghanistan is to reach the target by 2015 it will need to reduce the maternal mortality ratio by almost 140 per 100,000 live births per year.

One reason for the high levels of maternal mortality is that too few births take place in the presence of skilled attendants. In the early 1990s in 11 of the 46 countries in the region for which data are available less than half of births were attended by a trained health professional. With the exception of Bhutan and Indonesia, which managed to increase the rate by more than 30 percentage points, there has been relatively little progress. This situation is of particular concern in Nepal, Bangladesh and Afghanistan; although these countries have been making progress, skilled professionals attend less than one birth in four (see Figure I-6). Nevertheless, as Table I-6 shows, around half of the off-track countries could meet the target by increasing the rate of attendance by less than three percentage points per year.

Maternal mortality could also be substantially reduced if all mothers had access to antenatal care. Some countries have already met the corresponding target and others, such as Turkey and Bhutan, have made impressive progress and are classified as on track. The region as a whole, however, has been slow to achieve universal access. Nevertheless, a number of countries could still meet their targets by increasing their rates at around 2 percentage points per year. Others will find it more difficult: Afghanistan, Bangladesh, Lao PDR, Nepal and Pakistan will need to accelerate coverage by more than 4 percentage points per year (Figure I-7 and Table I-7). See Box I-3 at the end of the Chapter for further discussion on reproductive health.

Figure I-4 – Progress in reducing under-5 mortality



Note: In the high income countries of the region child mortality is only around 4 per thousand live births. Afghanistan, which is not shown in the figure, had an under-5 mortality rate of 209 in 1990 and 149 in 2010. For all countries, the latest year for which data are available is 2010.

Source: Staff calculations based on the United Nations MDG Database.

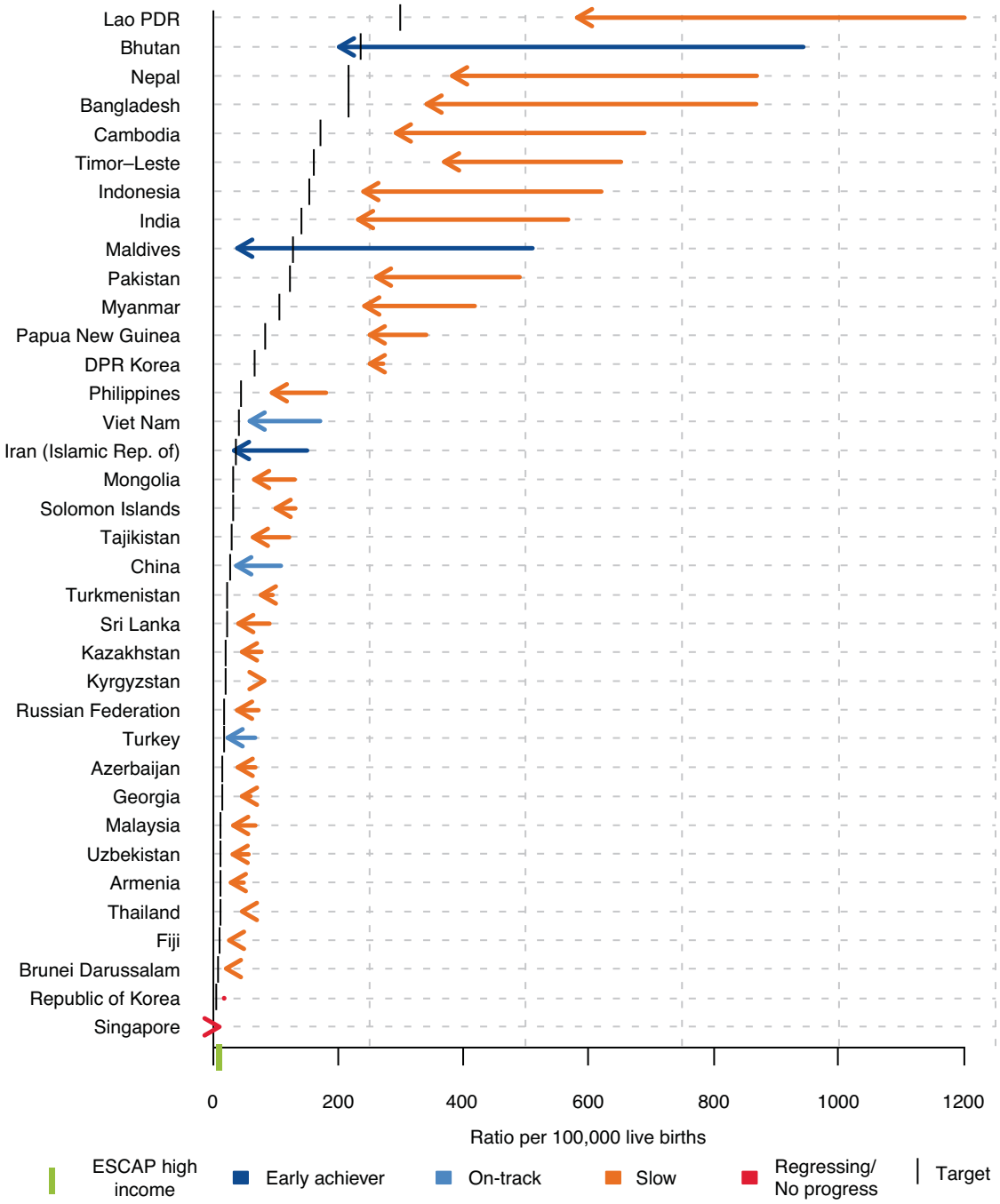
Table I-4 – Rate of progress needed for off-track countries to meet the under-5 mortality target

Country	Child deaths over the period 2011-2015 on current trends, thousands	Lives saved over the period 2011-2015 if the target was reached, thousands	Average annual reduction in child mortality rate needed from latest year for which data is available to meet the 2015 target, number of child deaths per 1,000 live births
Republic of Korea	11.0	2.57	0.5
Brunei Darussalam	0.3	0.07	0.6
Russian Federation	99.9	14.83	0.6
Viet Nam	146.8	9.22	1.2
Sri Lanka	27.3	3.81	1.3
Georgia	4.8	0.44	1.3
Fiji	1.4	0.30	1.4
Tonga	0.2	0.05	1.5
Philippines	309.8	33.99	1.9
Cambodia	79.0	9.18	2.1
Samoa	0.4	0.15	2.2
Solomon Islands	2.2	0.49	2.4
Kazakhstan	52.0	10.98	2.8
Kyrgyzstan	22.6	3.42	2.8
Azerbaijan	38.2	4.68	3.0
DPR Korea	48.7	11.75	3.6
Micronesia (F.S.)	0.6	0.19	4.7
Turkmenistan	27.9	5.39	4.7
Tajikistan	57.6	10.61	4.9
India	7,716.7	1,350.37	4.9
Uzbekistan	142.8	40.52	5.3
Myanmar	249.5	56.20	5.7
Papua New Guinea	60.5	17.51	6.2
Pakistan	1,929.9	564.84	9.1
Afghanistan	975.5	271.94	15.9
Total	12,005.6	2,423.50	

Note: The required annual percentage points reduction in rates for several Pacific island countries are: Cook Islands, 0.5; Palau, 1.6; Marshall Islands, 1.8; Tuvalu, 2.8; Niue, 3.5; Kiribati, 4.0; Nauru, 5.3. In these cases because of a lack of relevant population data it is not possible to estimate the number of additional children's lives that would be saved.

Source: Staff calculations based on the United Nations MDG Database and World Population Prospects 2010.

Figure I-5 – Progress in reducing maternal mortality



Note: In the high income countries of the region maternal mortality is around 9.57 per 100,000 live births. Afghanistan, which is not shown in the figure, had a maternal mortality ratio of 1,700 in 1990 and 1,400 in 2008. For all countries, the latest year for which data are available is 2008.

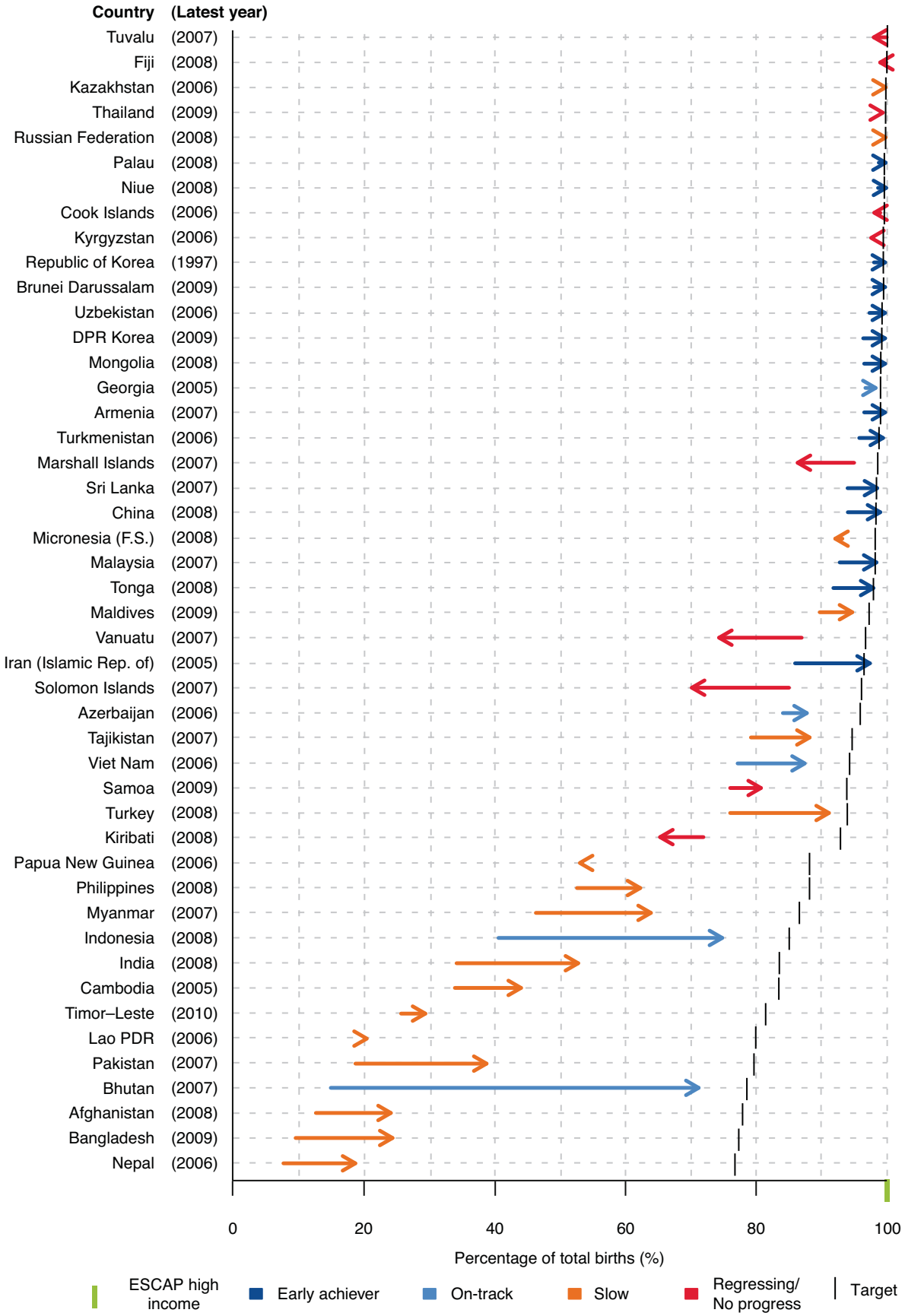
Source: Staff calculations based on the United Nations MDG Database.

Table I-5 – Rate of progress needed for off-track countries to meet the maternal mortality target

Country	Total maternal deaths, over the period 2009-2015 on current trends	Women's lives saved over the period 2009-2015 if the target was reached	Average annual reduction in maternal mortality ratio needed from latest year for which data is available to meet the 2015 target, number of maternal deaths per 100,000 live births
Singapore	30	20	1.1
Republic of Korea	600	310	1.9
Brunei Darussalam	10	0	2.0
Fiji	30	10	2.3
Sri Lanka	840	90	2.3
Armenia	80	20	2.3
Uzbekistan	1,000	200	2.4
Malaysia	1,100	280	2.4
Russian Federation	3,810	750	2.9
Azerbaijan	460	150	3.1
Kazakhstan	910	220	3.6
Mongolia	270	60	4.6
Georgia	160	70	4.8
Tajikistan	820	240	4.9
Thailand	2,930	1,550	5.1
Philippines	13,820	3,360	7.0
Turkmenistan	590	280	7.8
Kyrgyzstan	730	380	8.8
Solomon Islands	120	50	9.6
Indonesia	57,270	830	12.1
India	374,340	40,380	12.5
Cambodia	5,490	670	16.8
Bangladesh	59,690	3,830	17.5
Myanmar	11,700	2,870	19.3
Pakistan	75,440	17,750	19.6
Nepal	16,130	1,960	23.2
Papua New Guinea	3,500	1,420	23.6
DPR Korea	5,980	2,880	26.1
Timor-Leste	1,080	320	29.6
Lao PDR	4,830	850	40.0
Afghanistan	140,970	66,510	139.3
Total	784,730	148,310	

Source: Staff calculations based on the United Nations MDG Database and World Population Prospects 2010.

Figure I-6 – Progress in increasing skilled birth attendance



Note: In the high income countries of the region the proportion of births attended by skilled health personnel is 100 per cent.

Source: Staff calculations based on the United Nations MDG Database.

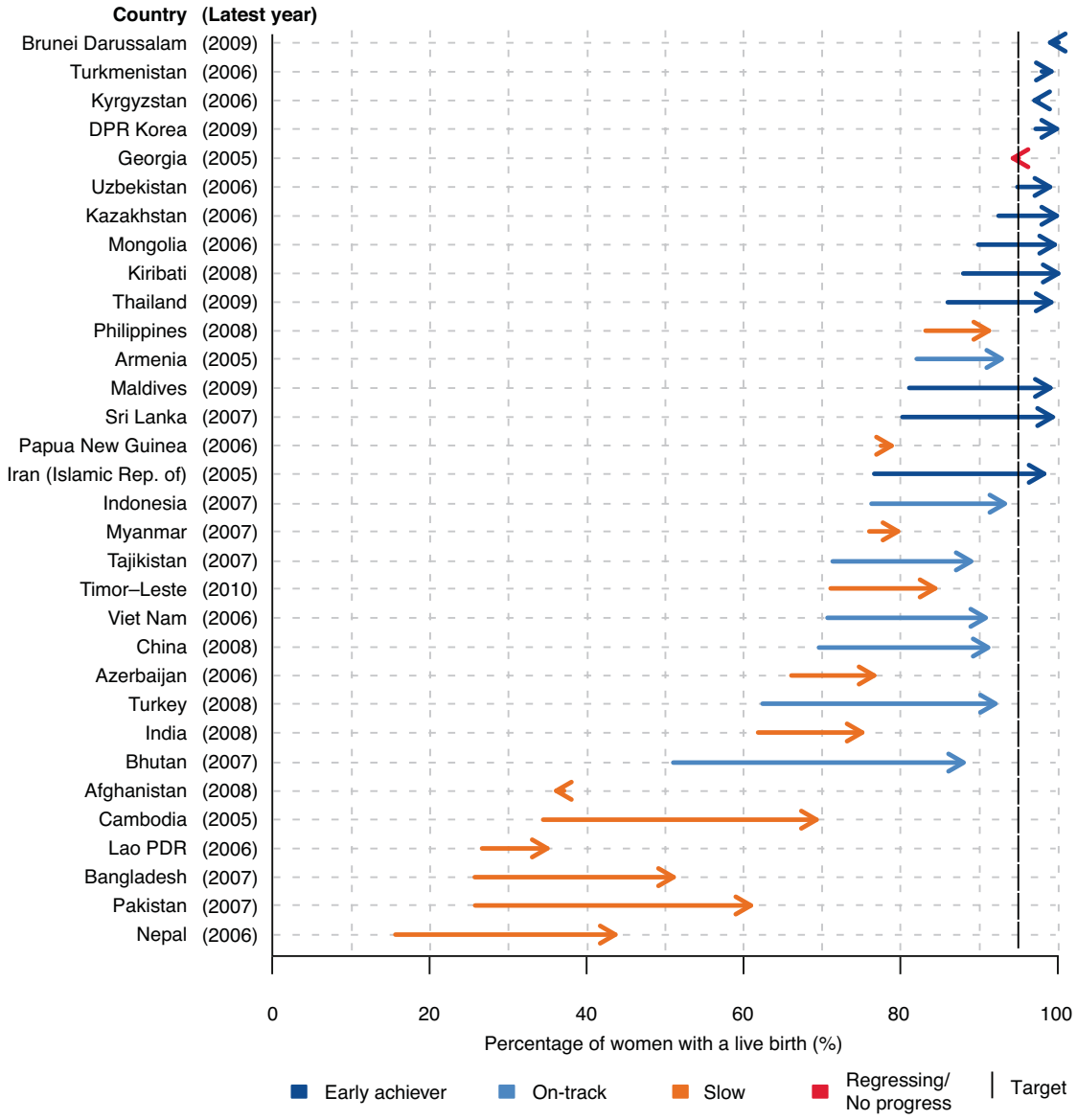
Table I-6 – Rate of progress needed for off-track countries to meet the skilled birth attendance target

Country	Births without skilled attendance in 2015 on present trends, thousands	Extra births with skilled attendance if the target was reached, thousands	Average annual increase needed to reach the target from latest year for which data is available, percentage points
Kazakhstan	0.42	0.08	0.01
Russian Federation	6.36	3.05	0.03
Thailand	4.62	3.27	0.07
Fiji	0.18	0.18	0.14
Kyrgyzstan	3.17	2.55	0.21
Turkey	76.65	1.86	0.38
Maldives	0.41	0.28	0.45
Tajikistan	16.91	6.34	0.79
Micronesia (F.S.)	0.22	0.17	0.89
Samoa	0.83	0.57	2.20
Myanmar	226.92	119.77	2.83
Vanuatu	1.96	1.72	2.84
Solomon Islands	5.31	4.64	3.27
Philippines	812.08	526.68	3.71
Papua New Guinea	104.86	79.80	3.92
Cambodia	125.80	74.48	3.97
India	10,922.75	6,528.74	4.41
Pakistan	2,615.71	1,641.65	5.11
Nepal	496.84	329.27	6.46
Lao PDR	108.27	80.30	6.62
Afghanistan	923.14	593.92	7.73
Bangladesh	2,033.36	1,368.42	8.83
Timor-Leste	35.32	26.27	10.43
Total	18,522.09	11,394.01	

Note: The required annual percentage points reduction in rates for several Pacific island countries are: Cook Islands, 0.19; Kiribati, 4.00; Marshall Islands, 1.57; and Tuvalu, 0.26. In these cases, because of a lack of relevant population data it is not possible to estimate the number of extra births that would be attended.

Source: Staff calculations based on the United Nations MDG Database and World Population Prospects 2010.

Figure I-7 – Progress in expanding antenatal care



Source: Staff calculations based on the United Nations MDG Database.

Table I-7 – Rate of progress needed for off-track countries to meet the antenatal care target

Country	Number of women not receiving antenatal care in 2015 on present trend	Additional women receiving care if the target was reached	Average annual increase needed to reach the target from latest year for which data is available, percentage points
Georgia	2,630	320	0.1
Philippines	169,010	48,080	0.6
Papua New Guinea	43,020	32,300	1.8
Myanmar	140,540	100,630	1.9
Azerbaijan	23,040	14,010	2.0
Timor-Leste	8,060	5,620	2.1
Cambodia	19,820	4,270	2.6
India	5,295,840	3,960,270	2.8
Pakistan	1,655,280	1,415,370	4.3
Bangladesh	911,160	764,210	5.5
Nepal	281,780	245,590	5.7
Lao PDR	65,400	58,460	6.7
Afghanistan	1,011,640	936,480	8.4
Total	9,627,220	7,585,610	

Source: Staff calculations based on the United Nations MDG Database and World Population Prospects 2010.

Providing safe drinking water

On safe drinking water, the Asia and the Pacific region as a whole appears to have been doing well owing to the good performance of a few countries. Indeed it is an early achiever. Unfortunately, this disguises the fact that of the 48 countries with sufficient data to calculate a trend, 20 are off track. This is reflected in diverging trajectories between countries. Thus in the early 1990s Viet Nam, Mongolia and Myanmar had similar levels of access, but while Viet Nam is an early achiever and Mongolia is on track, Myanmar is making only slow progress. Nevertheless, most off-track countries could reach the target by increasing their access rates by less than 2 percentage points per year; only Lao PDR and Papua New Guinea require more (see Table I-8 and Figure I-8).

Ensuring access to basic sanitation

For sanitation, progress has been slower. In the early 1990s, of the 48 countries for which trend data are available, 18 countries were offering basic sanitation to less than half their populations. Since then only four of these countries have made satisfactory progress: Viet Nam and Myanmar have reached their targets and Lao PDR and Timor-Leste are on track. A total of 30 countries in the region are off track. Nevertheless, as indicated in Table I-9, nine of these countries could reach the target by extending access by less than one percentage point per year. Other countries including India require greater acceleration – though if India did meet the target another 290 million more people would gain access (see Figure I-9 and Table I-9).

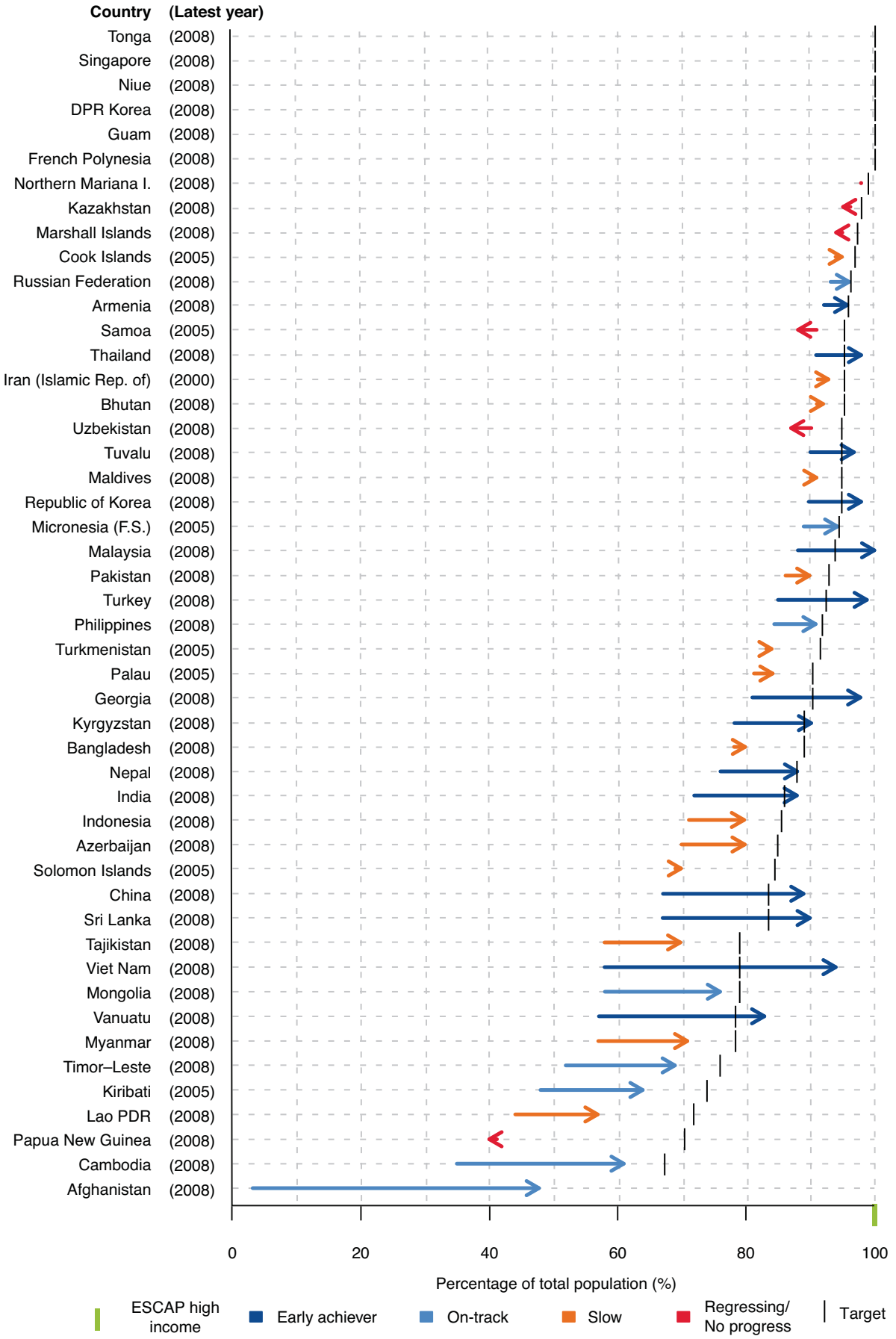
Table I-8 – Rate of progress needed for off-track countries to meet the safe drinking water target

Country	People lacking safe drinking water in 2015 on current trend, thousands	Additional people who would get access if the target was reached, thousands	Average annual increase needed to reach the target from latest year for which data is available, percentage points
Iran (Islamic Rep. of)	3,748	213	0.17
Pakistan	17,294	3,824	0.43
Kazakhstan	846	508	0.43
Bhutan	60	24	0.50
Maldives	31	14	0.57
Azerbaijan	1,730	267	0.71
Turkmenistan	822	363	0.75
Samoa	23	14	0.75
Indonesia	41,391	4,671	0.79
Myanmar	11,526	739	1.07
Uzbekistan	3,813	2,346	1.14
Bangladesh	30,417	12,840	1.29
Tajikistan	1,841	270	1.29
Solomon Islands	178	82	1.45
Lao PDR	2,448	558	2.14
Papua New Guinea	4,635	2,356	4.36
Total	120,803	29,089	

Note: The required annual percentage points reduction in rates for several Pacific island countries are: Cook Islands, 0.20; Northern Mariana Islands, 0.14; Marshall Islands, 0.50; Palau, 0.65. In these cases because of a lack of relevant population data it is not possible to estimate the number of additional people who would get access.

Source: Staff calculations based on the United Nations MDG Database and World Population Prospects 2010.

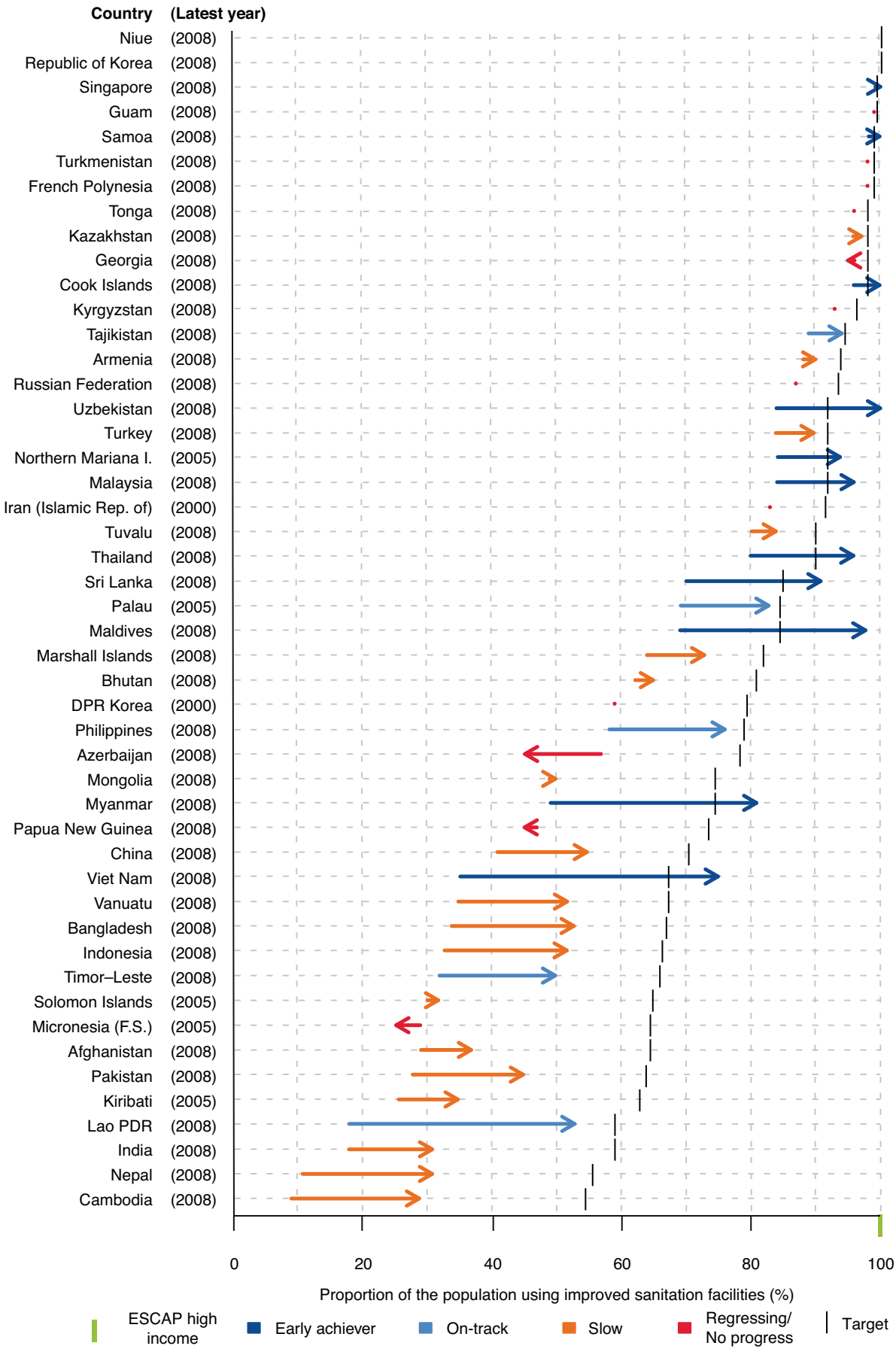
Figure I-8 – Progress in improving access to safe drinking water



Note: In the high income countries of the region the proportion of population using an improved drinking water source is almost 100 per cent.

Source: Staff calculations based on the United Nations MDG Database.

Figure I-9 – Progress in expanding access to basic sanitation



Note: In the high income countries of the region the proportion of population using an improved sanitation facility is 100 per cent.

Source: Staff calculations based on the United Nations MDG Database.

Table I-9 – Rate of progress needed for off-track countries to meet the basic sanitation target

Country	Number of people who will lack basic sanitation in 2015 on current trend, thousands	Additional people who would gain access if the target was reached, thousands	Average annual change needed to reach the target from latest year for which data is available, percentage points
Kazakhstan	424	85	0.1
Turkmenistan	108	54	0.1
Turkey	6,474	283	0.3
Tonga	4	2	0.3
Georgia	212	127	0.4
Kyrgyzstan	395	198	0.5
Iran (Islamic Rep. of)	13,355	6,677	0.6
Armenia	294	106	0.6
Russian Federation	18,410	9,205	0.9
DPR Korea	10,212	5,106	1.4
Bangladesh	62,835	10,103	2.0
Indonesia	101,631	16,795	2.1
China	541,604	136,277	2.2
Vanuatu	106	17	2.2
Bhutan	258	107	2.3
Pakistan	93,266	23,995	2.7
Solomon Islands	407	191	3.3
Nepal	18,420	3,700	3.5
Mongolia	1,490	729	3.5
Cambodia	8,930	1,996	3.6
Afghanistan	21,838	8,560	3.9
Micronesia (F.S.)	87	46	4.0
India	829,904	289,522	4.0
Papua New Guinea	4,248	2,201	4.1
Azerbaijan	5,364	3,267	4.8
Total	1,740,276	519,349	

Note: The required annual percentage points reduction in rates for several Pacific island countries are: French Polynesia, 0.14; Kiribati, 2.80; Guam, 0.07; Marshall Islands, 1.29; and Tuvalu, 0.86. In these cases because of a lack of relevant population data it is not possible to estimate the number of additional people that would gain access.

Source: Staff calculations based on the United Nations MDG Database and World Population Prospects 2010.

Number of people in off-track countries who will gain if targets are reached

The benefits of off-track countries meeting the targets on these health indicators are summarized in Table I-10. The first column shows the likely effect if the current trends were to continue. The second shows the potential gains. Thus, accelerated progress in the off-track countries alone would reduce the prevalence of underweight children in these countries by around one third. Similarly, if accelerated progress takes place in off track countries, as many as 2.4 million children could be prevented from dying before reaching age five and an additional 148,000 mothers could survive pregnancy and child birth.

Many of these gains can be achieved by paying close attention to specific groups that are still lagging – whether in the rural areas, for example, or specific ethnic or social groups. This issue of disparities between different population groups is the subject of the next chapter.

Table I-10 – Potential gains if off-track countries can meet their targets

	On present trends, the total number of people in off-track countries who would be deprived in 2015 or have died, thousands	Number of people in off-track countries who would gain if the targets were reached, thousands
Underweight children	60,789	17,652
Under-5 mortality*	12,006	2,424
Maternal mortality**	785	148
Skilled birth attendance	18,522	11,394
Antenatal care (≥ 1 visit)	9,627	7,586
Safe drinking water	120,803	29,089
Basic sanitation	1,740,276	519,349

Notes: *Cumulative number of deaths from 2011 to 2015; ** Cumulative number of deaths from 2009 to 2015.

Source: Staff calculations based on the United Nations MDG Database and World Population Prospects 2010.

Box I-3 – Reproductive health

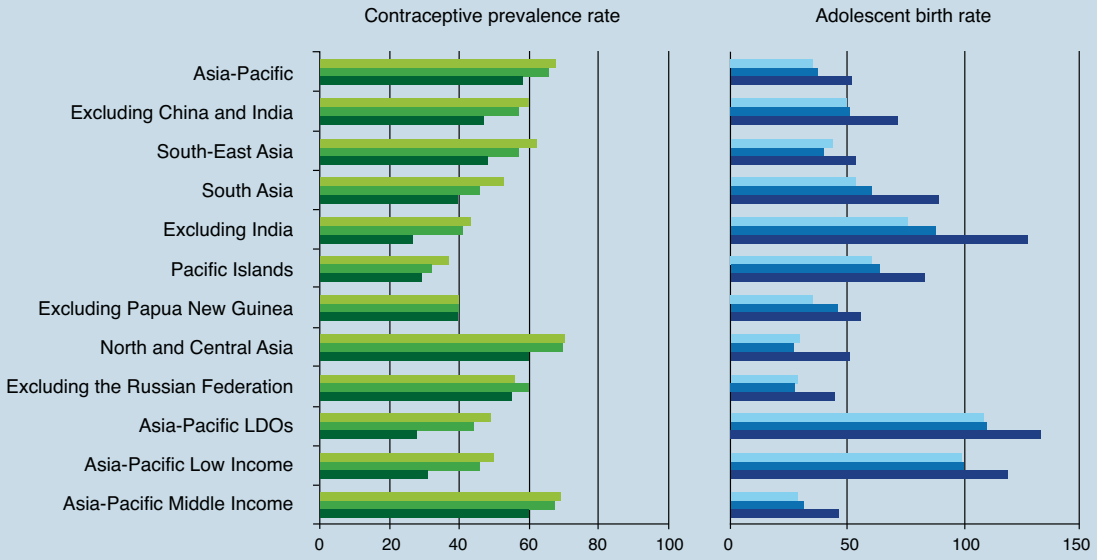
Critical to lives of women and children is access to sexual and reproductive health care services. MDG 5 is dedicated to improving maternal health, with target 5B calling for universal access to reproductive health.

Good maternal health depends on the achievement of reproductive rights and effective family planning, which can help prevent unintended pregnancies, induced abortions and the associated morbidity and mortality. Access to family planning and the empowerment of women are reflected in the contraceptive prevalence rate, which is the proportion of women of reproductive age who are using (or whose partner is using) a contraceptive method. Between 1990 and 2008 the rate for Asia and the Pacific as a whole rose from 58 to 67 per cent or by more than half a percentage point per year, with slightly faster progress in South-East Asia and South Asia than in other subregions. Progress was slowest in the Pacific, which at 37 per cent in 2008 had the lowest rate in the region.

Differences in contraceptive prevalence rates between countries are considerably larger than between subregions. Contraceptive use has increased in most countries for which data are available. The largest increase was in Cambodia where between 1995 and 2005 it rose from 13 to 40 per cent – by 2.7 percentage points per year. In China between 1992 and 2006 the rate remained unchanged at 85 per cent.

For social and biological reasons the region's 176 million adolescent girls (aged 15-19) are particularly vulnerable. The adolescent birth rate is measured as the annual number of births to women 15 to 19 years of age per 1,000 women in that age group Between 1990 and 2008, the rate decreased by almost one percentage point per year. The greatest falls over this period were in South Asia, from 89 to 54, and the Pacific, from 83 to 62. Across the region adolescent birth rate is decreasing in most countries. In Bhutan, for example, between 1993 and 2005 it fell from 120 in 1993 to 46, and in the Islamic Republic of Iran between 1990 and 2006 it fell from 94 to 31. However, some countries still have alarming high adolescent birth rates, including Nepal at 106 in 2004 and Lao PDR at 110 in 2005.

Figure I-10 – Progress in contraceptive prevalence rate and adolescent birth rate in Asia and the Pacific



Source: UN Population Division, DESA, 2011.

Chapter I Endnote

[1] A different set of poverty figures for Asia and the Pacific region has been published in the ADB Economics Working Paper Series No. 267 in August 2011. The paper updates poverty estimates for 25 developing countries taking into account the impact of recent spikes in food prices. The results show a significant decline in the number of poor between 2005 and 2008. This decline is expected to have continued in 2009 and 2010 at a slower pace despite the global economic crisis. Please see http://www.adb.org/Documents/Working-Papers/2011/Economics-WP267.pdf for more details.

CHAPTER II

Diagnosing disparities

The Asia-Pacific region embraces more than 50 countries and territories. These are very different in terms of wealth, landmass and population size, and cover a wide range of MDG achievements. Considering only the overall Asia-Pacific regional averages therefore hides the true picture. This chapter assesses MDG disparities both between and within countries, particularly in standards of health, and considers possible causes.

While all Asia-Pacific countries have made progress towards the MDGs, the overall achievements vary considerably. Even among the group of countries that started at much lower levels some remain at a serious disadvantage while others have built up momentum and have been able to race ahead.

In addition, there are wide differences within countries. Affluent communities and urban areas have pulled ahead of rural ones. There remain persistent disparities between women and men, and between a number of social and ethnic groups. These disturbing gaps are of particular concern in Asia where several decades of remarkable economic growth have been shadowed by rising levels of inequality.

That some people should live in miserable conditions while others prosper is not just unacceptable, it also poses a threat to economic and social stability. The rich and the poor share the same world. Even the poorest households, with access to television, are acutely aware of how far they lag behind other households either in their own countries or in richer nations halfway around the world.[1] These perceptions can undermine national stability and provoke social and political unrest, especially at times of global crisis when communities protest against rising prices for food and other essential items.

Uneven development can also provoke friction between countries.[2] This can arise, for example, through pressures for international migration – as workers see greater opportunities in neighbouring countries and start to cross borders in greater numbers. Much migration is valuable and allows countries and people to make best use of their resources and skills. But people often migrate under duress, making them more vulnerable to human trafficking and related abuses. Given similar opportunities in their own country most would prefer to stay at home.

Wide cross-country disparities can also slow regional cooperation. At present people in some of the region's wealthier enclaves may feel more in common with those of similar living standards in developed countries of Europe or North America than those in other countries in the region. Wide disparities between countries can reduce the prospects for greater Asian unity and integration.

At the September 2010 MDG summit in New York, the Heads of States and Governments together with their development partners from all regions, including Asia and the Pacific, reiterated their commitment to reduce MDG disparities. This stronger focus on disparities reflects an ongoing evolution of development strategies. Countries which want to help their poorest citizens recognize that they cannot rely on economic growth alone. For this purpose many governments developed specific strategies – first for poverty reduction, then for pro-poor growth. More recently they have been aiming for 'inclusive growth'

which places particular emphasis on the need to increase the welfare of the poor, and includes every member of the society in the growth process.[3]

Despite their significance, the widening gaps across the region have been subject to little analytical research. Indeed even the scale of the gaps in MDG achievement has not been fully explored. This chapter therefore uses MDG data first to assess the extent of disparities. Then it makes comparisons between and within countries that can help reveal underlying causes of varying levels of attainment. The primary sources for the analysis of between-country disparities are the global MDG Database, supplemented with ADB's key indicators and Asian Development Outlook, as well as the World Bank's World Development Indicators. The analysis of within-country disparities is based on data from household surveys.

The extent of disparities

The most direct way to illustrate gaps in MDG achievement for each indicator is to compare individual country observations with the regional mean. Weighting the regional mean by population, however, will centre it largely around the values of China and India. To give a clearer picture, this report uses a simple average that gives equal weight to all countries large and small. This is illustrated for 2004 the year with the highest number of poverty headcount ratios computed from actual household surveys (Figure II-1). The regional average for this 2004 data of $1.25-per-day poverty level is around 22 per cent, but across countries the poverty rate ranges from 0 in Malaysia to 55.1 per cent in Nepal. As this chart also shows, among the subregions, some of the highest poverty rates – above 40 per cent – are found in South Asia.

Figure II-2 shows the corresponding data for net enrolment in primary education. In this case, however, most countries have performed fairly well and the disparities are evidently much smaller, with the Pacific Islands as a group furthest from the mean value. The disparities in other education-related indicators, not shown here but discussed later, are also generally low.

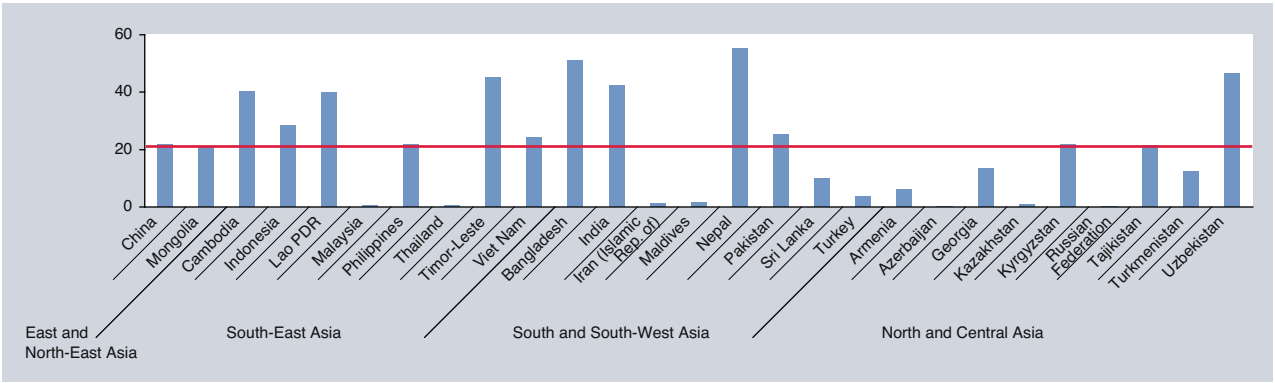
Figures from II-3 to II-7 display health outcomes which are the focus of this chapter. In general, average health attainments are poor while inter-country variations are quite high. For infant and child mortality, maternal mortality and HIV prevalence one-third of countries fare worse than the regional average. However, for underweight children around half are below average. In general, countries in North and Central Asia are doing better, while those in South and South-West Asia are lagging. As will be confirmed later, this chart also shows high intra-regional variations.

Measuring disparities between countries and over time

The region's impressive progress in meeting some of the MDGs has largely been based on estimates of average regional achievements that hide wide variation between countries. For instance, there still remain as many as 8 countries out of 27 which have data on this indicator that are unlikely to achieve the poverty reduction target, although the region – given by the overall regional average – has already achieved it. It is necessary therefore to obtain a better sense of the *distribution* as well as the *average*.

A way to visualize the extent of disparities is to display them as 'Lorenz curves' which are commonly used to illustrate the degree of inequality that exists in the distribution of values within a group. This is illustrated

Figure II-1 – Proportion of population below $1.25 (PPP) per day, per cent, 2004

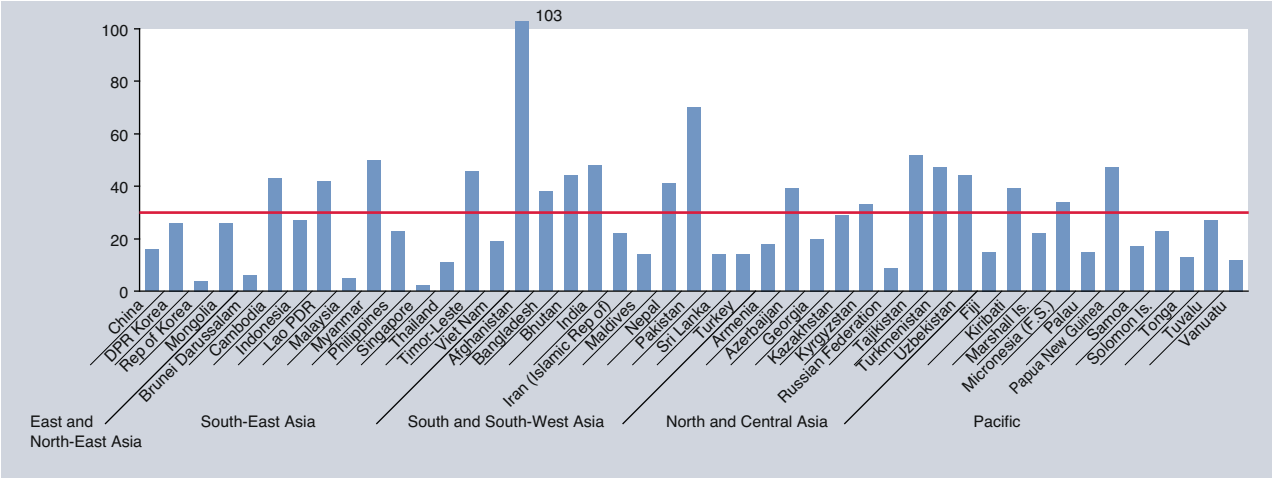


Source: The United Nations MDG Database and staff estimates.

Figure II-2 – Net enrolment in primary education, per cent, 2009

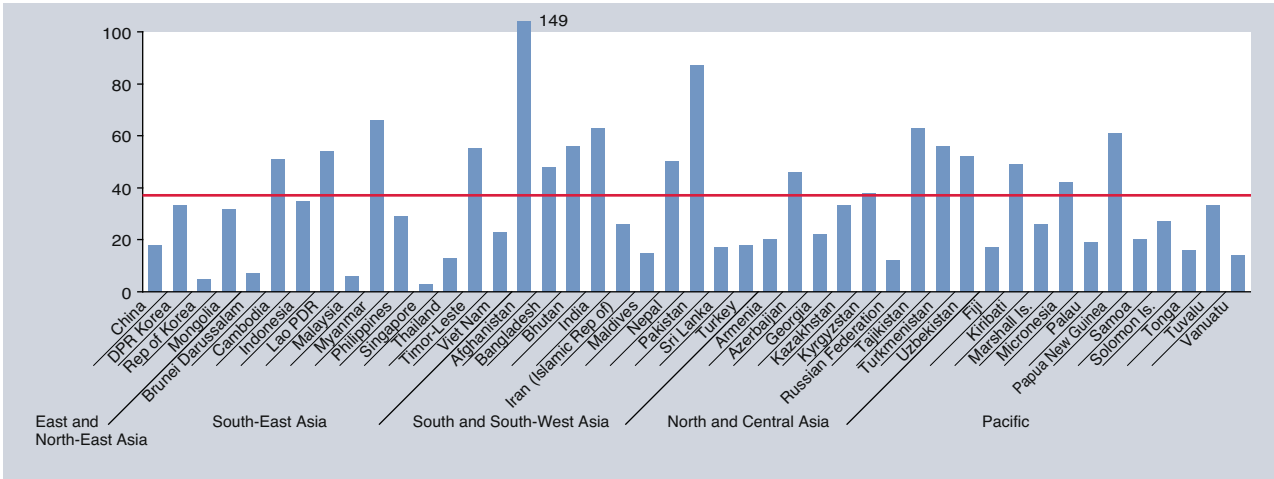
Source: The United Nations MDG Database and staff estimates.

Figure II-3 – Infant mortality rate per 1,000 live births, 2010



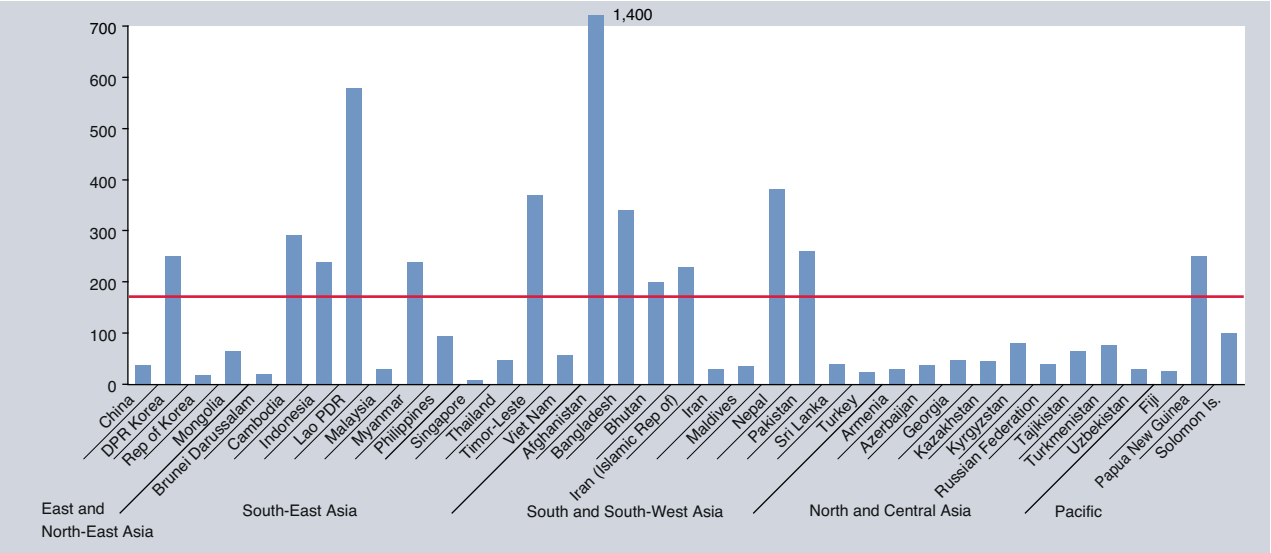
Source: The United Nations MDG Database and staff estimates.

Figure II-4 – Under-5 mortality rate per 1,000 live births, 2010



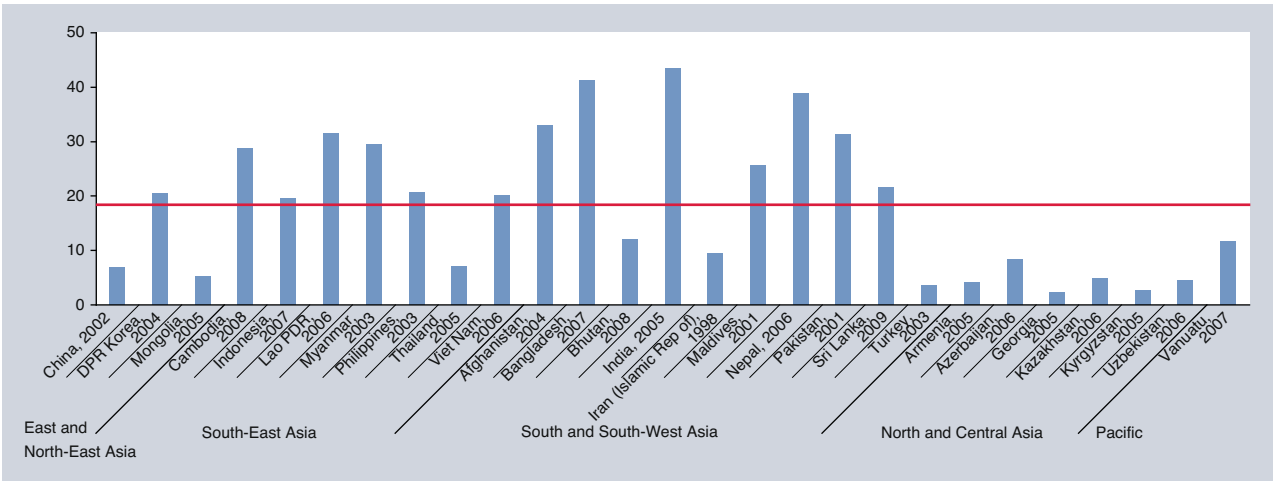
Source: The United Nations MDG Database and staff estimates.

Figure II-5 – Maternal mortality ratio per 100,000 live births, 2008



Source: The United Nations MDG Database and staff estimates.

Figure II-6 – Incidence of underweight children, per cent, latest year

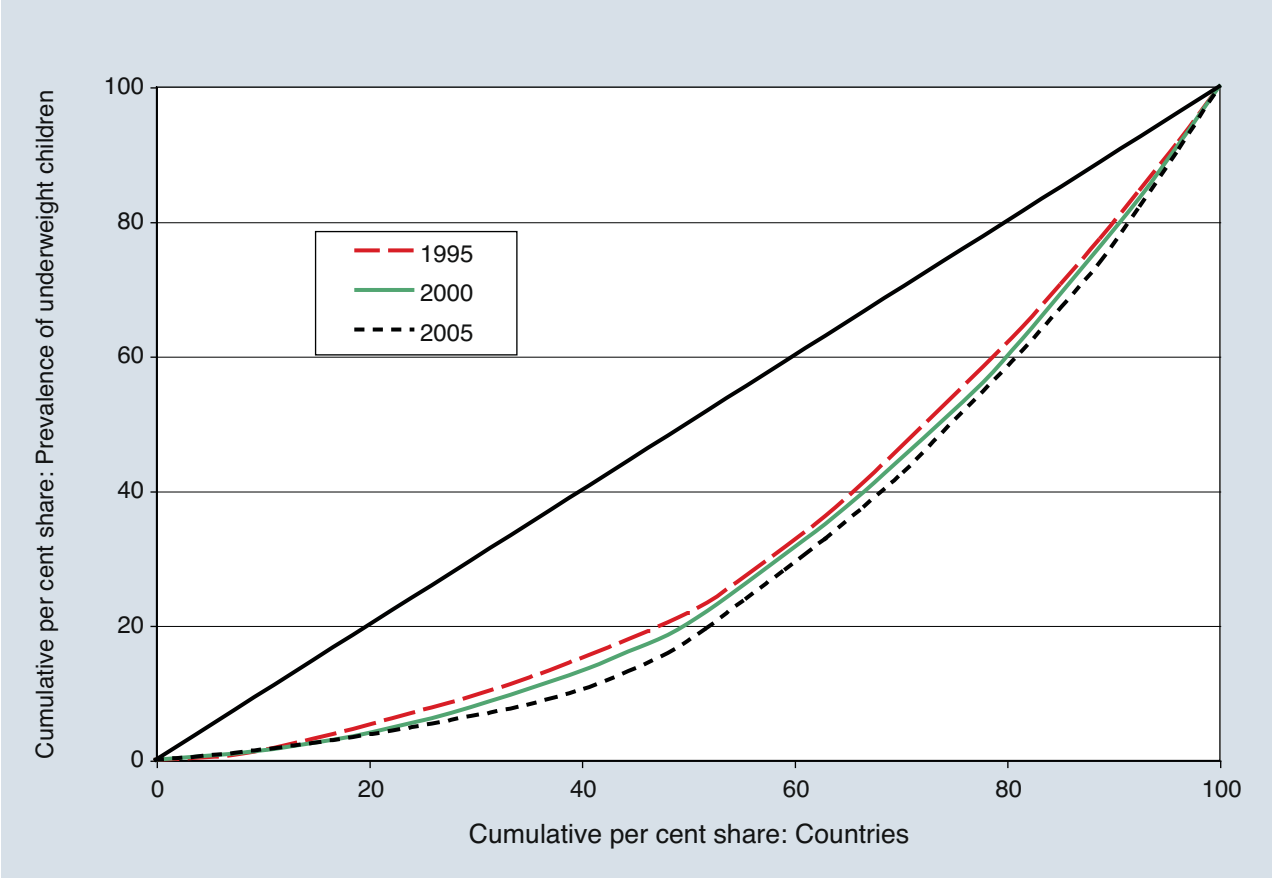


Source: The United Nations MDG Database and staff estimates.

Figure II-7 – HIV prevalence among population 15-24 years old, per cent, 2009

Source: The United Nations MDG Database and staff estimates.

Figure II-8 – Inter-country disparity in prevalence of underweight children under 5, 1995-2005



Source: Staff calculation based on the United Nations MDG Database.

for the prevalence of underweight children, for example, in Figure II-8. The solid straight line represents perfect equality and the Lorenz Curves show the deviation from this. The overall extent of disparity is represented by the area between the equal distribution line and the Lorenz Curves. For underweight children the disparity increased significantly between 1995 and 2005.

The information presented in the Lorenz curves can also be represented through numerical measures which may be easier to compare than visual representations. One option is the Gini index. This technique is commonly used, for example, to measure a country's income distribution. A Gini index of zero indicates absolute equality while a value of 1 means that one person owns everything. Similarly the Gini coefficient for a set of country values for a particular indicator will reflect how these are distributed. In fact, the Gini index is related to the Lorenz curve: it is the size of the area between the curve and the equal distribution line – expressed as a proportion of the whole area below the equal distribution line. The higher the Gini index the greater the disparities. Another measure of distribution that can be used is the Theil index.[4] This gives results largely parallel to those of the Gini index but the index is derived slightly differently and has the advantage that it can be sub-divided into different components.

This report assumes that improvements in region-wide MDG outcomes should go along with a reduction in disparity – an assumption that is supported by the data on disparities within countries (see below). This would make reduction in disparities a desirable policy to follow and preclude the perverse outcome of inequalities being reduced as a result of general reduction in attainments.

As indicated in Table II-1, the greatest disparities on the basis of the Gini index (exceeding values of 0.5) for the latest years for which data are available are for maternal mortality and two of the environmental indicators – CO_2 emissions and protected areas – followed by TB and HIV prevalence. Other indices with high disparity are poverty, underweight children, forest cover and infant and child mortality. The education indicators, including gender equality in education, show low variation; as do indicators relating to water and sanitation. The Theil index also generally follows this pattern.

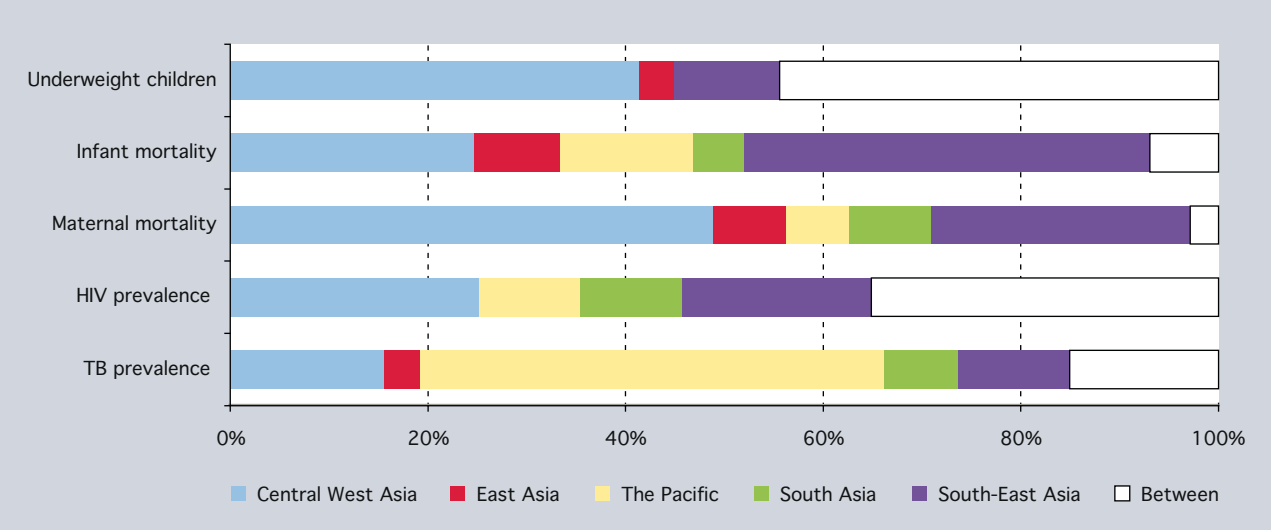
The Gini and Theil indexes can also help show how these disparities have changed over time. The Gini index suggests that, based on the earliest and latest years for which data are available, the disparities have widened for some indicators: population in poverty, underweight children, infant and under-5 mortality, maternal mortality, and TB incidence and prevalence. For other indicators, on the other hand the disparities have been reduced – for HIV prevalence, for the environmental indicators, and for all the education indicators including that for gender equality in education. Inequalities have also reduced in access to services related to maternal health – skilled birth attendance and ante-natal care. The Theil index generally also reveals the same story – except for maternal mortality and TB prevalence. For the region's policy makers, an increase in disparities in poverty, underweight children and health should be a matter of concern.

Table II-1 – Gini and Theil indices of inter-country distribution of MDG indicators

	Indicator	Earlier year	Gini index	Theil index	Later year	Gini index	Theil index
Goal 1: Eradicate extreme poverty and hunger							
1	$1.25 per day poverty	1997	0.426	0.507	2004	0.452	0.548
2	Underweight children	1995	0.296	0.21	2005	0.454	0.412
Goal 2: Achieve universal primary education							
3	Primary enrolment	1999	0.055	0.007	2007	0.06	0.008
4	Reaching last grade	1999	0.111	0.025	2007	0.074	0.013
5	Primary completion	1999	0.099	0.022	2008	0.074	0.011
Goal 3: Promote gender equality and empower women							
6	Gender Primary	1999	0.061	0.042	2008	0.037	0.004
7	Gender Secondary	1999	0.09	0.016	2008	0.068	0.014
8	Gender tertiary	1999	0.282	0.131	2008	0.199	0.066
Goal 4: Reduce child mortality							
9	Under-5 mortality	1990	0.378	0.282	2009	0.387	0.286
10	Infant mortality	1990	0.343	0.234	2008	0.365	0.263
Goal 5: Improve maternal health							
11	Maternal mortality	1990	0.579	0.726	2008	0.593	0.692
12	Skilled birth attendance	1997	0.19	0.145	2007	0.172	0.096
13	Antenatal care (= 1 visit)	1997	0.175	0.089	2007	0.109	0.029
Goal 6: Combat HIV/AIDS, malaria and other diseases							
14	HIV prevalence	2001	0.549	0.553	2007	0.518	0.472
15	TB incidence	1990	0.405	0.26	2008	0.447	0.393
16	TB prevalence	1990	0.538	0.658	2008	0.552	0.627
Goal 7: Ensure environmental sustainability							
17	Forest cover	1990	0.424	0.506	2005	0.42	0.501
18	CO_2 emissions	1990	0.683	1.152	2007	0.579	0.782
19	Protected area	1990	0.656	0.497	2009	0.581	0.892
20	Safe drinking water	1990	0.119	0.029	2008	0.087	0.019
21	Water, urban	1990	0.043	0.006	2008	0.036	0.003
22	Water, rural	1990	0.164	0.056	2008	0.113	0.03
23	Basic sanitation	1990	0.24	0.155	2008	0.175	0.064
24	Sanitation urban	1990	0.127	0.037	2008	0.101	0.021
25	Sanitation rural	1990	0.299	0.253	2008	0.221	0.105

Source: Staff calculation based on the United Nations MDG Database.

Figure II-9 – Contribution to disparities by subregion, selected MDG indicators



Note: Country groupings are based on subregional classification used by the Asian Development Bank: Central West Asia includes Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan and Uzbekistan; East Asia includes China and Mongolia; The Pacific includes Cook Islands, Fiji, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu and Vanuatu; South Asia includes Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka; and South-East Asia includes Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Thailand and Viet Nam.

Source: Staff calculation based on the United Nations MDG Database.

The Theil index of distribution across Asia and the Pacific can be decomposed to show where the disparities arise. This is illustrated in Figure II-9 for a selection of health-related indicators (based on the ADB definitions of subregions). The blank part of the bar, to the right, represents how much of the overall disparity is accounted for by differences between the subregions. The coloured sections of the bars indicate how much is contributed by uneven distribution between countries within subregions. In all these cases, the greatest contribution to disparities is clearly within subregions.

In the case of underweight children, for example, as indicated in Table II-1, the total Theil index of distribution is 0.412. Of this around 44 per cent is contributed by disparities between the subregions; the remaining 56 per cent comes from disparities within subregions, with the largest contribution from those within Central and West Asia, followed by South-East Asia, then East Asia. In this case there is no contribution from South Asia and the Pacific Island states where on this indicator there is relatively little difference between countries within subregions.

For infant mortality almost all the disparity comes from within the subregions, notably within South-East Asia. The situation is similar for maternal mortality, except that in this case the largest contribution to the disparities comes from Central and West Asia. For HIV where 35 per cent of the contribution arises between regions, the greatest subregional contribution is from Central and West Asia, with none from East Asia. There is also a distinctive pattern for TB: the greatest disparities are within the Pacific Island states some of which have the Asia-Pacific region's highest TB prevalence.

The overall picture suggests therefore that MDG disparities are largely accounted for by gaps between countries within subregions – and that appropriate policies are needed for the lagging countries.

Why some countries do better than others in health

Measuring disparities can thus identify which subregions and countries are doing better than others. But it is also possible to take the cross-country analysis further to suggest why these differences might exist and thus what might be done to narrow them. This will necessarily present only a partial picture as outcomes on each MDG indicator will have multiple causes and only for a small number of these will there be sufficient data to permit cross-country comparisons. Nevertheless, some general observations can be made on factors that appear important for health outcomes; even a limited data set can provide helpful clues to policy. This chapter carries out the analysis for three

health-related MDG outcomes: under-5 mortality, maternal mortality, and children underweight, using a multiple regression framework i.e. employing several factors to explain these outcomes. The regression results are presented in Technical Note 2 in the Statistical Appendix. The results reveal the strength or "significance" of these factors in explaining the health outcomes studied which are discussed below.

Economic growth

Although economic growth plays an important role in reducing poverty, it appears to have a considerably smaller impact on health outcomes. An ADB study in 2009 found, for example, that for every one per cent increase in per capita GDP the overall regional poverty headcount ratio has decreased by 0.92.[5] On the other hand, simple regressions of underweight children, and the incidence of maternal and child mortality against per capita GDP show smaller associations. The impact of per capita GDP is seen to weaken further when other factors are included to explain health outcomes and in only a few multiple regressions was it found to be a significant factor. This suggests – and confirms findings from the existing body of literature – that although economic growth helps provide governments with additional revenues that they can use to expand health services, and households with increased income to pay for services from both public and private providers, it alone is evidently insufficient and other factors play a bigger role in influencing health outcomes.

Health expenditure

Cross-country regressions also show that countries that spend more per capita on health, public and private combined, have better outcomes on all three indicators: under-5 mortality, maternal mortality and the incidence of underweight children. This is an important conclusion – many countries in the region underspend on health, so it is no surprise that they have lower health standards.

Figure II-10 shows the link between total health expenditure and under-5 mortality controlling for the effects of other factors such as GDP per capita, access to sanitation, proportion of immunized children, corruption control and women's development. The figure clearly shows that countries with higher per capita health expenditures have done better in reducing child mortality. Those countries below the multiple regression line – such as Sri Lanka, Thailand, Viet Nam, Singapore – are doing better than would be predicted by health spending alone, aided by additional factors such as higher women's development and per capita GDP, more efficient services, and less wastage due to corruption.

Another important issue is the relative effectiveness of public and private provision. To study this, total health expenditure was split up into its private and public components and were regressed separately with other explanatory variables against the health outcomes. The results of the multiple regression suggested private expenditure had little effect on reducing proportion of underweight children, while public expenditure was more helpful – highlighting the value of preventive public health measures such as immunization and control of diseases such as malaria and diarrhoea. But for reducing under-5 and maternal mortality the picture was reversed: private expenditure seemed to be more effective than public expenditure – underlining the need to improve public health services.

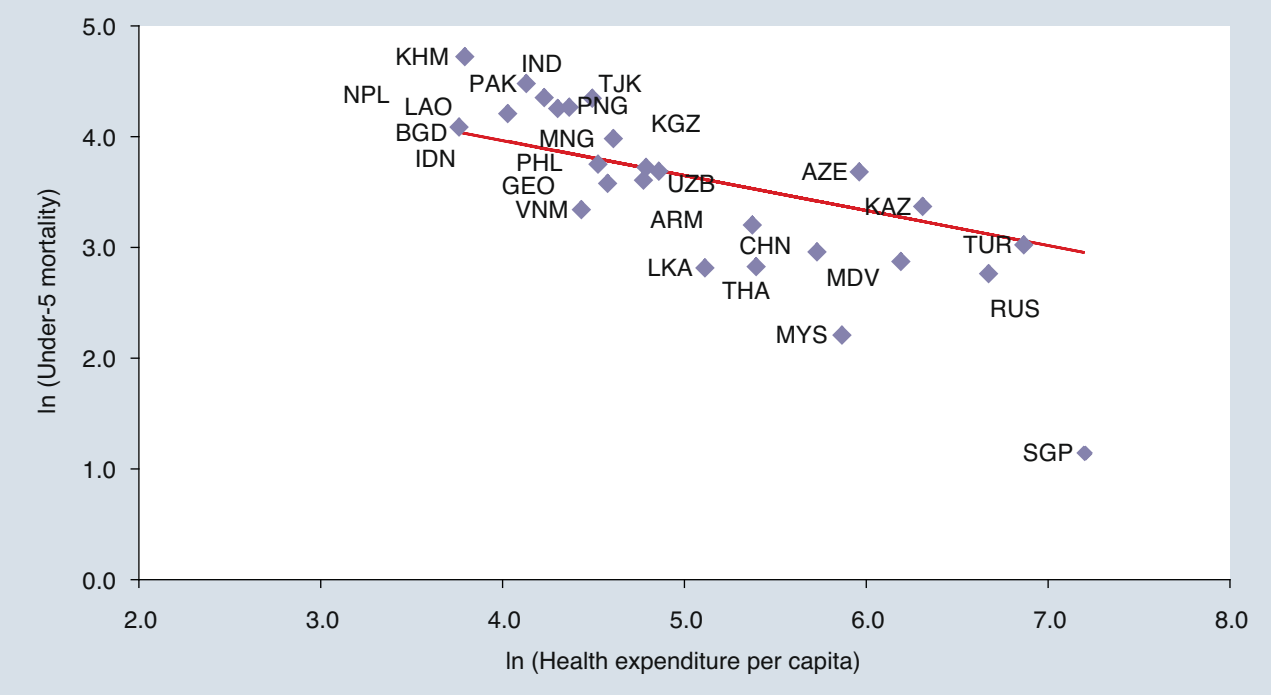
Better governance

Countries in Asia and the Pacific that have better standards of governance also have better health outcomes. This has been analysed by correlating health outcomes with two World Bank governance indicators, effectiveness of public services and corruption control, both of which were found to have partial correlation coefficients with the three health indicators ranging from about 0.5 to 0.8.[6] Results of multiple regression analysis also found corruption control, to have a significant impact on both under-5 mortality and maternal mortality (Figure II-11). These results confirm the growing evidence associating good governance and corruption control for improving health outcomes.[7] The results underline the importance of not just increasing public health expenditure but also improving its quality and effectiveness.

Number of health personnel

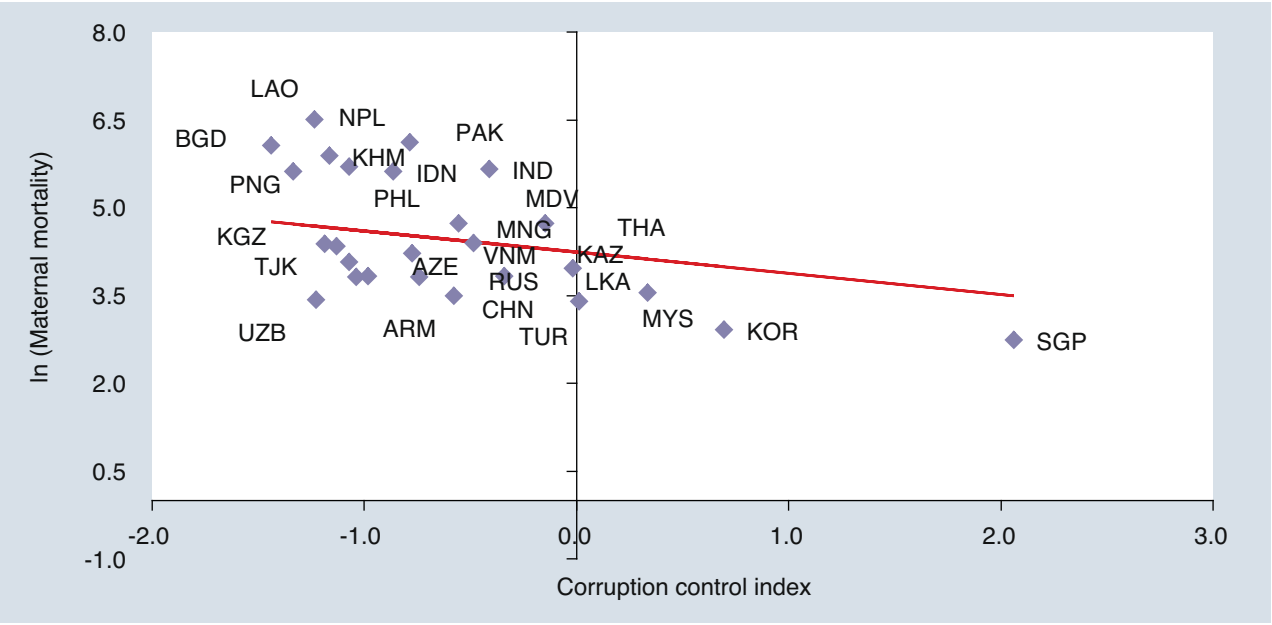
The quality of health services also depends on the availability of sufficient qualified staff. For the MDGs one of the most important staff indicators is the percentage of births attended by skilled health personnel. This was found to be critical for reducing maternal deaths, as illustrated in Figure II-12 in which maternal mortality falls as skilled attendance rises – though there is considerable cross-country variation. Another readily available staff indicator is the number of physicians per 1,000 persons; as the number rises, the proportion of underweight children falls. This would be expected since access to more health staff can improve children's health; and more staff can help expand preventive public health measures to reduce diseases. Child immunization drives, which depend heavily on health personnel, for example, have been found to significantly reduce child mortality (see below).

Figure II-10 – Cross-country variation in under-5 mortality explained by differences in per capita health spending



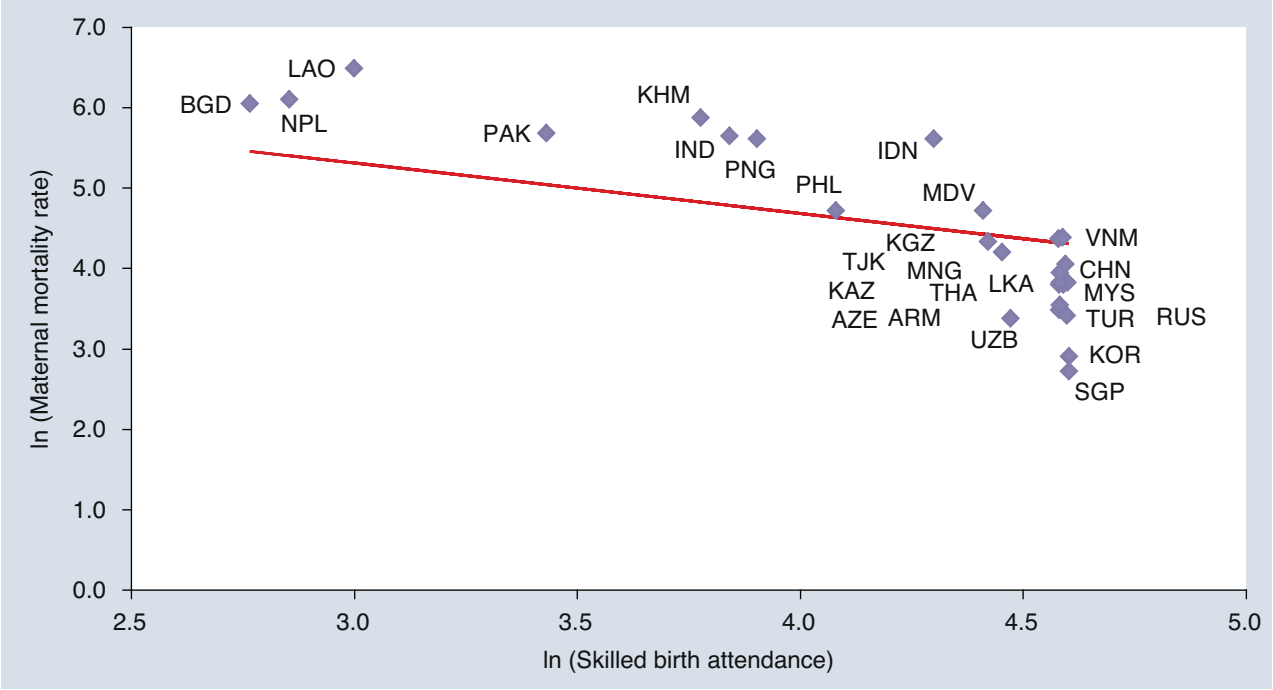
Source: The United Nations MDG Database for under-5 mortality and on the World Bank, World Development Indicators online database for health expenditure per capita.

Figure II-11 – Cross-country variation in maternal mortality explained by differences in corruption control



Sources: The Brookings Institution, World Bank Development Economics Research Group, and the World Bank Institute, World Governance Indicators online database for corruption control index and the United Nations MDG Database for maternal mortality ratio.

Figure II-12 – Cross-country variation in maternal mortality explained by differences in percentage of births attended by skilled health personnel



Source: Staff calculations based on the United Nations MDG Database.

Gender equality and women's development

Also vital for children's health is the status of their mothers. Women who are literate, well-informed and empowered are in a much stronger position to care for their children. This can be investigated using UNDP's gender-related development index (GDI), which incorporates measures of men's and women's life expectancy, educational attainment and employment. The GDI measure was found as an important factor, along with others, in reducing child mortality, but the analysis was not able to confirm its role in influencing the other two health outcomes namely maternal mortality and underweight children where other factors play a bigger role. Separate studies have found, however, that other measures of gender empowerment such as the participation of women in employment outside agriculture play a role in reducing child malnutrition.[8] Figure II-13 illustrates the strong relationship between GDI and child mortality. Most South Asian countries have low GDIs and also high levels of child mortality. The Maldives is an exception. Another is Sri Lanka which has better child mortality outcomes than predicted by its GDI. Among the South-East Asian countries, Viet Nam, Thailand, Malaysia and Singapore have relatively high GDIs and also child mortality lower than predicted by the multiple regression line – indicating that they have other favourable factors enabling better outcomes.

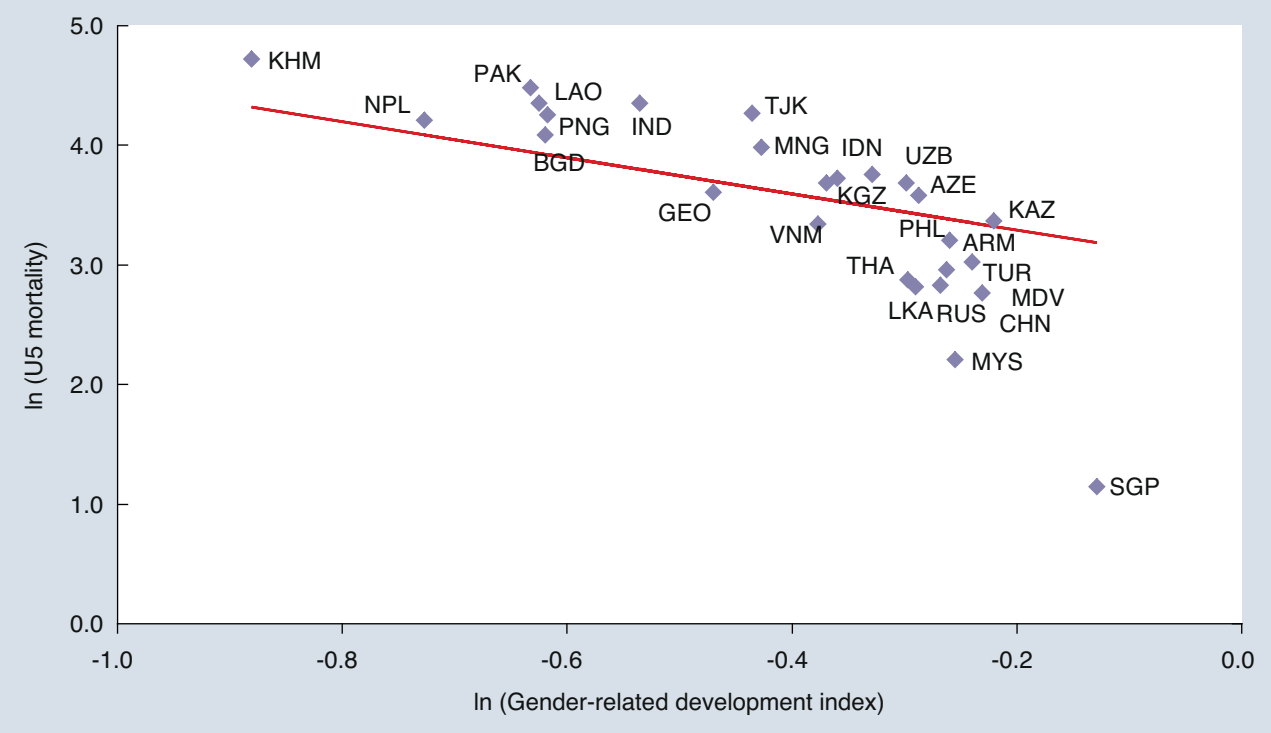
Infrastructure

Many of these influences on MDG outcomes can also be related to the availability of infrastructure.[9] Maternal mortality is likely to fall if mothers facing obstetric emergencies can rely on good roads to reach hospitals as well as reliable electricity supplies to enable adequate treatment. This is illustrated in Figure II-14 which shows skilled attendance rising as the extent of paved roads increases. It can also be noted, however, that Bangladesh, Nepal, India and Pakistan fall below the regression line, performing worse than might have been expected, possibly as a result of other factors such as low health expenditures which reduce the supply of skilled birth attendants.

The cross-country data also suggests that roads are important for other MDG indicators, particularly for the prevalence of TB whose control requires frequent doctor-patient interactions, close monitoring and effective drug supplies. Effective transport systems are also vital for immunization programmes to permit rapid distribution of supplies and to maintain cold chains.

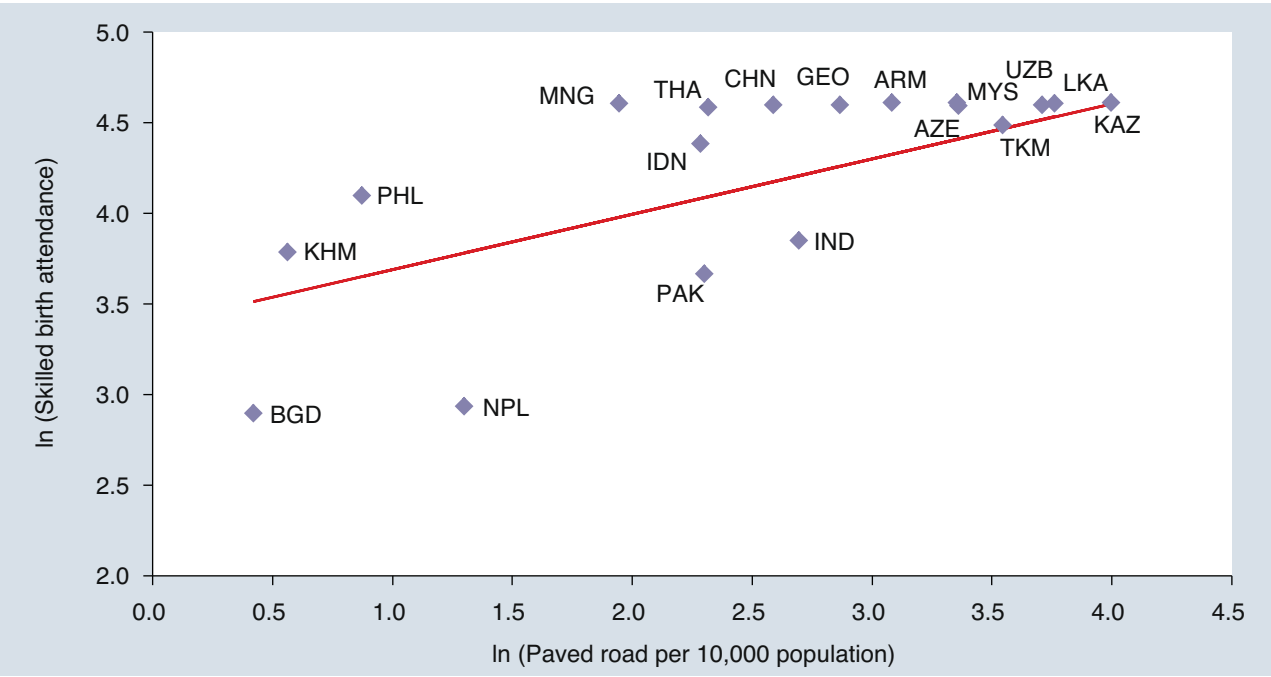
Improved infrastructure for sanitation and safe drinking water will also strengthen health systems. If people with HIV can rely on better sanitation and hygiene, for example, they are less likely to acquire secondary infections or pass them on to caregivers

Figure II-13 – Cross-country variation in child mortality explained by differences in gender development



Sources: United Nations Development Programme, Human Development Report, various issues for gender-related development index and the United Nations MDG Database for child mortality.

Figure II-14 – Births attended by skilled health personnel and the extent of paved roads



Sources: The World Bank, World Development Indicators online database for GDP per capita, electricity consumption, and per cent of paved road networks, and the United Nations MDG Database for skilled birth attendance, access to sanitation and safe drinking water.

or other family members.[10] Better sanitation and safe drinking water, which help limit childhood infections, will reduce the risk of children becoming underweight.

Child immunization

Cross-country data confirm, as might be expected, that immunized children are less likely to die prematurely. Multiple regressions confirm that immunization plays a significant role in lowering child mortality. Its impact on reducing child malnutrition is less evident in multiple regressions as other factors such as health expenditures and per capita GDP are possibly more closely related to it and prevent the impact of child immunization from being revealed. When these other factors are dropped, however, its impact becomes clear. Countries with lower immunization coverage, therefore need to step up their efforts particularly in rural and remote locations. There is wide variation even within sub-regions on child immunization efforts. In South Asia, for example, the average immunization coverage of children for DPT (diphtheria, pertussis, and tetanus) in 2006-2009 for India was only 66 per cent while for Maldives it was 98 per cent and relatively high coverage were also achieved by Sri Lanka (97.8 per cent) and Bangladesh (94 per cent).

Sanitation and water supplies

Progress in sanitation has been generally weak in the Asia and Pacific region but countries which have progressed faster have seen better health outcomes. Multiple regression analysis suggests that those countries that offer better access to safe sanitation are likely to have lower levels of maternal mortality. And after taking out the effect of correlated variables such as GDP per capita, sanitation is also seen to be associated with a lower proportion of underweight children. It also has high partial correlation coefficients with the reduction of both maternal and child mortality.

Although in the multiple regressions using the data available, access to clean water did not appear as significant, it is individually (partially) correlated with reductions in maternal mortality and child malnutrition. Along with sanitation, therefore the drive to increase access to clean water should be a high priority.

Population growth

High population growth increases the size of households, reduces per capita food availability for children in poorer households and thus increases child malnutrition.[11] This has been confirmed by the cross-country data using multiple regression analysis. Although its impact on the other health outcomes was not demonstrated by the cross country regressions, population growth obviously restrains other health outcomes by stretching already overburdened health services in developing countries of the region. This underlines the importance of effective reproductive health services.

Literacy

People who are literate are better able to handle sickness, disease and improve family nutrition. Although literacy did not show up in the multiple regressions as a significant contributing factor for health outcomes, literacy in the total population and female literacy are individually (partially) correlated with reduction of child mortality, maternal mortality and child malnutrition (with correlation coefficients of 0.67, 0.49 and 0.63 respectively). This also demonstrates that tackling health issues requires efforts on multiple fronts, such as improvements in education and literacy.

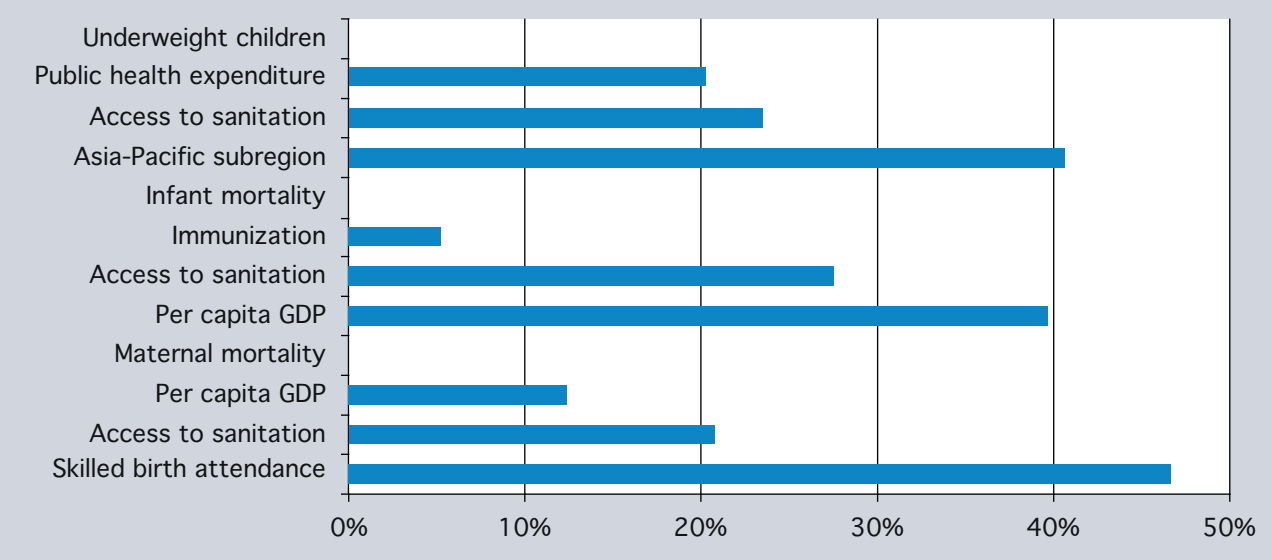
Accounting for disparities

It should be emphasized that techniques in the previous sections explore the differences in absolute levels of MDG attainment between countries rather than the magnitude of relative disparities between them. However, it is also possible to use modelling and regression techniques to rank the factors that contribute most to inter-country disparities.[12] See also the Technical Note 3 in the Statistical Appendix.

This involves constructing a mathematical model that links the MDG with potential determinants, such as levels of income and education, and the degree of urbanization. This model can be used to decompose MDG disparities, offering insights on the extent to which disparities could be reduced through faster economic growth, for example, or investment in particular types of infrastructure.

The results of this modelling exercise are summarized in Figure II-15. These show, for each indicator the three principal factors accounting for disparities across the region. Thus, for underweight children, around 40 per cent of the disparities can be considered locational; they can only be ascribed to overall differences between subregions. An additional 23 per cent, however, can be accounted for by differences in access to sanitation, while 20 per cent correspond to differences in levels of public health expenditure. For infant mortality on the other hand, while sanitation is also important, the largest factor is the per capita GDP. In the case of maternal mortality, this modelling confirms the importance of skilled attendance at birth.

Figure II-15 – Contributions to inter-country disparities for three MDG health-related indicators



Sources: Staff calculations based on data from the United Nations MDG Database; Asian Development Bank (ADB), Asian Development Outlook; ADB, Key Indicators (various issues); World Bank, World Development Indicators online database.

Disparities within countries

Just as there are wide disparities in MDG achievement between countries, so there can be equally wide disparities within countries – between various regions, for example, or different social groups. These differences can be revealed by national-level surveys such as the Demographic and Health Surveys and Multiple Indicator Cluster Surveys. Such data are available, however, for only 22 countries in the region, and may not be very recent. The following sections do not therefore necessarily offer an up-to-date picture but they can help show the extent of disparities and indicate possible causes. Please see Table 1 of Technical Note 4 in the Statistical Appendix for a list of countries and years of data collection.

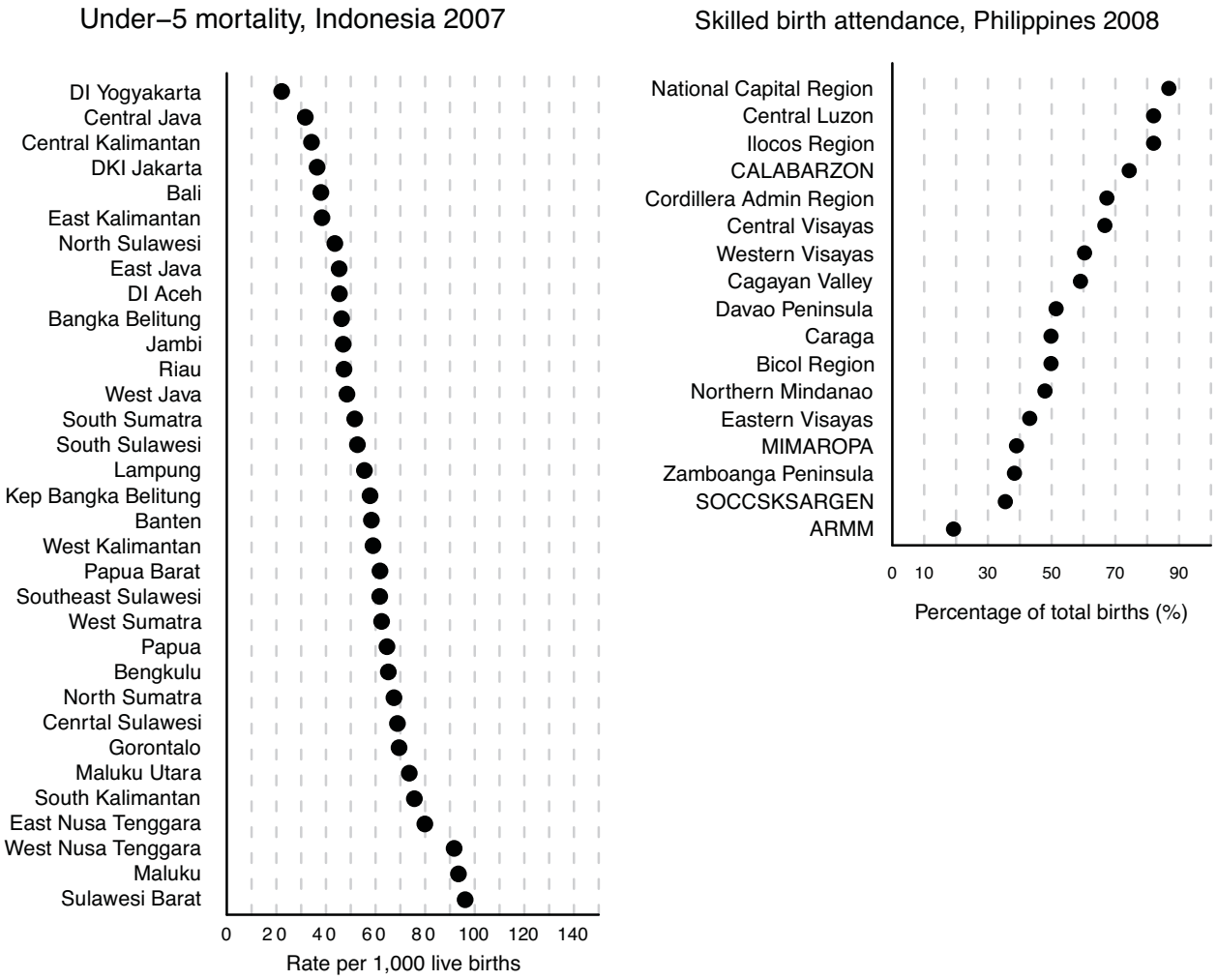
Regardless of a country's overall levels of attainment, there are often striking contrasts between different regions. Indeed the intra-country disparities are comparable to the inter-country disparities between the best and worst performing Asia-Pacific developing countries. This is illustrated for Indonesia and the Philippines in Figure II-16. For under-five mortality, for example, the national rates per 1,000 live births in Asia-Pacific developing countries ranged from 93 in Pakistan to 27 in the Maldives. Indonesia's national rate fell between the two, at 51, but the rates for individual provinces ranged from 22 in Yogyakarta to 96 in Sulawesi Barat.[13]

A similar picture emerges from skilled birth attendance. Across Asia and the Pacific in 2008 the proportion of births attended by skilled personnel ranged from 19 per cent in Nepal and 24 per cent in Bangladesh to 99 per cent in Thailand and 100 per cent in Singapore. The Philippines lies around the middle at 62 per cent, but coverage ranged from 87 per cent in the national capital region and 82 per cent in Ilocos and Central Luzon down to 19 per cent in the Autonomous Region of Muslim Mindanao – which is similar to the levels in Bangladesh and Nepal, which were among the lowest in Asia and the Pacific.

Wide gaps in levels of attainment between provinces are not confined to the larger countries. This is illustrated for Nepal and Timor-Leste in Figure II-17. In 2006 in Nepal, 79 children per 1,000 live births did not live beyond their fifth birthday. However, the number ranged from 60 in the Eastern region to 122 in the Mid-Western region, the latter being higher than all the countries in Asia and the Pacific except Afghanistan. A similar picture emerges in Timor-Leste for skilled birth attendance. In 2009 the overall level was 30 per cent, but values ranged from 69 per cent in Dili to 10 per cent in Oecussi. Indeed the range across these smaller countries was as great as that spanning the region's high- and low-performing countries.

Huge divides in attainment on these and other indicators are also evident between rural and urban residents, between poorer and richer populations, and between the more-educated and less-educated citizens, as well as among various ethnic, linguistic and caste groups. As a result, while some people may have standards comparable to more developed countries in the region, their fellow citizens are much worse off. Such huge divides are not only unacceptable, they

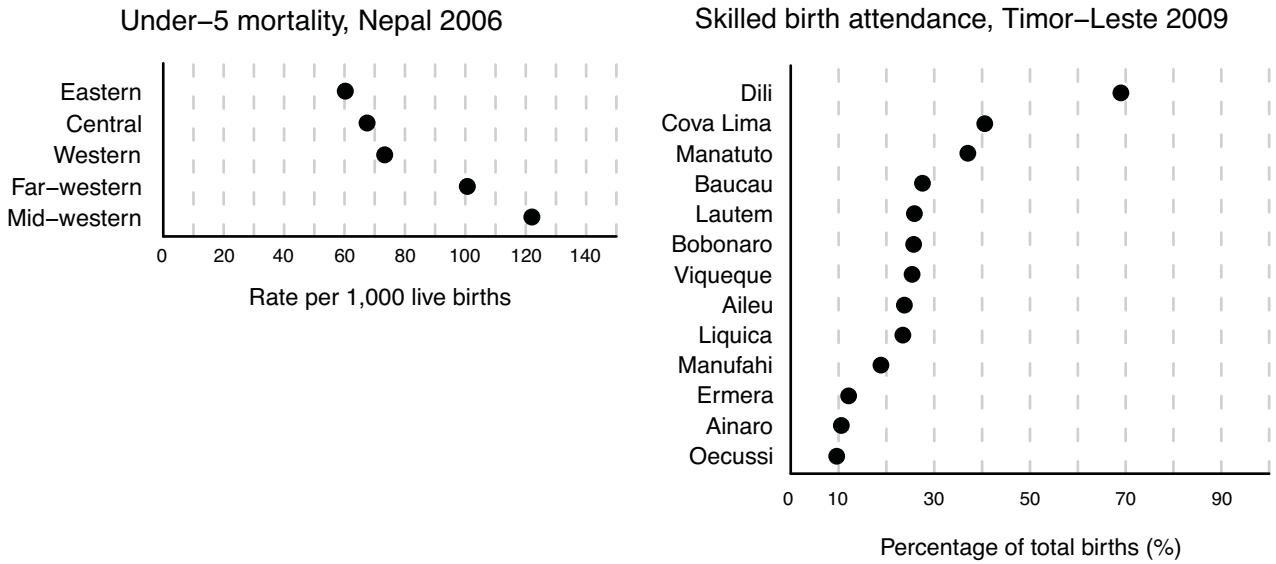
Figure II-16 – Health disparities across sub-national jurisdictions in two large countries



Note: Abbreviations in Indonesia: DI = Daerah Istimewa (special region), DKI = Daerah Khusus Ibukota (special capital region). In the Philippines: MIMAROPA, Occidental Mindoro, Marinduque, Romblon and Palawan; SOCCSKARGEN, South Cotabato, Cotabato, Sultan Kudarat, Sarangani and General Santos City; ARMM – Autonomous Region of Muslim Mindanao; CALABARZON, Cavite, Laguna, Batangas, Rizal, and Quezon.

Source: Staff calculations using DHS data from respective countries and years.

Figure II-17 – Health-related disparities across jurisdictions in two small countries



Source: Staff calculations using DHS data from respective countries and years.

Table II-2 – Factors considered to explain disparities for selected MDG indicators

	Child malnutrition	Under-5 mortality	Use of maternal health care services	Access to water and sanitation
Location				
Urban/rural	✓	✓	✓	✓
Administrative areas	✓	✓	✓	✓
Household characteristics				
Wealth	✓	✓	✓	✓
Proportion of females in household	✓	✓	✓	✓
Household size				✓
Access to improved drinking water	✓	✓		
Access to improved sanitation	✓	✓		
Sex of household head	✓	✓	✓	✓
Mother and child characteristics				
Highest educational level of mother	✓	✓	✓	*
Highest educational level of father			✓	*
Mother's age at birth of child	✓	✓	✓	
Mother's age at birth of first child			✓	
Skilled assistance at delivery		✓		
Antenatal care (at least one visit)		✓		
Previous birth interval	✓	✓		
Birth order	✓	✓		
Sex of child	✓	✓	✓	
Breastfed for at least 6 months		✓		
Child's age	✓			

Notes: *Two education variables are used for modelling access to improved water and sanitation. The first is the attainment level of the best-educated household member. The second is the percentage of people in the village or neighbourhood with at least primary education.

can also pose threats to economic and social stability. Governments across the regions aiming to achieve the MDG targets will need policies and programmes to reach those who are being left behind.

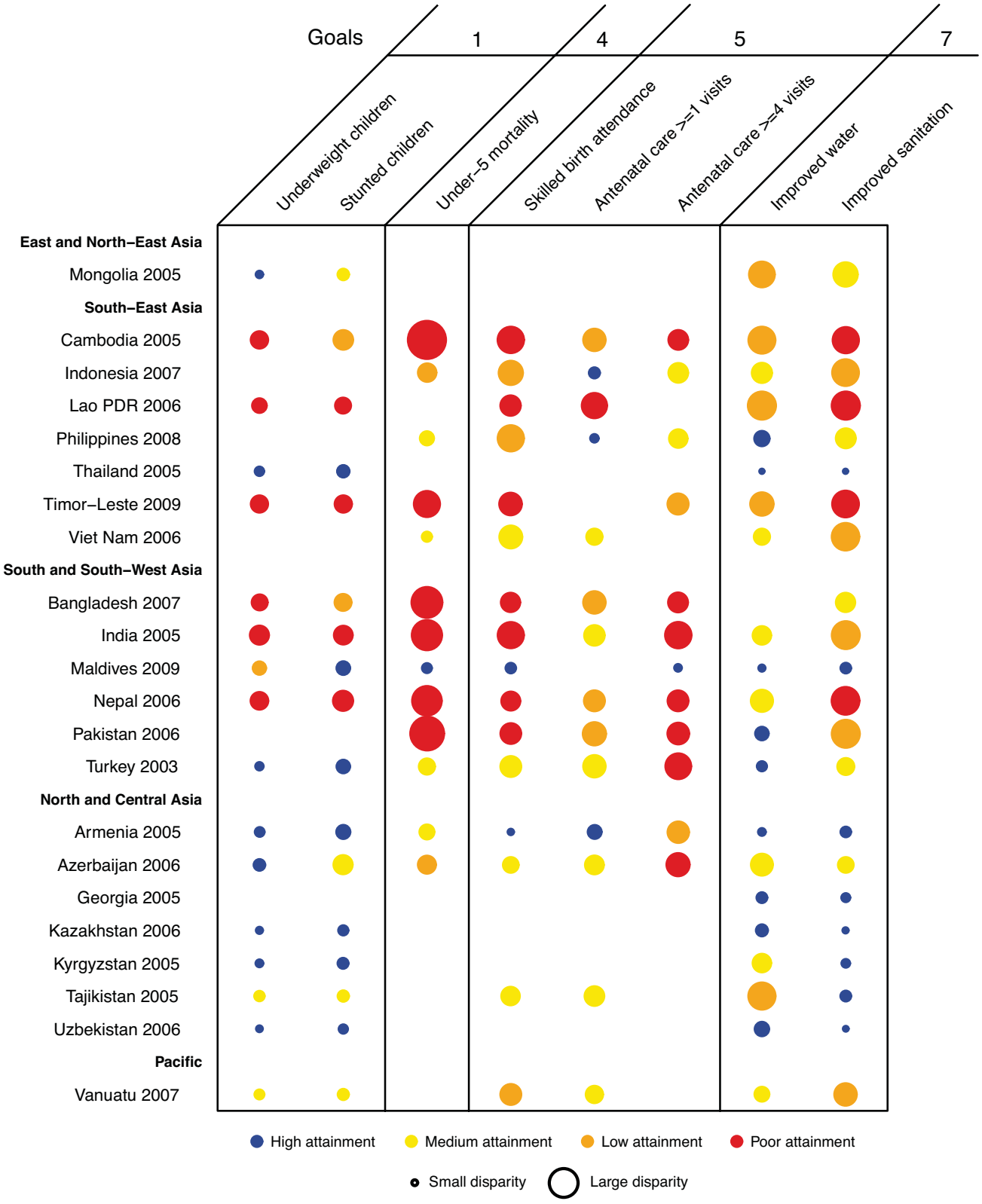
Uneven development is a common problem and the MDG indicators bring these into sharp relief. But as well as showing where the greatest deprivations lie they also point to potential solutions since addressing the shortfalls in progress in the weakest provinces or regions will also raise national levels of attainment.

These disparities in health attainment mirror socio-economic inequalities. Across Asia and the Pacific certain population groups face structural barriers and constraints that hinder their access to health and other essential services. The administrative regions with the lowest health standards tend to be the poorest. At the same time there are generally many other disparities – between urban and rural areas, for example, between boys and girls, or between more and less educated sections of the population.[14]

To estimate the overall extent of these intra-country disparities this section uses a composite measure. This simultaneously combines such factors as rural or urban residence and the location of the administrative area. It also includes household wealth, the educational attainment of adults, the sex of the household head and the sex composition of the household. In addition, the measure incorporates some indicator-specific characteristics. For malnutrition, for example, this includes the child's sex and age. The analysis has been carried out for eight indicators: under-5 children underweight and stunting (MDG 1); under-5 mortality (MDG 4); skilled birth attendance and prenatal care (MDG 5); and access to improved water and sanitation (MDG 7). The potential sources of disparity for each MDG indicator are shown in Table II-2.

The results for the 22 countries are presented in Figure II-18. In this chart, the size of the circle represents the extent of disparity, which is the difference in the estimated level of attainment between the most advantaged and the least advantaged sections of the population on the basis of the factors listed in Table II-2. At the same time, the colour represents the level of attainment of the entire population, which is defined differently for different indicators. For under-5 mortality, for example, attainment is considered to be

Figure II-18 – Disparities and attainment in health-related MDG targets



Notes: 1) All child mortality rates are calculated using the DHS method for a five-year period before the survey. 2) Estimates using the new standards were not available in earlier surveys, therefore, the underweight and stunting status of the child were calculated using the NCHS/CDC/WHO standard, which is different from the WHO Child Growth Standards 2006 used for the calculation of the prevalence of underweight children in Chapter 1. 3) In the case of Viet Nam for under-5 mortality, the results are based on the DHS survey from 2002. 4) See Technical Note 4 in the Statistical Appendix for details of attainment levels and disparities. 5) The levels of attainment and inequality as shown in the chart are based on household survey data from various sources. As such, the assessments of individual countries are not comparable to that based on the United Nations MDG Database.

Source: Staff calculations based on data from DHS and MICS from respective countries and years.

high, and thus coloured blue, if the rate is below 20 per 1,000 live births.[15] Medium attainment, coloured yellow, is between 20 and 39. Low attainment, coloured amber, is between 40 and 60. Poor attainment, coloured red, is more than 60 per thousand live births. For the definition of levels of attainment for the rest of the indicators, please refer to Technical Note 4 of the Statistical Appendix.

Thus Indonesia has low attainment in under-5 mortality and sanitation as indicated by the amber circles, but the disparities are greater for sanitation, in this case perhaps reflecting differences in wealth. For antenatal care (at least one visit), Indonesia, with a blue circle, has relatively high attainment which, as indicated by the size of the circle, does not vary much by location or other characteristics.

As might be expected, in Figure II-18 the red circles are generally larger than the blue ones. This means that the overall disparities as measured by the index tend to be larger in countries with relatively lower levels of attainment. In Cambodia, for example, where the overall under-5 mortality rate is 83 per thousand live births, this can range from 11 for the most advantaged sections of the population to 367 for others. In Maldives, on the other hand, the overall rate is only 17 and this higher attainment has typically been achieved by poorer households moving up to the standard of richer ones, thus compressing the range.

For these countries, the greatest success has evidently been in improved water supplies. Nevertheless, even here there were particularly large gaps between the most and least advantaged households – the bottom and top quintiles. On the other hand, progress has been slower when it comes to extending services for maternal health care: attainments for skilled birth attendance and antenatal care are fairly low and vary widely. The large and red symbols in the under-5 mortality column also highlight the urgent challenge for many countries particularly in South and South-West Asia.

Among the sub-regions, this chart also suggests, as might be expected, that attainments are higher, and disparities lower, in North and Central Asia, compared with South and South-West Asia. South-East Asia also shows wide differences in basic sanitation. The better-off households have universal coverage but for the least advantage coverage is low or non-existent.

Raising the attainment levels while reducing disparities

The above results suggest a range of policy priority choices. There are four possible scenarios. The first is for countries with relatively poor attainment levels and large disparities. This would be the case for under-5 children underweight in Bangladesh, Cambodia, India, Lao PDR, Nepal and Timor-Leste. If these countries can improve the conditions of the large sections of the population left behind they will also significantly raise attainment for the whole country.

The second scenario is for countries with low attainment but relatively low disparities. This would be the case for skilled birth attendance in Bangladesh and Nepal. In this situation, countries can efficiently use across-the-board policies and interventions.

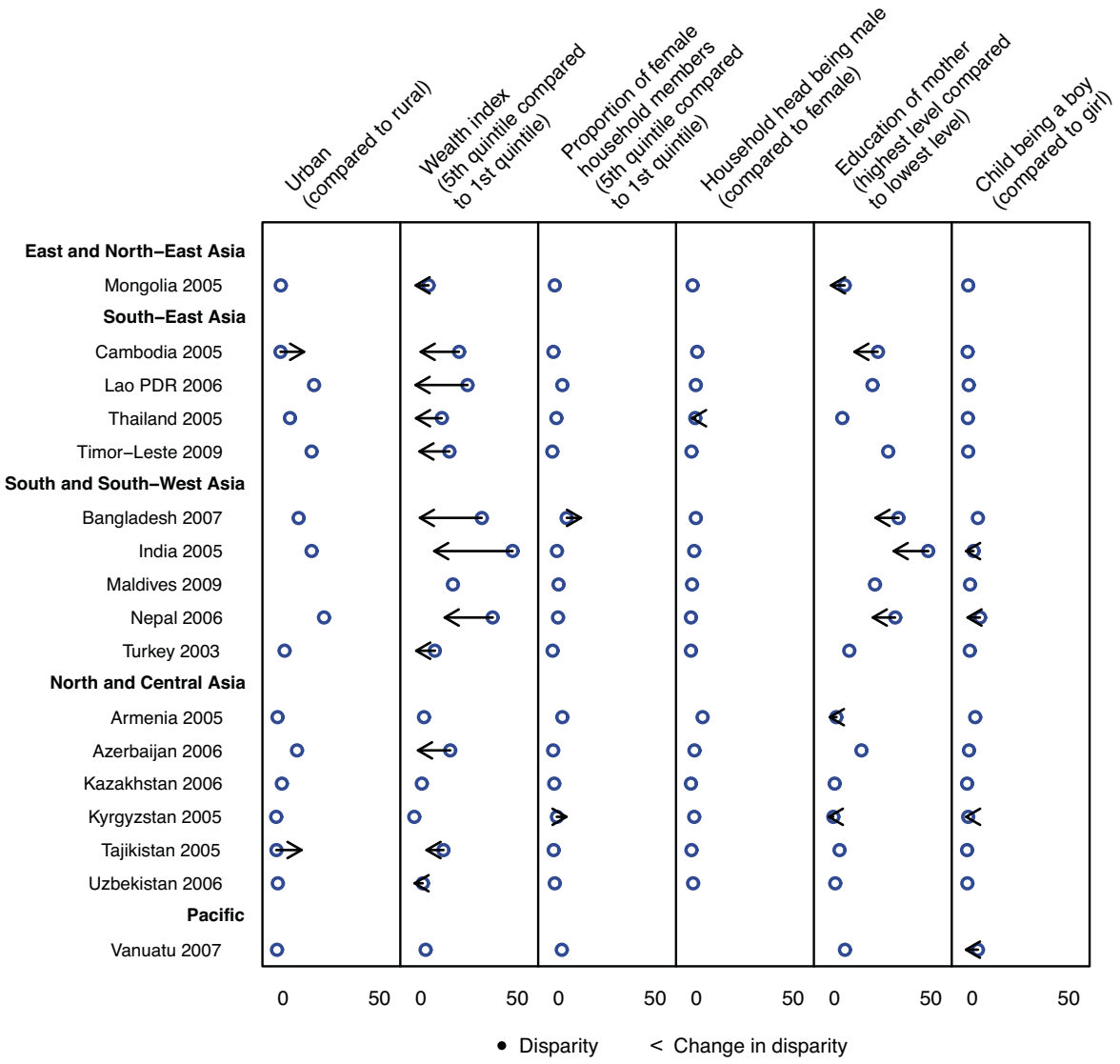
The third scenario is for countries that have done better on overall attainment but still have large disparities. Take stunting, for example, Armenia, Maldives and Turkey, have blue symbols corresponding to high achievement but the circles are fairly large; indeed the gaps between their highest- and lowest-performing groups are as wide as those within Azerbaijan, Bangladesh and Tajikistan. The former group of countries therefore need policies and programmes to support the populations at greatest risk of stunting.

The fourth scenario is for countries that have been relatively successful in raising attainment levels and minimizing disparities – as represented by small blue circles. This is the case in Kazakhstan and Uzbekistan, for example, for reducing the prevalence of under-5 children underweight. In this scenario, countries will need to consolidate their achievements and continue to improve the quality of the services.

Those in greatest need of medical care tend to have least access to services. This phenomenon has been referred to as 'the inverse care law'.[16] Poor communities face a number of barriers. Some are related to direct financial costs; other to opportunity costs, for example, the need to take time off work to travel long distances to facilities. Others are related to the quality of provision in remote areas – along with discrimination, which can be based on gender. Poor groups also tend to know less about the value of services. Moreover, when new services are introduced they tend to reach richer communities first; only later are they extended to the poor. As a result, when countries start to improve services the disparities are likely to increase, only falling again when the poor gain greater access.[17]

But this is not always the case. Large disparities and low attainment, or small disparities and high attainment, do not necessarily go hand in hand. Cambodia, for example, has an under-5 mortality rate of 83 per 1,000 live births: lower than that in Pakistan at 93.
However Cambodia's level of disparity on this indicator is 15 per cent higher than that of Pakistan. Similarly,

Figure II-19 – Drivers of disparities in underweight prevalence among under-5 children



Source: Staff calculations based on data from DHS and MICS from respective countries and years.

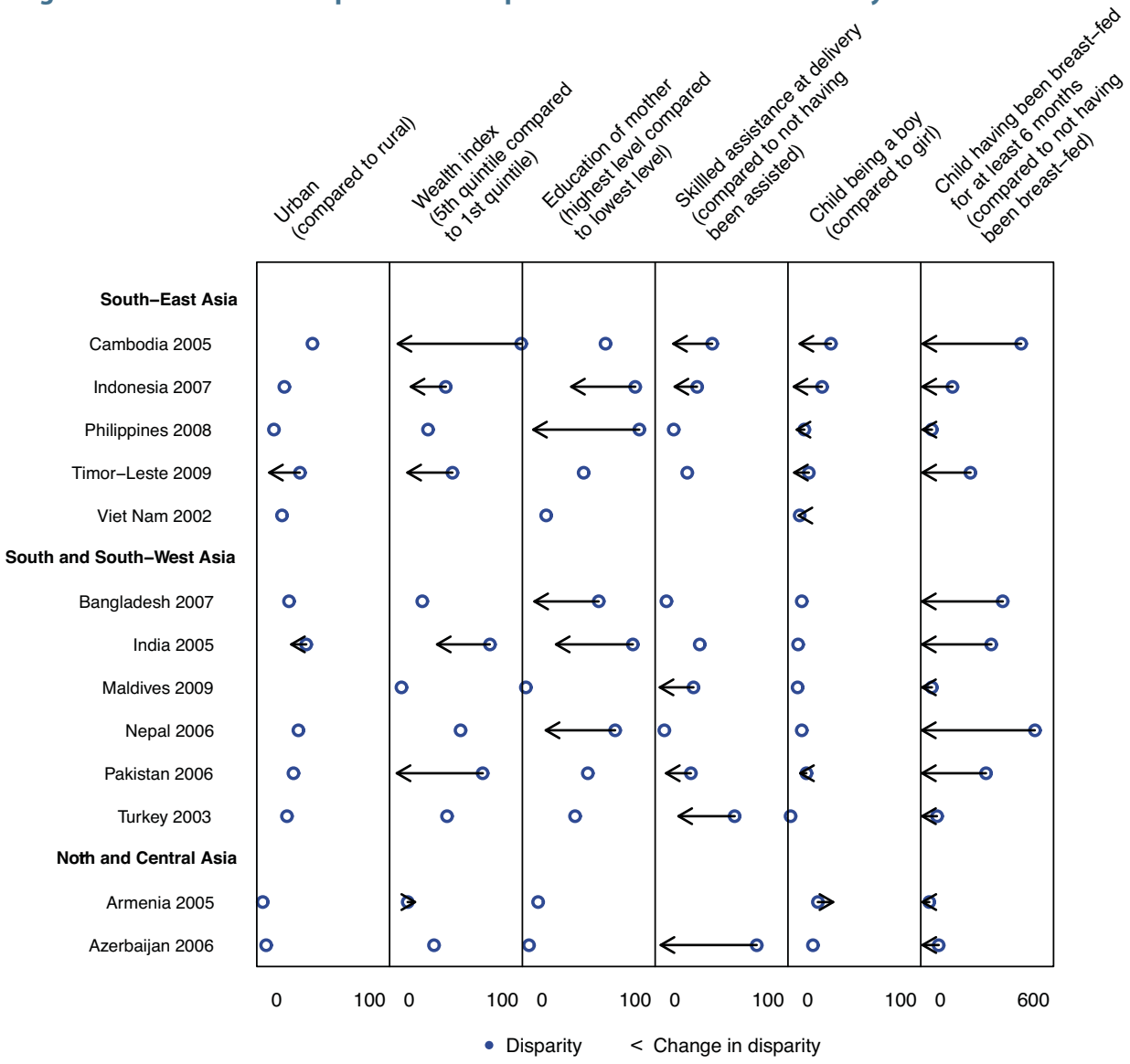
the levels of under-5 mortality are comparable in Timor-Leste at 64 per cent and Bangladesh at 65 per cent, but in Bangladesh the disparity is 23 per cent greater (please see Table 2 of Technical Note 4 in the Statistical Appendix for data sources). Evidently some countries are more successful at ensuring more equal access – in designing and implementing health programmes that reach disadvantaged and vulnerable populations.

Explaining disparities within countries

Figure II-18 highlights the disparities for individual indicators. In addition, it is possible to analyse household surveys more closely to show how these disparities overlap and interact. This is illustrated in this section for a selection of MDG indicators and countries for which sufficient data are available to make cross-country comparisons.

Figure II-19, for example, considers disparities in the proportion of under-5 children underweight. The distance between the position of the dot and the value of zero represents the difference in the probabilities of being underweight for each two groups of children – those in urban or rural areas, for example, or those with more educated mothers. The greatest rural-urban disparities among this group of countries were thus in Nepal, India, Timor-Leste and Lao PDR. There are also disparities between children of different ages: underweight was much more prevalent among older than younger children in South-East Asia, as well as in South and South-West Asia. Analysis based on a wealth index, which is based on the quality of housing, for

Figure II-20 – Drivers of disparities in the prevalence of under-5 mortality



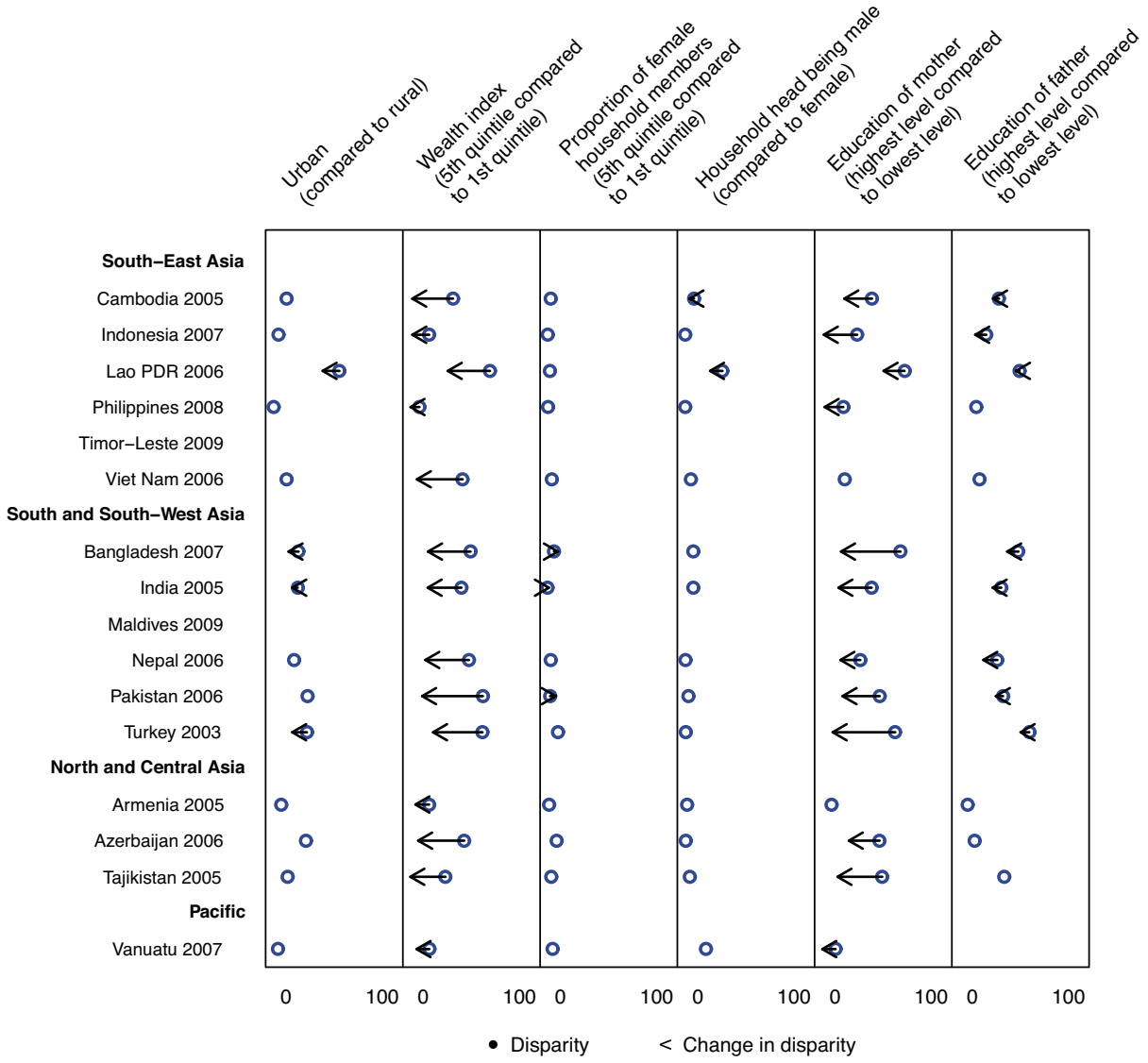
Source: Staff calculations based on data from DHS from respective countries and years.

example, also shows wide disparities on this indicator.

The analysis on explaining these disparities suggests that education and household wealth are by far the two most important factors that can dispel disparities. What does this imply for policy? That (a) education creates access to opportunities and remains a major priority, especially education of women; (b) that the poor need to be targeted in the provision of basic services. Usually these characteristics are interlinked. The poorest households as indicated by the wealth index, for example, are also likely to be those without adequate access to water and sanitation. Similarly, better-educated individuals tend to be in a position to generate income. And households in urban areas are generally richer and better educated. As a result, even if for each of the surveyed households one characteristic were changed it might not make much difference. The benefits of better access to water, for example, might still be outweighed by the impact of poverty or the lack of mothers' education.

However, a close analysis of these household data, using modelling techniques explained in Technical Note 4 of the Statistical Appendix, reveals that this is not always true. In certain cases, addressing just one factor in isolation might bring about a significant change. In Figure II-19 these opportunities are indicated by arrows from right to left, showing the potential for reducing the disparity from a higher to a lower value. In India, for example, there is an arrow for mothers' education. This suggests that if an Indian mother with no education is better educated then the disparity between her and the other mothers should be reduced by an amount corresponding to the length of the arrow – even if all her other characteristics

Figure II-21 – Drivers of disparities in the coverage of antenatal care (at least one visit)



Source: Staff calculations based on data from DHS and MICS from respective countries and years.

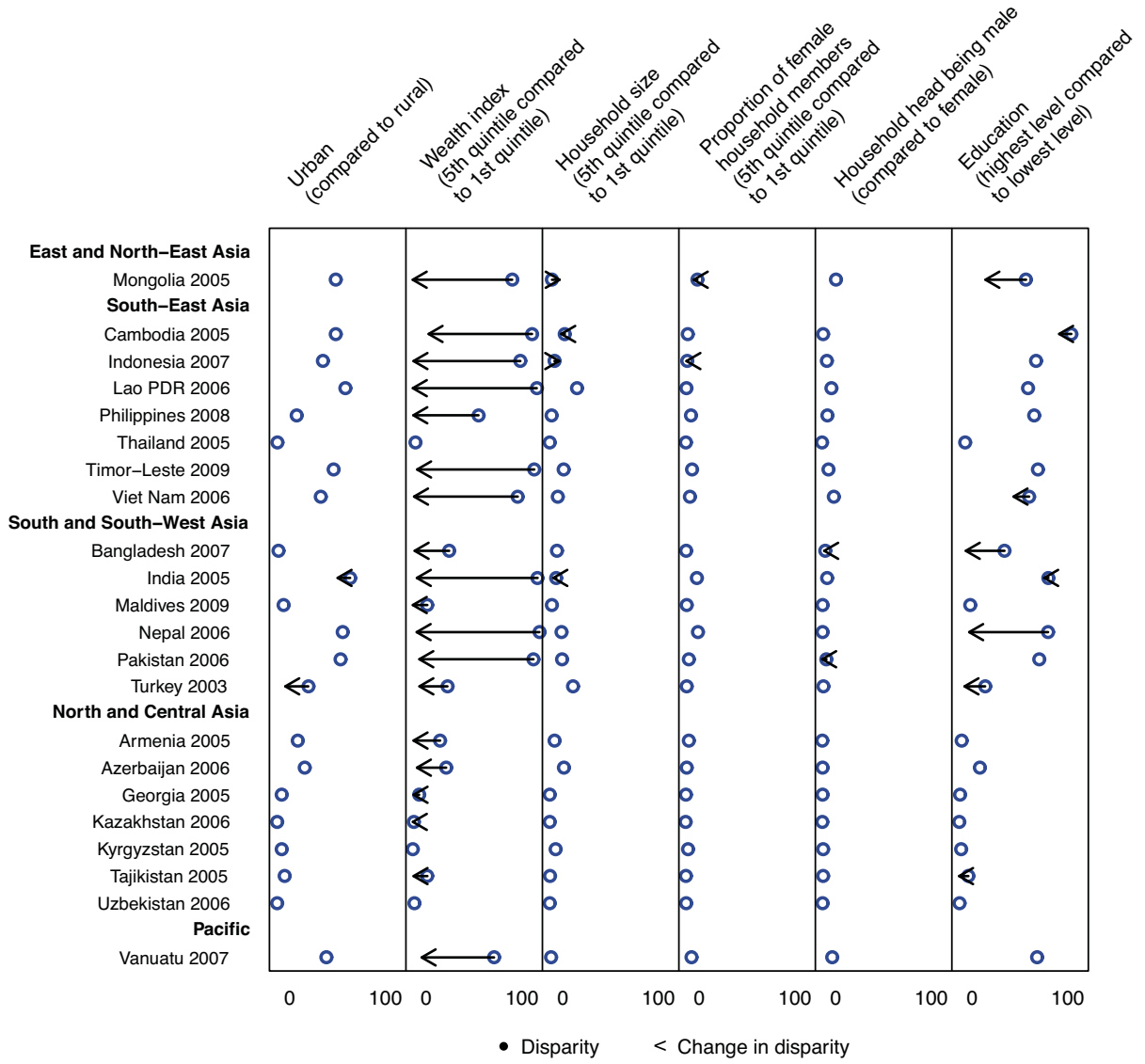
remained the same. Wealth too is important, with its largest effects found in India and Bangladesh: if the poorest quintile had the same material wellbeing as the richest even if their other characteristics remained the same there would be a significant reduction in child underweight disparities.

It is noticeable that the proportion of children underweight rises as the children get older. This is the pattern usually observed in less developed countries as underweight is a reflection of both chronic and acute malnutrition and when under nutrition occurs in a young age, particularly during the first two years of age, and if not addressed, it is likely to persist. Such results indicate the importance of addressing under nutrition during this period, which is often referred to as the "window of opportunity", because the consequences of under nutrition are particularly severe, often irreversible, and reach far into the future. A similar pattern is evident for stunting, though in this case the education level of the mother assumes greater significance, particularly in India, Nepal and Bangladesh. Household wealth is a significant factor in reducing disparities in stunting in Azerbaijan, Bangladesh, Cambodia, India, Lao PDR, Mongolia, Nepal and Turkey.

In the case of under-5 mortality, as indicated in Figure II-20, the most striking result emerges for breast-feeding for at least six months. Although it was not possible to examine the effect of early initiation of breastfeeding and exclusive breastfeeding in this analysis, these practices are likely to be even more important in terms of reducing under-5 mortality and associated disparities.

The analysis also highlights the urgent need of protecting girls in some parts of this region. Girls typically have higher chances of surviving beyond

Figure II-22 – Drivers of disparities in access to improved sanitation



Source: Staff calculations based on data from DHS and MICS from respective countries and years.

their fifth birthday than boys, reflecting their biological advantage. The analysis confirms this pattern in countries such as Armenia, Cambodia, Indonesia, Pakistan, Philippines and Timor-Leste. However, this biological advantage that girls enjoy is absent in the rest of the countries included in the analysis. Boys are actually at an advantage over girls in countries in parts of South-East Asia as well as South and South-West Asia. Countries with a reversal of female advantage in surviving beyond the fifth birthday include India, Nepal and Viet Nam. These results indicate the importance of removing gender-based discrimination so as for girls and boys to have equal chances in their healthy development.

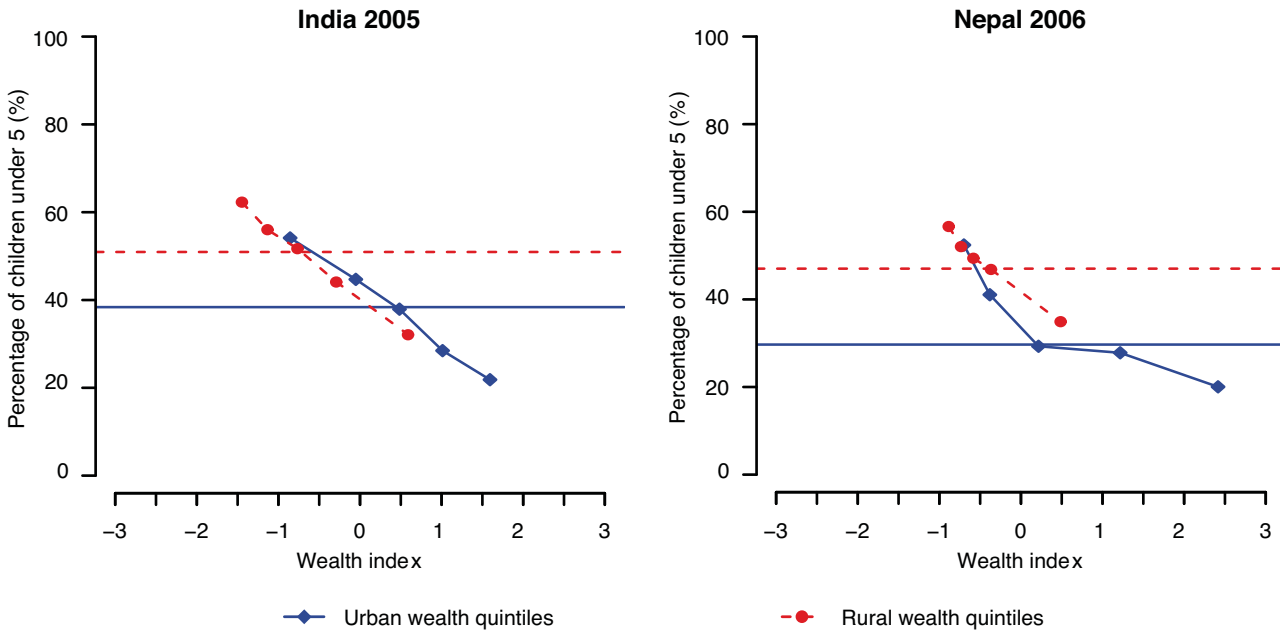
Across all these indicators a common factor is the education of the mother. For instance, the prevalence of underweight and stunting was much higher among children born to mothers with no schooling than their counterparts born to mothers with secondary or higher levels of schooling, particularly in South-East Asia, as well as in South and South-West Asia. As indicated in Figure II-21, the mother's education had a strong bearing on the likelihood of her receiving antenatal care. These results support the call for educating women and girls, both to fulfil their own rights and expedite progress towards the MDGs.

For a number of indicators, especially water and sanitation, the most important factor is household wealth. This is indicated in Figure II-22, for sanitation – and the pattern is similar for water supplies.

Urban-rural gaps

For most indicators, one of the most consistent forms of disparity is between urban and rural areas – with the rural areas generally lagging. However, it

Figure II-23 – Under-5 children underweight, urban and rural, by household wealth, India and Nepal



Source: Staff calculations based on data from DHS from respective countries and years.

should be emphasized that average attainment also covers a wide range of values. Indeed compared with the average rural-urban differences, there are much greater disparities within both rural and urban areas. This is illustrated for child nutrition in India in Figure II-23. In this and subsequent charts rural and urban households are divided into quintiles based on wealth. Household surveys assess wealth by noting the ownership of selected assets, such as televisions and bicycles, and other factors such as the materials used for housing construction. Urban households are on average wealthier than rural ones. On these charts, the zero point in the index corresponds roughly to average wealth. The negative values represent lower levels of household wealth and positive values higher levels.

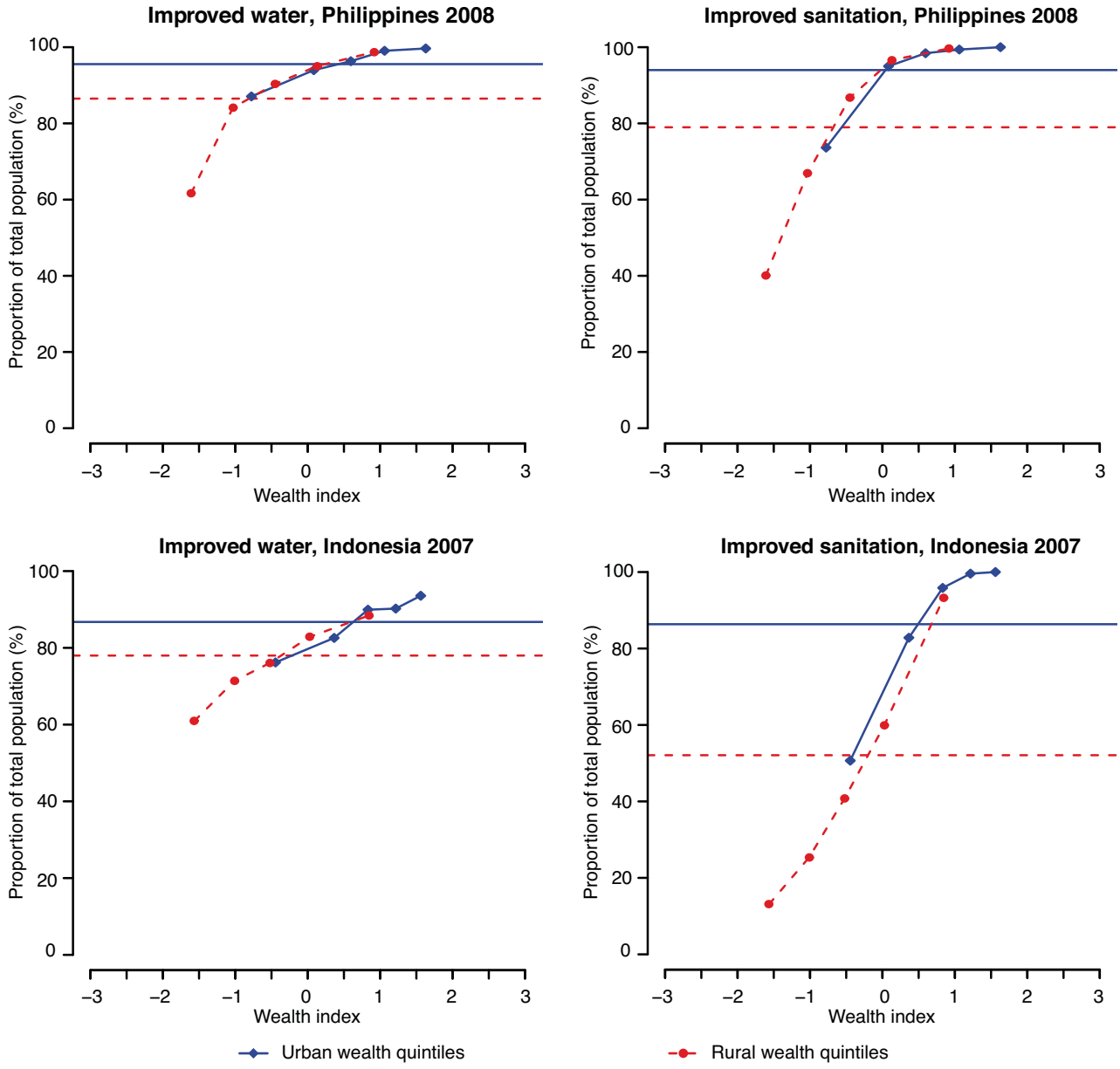
In Figure II-23, for India, for example, as indicated by the horizontal lines, the proportions of children underweight are on average 51 per cent in rural areas and 38 per cent in urban areas – a difference of 13 percentage points. As might be expected, the range of urban values is to the right of the rural ones. The symbol representing the wealthiest 20 per cent of the urban households, for example, is to the right of that of the symbol representing the wealthiest 20 per cent of the rural households. This is also the case for the symbols representing other urban and rural household wealth quintiles. In other words, the urban households were generally wealthier. But within urban areas the difference between the richest and poorest quintiles is 32 percentage points and in the rural areas is 30 percentage points. It can also be seen here that the richest 20 per cent of rural households have better nourished children than do 60 per cent of urban households. In Nepal, too, there is a significant, if smaller, overlap.

In India the urban and rural lines have similar gradients – indicating that an increase in wealth would reduce underweight to a similar extent from all levels of income. In Nepal, however, the situation is different. Here the greatest potential gains from greater wealth would be made by the two poorest urban quintiles. It is also useful to consider the extent to which the rural and urban curves overlap. The overlaps suggest that urban or rural residence matters less than the wealth of the household.

The latter point is also illustrated in Figure II-24, which shows an even greater overlap between richer and poorer households for access to safe water and sanitation in the Philippines. Average access to safe sanitation is 79 per cent in rural areas and 94 per cent in urban areas. But the wealthiest 40 per cent of rural households have better access to improved sanitation and water supplies than do the poorest 40 per cent of urban households. Almost all the rural-urban differences in access to water and sanitation reflect differences in household wealth.

Overall, however, for both water and sanitation the disparities are narrower in urban areas. This will be due partly to the effect mentioned earlier in which the range is compressed as attainment moves to 100 per cent. However, depending on the indicator, a lower disparity can also reflect the advantages of proximity.

Figure II-24 – Access to water and sanitation, urban and rural, by household wealth, the Philippines and Indonesia

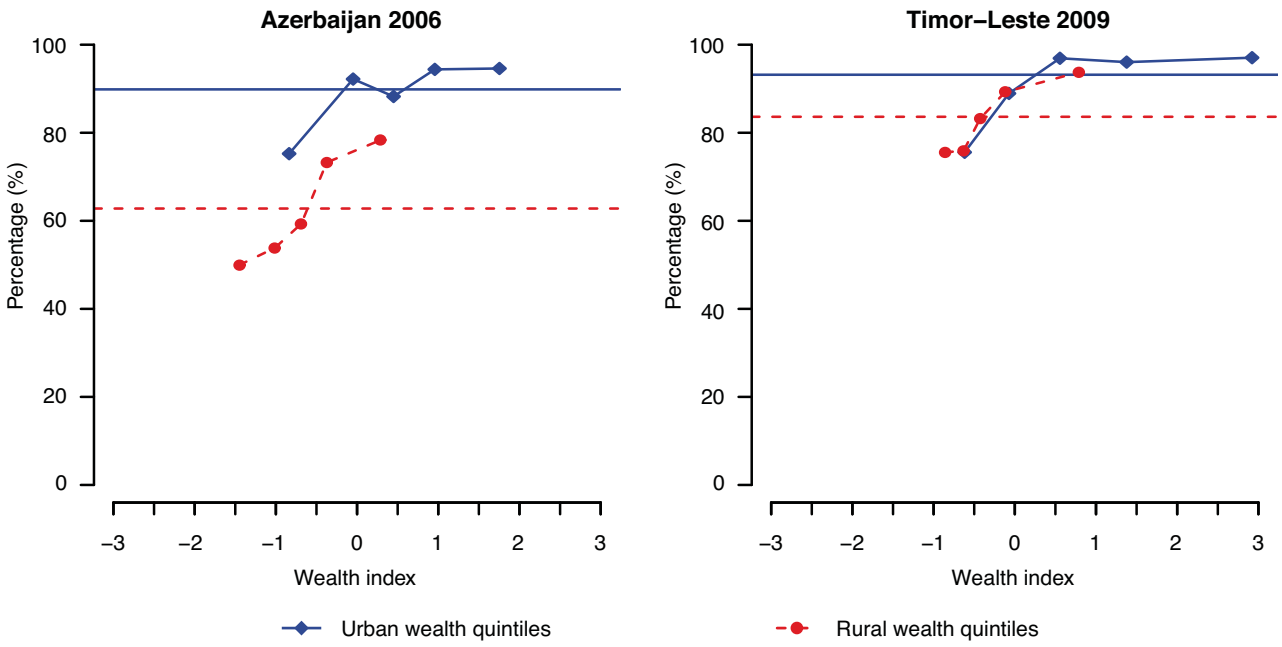


Source: Staff calculations based on data from DHS from respective countries and years.

For water supplies, for example, it is relatively easier to extend services to communities living along the pipelines than it is to provide extra sources to more remote rural communities. But the picture is likely to be different for sanitation; cities in Asia-Pacific developing countries have relatively few main sewerage lines so access will depend more on what households can afford for themselves in the form of septic tanks.

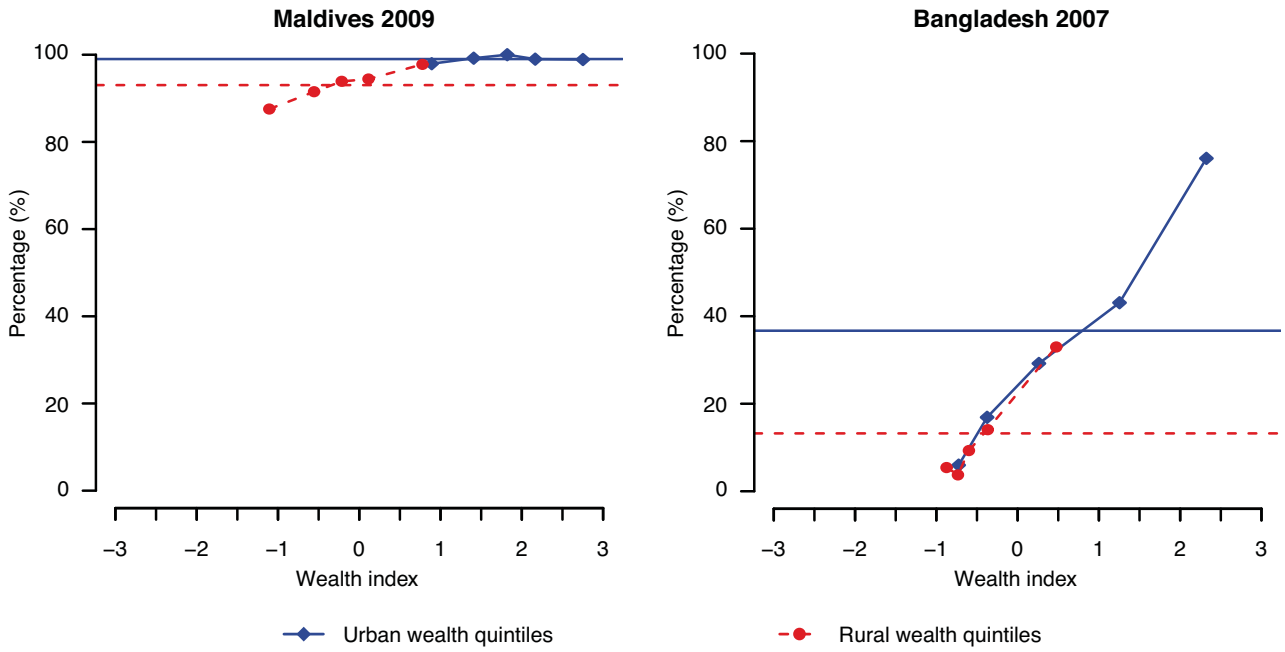
Urban-rural gaps can also be expected in access to health services. As indicated in Figure II-25, Azerbaijan, for example, has a wide urban-rural gap when it comes to use of antenatal services, with scarcely any overlap by wealth quintile. In Timor-Leste on the other hand, the gap is much narrower and there is considerable overlap. Similar gaps can be expected in skilled birth attendance. In some countries, such as Maldives, this is almost universal attendance in the urban areas, but attendance is less common for poorer families in rural areas (Figure II-26). Bangladesh, on the other hand shows a very different pattern, with wide disparities even in the urban areas by wealth quintile. In these charts the close overlaps in the curves indicate that the urban-rural disparities are primarily due to differences in household wealth. For mothers of similar wealth levels the likelihood of a birth being attended by a skilled health professional is similar in both urban and rural areas.

Figure II-25 – Access to antenatal care, urban and rural, by household wealth, Azerbaijan and Timor-Leste



Source: Staff calculations based on data from DHS from respective countries and years.

Figure II-26 – Access to skilled birth attendants, urban and rural, by household wealth, Maldives and Bangladesh



Source: Staff calculations based on data from DHS from respective countries and years.

Caste, ethnicity and language group

Amongst the countries studied there were also significant disparities in health outcomes between various castes, or ethnic or linguistic groups. Moreover, these disparities persisted even after taking into account wealth and education. This suggests that other forces are also important.

For instance, in India the prevalence of malnutrition was significantly higher among children belonging to scheduled castes (53 per cent), scheduled tribes (59 per cent) or other backward castes (48 per cent). Similarly in Nepal, children belonging to disadvantaged castes and other groups were more at risk than those belonging to the Gurung, the most advantaged caste (16 per cent). There were comparable caste divides for other MDG targets.

Similar inter-group disparities were evident in Kazakhstan, for example, where underweight was more prevalent among children of Kazakh-speaking families (4 per cent) than those from Russian-speaking families (3 per cent). In Lao PDR, children from the Lao families (33 per cent) were less at risk of undernutrition than their counterparts in other groups (41 per cent).

Similarly, in the Philippines, under-5 mortality rates were much higher among children from such ethnic groups as the Waray (31 per 1,000 live births) than those born to families of the Bicolano (6 per 1,000 live births). The same pattern existed in Pakistan between children born to families of Urdu backgrounds and others.

These disparities persisted despite differences in wealth, education and other important factors suggesting the need to consider the impact of cultural and institutional discrimination.

The importance of economic status

The above results highlight the significance of household wealth, particularly for improving access to water and sanitation, and also for reducing child malnutrition and increasing the use of maternal health care services. The earlier analysis suggested that rural-urban differences were also closely related to wealth.

The variable representing household wealth was constructed on the basis, for example, of the ownership of such assets as televisions and bicycles, and on materials used for housing as well as on access to basic services. Thus it does not represent the income or expenditure of a household but rather its economic status.[18] In most of the countries studied there was a strong link between household wealth and health-related MDG targets. Indeed the gaps observed in other dimensions, such as between rural and urban areas as well as among various jurisdictions, became smaller or disappeared in many cases altogether after taking household wealth into account. This may simply mean that poorer people, wherever they live, have less access to health services and intervention.

However household wealth, as measured here, can also be seen as an outcome of overall socio-economic and cultural status. Thus, lower levels of household wealth, or income, per se are not necessarily the only or main causes of poor health outcomes. Rather, the lower health standards among the poor and disadvantaged groups can result from lack of material resources, including food, housing and safe water supplies. Poorer people are also likely to live in places with limited or low-quality health services. And with less education poor households may know less of the benefits of medical treatments and interventions. Indeed, poor health can also be a result of a general lack of empowerment.[19]

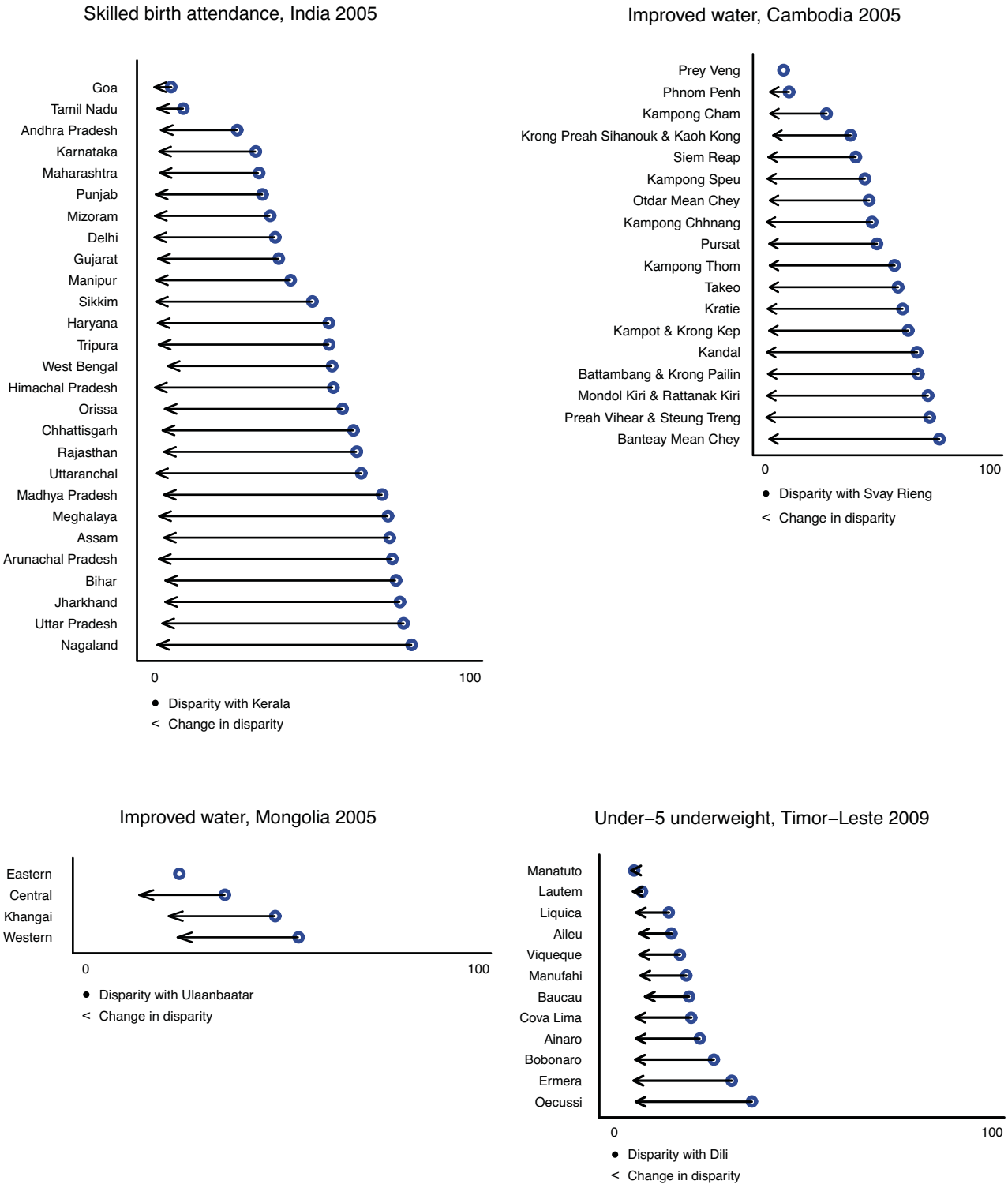
In other words when household wealth is a dominant factor it can be used as a marker to examine the unequal distribution of health outcomes. This is because disparities in health outcomes, between urban and rural areas, for example, or among different jurisdictions are manifested in the unequal distribution of household wealth.

Regional differences in policies and programmes

Differences in household wealth or levels of education may also account for some of the large, and sometimes dramatic, disparities between provinces and districts. But modelling exercises reveal that this is not the whole story. Above and beyond these differences there are factors tied to specific regions – perhaps reflecting the policies and programmes of local administrations.

Some of the regional effects are illustrated in Figure II-27. In India, for example, skilled birth attendance depends to some extent on the state of residence. In this case, the length of the arrows represents the size of gaps in the coverage of skilled birth attendance between each of state which is Kerala, the best performing state after taking into consideration the individual and household characteristics of the women. It is likely correspond to the differences in impact of the policies and programmes related to increasing the coverage of skilled birth attendance. In other words, the length of the arrows reflects the extent to which disparities are likely to be reduced if the rest of the states had the distinctive characteristics of Kerala. Indeed if pregnant women in Delhi and Goa, for

Figure II-27 – The potential for reducing regional disparities within countries



Note: The lines with arrows represent the difference in the MDG indicator between the state/province/district and the best-performing jurisdiction in the country after taking into account various household and individual characteristics. They can be interpreted as the effects of differences in the policies and programmes bewteen the best-performing jurisdiction and each of the rest of the jurisdictions.

Source: Staff calculations using DHS and MICS data from respective countries and years.

example, kept their current characteristics but lived in Kerala their levels of coverage would actually be higher than those in Kerala.

Similar results can be seen for access to improved drinking water in Cambodia in which the disparities illustrated are those with the best performing province which is Svay Rieng. If people in the other provinces maintained all their other characteristics and just moved to Svay Rieng they would have better access than the current average in Svay Rieng. Mongolia shows similar, if smaller, regional effects for access to improved water, as does Timor-Leste for the prevalence of under-5 children underweight.

The fact that regional effects persist after factoring in other household and individual characteristics highlights the importance of specific policies and programmes and the potential for the lagging administrations to adopt best practices.

Mining the data

The purpose of this chapter has been to explore disparities in health-related indicators in Asia and the Pacific by taking full advantage of the available cross-country data. In most respects this analysis reinforces what has been shown by numerous other studies. It has confirmed, for example, the importance of expenditure on health, even if some countries clearly take greater advantage of this than others. It has also demonstrated the value of empowering women, which not only fulfils their rights, but also benefits the health of their children. It has further offered firm statistical support for the need to ensure that all pregnant mothers can take advantage of skilled attendance at birth.

There are also considerable disparities within countries. In this case the analysis reveals the important effects of household wealth on child nutrition and on ensuring safe water and sanitation, and the huge value of breast-feeding for reducing infant mortality.

It should be emphasized however, that these results have their limitations. They are confined to issues on which there are roughly comparable cross-country data. They can thus offer only very broad conclusions. Chapter III will in addition take into account more empirical research and suggest ways of closing the health gaps, both between and within countries.

Chapter II Endnotes

[1] Wodon and Yitzhaki (2002); Graham and Felton (2005).
[2] Shamshad (2009). Taylor (2007).
[3] Ravallion (2006).
[4] Theil (1972).
[5] ADB (2009).
[6] These two indicators are from The World Governance Indicators project of the World Bank and based on surveys of perceptions of effectiveness of public services and corruption respectively. Multiple regressions with these two governance variables regressed separately (as they are highly correlated themselves) found them to be highly significant explanatory variables for child and maternal mortality.
[7] There are now numerous studies linking governance issues to effective public health delivery. See Maureen Lewis, Governance and Corruption in Public Health Care Systems, Center for Global Development, Working paper 78; WHO 2010 World Health Report: Health Systems Financing – the Path to Universal Coverage; and Angela Dawson: Towards a Comprehensive approach to Enhancing the Performance of Health Workers in maternal, Neonatal and Reproductive Health at Community Level: Learning from Experiences in the Asia and Pacific Regions, Discussion Paper 2, University of New South Wales, Sydney.
[8] Chatterjee, Mukherjee and Jha (2010) found for example that the MDG indicator share of women in non-agricultural wage employment which is a proxy for women's empowerment significantly reduced child malnutrition in Asia.
[9] ESCAP/ADB/UNDP (2010).
[10] WHO/USAID (2010).
[11] Several studies have linked population growth and household size to poverty which is an important factor in undernourishment. See for example *Population and Poverty Nexus: Does Family Size Matter?* By Romulo A. Virola and Arturo M. Martinez, Jr., paper presented at the 10th Philippines National Convention on Statistics.
[12] Wan (2002 and 2004); Wan et al. (2007).
[13] The figures on under-five mortality rates cited here have been estimated on the basis of the live births having taken place over 10 years preceding the survey. See the Statistical Appendix (Technical Note 4) for more details.
[14] For childhood stunting and wasting, see van de Poel et al (2008); for child mortality, see Wagstaff (2000), for maternity care see Say and Raine (2007); for child malnutrition, Fotso (2006). For gender disparities see: Patel et al (2010); WHO Western Pacific Region (2011).
[15] The modelling of under-five mortality is based on the live births having taken place over the 5 years preceding the survey. See the Statistical Appendix (Technical Note 4) for more details
[16] Hart (1971).
[17] Victora et al. (2000).
[18] See Rutstein and Johnson (2004) for more details about the concept of economic status and the method of constructing the index of household wealth and as well as the interpretation.
[19] Marmot M (2006); CSDH (2008).

CHAPTER III

Closing the health gaps

Accelerating progress towards the MDGs in Asia and the Pacific will require better standards of health for all. This is especially important for the poor, who rely on good health and nutrition for productive work. If they are to improve their incomes and their quality of life they must be able to resist and recover from diseases, and women should be able to count on safe pregnancies.

The Asia-Pacific region has enjoyed a period of robust economic growth. Yet, as outlined in the previous chapter, it has seen health disparities widen – notably for infant and child mortality, maternal mortality and the proportion of underweight children. This echoes the concerns raised by the MDG Summit in September 2010 which drew attention to the persistent imbalances in the current workings of the global economy, which are socially, economically and environmentally unsustainable.

If governments are to close these gaps and raise standards of health, they will need more equitable and inclusive economic growth, and will have to focus much more sharply on the needs of the poor and vulnerable. This will also require a more integrated approach, looking beyond health interventions to address other issues such as poverty, nutrition, water supplies and sanitation, and women's empowerment. Addressing human health problems lies as much in the realm of development policy, as it does in the health sector.

A useful tool for this purpose is the recently-launched United Nations' MDG Acceleration Framework. This is a structured methodology for selecting priority policy areas and addressing a wide range of bottlenecks, including institutional deficits, budgetary inadequacy, gaps in service delivery and barriers to utilization of health services.[1] Services in mountain areas, for example, are often hampered by a lack of health personnel, and road access, poor water or electricity supplies. Many people will also live too far away from, or be unable to afford, the services on offer.

Fortunately there is now a wealth of knowledge and expertise on how to overcome health deficits – though these need to be tailored to local circumstances. The right combination of innovation and policy experimentation, supported by sufficient finance, qualified personnel and improved medical technology, should enable lagging countries to accelerate progress. This chapter suggests eight priorities for improving health standards while highlighting some successful practices.

1. Address the social determinants of health

Many health inequities are linked to poverty which to some extent can be tackled through more inclusive economic growth. Even so, many countries that have boosted economic growth and household income have had less success in assuring health for all. Clearly there are many other factors at play – notably a range of social barriers and determinants.

WHO defines the social determinants of health as the 'conditions in which people are born, grown, live, work and age, including the health system' and argues that these are the chief causes of health inequities both within and between countries.[2] These conditions can be related to gender, class, ethnicity, caste, language, and religion – arising from ingrained social structures, norms, and processes that accept and even encourage unfair distributions of wealth and social resources. For example, people living with HIV and some other chronic illnesses, face high levels of stigma and discrimination that hinder their access to medical testing, treatment,

Box III-1– Unlikely alliances for reducing HIV-related stigma

HIV programmes have to include strategies for reducing stigma. The South Asia Regional Development Marketplace, co-funded by UNICEF, has piloted stigma reduction interventions in six countries. Most of these worked with the hard-to-reach, high-risk groups which account for the majority of the region's HIV cases – and often involved forming unlikely alliances such as between sex workers and the police. These experiences confirmed the importance of engaging multiple groups, in particular opinion leaders, people experiencing stigma, health providers and the police, while reaching out to sensitize and educate the general community.

Source: UNICEF EAPRO, 2010 – Achieving the MDGs with Equity.

care and support including social protection schemes (Box III-1). There are also structural barriers such as laws that criminalise populations with certain behaviour including men who have sex with men, sex workers, and people who inject drugs. Criminalisation drives these vulnerable populations underground, and hinders their access to health information and services, leading to much higher HIV prevalence than among the general population.[3]

One of the most important social determinants of health is gender as has been revealed in the cross country analysis for Asia and the Pacific in Chapter II. Gender-based inequities in education, employment and income, for example, make women more vulnerable to ill health and premature mortality.[4] Compared to men and boys, women and girls generally have less access to health care and resources – which in a number of countries contributes to relatively high female mortality rates and causes a shortfall of women relative to men.[5] Indeed, rising per capita incomes may be accompanied by an increase in sex-selective abortions and in the absolute number of 'missing women'.[6]

Boosting the status of girls and women strengthens overall health security across generations. Education, for example, builds the capacity of mothers to process health-related information and learn about health and nutritional practices that promote child well-being.[7] Governments aiming to improved health standards will therefore want to improve the status of women, provide effective reproductive health services, implement comprehensive breastfeeding programmes and increase community-based pressures against sex-selective abortion. In Pakistan, for example, the Tawana project, by empowering women, has successfully addressed the problems of malnutrition and low school enrolment in several districts.[8]

Social determinants are also the major drivers of non-communicable diseases (NCDs) – notably diabetes, cardiovascular diseases, cancer and chronic respiratory diseases. These may be a consequence of changes in diet and lifestyle or the result of tobacco or alcohol misuse. NCDs represent a serious public health problem: globally they account for 63 per cent of deaths of which 80 per cent occur in low- and middle-income countries. WHO projections indicate that, by 2020, NCD-related deaths in the world will be concentrated in South-East Asia (10.4 million) and the Western Pacific (12.3 million).[9] Poor people, lacking education and information, or the funds for healthier options, are more vulnerable than the rich to NCDs and are likely to die earlier. Directly and indirectly NCDs will have far-reaching impacts on progress towards the MDGs.[10]

Interventions that address the social determinants of health need not be expensive. Certain states of India, such as Kerala and Tamil Nadu, despite modest per capita incomes, have performed remarkably well. In Kerala, overall women's higher literacy and empowerment have helped improve the health of women and their families, resulting in low maternal and infant mortality even though concerns persist, such as mental health and high incidence of gender based violence. At a broader level, China too offers important lessons. Between 1949 and 1980, China reported significant progress in health even during a period of slower economic growth – by improving sanitation and immunization, encouraging births in hospital, and extending health insurance.[11] Sri Lanka has also established universal access to health care as a social right, aiming to ensure that poor households have ready access to nearby health facilities.[12]

Nevertheless India, China, and Sri Lanka still face major health issues. Sri Lanka, for example, like many other countries, is facing a shift towards non-communicable diseases.[13] These not only contribute to loss of workdays, absenteeism, mortality and a lower quality of life, but are also costly for health systems. In Vanuatu, for example, one of the most serious

Box III-2 – Primary health care in China

To address disparities in health achievement China is putting greater emphasis on primary health care, in both rural and urban areas. In the 1950s China had well-established Cooperative Medical Schemes, but these were weakened considerably in the 1980s when the newly-established market mechanisms led to reductions in public health investments and the withdrawal of support for the rural health cooperatives. These cuts caused a steep rise in health-related distress in rural areas and an overall increase in the costs of health care that could not be financed through insurance.[14]

In 2002, the Chinese government released "China rural primary health care development plan" (2001-2010) targeted at the rural areas which are home to 80 per cent of China's population.[15] In the same year, the State Council released "Decision on strengthening rural health".[16] These plans contributed perceptibly to substantial reductions in child and maternal mortality and bridged the rural-urban divide. Indeed, even for China's hospital-centric urban health care system, the Chinese government had shifted the focus to Community Health Centres and Community Health Stations. This shift started in 1997 due to unaffordable and inaccessible health care in urban areas, and intensified after 2003 due in large part to the outbreak of the Severe Acute Respiratory Syndrome (SARS). The SARS outbreak was a stark reminder of the importance of organizing a community-based public health system focused on primary care.

Chinese health policies have emphasized health equity, universal access, and provision of essential health care at the first level of contact. The Primary Health Care system has led to substantial improvements in health indicators, including near universal immunization coverage, increased access to skilled care at birth, and sharp reductions in the prevalence of several diseases, including polio and TB.[17]

issues for young people is alcohol abuse. Urban youth with little education and few job opportunities often resort to alcohol which is cheap and readily available. The government has responded with some success with a multi-sectoral programme including education and social services while anchoring it in the health department.[18]

Governments also need to comprehensively address the social determinants of health – particularly those related to gender – by taking a rights-based approach to the laws, policies, social norms, customs and practices that impoverish and disempower women. Women and children should also have access to medical facilities for regular check-ups and other preventive health care services, and where necessary insecticide-treated bed-nets to protect them against malaria. Specific actions on preventing gender-based violence would also be important since women who suffer violence are not only injured but tend to have poor health generally. If women own assets such as land or housing they have greater bargaining power and are at less risk of domestic violence.[19]

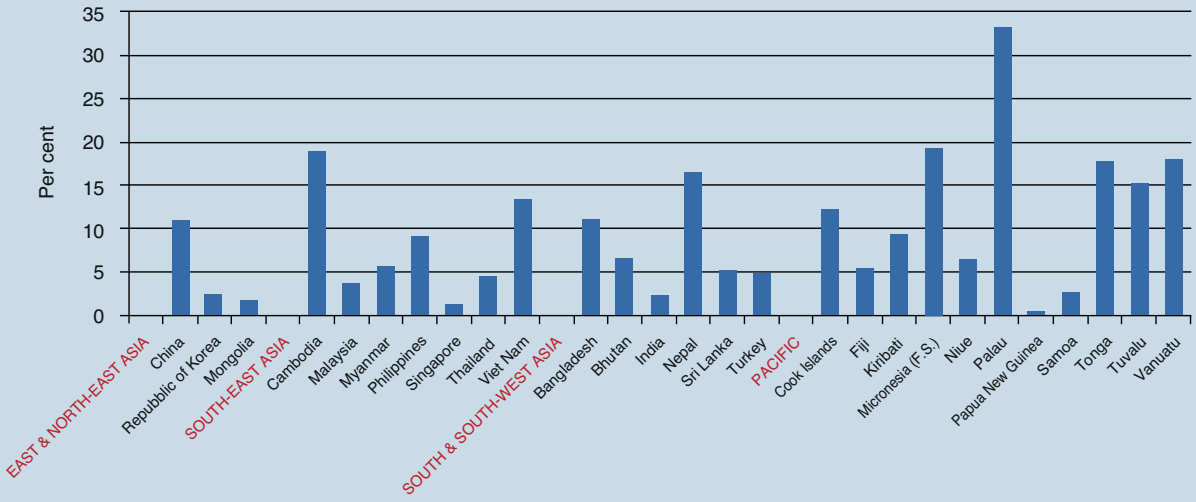
2. Expand access to primary health care

Chapter II of this report has illustrated the disparities between different social groups and the gaps in health outcomes across regions and provinces, between rural and urban areas and between areas less served by basic infrastructure and those better served. Addressing these disparities will require a renewed focus on primary health care, so as to improve the equity, efficiency, effectiveness and responsiveness of health services – wherever people live. Global experience reported by WHO shows that the majority of health problems can be tackled by integrated primary health care, and that 'health systems in low-income countries with a strong primary care orientation are likely to be more pro-poor, equitable and accessible'.[20] A number of countries such as China have put greater emphasis on primary care (Box III-2). But implementation has been uneven; indeed many countries have instead invested heavily in curative services (Box III-3).[21]

In 2008, the WHO *World Health Report* raised concerns, for example, about a focus on specialized curative care and fragmented service delivery.[22] The report noted that a hands-off approach has allowed uncontrolled commercialization of health, and pointed to three common shortcomings. First, in poor and marginalized areas the health facilities tend to be fragmented and under-resourced. Second, richer segments of the population ultimately make most use of public health facilities, while the poor – who are generally in greater need – are unable to access care. Third, people who lack social protection or other forms of health insurance are being pushed into poverty by the need to make cash, 'out-of-pocket' payments.

Box III-3 – Expenditure on preventive and public health

The chart shows expenditure on preventive and public health as a proportion of total health expenditure. Many countries, especially those in North and Central Asia, do not report this data. But among those that do there is considerable variation. By far the highest proportion is in Palau at one-third of total health expenditures. A number of other Pacific island countries, including the Federated States of Micronesia, Tonga, and Vanuatu, also had high shares. Outside the Pacific, Cambodia, Viet Nam, and Nepal also allocated relatively high proportions, while the proportions were much lower in Singapore, the Republic of Korea, Mongolia, and India.



Source: Data for the most recent year with data available in the 2000-2009 period from National Health Accounts, World Health Organization (2011a).

Box III-4 – New facilities reduce infant mortality in Bihar, India

As part of the Comprehensive Newborn Care Initiative (CNCI) developed with technical support from UNICEF and the National Neonatology Forum, the government of Bihar, one of India's poorest states, has set up 'sick new born care units'. These are believed to have contributed to a decline in the state's infant mortality rate; between 2008 and 2009 this fell from 56 to 52 per live 1,000 births – only just above the national average. The new system relies on better electricity supplies, better health care services and better roads for home visits and referrals to specialized health centres. Electricity supplies are not affected by the frequent power cuts as the units also have back-up generators. The units have equipment to make oxygen directly from the atmosphere so need not wait for replenishment of oxygen cylinders.

These units, of which there are now eight, have proved a boon for critically sick newborns. Between 2009 and 2010 they almost doubled their admissions, from 53,987 to 90,236. The CNCI uses the integrated management of neonatal and childhood illnesses, providing newborn care at every level, and the government expects that this will save up to 60,000 newborn lives every year. Thanks in part to improved roads, districts using this approach also have home visits for all newborns, and Bihar is also the first state in India to manage referred sick children in hospitals. State-of-the art care is also provided through the neonatal intensive care unit at the Patna Medical College Hospital which through telemedicine also serves as an online consultation centre for districts.

Source: Swapna Majumdar, India: Newborn care units fight infant mortality in Bihar, 24 May 2011 (http://www.propoor.org/news/?n=49548).

For many families, cost is an abiding concern. For example, in India in 2004-05, out-of-pocket expenditures accounted for five per cent of total household spending, and these payments caused the poverty headcount to rise from 28 to 31 per cent in the same period.[23] Those affected by AIDS in particular can soon exhaust any savings. Studies on five countries in Asia reveal that, compared with non-affected households, HIV-affected households are more prone to poverty-inducing coping mechanisms such as asset liquidation, debt assumption or even child labour.[24] In most countries, antiretroviral therapy is officially free but people have to pay related costs for tests and transport. As a step towards universal access, UNAIDS and WHO have developed the Treatment 2.0 initiative, which includes reducing costs at all levels, simplifying service delivery, and strengthening community involvement.

Some countries, including Bangladesh and Indonesia, have sought to implement primary health care through the Essential Service Package, comprising maternal care, child health care and action against some communicable diseases. Based on social justice and empowerment this package aims to increase efficiency and reduce costs.[25] However, in Bangladesh, implementation has faced a number of limitations: in some cases the funding has been insufficient, leading to long waits and the introduction of unofficial fees, and leaving some areas underserved such as the urban poor. Nevertheless, this strategy can be an effective way to channel health resources.[26]

Similarly, in the Pacific region WHO has promoted the 'Healthy Islands' approach since 1995. This comprehensive package includes: safe water and sanitation, food security, waste management, human resource development, prevention and control of communicable and non-communicable diseases, reproductive health services, and primary health care. It also addresses people's quality of life, and social and emotional well-being. The Healthy Islands framework has inspired a wide range of projects: malaria control in the Solomon Islands and Vanuatu; environmental health and health promotion initiatives in Fiji; water supply and sanitation through community development in Tonga; participatory health needs assessments and planning in Nauru; and community-based health promotion in Kiribati, Samoa, Niue, the Cook Islands, and Tuvalu. Nevertheless the approach does not yet seem to have been fully implemented as a large-scale management model.[27] Recently there have been calls to reposition it as a broader development initiative which would incorporate other elements such as food security and climate change.[28]

As highlighted in Chapter II, a critical factor in achieving more equitable health outcomes is the availability of health personnel. Cross-country analysis showed its significance for reducing child and maternal deaths, and the incidence of underweight children. In 2006 the World Health Report identified ten Asia-Pacific countries that had a health workforce crisis, with fewer than 23 health workers (doctors, nurses, midwives) per 10,000 people – the minimum requirement for immunization purposes or for achieving 80 per cent coverage by skilled birth attendants. When health workers are scarce they generally work in the better off areas – to the detriment of the poor who depend most on public health facilities.[29]

Chapter II also highlighted the importance of basic infrastructure in reaching out to the health deprived. Planning out expansion of primary health care has to be made in tandem with expanding basic infrastructure to maximize health benefits.

3. Integrate child and maternal health into a continuum of care

A key objective of the MDG Acceleration Framework is to make faster progress on lagging MDGs including on maternal and child health. The UN Secretary-General has also stressed the importance for women's and children's health of country-led health plans supported by increased, predictable and sustained investments.[30] A robust health system focuses on needs of various groups along the continuum of care which includes preventive, promotive, curative, rehabilitative and palliative services. Gaps in the continuum of care lead to health deficits.

Across the region many young women still die unnecessarily from childbirth, while their children are also at risk of dying from preventable causes, either around the time of birth or in the first few years of life. Globally, nearly all maternal, infant, and child deaths occur in low- and middle-income countries.

If mothers face emergencies during pregnancy and birth, it is vital that they have timely support from skilled attendants, and if necessary from doctors who can treat obstetric complications such as haemorrhage, hypertension, infection, and obstructed labour. In many cases they do not get such support. This is partly because low-income countries generally do not spend enough on maternal and infant health and lack sufficient skilled birth attendants or health professionals.[31] In the Pacific islands, in particular the problems are compounded by geographical remoteness, brain drain of qualified health personnel, and in some islands, the low status of women.

Health systems can reduce inequities in maternal and under-5 mortality by adopting a lifecycle approach – improving access and addressing the vulnerabilities and risks that women and children face throughout their lives on both supply and demand sides (Box III-4). This can be achieved by an integrated package of services including medicines and equipment. One study suggests that a series of 23 simple and cost-effective measures could reduce child deaths by around two-thirds.[32] These include implementing comprehensive breastfeeding programmes, controlling vector-borne diseases, and strengthening immunization programmes. It is also vital that couples have access to family planning services and can decide freely and responsibly the number, spacing and timing of births, free of discrimination, coercion and violence. Effective family planning services can contribute to reduction of maternal mortality through reducing unwanted pregnancies and complications around abortion. Health issues of the adolescents such as that of anaemia, malnutrition, pregnancies need explicit focus with more than half the world's adolescents living in either South Asia or East Asia and the Pacific, each of which contain around 330 million of them.[33]

Of particular relevance for the health of newborns is breastfeeding – which, among other benefits, can reduce the incidence of diabetes, asthma, and infectious diseases.[34] Disparities in under-five mortality would be reduced substantially if all mothers breastfed their children in line with current recommendations. The World Health Organization recommends mothers should initiate breastfeeding within one hour of birth, breastfeed exclusively for the first six months of the child's life and continue to do so with appropriate complementary foods until she or he is at least two years old.[35] At the same time mothers and children should consume appropriate vitamin and mineral supplements.

As children grow older it is also important to combat not just undernutrition but also the increasing problem of overweight caused by eating too much food that is highly refined, processed and energy dense.[36] Nutrition is one of the 'world's most serious but least addressed health problems' with high human and economic costs especially on the poor.[37] The *Scaling Up Nutrition Initiative,* with its framework of action, can help mobilize the necessary resources for implementation of nutrition interventions, such as promoting ante-natal nutrition and breastfeeding programmes, which need to be championed.[38]

Women and children should also have access to medical facilities for regular check-ups and other preventive health care services, and where necessary insecticide-treated bed-nets to protect them against malaria. This will encourage them to develop health-seeking behaviour.

Good examples of successful programmes for mothers and children include India's Comprehensive Emergency Obstetric Newborn Care in the state of Tamil Nadu, and Indonesia's Integrating Malaria Treatment and Prevention into Maternal and Child Health Services.[39] Similarly in Mongolia a focus on antenatal care, skilled birth attendance and maternal and new born health services, especially in rural areas, has reduced maternal mortality significantly (Box III-5).

4. Act on the health needs of the urban poor

In Asia and the Pacific more than one-third of the urban population live in slums.[40] The projected slum population in India has been estimated at around 93 million in 2011.[41] And while annual urban population growth in India is likely to stabilize at about three per cent, the slum population is growing around five per cent. Some towns in the Pacific also have high urban population densities, as in the atoll states of Kiribati, Tuvalu and the Marshall Islands.

The urban poor are often un-served or under-served by health and other services. People in urban slums live in highly degraded conditions, experiencing pollution, poor water and sanitation facilities, lack of toilets, and poor drainage along with frequent flooding. These squalid conditions expose them to disease and to high rates of morbidity and mortality. Indeed health indicators for some of the urban poor are as bad if not worse than for many of the rural poor.[42] As demonstrated in Chapter II, one of the principal causes of divergent health outcomes is poverty. Despite some progress, a number of Pacific towns, particularly Port Moresby, Majuro, Ebeye, Kolonia and South Tarawa, face periodic threats of cholera and other water-borne diseases.[43]

In India, a number of slum improvement programmes have tried to empower communities and improve housing and basic services, improve environmental conditions, provide employment opportunities, and food security. But only a few have been successful.[44] This is partly because many slums are unregistered so their residents remain unreached. Moreover such programmes have involved multiple agencies leading to difficulties in coordination. China similarly has an estimated migrant population of about 250 million people who are either temporarily or permanently based in urban areas and do not directly stand to

Box III-5 – Mongolia's success in reducing maternal mortality

Between 2000 and 2010 maternal mortality in Mongolia fell from 166 to 46 deaths per 100,000 live births. The main factors which helped bring about this significant reduction were:

Government prioritization. The government formulated the State Policy on Population and Development in 2004, and the MDG-based National Development Strategy in 2008 which was supported by the National Reproductive Health Programme (2007-2011). The Ministry of Health has also implemented the Maternal Mortality Reduction Strategies 2000-2004 and 2005-2010, reviewing progress each year and formulating solutions for pressing concerns. In 2010 the Minister of Health endorsed the National Strategy on Maternal and Newborn Health (2011-2015). These activities have been supported by local decision makers such as the governors, NGOs, and private health facilities.

A focus on maternal and newborn health services. Some of the major achievements are associated with high coverage of antenatal care (88 per cent) and delivery by skilled birth attendance (99.5 per cent). In addition, the availability and quality of maternal and newborn health services have improved. These have been supported by Reproductive Health projects in collaboration with UNFPA, Maternal and Newborn Health projects with ADB and UNICEF, and Safe Motherhood initiatives with WHO.

Strengthening rural facilities. More than half of the population lives in rural areas. To improve access for mothers in remote communities, the government has restored maternity waiting homes in which women with high-risk pregnancies can stay close to facilities. Overall, 60 to 80 per cent of high-risk deliveries take place at aimag or city maternity wards – a major factor in reducing maternal deaths. All health care providers now receive guidelines and training.

Nevertheless there are still many pressing issues. These include: distribution of health workers; systematic update of professional skills; ethics and accountability; provision of vouchers for migrants and poor women to attend health facilities at their convenience, and supporting voluntary helpers for women in labour. It will also be important to establish midwives in a separate independent vocational programme and improve the quality and retention of health care staff, especially in rural areas.

Source: ADB resident mission in Mongolia, based on: Implementation of National Reproductive Health Programme, 2010; UNDP Mongolia, The 3rd National Report on the Millennium Development Goals, 2009; and Current status of emergency obstetric and essential newborn care in Mongolia, 2010.

benefit from the urban health infrastructure.[45] Recent experiments with eliminating the legal distinction between migrants and other urban residents in China are promising, but to date have only affected a relatively small number of people. Better health services require strong institutional frameworks that can deliver cross-sectoral, inter-agency services. This entails capable and inclusive urban governance that focuses on basic rights – to health, education and other social services. Health interventions are unlikely to succeed if they are not embedded in broader efforts to respect the rights of their citizens and serve their basic needs.

5. Devise sustainable financial strategies

Governments aiming to finance universal and equitable health coverage face critical questions and tough choices. Though much can be achieved at relatively low cost, some health interventions are expensive and governments will need sustainable financial strategies while prioritizing stepping up public health allocations especially in economies which have experienced robust economic growth. Countries in the region need to make dedicated efforts to shore up their revenues. It has been seen that OECD and industrialized countries collect significantly more revenues than countries in Asia and the Pacific. Even as this can be targeted in the medium to long term, actions such as strengthening tax governance and expansion of tax base need to be seriously considered.[46] These actions will necessarily be determined by national priorities which can differ greatly as evidenced by some striking differences in health expenditure as a proportion of GDP (Box III-6).

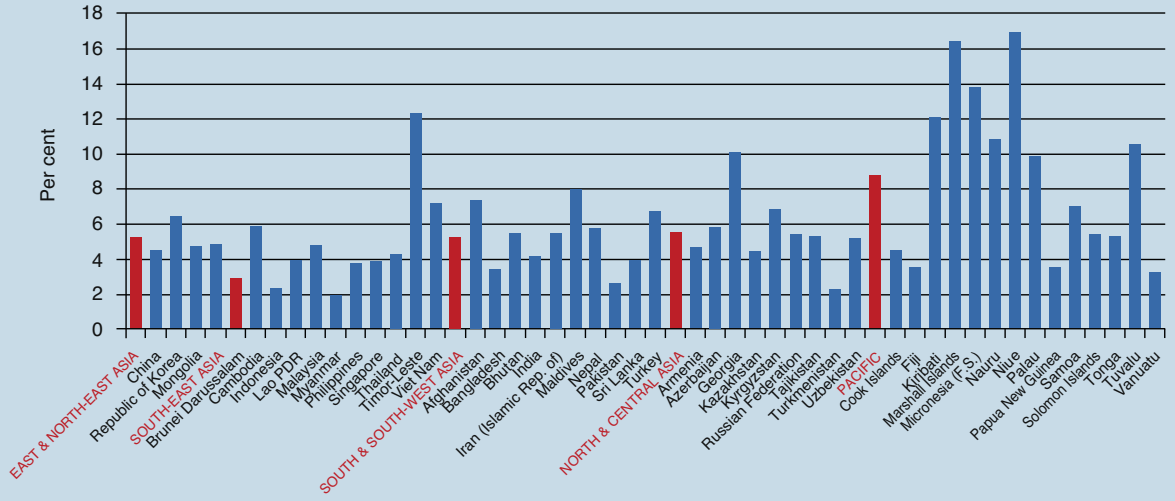
The minimum objective should be to provide social protection programmes that can help people manage health risks. At present, many are denied health

Box III-6 – Total health expenditures as a share of gross domestic product

The chart below shows for a selection of countries total health expenditures as a proportion of GDP. Some of the highest proportions are in the Pacific where the average was 9 per cent compared with 5 per cent in other subregions. Driving this high average were small atoll nations such as Niue, Marshall Islands, the Federated States of Micronesia, and Kiribati, with Nauru and Tuvalu not far behind. For the smaller countries this reflects relatively high overall public spending often financed from external resources. In other countries health expenditure is financed by national governments and private resources.

It is also noteworthy that a higher proportion of total health expenditure in the Pacific is by governments – ranging from just over 70 per cent in Fiji to almost 100 per cent in Tuvalu – suggesting very limited private health services or difficulty in capturing private health expenditure. In contrast, while Georgia also has fairly high total health expenditures, most of this is from private resources.

Many of the countries with very low allocations are found in South and South-East Asia. Myanmar has the lowest, with low figures also reported in Indonesia, Pakistan, and Brunei Darussalam. Turkmenistan also has very low health expenditures.



Source: Data for 2009 from National Health Accounts, World Health Organization (2011a).

services because they cannot afford them. In the Asia-Pacific region, out-of-pocket expenses on health are very high, often as result of catastrophic payments needed to fill gaps in health spending by governments (Box III-7).[47] WHO recommends that in order to achieve universal coverage countries should limit out-of-pocket expenses to no more than 40 per cent of total health expenditures.[48]

ESCAP has estimated the cost of reaching the health-related MDGs. In the case of access to a skilled professional at birth, for example, reaching the projected value for MDG 5 will cost $8 billion, though if the off-track countries are to close their gaps they would need a further $13 billion.[49] Similarly, closing the gap for safe water supplies would cost an additional $2 billion and for safe sanitation an additional $8 billion.

For child mortality if all countries were to reach the target the cost would be $33 billion. The greatest dividends are likely to be achieved from an initial boost in spending. This is illustrated in Figure III-1 which shows for countries in Asia and the Pacific how under-5 mortality falls as per capita public health expenditure rises. But progress slows as the mortality rate falls. Thus increasing per capita public health expenditure from $10 to $100 is associated with a decrease in the rate from 250 to 50 per 1,000 live births, but it may require an increase of $900 to drop the rate to 10. This reflects the fact that in some cases it becomes progressively more expensive to achieve universalize coverage.

As a further indication, ADB has estimated in the 15 Asia-Pacific countries with the highest morbidity and mortality burden that the costs of a 'core package' for

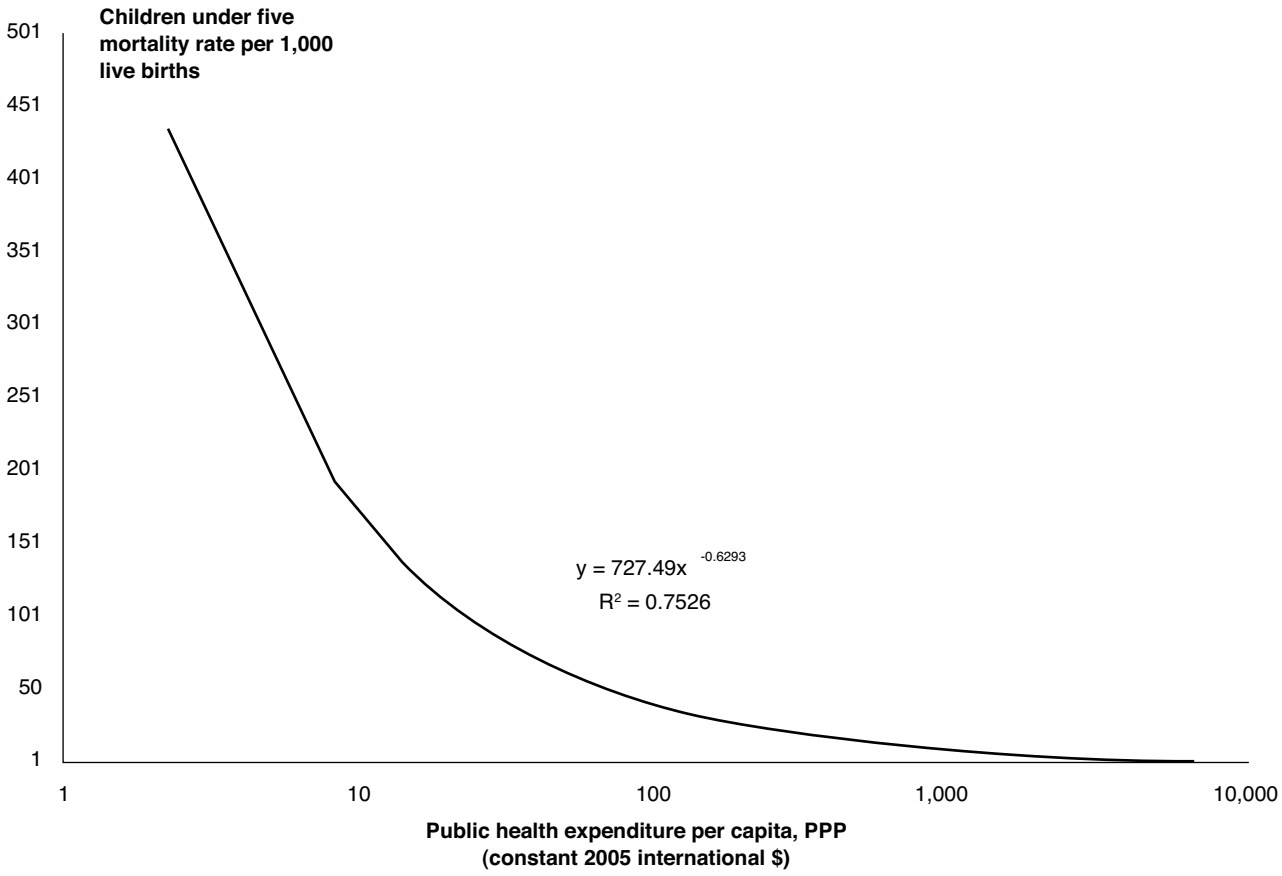
Box III-7 – Out-of-pocket expenses as a share of private health expenditures

The table below shows out-of-pocket health expenses as a share of private health expenditures in 2009, where ● is a low share (<65 per cent); ● is a medium share (<65-79.9 per cent); ● is a high share (80-94.9 per cent); ● is a very high share (95-100 per cent). A small circle indicates a falling share since 1999, and a large circle indicates a stable or larger share over time. Overall, of the ten countries with very low figures, eight are in the Pacific. Timor-Leste and Turkey are the only two countries outside of the Pacific with very low out-of-pocket expenses. At the other extreme, countries with levels are concentrated in South and South-West Asia, as well as North and Central Asia. The majority of countries with very high expenses have seen an increase or very little change since 1999.

Note: ● low (<65 per cent); ● medium (<65-79.9 per cent); ● high (80-94.9 per cent); ● very high (95-100 per cent). Small circle: negative change (1999-2009); large circle: zero or positive change (1999-2009).

Source: Data for 1999-2009 from National Health Accounts, World Health Organization (2011a).

Figure III-1 – Under-5 mortality and per capita expenditure on health



Source: Based on World Bank Development Indicators and the United Nations MDG Indicators.

maternal, new-born and child health would require at least an additional $5.1 billion annually by 2010, increasing to an additional $10.4 billion by 2015.[50] This means that the additional cost of the 'core package' for maternal, new born and child health is less than $3 in both South Asia and East Asia and the Pacific.

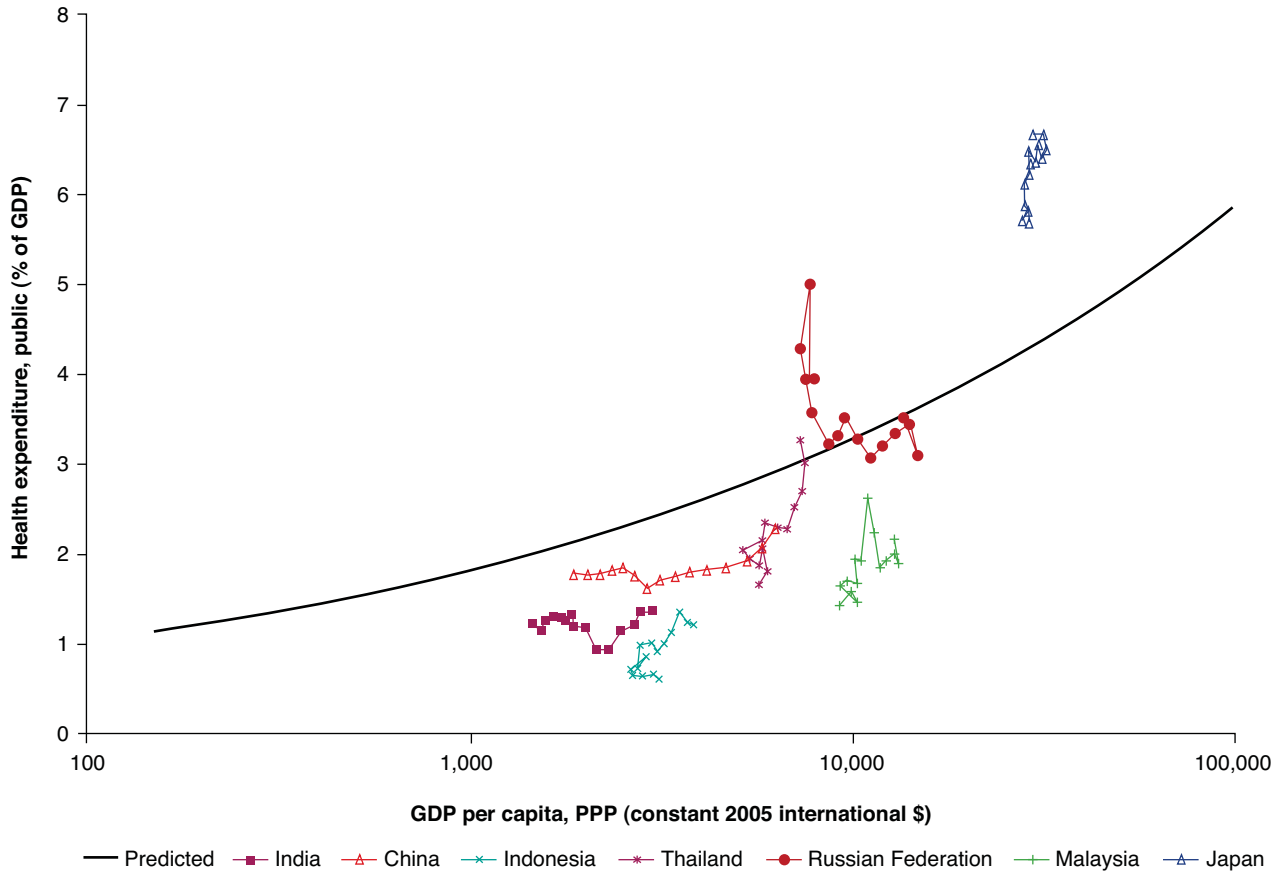
Overall, the cost of reaching the targets in rural areas is much less than in urban areas – between one tenth and one-quarter – and around twice as many people would benefit.[51] However, reaching the more remote communities, for example, in mountainous areas that lack roads, is likely to be more expensive.

Where are the funds likely to come from? As incomes rise, it might be expected that more people would be in a position to finance their own health needs. In fact, however, as countries develop, the balance of expenditure tends to shift from private to public. As national incomes rise, per capita public health expenditure tends to rise. Private health expenditure can also rise, but not always to the same extent. Richer societies can afford to offset rises in income inequality by providing more health services as public goods. Figure III-2 shows the progress in health expenditure for selected countries. Among this group, India appears to be spending less than predicted, while the Russian Federation and Japan are spending more. This analysis is extended to a larger group of countries in Box III-8 which also looks at the gaps in public and private expenditures.

But a country does not have to wait until it reaches a high level of income to increase its health expenditure. This is clear from cross-country analysis which shows that countries with similar national income or GDP can have different levels of health expenditure.

How can governments find the necessary funds for public health expenditure? Some should be able to spend more on health even if this means increasing fiscal deficits. ESCAP has argued that the optimal level of budget deficit should vary according to national circumstances rather than a rule of thumb of 3 per cent, and many developing countries have greater fiscal space then they realize that could be exploited for MDG spending.[52] There are also examples of governments within the region trying to find innovative sources of

Figure III-2 – Association between public health expenditure and GDP, selected countries



Source: Staff calculations based on World Bank Development Indicators and United Nations MDG Database.

finance for funding MDGs. India, for example, levies an "education cess" of 2 per cent on the total income tax payable by individuals and uses this to finance education – primary, secondary and higher secondary – for all children.[53]

Another option is to reprioritize government budgets, perhaps along the lines of Africa's Abuja declaration which exhorts governments to allocate 15 per cent of their budgets to health services. They could achieve this by switching resources from other government expenditures and have a greater opportunity to do this now while their economies are growing.

Governments can also gain resources in other ways.[54] One is better management as was stressed in Chapter II. Between 20 and 40 per cent of all health spending is wasted through inefficiency.[55] Key areas for improvement include better procurement practices, more use of generic products, better incentives for providers, and streamlined administrative and financial procedures (Box III-9).

Another way that scarce public resources are put to the best use is to consider possible options on encouraging those who can afford to pay for health services to do so and target public health services primarily to the poor. Institutional arrangements to segment recipients of health care services according to income are difficult, however, and would require innovative institutional measures.

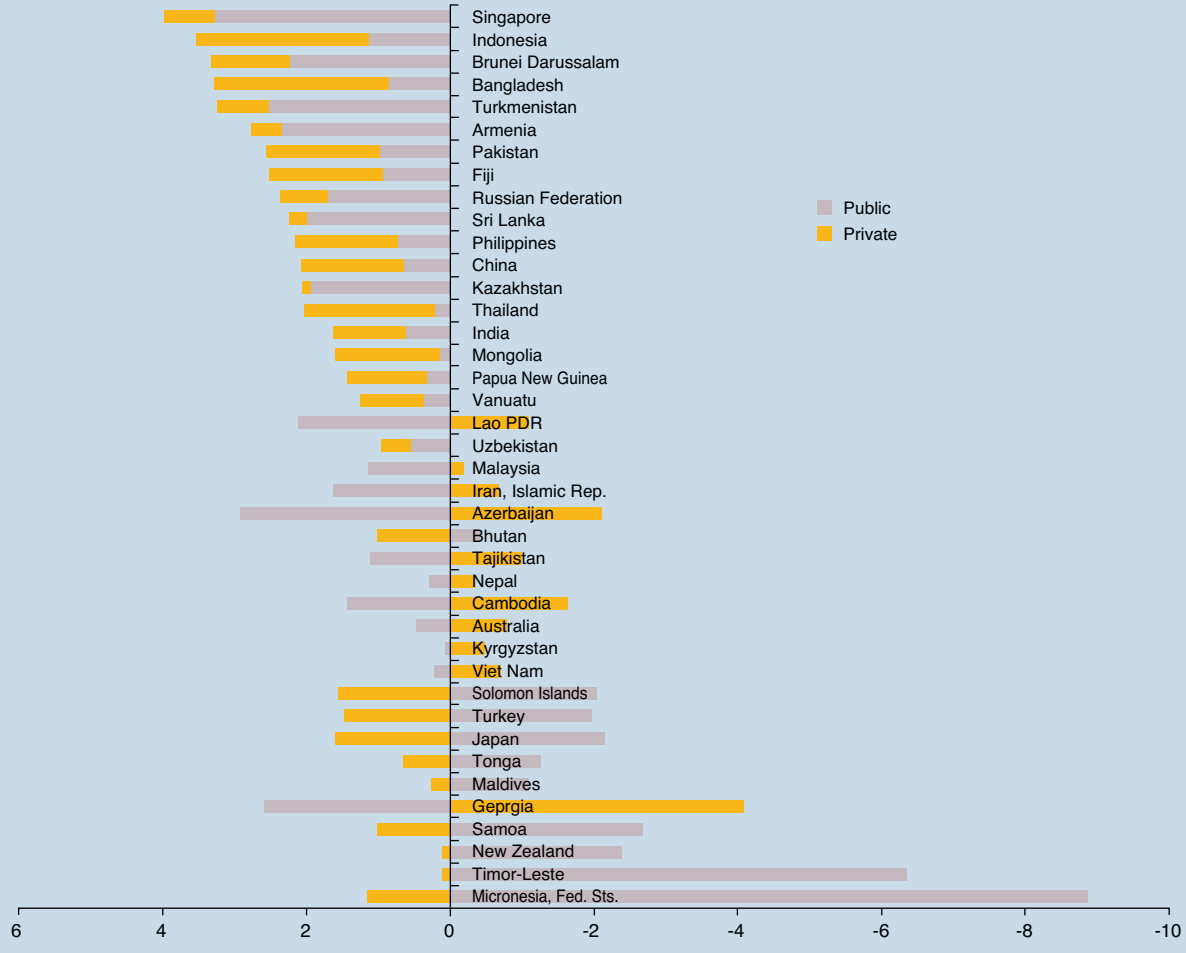
No single set of policies can be universally applied, and health financing solutions should respond to individual country needs. China, Thailand, and Cambodia, for example, are seeking to address health financing in promising ways. China is now home to the largest insurance scheme in the world, a scheme that has grown impressively in terms of its financial and geographical coverage. Since 2009, China has initiated a series of reforms aimed at providing all residents with universal and equitable health care including health insurance and essential drugs in a subsidized way. The Chinese programmes aim to focus equally on urban and rural needs through their Rural Cooperative Medical Scheme and the Urban Employee Based Basic Medical Insurance Scheme. Thailand's subsidized universal health care scheme affords access to public health services and has significantly expanded coverage across the country. Cambodia, on the other hand, is considering paying for

Box III-8 – Health expenditure gaps

As incomes rise there is generally a rise in total per capita health expenditure, public and private. Cross country data can be used to suggest the trend of increase in both public and private expenditure for each dollar rise in per capita GDP. Some countries will spend more than these trends; others less. The figure below shows these differences as 'gaps' expressed as a proportion of GDP. A positive gap is lower expenditure than the trend; a negative gap is higher. Each bar is a total of public and private expenditure. For public expenditure most of the countries with larger positive gaps are in North and Central Asia: Azerbaijan (2.9 per cent), Georgia (2.6 per cent), Turkmenistan (2.5 per cent), and Armenia (2.4 per cent) – suggesting that when these countries moved to market economies they overshot in cutting government health expenditure. For private expenditure the largest gaps are in Bangladesh (2.4 per cent), Indonesia (2.4 per cent), Thailand (1.8 per cent), Japan (1.6 per cent) and Pakistan (1.6 per cent).

These gaps suggest potential for increasing expenditure. Cambodia for example, is in line with the trend for total health expenditure. But this is because its positive public gap is offset by a negative private gap. Increasing public expenditure in line with other countries could, for example, provide the funds needed to meet the under-5 mortality goal, estimated at 8 per cent of GDP.

Health expenditure gaps, as per cent of GDP



Source: Data from World Bank Development Indicators.

Box III-9 – Marginal budgeting for bottlenecks in Pakistan

An analysis in the Pakistan's Punjab province based on 'Marginal Budgeting for Bottlenecks' (MBB) is revealing cost-effective evidence-based strategies for accelerating equitable progress towards MDG 4. Early results show the importance of community-focused strategies such as strengthening community case management for childhood diarrhoea, pneumonia and neonatal infections, along with scaling up outreach and schedulable services such as immunization. Particular emphasis is placed upon reaching the most deprived populations through demand- and supply-side interventions, including conditional cash transfers and paid-for performance incentives.

The MBB approach is highly consultative and enables governments to model various strategies. Some interventions may be new – such as introducing rotavirus and pneumococcal vaccines into government-mandated immunization programmes. Others are refinements of existing interventions to improve their cost effectiveness and achieve equitable outcomes. These interventions strengthen service delivery along the continuum of care and strengthen the health system as a whole.

Source: UNICEF EAPRO, 2010.

health care for the poor by scaling up an innovative health equity fund which would cover district hospital care, transportation costs and other vital expenses – with minimal leakage to the non-poor. Since 2005, the poor in Viet Nam have been eligible for membership in a social health insurance scheme.[56] Community based health insurance programmes, as tried under the Yeshaswini programme in the Karnataka state in India can help in spreading the utilization of health care services among poor households in rural areas while helping to reduce the cost of coverage. Assessments of the programme have shown that utilization of health care has increased, out-of-pocket spending has reduced and has ensured better health and economic outcomes among the beneficiary households across villages in the State.[57] In India, the Planning Commission is also considering rolling out universal health insurance with the government proposing to cover premium payments for the poor.

6. Improve the governance of health systems

Central governments are often responsible for overall system management, policy and coordination, but the planning and delivery of public health services should be devolved to local governments. This will ensure greater community ownership, transparency and accountability and make more effective use of limited funds.

In many developing countries health services are poorly managed. As pointed out in Chapter II, one of the most serious issues is corruption, as public officials collude with businesses and others to divert scarce public resources into private pockets. Corruption within the health sector can occur at all levels. Much of the grand corruption takes the form of bribes for large contracts or for drug procurement. Up to 10 per cent of the health budget can disappear en route from the ministry of finance to the ministry of health, as the funds flow to provinces, local hospitals, and clinics with subsequent leaks through various side channels. Then there is petty corruption in the form of demands by health staff for payments for routine services.[58] Another serious problem is staff absenteeism – rates can reach 40 per cent and tend to be higher for doctors and nurses than for other health workers. Petty corruption is in fact a misnomer – the numbers affected can be large, mostly the poor and the share of incomes extracted from them high.[59]

Also linked to corruption is the spread of fake, counterfeit, and substandard medicines, for example, anti-malarial drugs particularly in South-East Asia. Those more likely to resort to counterfeit drugs in the informal market are the poor while the rich are better able to afford guaranteed high-quality medicines.

All of this further dissipates already modest public health spending and reduces the quality of services, undermining even basic preventive measures such as vaccination. The need to pay bribes also puts an extra strain on the poor especially those in women-headed households.

Health standards can also be compromised by corruption in public utilities. Poorer households often have to pay bribes for reliable water supplies. In some

countries, powerful mafias have exploited ineffective water distribution systems and, by bribing corrupt officials to look the other way, have effectively privatized the distribution of water in tankers to communities and businesses. These actions have further contributed to health inequities by reducing water supplies to the poor, especially in urban areas and in outer peripheries.

Action is needed from above and below. Governments will need to ensure more transparent and better managed services, while users will need to work together to resist demands for bribes. Several countries have set precedents for good practices, such as Cambodia in the reduction of informal payments,[60] India in improved activism through radio reporting in Gujarat,[61] and the Mekong countries in the reduction of counterfeit drugs.[62] The Indian city of Hyderabad, for example, has established a single-window system to process applications for new water and sewer connections, thus eliminating a multitude of applications and red tape that previously had been a major source of corruption.[63]

It is also vital to ensure stronger regulation. When the public health sector fails to perform, the private sector does not perform either.[64] The public sector therefore needs to set the rules of the game with regulations that guarantee quality of care and ensure fair pricing of health services.

7. Enhance the affordability of medicines through generics

The affordability of medicines is an important issue for the spread of medical care in developing countries given the resource constraints faced by the governments as well as the patients. A number of countries, including India, have been able to keep the medicine prices low by focusing on generics and extending only the process patents on pharmaceuticals. Use of generic alternatives to patented medicines had, for example, reduced the cost of HIV/AIDS treatment, from $10,000-$15,000 per year per patient to under $80 now for certain regimens.[65] Introduction of product patents which was obligatory under the WTO's Trade Related Intellectual Property Rights (TRIPS) Agreement by 2006, was expected to adversely affect the affordability of medicines by restricting the production of generics and hence affect the progress towards MDGs.

However, the least developed countries have the flexibility on introduction of product patents until 2016 and can seek further extensions of the transition period. Furthermore, all low and middle income countries should utilize the flexibilities defined in the 2001 Doha Declaration on the TRIPS Agreement and Public Health. For instance, countries can determine the criteria for an invention that can be granted a patent and can exclude non-substantive changes to products to extend the life of patents beyond their expiry. They can also incorporate 'Bolar' provision allowing manufacturers of generic drugs to obtain marketing approval without patent owner's permission before expiration of patent. Issuance of compulsory licences for local manufacture of medicines with a reasonable rate of licensing fees is another potential option. Furthermore, the Doha Declaration permits developing countries to import medicines which they do not produce to protect public health. Malaysia was the first Asian country to take advantage of this when in 2003 it issued a license to import antiretroviral drugs from the Indian company Cipla for use in government hospitals and clinics. In this way, Malaysia achieved cost reductions of over 80 per cent. Indonesia followed suit in 2004 and Thailand in 2006. In a similar vein, the Philippines passed the Universally Accessible Cheaper and Quality Medicines Act of 2008 to enhance access to quality generic drugs and other essential medicines at lower prices.[66] Other countries faced with similar choices can benefit from these experiences to retain and expand access to affordable medicines.

These flexibilities need to be buttressed by supportive and harmonized regional trade agreements that offer similar provisions and flexibilities. Bilateral and regional trade agreements are increasingly obliging countries to protect intellectual property rights beyond what is required by TRIPS. This trend should be resisted keeping the interests of public health in mind. Countries can also cooperate on research and development (R&D) for drugs and treatment for the infectious diseases that plague low-income countries. In particular, the WHO's Commission on Macroeconomics and Health (2001) found that the global pharmaceutical industry has neglected R&D on tropical diseases that afflict people in developing countries and hence sought an international commitment of $3 billion p.a. for R&D for tropical diseases. It has been argued that such additional international commitment for R&D funding for tropical medicine is desirable and should be awarded to eligible institutions and enterprises of developing countries.[67]

8. Strengthen international partnership and regional cooperation

Earlier chapters of this report have analysed disparities in health achievement across Asia and the Pacific – showing, for example, higher attainment and lower disparities in North and Central Asia compared with South and South-West Asia. This highlights the potential for greater regional cooperation through the exchange on information and experience and, where appropriate, flows of development assistance.

A. Governments in LDCs which rely on official development assistance (ODA) to close their health financing gaps should seek to avoid introducing new stand-alone programmes that place additional burdens on understaffed and overburdened health services.[68] Instead they should ensure that new initiatives fit into well-functioning primary health care systems, and devote their resources to integration and strengthening capacity. Also, if health programmes become over-reliant on ODA they will be difficult to scale up and will be unsustainable. In the case of HIV drugs, for example, most countries in the region are almost completely dependent on external resources.

B. Official development assistance can be supplemented by other, innovative international financing mechanisms. Three such initiatives are already functioning. These are: (i) UNITAID and the solidarity levies on airline tickets, (ii) The International Finance Facility for Immunization (IFFIm) / Global Alliance for Vaccines and Immunization (GAVI), and (iii) Advance Market Commitment for pneumococcal vaccines (AMC-PV). UNITAID, hosted by the World Health Organization (WHO), is a facility for purchasing drugs and diagnostics to fight pandemic diseases such as AIDS, malaria and tuberculosis. Bulk purchasing enables it to negotiate lower prices for drugs and diagnostics, which they then distribute to low income countries. UNITAID has an annual budget exceeding $300 million, raised in part from donors, charitable foundations, and through solidarity contributions levied on airline tickets of passengers originating in 11 countries. The levy on airline tickets has the potential of being a stable source of finance, as it has had no impact on the air traffic. Expanding this levy beyond the 11 participating countries could enhance the revenue potential. The Asia-Pacific region has a large and fast growing market for air travel, and thus has enormous potential for raising additional resources through an air travel levy. IFFIm is a large facility for raising funds for immunization programmes in poor countries through government guaranteed bonds issued on international capital markets. So far six countries have offered guarantees to raise about €4 billion over 20 years, of which nearly $1 billion was raised through the initial issue of bonds. Managed by GAVI, about $862 million-worth of vaccines were distributed in 2007. The AMC-PV is an attempt to address neglected diseases that affect poor countries. Through contractual partnerships between donor governments and pharmaceutical companies, it seeks to ensure that research on neglected diseases is carried out. A key feature of this contractual arrangement is that drug companies commit to undertake effective research, while governments commit to provide a market at guaranteed price for the drugs that come out of such research. About $1.5 billion has been committed under this facility.[69] Another successful example is the Debt2Health initiative, through which donors forgo a portion of loan repayments against the debtor's commitment to invest half of the forgiven debt to programmes approved by the Global Fund to Fight AIDS, Tuberculosis and Malaria. The Global Fund also receives income from the ProductRED initiative, through which companies commit a share of their profits on goods branded with the ProductRED.[70]

C. These are commendable efforts for addressing particular needs. However, they pale in comparison with the revenue potential of a tax on international capital flows. In the current climate of governments in advanced economies reeling under build up of high levels of debt accumulation, anaemic growth and budgetary constraints, and hence limited prospects of significantly enhancing levels of ODA, it is important to look for new innovative sources of financing MDGs that are not dependent on government budgets. In that context a promising avenue is to impose a small tax on all international foreign exchange transactions. Besides its potential to moderate the financial volatility, the revenue potential of the tax, first proposed by economist James Tobin, makes it extremely attractive. ESCAP has estimated that even a modest tax of 0.1 per cent could generate revenue of about $640 billion a year globally, a substantial sum to fund global public goods such as MDGs and poverty reduction programmes without burdening budgets of any government. Such a tax has moved to the agenda of the G20 with the support of European governments but a consensus has eluded because of strong resistance by the financial industry. Asia-Pacific governments should move ahead to adopt such a tax at the regional level, like the European governments, in an effort to build an international consensus.[71]

For this Asia-Pacific countries can consider models developed by the European Union to bridge inequalities and help poorer member states participate more effectively in regional integration. Mechanisms

co-financed by member countries include the EU Regional Development Fund, the European Social Fund and the Cohesion Fund and have benefited, among other countries, Ireland, Spain, Portugal and Greece.[72]

The Asia-Pacific region already has some mechanisms. The South Asian Association for Regional Cooperation (SAARC) has a SAARC Development Fund which has, for example, initiated a Maternal and Child Health Project. But the fund is still on a small scale and needs greater momentum and publicity if it is to engage all stakeholders in transformative and catalytic projects and programmes. Similarly, the Association of South-East Asian Nations can focus more of its health work on effective health policies and programmes among its least developed members.

In the context of international partnership for health-related MDGs especially for poorest countries a major new initiative is the United Nations Secretary-General's *Global Strategy for Women's and Children's Health* announced at the UNGA's MDG Summit in September 2010. It seeks to ensure that by 2015, 43 million new users of comprehensive family planning, 19 million more women giving birth assisted by skilled workers, 2.2 million additional neonatal infections are treated, 15.2 million more children are fully immunized in their first year, 117 million more children under five receive vitamin A supplements, 85,000 more quality health facilities and 3.5 million more health workers are available in 49 poorest countries. The Global Strategy planned additional investments of $26 billion in 2011 rising up to $42 billion by 2015 in the 49 poorest countries through a partnership involving governments, donors, international agencies, private sector, foundations and civil society organizations.[73]

Mutual inspiration

Everyone has rights to life and good health. Yet across Asia and the Pacific there are wide disparities in health achievement – between rich and poor countries, urban and rural areas, mountain and plains, men and women. Health gaps also open up along many other fault lines based on ethnic group, or caste, or religion.

A determination to achieve the Millennium Development Goals offers a unique opportunity to close these unacceptable divides. And ways and means of doing so are becoming clearer. The Asia-Pacific region offers a wealth of country experience in dealing with the complexities of health provision. It is clear that no single generic approach will work everywhere. Every country has to address its own specific circumstances. Nevertheless, countries can be inspired by their neighbours to drive their own experiments and innovations.

Chapter III Endnotes

[1] UNDG (2011).
[2] WHO (2008b).
[3] UNAIDS (2011).
[4] WHO (2009).
[5] Sen (1989).
[6] Klasen and Wink (2003).
[7] Rodgers (2011). Glewwe (1999).
[8] WHO (2011a).
[9] WHO (2010c).
[10] ibid.
[11] Wagstaff et al. (2009).
[12] Rannan-Eliya and Sikurajapathy (2009).
[13] WHO Sri Lanka (2010).
[14] See Hou (2009) for further discussion.
[15] See Chinese Embassy (2003).
[16] Details are available at http://www.moh.gov.cn/publicfiles/business/htmlfiles/mohncwsgls/s3585/200804/30848.htm.
[17] See Zhaoyang (2011).
[18] WHO (2011b).
[19] See, for example, Panda and Agarwal (2005).
[20] WHO (2007).
[21] WPRO (2009).
[22] WHO (2008a).
[23] Bonu et al. (2007).
[24] UNDP (2011).
[25] WHO (2011b).
[26] WHO (2011b); Ensor et al. (2002); McDonagh and Goodburn (2001).
[27] Galea et al. (2000).
[28] WPRO (2011).
[29] WHO (2006).
[30] United Nations (2010).
[31] WHO 2009 (2010c).
[32] Jones et al. (2003).
[33] UNICEF (2011).
[34] Numerous studies support the health benefits of breastfeeding, including American Academy of Pediatrics (2005) and Kramer and Kakuma (2004).
[35] WHO (2007).
[36] http://www.who.int/mediacentre/factsheets/fs311/en/
[37] UNU (2010).
[38] http://www.who.int/nutrition/EB128_18_backgroundpaper3_developingcountryscaleupplans.pdf.
[39] For more information, see Krupp and Madhivanan (2009) and UNDG (2011).
[40] These percentages for the urban slum population are from ESCAP/ADB/UNDP (2010).
[41] Government of India (2010).
[42] Agarwal et al. (2007).
[43] UNDP/SPC (2010).
[44] Agarwal et al. (2007).
[45] Estimates based on inputs received from UNICEF, China office.
[46] ADB (2010).
[47] James et al (2010).
[48] WPRO (2009).
[49] ESCAP (2010).
[50] ADB, AusAid, Bill and Melinda Gates Foundation, et al. (2009).
[51] ESCAP (2010).
[52] See ESCAP (2010).
[53] See ESCAP (2010).
[54] ESCAP (2010).
[55] WPRO (2009); WHO (2010b).
[56] ILO, GTZ, WHO (2005).
[57] See Aggarwal (2010).
[58] The discussion in this sub-section draws on UNDP (2008).
[59] ibid.
[60] Barbar (2004).
[61] SEWA (2009) [Full details available at http://radiosewa.org/CRS.html].
[62] http://www.casestudiesforglobalhealth.org/case_study_PDFs/GHCS_6_MekongDrugs.pdf.
[63] Water and Sanitation Programme (2009).
[64] WHO (2010c).
[65] In 2010, the price of the most widely used combination drug for HIV treatment at that time was $64 per person per year See WHO (2010).
[66] See Smith et al. (2009) and Thatte et al. (2009).
[67] See Kumar (2003).
[68] See, for example, the collection of articles in Capacity.org (2011).
[69] See ESCAP (2010).
[70] These initiatives are discussed in Le Gargasson and Salomé (2010). Another option is community-based health insurance, as discussed in Soors et al. (2010).
[71] See ESCAP (2010).
[72] http://ec.europa.eu/regional_policy/thefunds/index_en.cfm.
[73] See http://www.un.org/sg/hf/Global_StategyEN.pdf.

CHAPTER IV

Way Forward

The countries of the Asia and Pacific region have made considerable progress in attaining the MDGs. Several targets have been achieved already or are likely to be achieved soon. Tangible improvements can be made on the others in the four years that remain till 2015 through additional and persistent efforts. This Report indicates that particular attention has to be paid to the following areas.

The Report has drawn attention to the large imbalances that prevail in MDG achievements both between and within countries. Reducing differences within countries has to be tackled mainly through domestic action. While accelerating overall progress on the MDGs, countries must therefore be mindful of the vast differences in achievement between urban and rural areas, between administrative regions, the wealthy and the poor, those with and without education, between socially privileged and excluded groups and so on. Attention must be directed at those being left behind and specific interventions devised, according to each country situation, to eliminate these imbalances. In many cases they are already threatening the stability and growth of countries.

As far as reducing differences in progress between countries is concerned, regional cooperation can make substantial contribution. Actions at both the regional and subregional levels will be needed – led by regional and subregional groupings and institutions – to help lagging countries, particularly the LDCs achieve the MDGs. A notable finding of this Report is that large differences in attainment exist within subregions indicating that stronger subregional cooperation efforts (such as by ASEAN, the CAREC program, the Pacific Islands Forum and SAARC) are called for to help countries within such groupings accelerate their performance. At the regional level, regional forums must be utilized to spur cooperative efforts. The partnership between ESCAP, ADB and UNDP will also make its contribution in this respect. Action will be taken both individually – such as through ESCAP's LDC forums and ADB's and UNDP's country operations in least developed countries – as well as collectively to reduce the inter-country disparities prevailing in the region.

The health, nutrition and water and sanitation group are the poorest performing among the MDG sectors in the region. This Report suggests therefore that urgent action in respect of these needs to be taken focusing on the following areas.

a. An integrated approach will have to be adopted to address the underlying causes of the disparities in health outcomes – covering the health sector, but also going beyond it. Therefore better coordination mechanisms will need to be developed between health and other concerned ministries and between different levels of government and with NGOs and the private sector to maximize the impact of national health interventions.

b. While developing national health strategies to accelerate progress on the MDGs, it has to be recognized that such progress hinges on social determinants, not just economic growth. Country specific approaches will need to be devised which rest on a broader framework than on income metrics alone.

c. Bottlenecks that need to be particularly addressed are policy, finance, supply-side constraints and demand-side constraints; these bottlenecks can be interlinked.

d. Implementing Agencies at the national and sub-national levels will need to renew their focus on Primary Health Care (PHC) and strengthening of health systems to effectively address the wide range of health-related disparities. Action will need to be taken particularly to ensure PHC services are affordable for the poor, backed by adequate health service personnel and basic infrastructure for better access and improved services.

e. Governments will need to quickly identify financing gaps to achieve the health-related MDGs and devise sustainable financing strategies to close them.

f. Gender equality holds the key to accelerating equitable progress on health-related MDGs and must be pursued vigorously. In the medium term priority actions include ensuring better access by women and girls to health care and nutrition; and improving women's education. Other priority actions involving women are promoting breastfeeding as per recommendations (early initiation and exclusive breastfeeding in particular) and stopping sex selective abortions.

g. Integrating child and maternal health into a continuum of care and life cycle approach will be needed to help reduce inequities in mortality. Action to develop an integrated package of health services should be initiated focusing on a set of well-known simple and cost-effective measures known to produce results quickly.

h. The Asia-Pacific region is rapidly urbanizing and greater and well-coordinated policy attention will be needed on the health needs of the urban poor with particular focus on the large population of urban slum dwellers.

i. Corruption in national health systems is undermining progress toward health security. Rooting out this malaise should be an important part of national health strategies.

j. Improving a country's health security will entail action, apart from those at the national, also at the subregional, regional and international levels. Regional cooperation efforts can consider using the EU co-financing models, or scale up sub-regional initiatives such as the SAARC development fund. Priority areas in regional cooperation include supply of cheap generic drugs, and research and development for drugs and treatment of infectious diseases.

MDGs Beyond 2015[1]

The UN Secretary-General has initiated system-wide preparations for a development agenda beyond 2015 in consultation with all stakeholders. With that objective, a UN System Task Team has been established, led by UNDESA and UNDP, to deliver a study by March 2012 so that this Report can be informed by the recommendations of the Secretary General's High-level Panel on Global Sustainability, expected to be announced in late June 2012.

The imperative for a development agenda beyond 2015 has arisen owing to several factors, including the need to address the barriers that have hindered the achievement of the MDGs and other development objectives during the last two decades; and several development challenges that have emerged and have become more pressing since 1990. Some of these include:[2]

- growing inequalities within and among countries
- changing demographics from urbanization, internal and external migration, and ageing
- climate change and need to ensure food and energy security, and environmental sustainability
- maintaining peace and security and addressing the development challenges confronting countries affected by conflict and fragility
- guaranteeing respect for human rights
- establishing more effective mechanisms of global governance, including mechanisms to better cope with global economic crises.

The UN System Task Team has already begun work and developed a framework to address six critical issues:

- **Assess the MDG framework** to identify what worked and what needs to be improved in a post 2015 development framework.
- **Identify emerging development challenges** or challenges that have become more pressing since 2000 in the current context, and ways to incorporate them into the global development agenda.
- **Assess proposals and processes** for the post-2015 development agenda, with a clear **mapping of actors** and interactions among multiple stakeholders.

- **Assess how the post-2015 development agenda would relate to on-going processes and area-specific development targets;** there are several processes within the UN that will influence the post-2015 development agenda.

- **Assess how the global partnership for development should be broadened and strengthened;** re-evaluate the present global partnership vis-à-vis the additional global challenges to be prioritized by the post-2015 development agenda, taking into account the discussions at the Fourth High Level Forum on Aid Effectiveness held from 29 November to 1 December 2011 in Busan, Republic of Korea.

- **Assess possible formats for the post-2015 global development agenda;** start thinking early on how best to conceptually and operationally define and monitor the objectives and related processes of the post-2015 development agenda.

In parallel, development agencies, NGOs and other stakeholders, globally and within the Asia and Pacific region, have also begun discussions to continue development efforts beyond 2015 to ensure that the momentum generated by the MDGs towards ending poverty and other social deprivations does not abate.

This ESCAP/ADB/UNDP Asia-Pacific Regional MDG Report 2011/12 is a contribution to the on-going discussions and exchange of information on the post-2015 development agenda. Particularly, it highlights the key issues, challenges and opportunities in reducing disparities within and across countries in Asia-Pacific region with a focus on health- and nutrition-related MDGs, an area of continuing relevance for formulating and operationalizing the post-2015 development agenda.

Chapter IV Endnotes

[1] Based on notes and background materials prepared by the UN System Task Team.

[2] Some of these have been identified in UN Secretary General's Report A/66/126, *Accelerating progress towards the MDGs: option for sustained and inclusive growth and issues for advancing the United Nations development agenda beyond 2015*.

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STATISTICAL APPENDIX

Technical Note 1: MDG process classification

Data sources

The data underlying the MDG progress classification tables are from the Global Millennium Development Goals Indicators Database (http://unstats.un.org/unsd/mdg/). This database is updated annually, resulting in revisions of specific data points in some cases. Thus prospects for progress presented in the Asia-Pacific MDG report 2011/12 are not always comparable with those in previous reports in this series. The analyses presented in the Asia-Pacific MDG report 2011/12 are based on data updated on 21 September 2011 and accessed on 30 September 2011.

Reference populations published by the United Nations Population Division (*World Population Prospects: the 2010 Revision*) are used for estimating the size of the affected population as well as regional totals and averages.

Determining the progress in achieving a MDG target

A country, region or sub-region is assigned one of the following four categories of MDG progress towards the targets:

- *Early achiever* - Already achieved the 2015 target
- *On track* - Expected to meet the target by 2015
- *Off track: Slow* - Expected to meet the target, but after 2015
- *Off track: Regressing/No progress* - slipping backwards or stagnating

Two different procedures are used to determine the categories, depending on whether or not an indicator has an explicit target value for 2015. For indicators without such a target value, such as HIV prevalence, TB prevalence, TB death rate, forest cover, protected area, CO_2 emissions and consumption of ozone-depleting substances, only three of the four categories are used: indicators trending in the 'right' direction since 1990 are categorized as Early achievers; indicators showing no change at all over the period are categorized as On track; and finally indicators trending in the 'wrong' direction are categorized as Off track – Regressing / No progress.

For indicators with an explicit target value, such as $1.25-a-day poverty, mortality rates, school enrolment and the gender parity indices, all four categories are used. To determine the category, the year t* – by which a country is expected to reach its MDG target if the trend since 1990 continued – is estimated (see below). Denote tLst as the year with the latest available value. If t* is below tLst, the country is categorized as an Early achiever. If t* lies between tLst + 1 and 2015, it is categorized as On track. If t* is above 2015, the country is categorized as Off track – Slow. Naturally, no t* can be estimated if a country has a zero trend or trend in the 'wrong' direction, i.e. away from the target value. In these cases, the country is categorized as Off track – Regressing/No progress.

To estimate t*, the trend since 1990 is estimated first based on at least two data points, which are at least three years apart. In case an indicator is a proportion or a probability, the original value, Y_t is converted into y_t, which is between 0 and 1, by dividing Y_t by the appropriate scale. For example, for $1.25 poverty rate, Y_t is divided by 100; for infant mortality, the indicator is divided by 1000. A logit transformation is then made on y_t so that the indicator is on the scale of real numbers. For indicators that are odds ratios, such as gender parity, a log transformation is used. For indicators that cannot be interpreted as either a probability or odds ratio, such as CO_2 emissions and consumption of ozone-depleting substances, no transformation is applied.

$$L_t = \begin{cases} \log\left(\frac{y_t}{1-y_t}\right) & \text{if } y_t \text{ is a probability} \\ \log(y_t) & \text{if } y_t \text{ is a rate of proportions} \\ y_t & \text{otherwise} \end{cases} \quad (1)$$

The year T is adjusted to t by subtracting the mean year $\bar{T}$ from all the years:

$$t = T - \bar{T}$$

The rate of change r_1 is estimated using the following linear equation:

$$L_t = r_0 + r_1 * t + \varepsilon_t \quad (2)$$

For countries in North and Central Asia the impact of the social changes in the early 1990s on many of the MDG indicators is taken into account. The rate of change for all the available data since 1990 is calculated first and then for all the available data except the first year. If the signs of the two estimated rates differ, the trend estimate excluding the observation for the first year is used.

In addition, for indicators such as TB prevalence, TB death rate, CO_2 emissions and consumption of ozone-depleting substances, where enough data (more than five observations) are available to detect a reversal of trend, a binomial equation was estimated using the Ordinary Least Square method:

$$L_t = r_0 + r_1 * t + r_2 * t^2 + \varepsilon_t \quad (3)$$

When r_2, the coefficient of t^2, is statistically significant (at 0.02 level) and there are more than three data points to the right of the turning point, estimated at $-r_1/(2 * r_2)$, the binomial model is used in place of the linear model. If $r_2 < 0$, the indicator increased in value first and then decreased. This means that the target has already been achieved. If $r_2 > 0$, there is regression on the indicator. When the linear model is used, the sign of r1 is used to judge if the country has already achieved the target ($r_1 < 0$), is on track ($r_1 = 0$), or is regressing ($r_1 > 0$).

There are instances of large changes in the value of an indicator, the magnitude of which makes it difficult for the trend to sustain in future years (or extrapolate the trend backwards to as early as 1990). Since a logit transformation for most of the indicators is applied, a restriction to the slope is considered in these cases (to be between -0.2 and 0.2). It is possible to simulate that a slope of 0.2 or larger or -0.2 or smaller can give very drastic results when moving through the 25 years (1990-2015) with the logit transformations. This restriction does not affect the on/off track decision: a country with this rapid change will be early achiever or on track if in the right sign already and regressing if in the wrong sign.

Setting the target value

When an indicator requires a target value, a value for the indicator for the year 1990 is required to calculate it. When the 1990 value is not available, with the exception of the North and Central Asian countries, the first value is used in place of the 1990 value. For the North and Central Asian countries, if the trend estimate excludes the first available value, the second value is then used in place of the 1990 value.

Using cut-off values

The cut-off values depend on the kind of target of the indicator. Some of the MDG targets require an indicator value to increase or decrease by a certain proportion of their 1990 values. The only indicator of this kind that has cut off point is $1.25-a-day poverty, because 2 per cent is the lowest level reported on this indicator. Many other indicators require an absolute level as a target, such as the primary school enrolment. These targets cannot be achieved by the model due to the transformation used. In this case the indicator is treated as achieved if the country has reached this cut-off value. In the case of primary school enrolment, for example, this cut-off value is set at 95 per cent instead of 100. The transformation and cut-off values for indicators are presented in Table 1.

Calculating regional and country group aggregates and the affected population

Regional and country group aggregates

The aggregates are estimated by using a weighted average of the actual country values, or imputed country values wherever data are missing for the year required. The reference populations were obtained from *World Population Prospects: the 2010 Revision* (United Nations, 2011). The same models for estimating trends are used to impute missing values for the year for a country (please see below how to calculate the trend). The aggregate values for a specific indicator are calculated through the following process:

- Estimate the indicator values for the countries (see the previous section, estimating the trend) that do not have data in a year
- Using the reference populations, a weighted average of the country values is calculated to obtain the aggregate value for the region or country group
- If the country was classified as regressing in an indicator, the latest available value will be used as estimate for following years, assuming that the country will maintain at least that level of the indicator and will not get worse.

Table 1. Cut-off values for selected MDG indicators

Indicator	MDG target	Cut-Off	Transformation	Quadratic Function (when data permits) poverty
$1.25 per day poverty	Half 1990 value	2	Logit	
Underweight children	Half 1990 value	None	Logit	
Primary enrolment	100	95	Logit	
Primary completion	100	95	Logit	
Reaching last grade	100	95	Logit	
Gender primary	1	0.95	Log	
Gender secondary	1	0.95	Log	
Gender tertiary	1	0.95	Log	
Maternal mortality	Reduce by 3/4 (without)	None	Log	
Antenatal care (= 1 visit)	100	95	Logit	
Skilled birth attendance	Reduce by 3/4 (without)	None	Logit	
Under-5 mortality	One third 1990 value	None	Logit	
Infant mortality	One third 1990 value	None	Logit	
TB incidence	Reverse the trend		Logit	Yes
TB prevalence	Reverse the trend		Logit	Yes
HIV prevalence	Reverse the trend		Logit	(not enough data)
Forest cover	Reverse the trend		Logit	(not applicable)
Protected area	Reverse the trend		Logit	(not applicable)
ODP substance consumption	Reverse the trend		None	Yes
CO_2 emissions	Reverse the trend		None	Yes
Basic sanitation	Half 1990 value (without)	None	Logit	
Safe drinking water	Half 1990 value (without)	None	Logit	

Note: Protected area and Forest cover are marked "not applicable" as they tend to stay constant / show very little variation for most of the time and hence quadratic or other polynomial functional forms cannot be fitted.

Affected population

The calculation of the affected population is based on the aggregate value of the indicator for the region and the total reference population for the region. More specifically, the following processes are used for computing the affected population for different types of indicators.

In case a higher value of an indicator represents a worsening outcome (e.g. $1.25-a-day poverty, underweight children), the affected population is calculated by:

$$CV * TRP$$

where CV is the converted value of the indicator at the aggregate level (between 0 and 1) and TRP is the total reference population in the region.

In case a higher value of an indicator represents improvement in outcome (e.g., primary enrolment, births by skilled professionals), the affected population is calculated as:

$$(1 - CV) * TRP$$

In this last category there are some indicators, such as gender primary, gender secondary and gender tertiary, for which the affected population is computed as:

$$\frac{(1-CV)*TRP}{2}$$

Finally, there are some indicators without reference populations, such as forest cover, protected area, for which it is therefore impossible to calculate the affected populations.

Regional and country group aggregates are reported only when the countries account for more than two thirds of the total reference population in a region or country group.

Table 2. Data series names and responsible agency

Short indicator name	Original indicator name	Responsible agency
Goal 1		
$1.25 per day poverty	Population below $1 (PPP) per day, percentage	World Bank
Underweight children	Children under 5 moderately or severely underweight, percentage	UNICEF
Goal 2		
Primary enrolment	Total net enrolment ratio in primary education, both sexes	UNESCO-UIS
Reaching last grade	Percentage of pupils starting grade 1 who reach last grade of primary, both sexes	UNESCO-UIS
Primary completion	Primary completion rate, both sexes	UNESCO-UIS
Goal 3		
Gender primary	Gender Parity Index in primary level enrolment	UNESCO-UIS
Gender secondary	Gender Parity Index in secondary level enrolment	UNESCO-UIS
Gender tertiary	Gender Parity Index in tertiary level enrolment	UNESCO-UIS
Goal 4		
Under-5 mortality	Children under five mortality rate per 1,000 live births	UNICEF
Infant mortality	Infant mortality rate (0-1 year) per 1,000 live births	UNICEF
Goal 5		
Maternal mortality	Maternal mortality ratio	WHO, UNICEF
Skilled birth attendance	Births attended by skilled health personnel, percentage	WHO, UNICEF
Antenatal care (≥ 1 visit)	Antenatal care coverage, at least one visit, percentage	WHO, UNICEF
Goal 6		
HIV prevalence	People living with HIV, 15-49 years old, percentage	UNAIDS
TB incidence	Tuberculosis incidence rate per year per 100,000 population	WHO
TB prevalence	Tuberculosis prevalence rate per 100,000 population	WHO
Goal 7		
Forest cover	Proportion of land area covered by forest, percentage	FAO
Protected area	Terrestrial and marine areas protected to total territorial area, percentage	UNEP
CO_2 emissions pc	Carbon dioxide emissions (CO_2), metric tons of CO_2 per capita (CDIAC) 2010 dataset	Carbon Dioxide Information Analysis Center
ODP substance consumption	Consumption of all Ozone-Depleting Substances in ODP metric tons	UNEP
Safe drinking water	Proportion of the population using improved drinking water sources, total	WHO, UNICEF
Basic sanitation	Proportion of the population using improved sanitation facilities, total	WHO, UNICEF

Technical Note 2: Factors explaining disparities between countries

Data and Methodology

The data used was from the ESCAP database for the MDG indicators for Asia and the Pacific supplemented with data on governance indicators on government and control of corruption from the Worldwide Governance Indicators produced by the Brookings Institution, World Bank Development Economics Research Group, and the World Bank Institute; and infrastructure indicators from the World Development Indicators online database and the World Energy Outlook 2010 of the International Energy Agency. Cross country data was pooled with time series.

Three main outcome indicators were studied: child (under-5) mortality, maternal mortality, and incidence of underweight children. The regressions used were log linear in form employing log transformed variables which resulted in estimating elasticities directly from the coefficients of the explanatory variables viz:

$$\text{Ln } Y = C + \text{Ln } X_1 + \text{Ln}X_2 + \ldots + \text{Ln}X_n + e$$

Where Y is the MDG outcome variable being explained and X_1 to X_n are the explanatory variables. To determine which variables are to be used as explanatory variables a literature survey was undertaken including employing a correlogram between the explained and explanatory variables.

Results

The results of the regressions are shown in Tables 1 and 2.

For child mortality, the first regression uses all the likely explanatory variables. The second equation replaces total health expenditures with its private and public expenditure components and dropping one variable (physicians) which exhibited a wrong sign. Given the very high partial correlation coefficient (0.89) between health expenditures and GDP per capita, which may have resulted in the lack of significance for the latter, the third regression confirms that GDP per capita is a significant explanatory variable if health expenditure is dropped.

The same method is used for maternal mortality and for the first three regressions for underweight children. While GDP per capita does become significant if health expenditure is dropped in the case of underweight children, this does not happen in the case of maternal mortality. The fourth and fifth regressions for underweight children show that sanitation and immunization become significant explanatory variables of child malnutrition only when other variables are dropped from the regression (possibly because of problems of multi-collinearity).

Table 2 shows regression equations specifically using explanatory variables relating to infrastructure viz: per capita electricity consumption, access to paved roads, access to basic sanitation and access to clean water with GDP per capita used as a control variable.

Table 1. Cross country regressions of selected health outcomes and explanatory factors

MDG Indicator	ln (Health expenditure per capita)	ln (Health expenditure per capita, public)	ln (Health expenditure per capita, private)	ln (GDP per capita)	ln(Sanitation)	ln(Immunization, DPT)	Corruption control	ln (Skilled birth attendance)	ln (Number of physician)	Population growth	ln (Gender-related development index)	R2	N
ln (Under-5 mortality)													
Equation 1:	-0.3164 **			0.0810	-0.0408	-0.7340 **	-0.3927 **		0.1548		-1.5102 **	0.79	96
	-3.2754			*0.8800*	*-0.2934*	*-2.9407*	*-5.5644*		*3.7158*		*-3.9736*		
Equation 2:		0.0702	-0.1455 **	-0.1611	-0.0174	-0.7014 **	-0.3932 **				-1.0883 **	0.77	96
		1.0994	*-2.2314*	*-1.5472*	*-0.1203*	*-2.5881*	*-5.2742*				*-2.7686*		
Equation 3:				-0.1832 **	0.0082	-0.6256 **	-0.3942 **				-1.2551 **	0.76	96
				-3.3000	*0.0556*	*-2.3475*	*-5.3315*				*-3.1814*		
ln (Maternal mortality)													
Equation 1:	-0.4909 **			0.2437	-1.0595 **		-0.3606 **	-0.6281 **			0.4728	0.89	44
	-3.0391			*1.6657*	*-4.9031*		*-2.3814*	*-2.7654*			*0.4352*		
Equation 2:		-0.1148	-0.3589 **	0.2879	-1.1048 **		-0.3208 **	-0.8214 **			1.1729	0.89	44
		-0.9127	*-3.174*	*1.4167*	*-5.0685*		*-2.1138*	*-3.3757*			*0.9976*		
Equation 3:				-0.0790	-1.0363 **		-0.3020 *	-0.7127 **			-0.0221	0.87	44
				-0.7109	*-4.3504*		*-1.8232*	*-2.8662*			*-0.0187*		
ln (Underweight children)													
Equation 1:	-1.0562 **			0.2000	-0.1010	-0.2165	0.1873		-0.2658 **	0.4312 **	0.9021	0.82	26
	-3.9676			*0.7695*	*-0.2711*	*-0.3193*	*0.6760*		*-2.0848*	*2.5720*	*0.6063*		
Equation 2:		-0.4183 **	-0.2735	0.3208	0.0358				-0.2145 **	0.3817 **		0.74	44
		-2.6683	*-1.3238*	*1.3738*	*0.1231*				*-1.9913*	*3.6069*			
Equation 3:				-0.5220 **	-0.0974	0.1019	0.0831		-0.3761 **	0.5230 **	0.8433	0.68	26
				-2.0859	*-0.1938*	*0.1122*	*0.2235*		*-2.2415*	*2.3353*	*0.4203*		
Equation 4:	-0.7072 **				-0.4352 **					0.4592 **	0.9928	0.71	72
	-6.6593				*-2.2773*					*5.8551*	*1.7911*		
Equation 5:						-1.4181 **				0.5715 **		0.30	49
						-2.0744				*3.6141*			

R2 = coefficient of determination, N=number of observations, DPT=diphtheria, pertussis and tetanus, **=significant at 5% level, *=significant at 10% level.

Note: Regression equations include only the variables where coefficients are estimated. Numbers in italics are t-values.

Sources: Author's calculation based on data from WB, World Development Indicators online database for health expenditure per capita, number of physician and population growth; UNDP, Human Development Report , various issues for gender-related development index; UNESCAP, Statistics Division for child and maternal mortality, underweight children, sanitation, immunization, skilled birth attendance,and women in nonagriculture employment.

Table 2. Relationship of health outcomes to basic infrastructure

	MDG Indicator	ln (GDP per capita)	ln (Electricity consumption)	ln (Access to paved road)	ln (Basic sanitation)	ln (Safe drinking water)	R2	N
MDG1	ln (Underweight children)	-0.1070			-0.8153 **		0.37	98
		-1.0213			*-5.5401*			
MDG 4	ln (Immunization, measles)	0.0655 **		0.0554 **			0.14	510
		4.5599		*6.4104*				
MDG5	ln (Skilled birth attendance)	0.1644 **	0.2079 **	0.3055 **			0.77	96
		2.1471	*3.0670*	*4.6173*				
	ln (Antenatal care, at least once)	0.0920	0.1973 **	0.0479			0.56	73
		1.2088	*3.3612*	*0.8428*				
MDG6	ln (TB prevalence)	-0.3612 **		-0.3061 **		-0.3682 **	0.34	486
		-6.4069		*-9.2596*		*-1.9476*		
	ln (TB incidence)	-0.1973 **		-0.1799 **		-0.3834 **	0.30	486
		-5.1558		*-8.0158*		*-2.9867*		
	ln (TB death rate)	-0.3660 **		-0.2041 **		-0.3886 **	0.35	486
		-7.9106		*-7.5229*		*-2.5043*		
	ln (HIV prevalence)	2.1993 **			-3.6766 **		0.24	21
		2.1946			*-2.8581*			

R2=coefficient of determination, N=number of observations, TB=tuberculosis,HIV=human immunodeficiency virus, **=significant at 5% level, *=significant at 10% level.

Note: Regression equations include only the variables where coefficients are estimated. Numbers in italics are t-values.

Sources: Author's calculation based on data from WB, World Development Indicators online database for health expenditure per capita, number of physician and population growth; UNDP, Human Development Report , various issues for gender-related development index; UNESCAP, Statistics Division for child and maternal mortality, underweight children, sanitation, immunization, skilled birth attendance,and women in nonagriculture employment.

Technical Note 3: Accounting for disparities between countries

(From Wan G. and Y. Zhang. (2011). Between Country Disparities in MDGs: the Asia-Pacific Region *Unpublished background paper for this report.*)

Disparity or inequality implies gaps in consumption, income or other variables between individuals or groups of individuals. Common measures of such disparity include the popular Gini coefficient (Gini 1910), the family of generalized entropy measures (Theil 1972) and the Atkinson index.

In order to contain or reduce disparity, it is necessary to identify its determinants. The conventional approach is to classify sample data into several groups according to a variable such as location or per capita GDP (Purchasing Power Parity adjusted) and then work out how much of the disparity can be attributed to gaps within groups and how much between these groups. This approach cannot control for variables other than that for splitting data into sub-groups. Therefore, analytical results are most likely to be contaminated. For a good discussion on this approach and applications, see Shorrocks and Wan (2005).

A better approach to exploring sources of disparity is the regression-based inequality decomposition developed by Wan (2004). For more technical details and empirical applications, see Wan (2002, 2008), Wan and Zhou (2005) and Wan, Lu and Chen. (2007). Under this framework, the first step is to construct a model, linking the consumption, income or *MDG* variable with its determinants such as education level, financial assets, social capital, and gender:

$$MDG = f(Xs),$$

where *f* denotes a functional form which can be linear or nonlinear. The *Xs* denote determinants of MDG and can enter the function as individual variables or interact with each other. This model is useful in identifying what policy instruments are important for improving the level of the dependent variable.

The second step is to apply the regression-based inequality decomposition technique of Wan (2004) by taking inequality on both sides of the above model:

$$I(MDG) = I\,[f(Xs)],$$

where *I* denotes computation of an inequality measure such as Gini or Theil index. Relying on the Shapley procedure which is based on cooperate game theory (Shorrocks 1999), it is possible to breakdown the total inequality $I\,[f(Xs)]$ into components attributable to individual *Xs*. The results can offer insights as to how much disparity would be reduced if differences in independent variables such as schooling are eliminated.

How to break down the total inequality? Suppose $MDG = f(X_1, \ldots, X_K)$ is an MDG-generation function. Usually the *Xs* are different for different countries. Replacing one of the *Xs*, say X_k , by its sample mean would eliminate any differences in X_k among countries. Now, one can use the MDG-generation function to re-compute *MDG* after this replacement. The resulting *MDG* value, denoted by MDG_k, still differs from country to country because the remaining *Xs* other than X_k differ across countries. However, these differences cannot be attributed to X_k anymore. In other words, inequality in MDG_k, denoted by $I(MDG_k)$, is due to differences in the *Xs* excluding X_k. But, $I(MDG)$ contains the effect of X_k. Thus, the contribution of X_k to total inequality, C_k, can be obtained as $I(MDG) - I(MDG_k)$ for $k = 1, \ldots, K$. Shorrocks (1999) terms these contributions the "first-round effect," which is obtained when only one independent variable X_k is replaced by its sample mean. One can obtain a second-round C_k by replacing two variables X_k and X_j with their sample means in computing MDG_{kj}. The second-round contribution can be written as $C_k = I(MDG_j) - I(MDG_{jk})$ for $k, j = 1, \ldots, K\ (k \neq j)$. By the same token, the third-round contribution can be obtained as $C_k = I(MDG_{ij}) - I(MDG_{ijk})$ for $k, j, i = 1, \ldots, K\ (k \neq j \neq i)$. This process continues until all the *Xs* are replaced by their sample means. At each round, it is possible to obtain multiple C_k, which are averaged first and then averaged across all rounds. The finally averaged C_k represents the contribution of X_k to total disparity in *MDG*.

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Technical Note 4: Analysis of disparities within countries

Definitions

i. Child nutrition status

The prevalence of underweight children is the percentage of children aged 0-59 months whose weights for age are less than two standard deviations below the median weight for age of the international reference population. Underweight is a good measure of acute and long-term malnutrition as it takes into account both weight for height and height for age.

The prevalence of stunted children is the percentage of children aged 0-59 months whose heights for age are less than two standard deviations below the median height for age of the international reference population. Stunting is a measure of chronic effect of malnutrition.

Estimates using the new standards were not available in earlier surveys; therefore, the underweight and stunting status of the children were calculated using the NCHS/CDC/WHO standard and the international reference population, often referred to as the NCHS/WHO reference population, which was formulated by the National Center for Health Statistics (NCHS) as a reference for the United States and later adopted by the World Health Organization (WHO).

The NCHS/WHO reference standard represents the distribution of height and weight by age and sex in a well-nourished population. In a well-nourished population, 2.3 per cent of children fall below minus two standard deviations.

In the NCHS/WHO reference population, data for ages of 0 to 2 years is based on a longitudinal study based on children from 1929 to 1975, known as the Ohio Fels Research Institute Longitudinal Study. The data for children 2 to 18 years is compromised of 3 cross sectional studies from 1960 to 1975, also conducted in the US. A limitation of is that this reference population is compromised of unrelated samples. However, this reference still has functionality for monitoring and comparing populations.[1]

ii. Child mortality

The child mortality rates are calculated as defined in the DHS, using a direct method based on a cohort life table. Mortality for shorter age segments are combined into the more common age segments (for example, for under-5 mortality). DHS adopted the following shorter age segments: 0, 1-2, 3-5, 6-11, 12-23, 24-35, 36-47 and 48-59 months. The death probabilities are calculated for these shorter age segments of completed age. These death probabilities are combined into mortality rates.

A death probability is defined by a time period and an age interval. Three cohorts of children are included in the calculations: one is completely included and the other two are partially included because they are partially exposed to mortality, from which only one-half of the total exposure and one-half of the deaths are taken into account.[2]

Usually, mortality rates are calculated for five-year periods preceding the date of the survey. But for smaller subgroups, the ten-year period before the survey is used.

In MICS, no information is collected on number of children who died. Therefore, an indirect method for measuring child mortality is adopted.[3] This method of calculating mortality rate uses information on the number of live births, number of children living and number of women by age group This method is known as Brass' method and it is based on the assumption that the age of women can be used as proxy for each child's time of exposure to the risk of dying.[4]

The model to calculate the composite measure of disparity and the simulations used only the births which occurred within the five years preceding the survey. In this case, the calculation of mortality rate was adjusted to account for all the observations and compensate for the missing observations from the previous cohort.

iii. Use of maternal health care services

The use of maternal health care services is represented by two indicators. The fist is the coverage of skilled birth attendance. In DHS, this variable is defined as the proportion of live births in the five years preceding the survey that were attended by a skilled health professional during delivery. In MICS, it is defined as the proportion of most recent live birth in the two years preceding the survey that were attended by a skilled health professional during delivery.

The second indicator of the use of maternal health care services is antenatal care coverage. In DHS, the population is women aged 15-49 with a live birth in the five years preceding the survey. In MICS, the

population is women aged 15-49 with a live birth in the two years preceding the survey. In both cases, the indicator is defined as the proportion of the most recent births for which antenatal care was provided by skilled health personnel at least once during pregnancy. For DHS data, the indicator also includes four or more antenatal visits.

Skilled health personnel refers to doctors, nurses or midwives who were trained in providing life saving obstetric care, including giving the necessary supervision, care and advice to women during pregnancy, labour and the post-partum period, conducting deliveries on their own, and caring for newborns. Traditional birth attendants, even if they had received a short training course, are not included.

iv. Access to improved drinking water source and improved sanitation facility

The proportion of household which have access to improved drinking water source is defined as the percentage of the households which use any of the following types of water supply for drinking: piped water into dwelling, plot or yard; public tap/standpipe; borehole/tube well; protected dug well; protected spring; rainwater collection and bottled water (if a secondary available source is also improved). It does not include unprotected well, unprotected spring, water provided by carts with small tanks/drums, tanker truck-provided water and bottled water (if secondary source is not an improved source) or surface water taken directly from rivers, ponds, streams, lakes, dams, or irrigation channels.

The proportion of households which have access to improved sanitation facilities is defined as percentage of the households with access to facilities that hygienically separate human excreta from human contact. Improved facilities include flush/pour flush toilets or latrines connected to a sewer, septic tank, or pit, ventilated improved pit latrines, pit latrines with a slab or platform of any material which covers the pit entirely, except for the drop hole and composting toilets/latrines. Unimproved facilities include public or shared facilities of an otherwise acceptable type, flush/pour-flush toilets or latrines which discharge directly into an open sewer or ditch, pit latrines without a slab, bucket latrines, hanging toilets or latrines which directly discharge in water bodies or in the open and the practice of open defecation in the bush, field or bodies of water.

Definitions and a detailed description of these facilities can be found at the website of the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation at www.wssinfo.org. At the country level, WHO/UNICEF JMP country files, 2010 were used as reference.

Data sources

Data from MICS and DHS surveys are used. The surveys are national representative samples of the population for each country and conducted using a multistage sampling approach. There are three sets of questionnaires, specific to the household, individual women and children under five which were administered to the child's mother or caretaker.

Questionnaires are administered to women aged 15-49 and children under 5 years of age. Women are asked a series of questions, including but not limited to the maternal health status, child birth, services sought before birth, who the birth was attended by, attitudes and opinions towards HIV/AIDS and domestic violence, contraception, marriage/union, child mortality, immunizations, breastfeeding, questions about the child regarding weight, height and age which allows for measurement of nutritional status.

In the case of child mortality, data from the DHS surveys provide complete and detailed births histories because women are asked a series of questions about the dates and survival status of all pregnancies and whether they resulted in live or non-live births. This permits direct estimates of infant and child mortality, and the possibility to use the data in models. On the other hand, MICS reports under-5 and infant mortality using the indirect method, and data does not allow to be used in models. The evaluation team of MICS 3 recommended UNICEF to produce a shortened core questionnaire with clear decisions on the inclusion of full birth histories and with additional modules in the next round.[5]

Therefore, the study of disparities and the simulations will focus on the births that occurred within five years prior the survey and the mortality experienced by these children. It would be desirable to have a shorter period of time prior the survey, because the socio-economic covariates are reflecting the household´s situation at the time of the survey. Survival models will be used to analyse the time to death; therefore the relevant measure is the age measured in months and the status of the child, whether survived or died. The independent variables will represent individual, household and community characteristics.

Table 1. Surveys used in the analysis

Country	Survey	Year	Health indicators							
			Under-5 underweight	Stunting	Under-5 mortality	Antenatal care, 1 visit	Antenatal care, 4 visits	Skilled birth attendance	Access to water	Access to sanitation Mongolia
Mongolia	MICS	2005	√	√					√	√
Cambodia	DHS	2005	√	√	√	√	√	√	√	√
Indonesia	DHS	2007			√	√	√	√	√	√
Lao PDR	MICS	2006	√	√		√		√	√	√
Philippines	DHS	2008			√	√	√	√	√	√
Thailand	MICS	2005-2006	√	√					√	√
Timor-Leste	DHS	2009	√	√	√	√	√	√	√	√
Viet Nam	DHS	2002			√					
Viet Nam	MICS	2006				√		√	√	√
Bangladesh	DHS	2007	√	√	√	√	√	√	√	√
India	DHS	2005-2006	√	√	√	√	√	√	√	√
Maldives	DHS	2009	√	√	√	√	√	√	√	√
Nepal	DHS	2006	√	√	√	√	√	√	√	√
Pakistan	DHS	2006-2007			√	√	√	√	√	√
Turkey	DHS	2003	√	√	√	√	√	√	√	√
Armenia	DHS	2005	√	√	√	√	√	√	√	√
Azerbaijan	DHS	2006	√	√	√	√	√	√	√	√
Georgia	MICS	2005							√	√
Kazakhstan	MICS	2006	√	√					√	√
Kyrgyzstan	MICS	2005-2006	√	√					√	√
Tajikistan	MICS	2005	√	√		√		√	√	√
Uzbekistan	MICS	2006	√	√					√	√
Vanuatu	MICS	2007	√	√		√		√	√	√

Covariates considered in the model

Two separate models are fitted to the data, full model and extended model. Full model includes a common set of variables for all countries. The extended model includes additional variables that are unique for each country, depending on the availability of data.

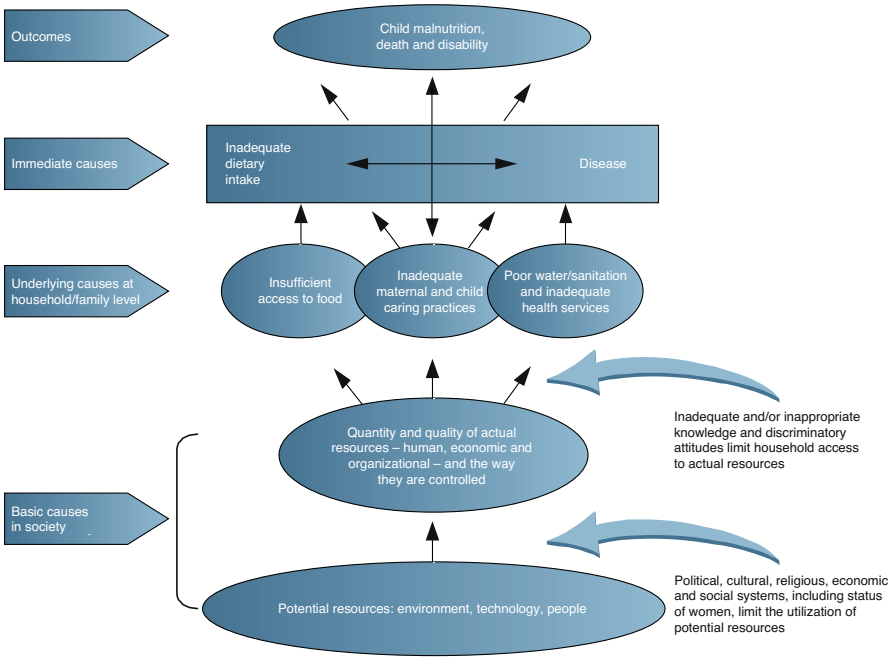
The covariates in the models for malnutrition related outcomes and child mortality were selected based on the framework in figure 1.

Table 2. Sources of disparity assessed for selected MDG indicators

	Child malnutrition	Under-5 mortality	Use of maternal health care services	Access to water and sanitation
Location				
Urban/rural	√	√	√	√
Administrative areas	√	√	√	√
Household characteristics				
Wealth	√	√	√	√
Proportion of females in household	√	√	√	√
Household size				√
Access to improved drinking water	√	√		
Access to improved sanitation	√	√		
Sex of household head	√	√	√	√
Mother and child characteristics				
Education of mother	√	√	√	*
Education of father			√	*
Mother's age at birth of child	√	√	√	
Mother's age at birth of first child			√	
Skilled assistance at delivery		√		
Antenatal care (at least one visit)		√		
Previous birth interval	√	√		
Birth order	√	√		
Sex of child	√	√	√	
Breastfed for at least 6 months		√		
Child's age	√			

Notes: *. Two education variables are used for modelling access to improved water and sanitation. The first is the attainment level of the best-educated household member. The second is the percentage of people in the village or neighbourhood with at least primary education.

Figure 1 – Conceptual framework on the causes of child malnutrition, death and disability



Source: UNICEF, The State of the world's children 1998, accessed from http://www.unicef.org/publications/files/pub_sowc98_en.pdf

Method

i. Model

Considering the clustered design of the surveys, a multilevel regression method is deemed appropriate to model the data. The data is hierarchical, with units nested within each cluster. Individual women are nested within a household and each household is nested within a cluster. Women within each household and households within each cluster are assumed to be correlated through unobserved characteristics unique to each cluster. This correlation is accounted for by including a random effects intercept specific for each cluster.

For each outcome, there are two possible statuses. The mother either had at least 1 or 4 prenatal visits (assigned a value of 1), or the mother did not have the required visit (value of 0). The mother either gave birth in the presence of skilled birth attendant (1) or not (0). Similarly, the child is underweight (1) or not (0). The child is stunted (1) or not (0). Therefore, a logistic model is employed, modelling the probability that an outcome will be observed. A generic model is as follows:

$$\text{logit}(P_{ijk}) = \alpha+\beta_{x1}*x1_{ijk}+\beta_{x2}*x2_{ijk}+\beta_{x3}*x3_{ijk}+\ldots +\alpha_i+\alpha_{ik}+\varepsilon_{ijk}$$

In this model, *i* is the index for each cluster, *j* is the index for each household in cluster *i*, *k* is the index for each woman and hence *ijk* identifies each unique woman in the survey. α_i is the random intercept for the cluster *i* and α_{ik} is the random intercept for the household. P_{ijk} is the likelihood of the indicated outcomes.

ii. Child mortality

In the case of under-5 mortality, survival models were used, specifically a Cox proportional hazards model with shared frailty. A survival model links instantaneous mortality probability with covariates. These estimates can be used to predict survival (mortality) probabilities.

The Cox proportional hazards model analyses survival data where no parametric form of the survival functions is specified assuming that the covariates serve to multiplicatively shift the baseline hazard function. In other words, the shape of the hazard could be any over time, but it is the same for everyone.

A frailty provides a way to introduce random effects, association and unobserved heterogeneity into models for survival data. This approach can be used for survival times of related individuals like family or community members or recurrent observations on the same person. Generally there is a reason to believe that lifetimes are correlated, because of common unobserved characteristics of the family or community. Therefore the incorporation of a random effect which will deal with this issue is necessary.

A shared frailty model is a random effects model for survival data where frailties are common (or shared) among groups of individuals and are randomly distributed across groups. In shared frailty models, the frailty can be used to model intragroup correlation, having a multiplicative effect on the baseline hazard function. In this analysis the groups were defined by the communities.

It is possible to observe two different statuses in a child: the child died during the observation period before reaching age 5 (assigning a value of 1), or the child reached its fifth birthday alive or is still alive at the end of the observation period (assigning a value of 0).

In a Cox model with shared frailty, the hazard for the jth subject in the ith group can be specified as

$$h_{ij}(t)=h_0(t)\ \alpha_i\exp(x_{ij}\beta)$$

where α_i is the group frailty, which is a positive quantity. It is assumed to have mean 1 and variance θ, which is calculated from the data.

If $\nu=\log(\alpha_i)$, the hazard can be specified as
$h_{ij}(t)=h_0(t)\ \exp(x_{ij}\beta + \nu_i)$

showing that the log frailties and random effects in standard linear models are comparable. In this case a gamma distribution for the frailty was chosen for the analysis.

h(t) is defined as f(t)/S(t). The hazard is the basis for modelling. The hazard function or the force of mortality h(t) measures the (instant) risk of dying within a short interval of time t, given that the subject is alive at time t. The survival function S(t|x) measures the probability of being alive at a given time.

To interpret results in PH models, the sign of the coefficient indicates how a covariate affects the hazard rate. A positive coefficient increases the hazard rate reducing the expected duration of life. A negative coefficient decreases the hazard rate increasing the expected duration of life. The statistical significance of the coefficient indicates whether these changes in the expected duration will be statistically significant or not.

Table 3. Criteria used to classify the attainment level of a country

	Underweight children	Stunted children	Under-5 mortality	Use of maternal health cares services and access to improved water and sanitation
High	<10%	<20%	<20 per 1000	>90%
Medium	10-19%	20-29%	20-39 per 1000	76-90%
Low	20-30%	30-40%	40-60 per 1000	50-75%
Poor	>30%	>40%	>60 per 1000	<50%

iii. Disparity

For each country, the corresponding model with the variables specified in Table 2 for each health outcome was fitted. Using the coefficients estimated from the model, the predicted probability for each subject was calculated. Depending on the likelihood of the outcome, the subjects were grouped into five quintiles, Q_1 to Q_5, where Q_1 is the 20 per cent of subjects with the least likelihood and Q_5 is the 20 per cent of subjects with the most likelihood of the outcome. Disparity (D) was then calculated as the difference in the actual level of the health outcome in the lowest and highest quintiles.

$$D=L_{Q5}-L_{Q1}$$

iv. Levels of attainment

The estimates of overall levels of children malnutrition, under-five mortality, use of maternal health care services as well as access to improved drinking water and sanitation were obtained on the basis of data from the household surveys. These estimates were then used to classify the attainment level of a country using the criteria in Table 3.

v. Simulations

A series of simulations is carried out to see the effects of each covariate separately on the likelihood of the indicator, keeping all other covariates constant. Based on the observed level of the indicator for each category of each covariate and the characteristics of each covariate, base and reference groups are designated. For each covariate, the base group is recoded to be the reference group and the likelihood of the indicator is calculated under the new conditions. For each covariate, the relevant base, reference and simulation conducted is highlighted in Table 4.

Table 4. Base, reference and simulation for each covariate

COVARIATE	BASE	REFERENCE	ADJUSTMENT
Rural/Urban	Rural	Urban	Simulate rural becoming urban
Administrative areas	All regions	Region with highest observed level of indicator	Simulate all the regions becoming the highest performing
Wealth	1st quintile	5th quintile	Simulate 1st quintile becoming the 5th by adding the mean difference between the first and fifth quintiles to the first quintile
Proportion of the women in the household	1st quintile	5th quintile	Simulate 1st quintile becoming the 5th by adding the mean difference between the first and fifth quintiles to the first quintile
Household size	1st quintile	5th quintile	Simulate 1st quintile becoming the 5th by adding the mean difference between the first and fifth quintiles to the first quintile
Access to improved water	No access	Access	Simulate households without access having "access"
Access to improved sanitation	No access	Access	Simulate households without access having "access"

COVARIATE	BASE	REFERENCE	ADJUSTMENT
Sex of the household head	Female	Male	Female "becoming" male
Education of the mother	Lowest level of education	Highest level of education	Simulate lowest level becoming the highest level
Education of the father	Lowest level of education	Highest level of education	Simulate lowest level becoming the highest level
Education in the case of water and sanitation	No education (preschool or less)	Higher education	The households that had educational level lower than elementary were assumed to have the highest educational level ("Higher") and the percentage of education at community level was assumed to be 100%
Mother's age at birth of the child	All lower performing groups	Highest performing group	There are 3 age groups: <=20, 21-34, >=35. Simulate the two lowest performing become the highest performing one
Mother's age at birth of her first child	All lower performing groups	Highest performing group	There are 3 age groups: <=20, 21-34, >=35. Simulate the two lowest performing become the highest performing one
Skilled assistance at delivery	No	Yes	Simulate "No" becoming "Yes"
Antenatal care (at least 1 visit)	No	Yes	Simulate "No" becoming "Yes"
Previous birth interval	All lower performing groups	Highest performing group	We have age groups (<=20, 21-34, >=35), simulate the two lowest performing group becoming the highest performing group
Birth order	All after first birth ("2nd" and "3rd and higher")	First birth	Simulate "2nd" and "3rd and higher" "becoming" first
Sex of the child	Female	Male	Female "becoming" male
Breastfed for at least 6 months	No	Yes	Simulate "No" becoming "Yes"
Child's age	1st quintile	5th quintile	Simulate 1st quintile becoming the 5th by adding the mean difference between the first and fifth quintiles to the first quintile
Religion	All lower performing groups	Highest performing religion	Simulate all the religions becoming the highest performing
Ethnicity/Caste	All lower performing ethnicities/ castes	Highest performing ethnicity/caste	Simulate all the ethnicities/ castes "becoming" the highest performing
Language	All lower performing language groups	Highest performing language group	Simulate all the language groups becoming the highest performing

Technical Note 4 Endnotes

[1] de Onis M, Yip R. The WHO growth chart: historical considerations and current scientific issues. Bibliotheca nutritio et dieta. 1996(53):74-89. Epub 1996/01/01.

[2] This paragraph is based on http://www.measuredhs.com/pubs/pdf/DHSG1/Guide_DHS_Statistics.pdf.

[3] http://www.unicef.org/evaldatabase/files/MICS.pdf.

[4] http://mdgs.un.org/unsd/mdg/Metadata.aspx?IndicatorId=0&SeriesId=562.

[5] http://www.unicef.org/evaldatabase/files/MICS.pdf.

Technical Note 5: Selected MDG Indicators

Goal 1: Eradicate extreme poverty and hunger

	$1.25 per day poverty (%)		Underweight children (% under age 5)	
	Earliest	Latest	Earliest	Latest
East and North-East Asia				
China	60.2 (90)	15.9 (05)	15.3 (92)	6.8 (02)
Hong Kong, China	...	...	...	...
Macao, China	...	...	...	...
DPR Korea	...	...	24.7 (00)	20.6 (04)
Republic of Korea	...	...	...	...
Mongolia	18.8 (95)	22.4 (05)	10.8 (92)	5.3 (05)
South-East Asia				
Brunei Darussalam	...	...	...	...
Cambodia	48.6 (94)	28.3 (07)	42.6 (96)	28.8 (08)
Indonesia	54.3 (90)	18.7 (09)	29.8 (92)	19.6 (07)
Lao PDR	55.7 (92)	33.9 (08)	39.8 (93)	31.6 (06)
Malaysia	1.6 (92)	0.0 (09)	...	16.7 (99)
Myanmar	...	...	28.8 (90)	29.6 (03)
Philippines	30.7 (91)	22.6 (06)	29.8 (92)	20.7 (03)
Singapore	...	...	...	3.3 (00)
Thailand	5.5 (92)	0.4 (04)	16.3 (93)	7.0 (05)
Timor-Leste	52.9 (01)	37.4 (07)	40.6 (02)	41.5 (03)
Viet Nam	63.7 (93)	13.1 (08)	36.9 (92)	20.2 (06)
South and South-West Asia				
Afghanistan	...	...	44.9 (97)	32.9 (04)
Bangladesh	66.8 (92)	49.6 (05)	64.1 (92)	41.3 (07)
Bhutan	...	26.2 (03)	14.1 (99)	12.0 (08)
India	49.4 (94)	41.6 (05)	50.7 (92)	43.5 (05)
Iran (Islamic Rep. of)	3.9 (90)	1.5 (05)	13.8 (95)	9.5 (98)
Maldives	28.2 (98)	1.5 (04)	32.5 (94)	25.7 (01)
Nepal	68.4 (96)	55.1 (04)	44.1 (95)	38.8 (06)
Pakistan	64.7 (91)	22.6 (05)	39.0 (90)	31.3 (01)
Sri Lanka	15.0 (91)	7.0 (07)	21.1 (06)	21.6 (09)
Turkey	2.1 (94)	2.7 (05)	8.7 (93)	3.5 (03)
North and Central Asia				
Armenia	17.5 (96)	1.3 (08)	2.7 (98)	4.2 (05)
Azerbaijan	15.6 (95)	1.0 (08)	8.8 (96)	8.4 (06)
Georgia	4.5 (96)	14.7 (08)	2.7 (99)	2.3 (05)
Kazakhstan	4.2 (93)	0.2 (07)	6.7 (95)	4.9 (06)
Kyrgyzstan	18.6 (93)	1.9 (07)	8.2 (97)	2.7 (05)
Russian Federation	2.8 (93)	0.0 (08)	...	...
Tajikistan	44.5 (99)	21.5 (04)	...	14.9 (05)
Turkmenistan	63.5 (93)	24.8 (98)	...	10.5 (00)
Uzbekistan	32.1 (98)	46.3 (03)	15.3 (96)	4.4 (06)
Pacific				
American Samoa	...	...	...	...
Cook Islands	...	...	...	...
Fiji	...	...	...	6.9 (93)
French Polynesia	...	...	...	...
Guam	...	...	...	...
Kiribati	...	...	...	...
Marshall Islands	...	...	...	...
Micronesia (F.S.)	...	31.2 (00)	...	...
Nauru	...	...	...	...
New Caledonia	...	...	...	...
Niue	...	...	...	...
Northern Mariana I.	...	...	...	...
Palau	...	...	...	...
Papua New Guinea	...	35.8 (96)	...	18.1 (05)
Samoa	...	...	...	1.7 (99)
Solomon Islands	...	...	...	11.5 (06)
Tonga	...	...	...	...
Tuvalu	...	...	...	1.6 (07)
Vanuatu	...	...	10.6 (96)	11.7 (07)

Note: The number in parenthesis is the year of the data point.
Source: United Nations MDG Database.

Goal 2: Achieve universal primary education

	Primary enrolment ratio (%)		Reaching last grade (%)		Primary completion rate (%)	
	Earliest	Latest	Earliest	Latest	Earliest	Latest
East and North-East Asia						
China	...	97.4 (91)	...	89.5 (91)	...	107.0 (91)
Hong Kong, China	97.5 (01)	98.3 (09)	99.1 (01)	99.5 (07)	102.2 (91)	92.7 (09)
Macao, China	81.1 (91)	87.5 (09)	98.5 (02)	98.1 (08)	96.4 (99)	98.8 (09)
DPR Korea	...	...	...	...	...	...
Republic of Korea	98.3 (99)	99.3 (09)	99.2 (99)	98.8 (08)	99.4 (91)	101.2 (09)
Mongolia	95.7 (99)	99.8 (09)	87.2 (99)	94.4 (07)	90.0 (99)	93.3 (08)
South-East Asia						
Brunei Darussalam	92.0 (91)	96.9 (09)	79.7 (91)	96.2 (07)	100.0 (91)	103.6 (09)
Cambodia	83.4 (99)	88.6 (08)	54.7 (00)	54.5 (07)	40.1 (99)	79.5 (08)
Indonesia	98.1 (91)	98.4 (09)	79.8 (91)	80.0 (07)	93.5 (91)	109.3 (09)
Lao PDR	77.5 (99)	82.4 (08)	54.6 (99)	67.0 (07)	70.7 (99)	74.7 (08)
Malaysia	97.7 (99)	94.1 (08)	82.0 (91)	95.9 (07)	91.0 (91)	97.3 (08)
Myanmar	...	...	55.2 (00)	69.6 (08)	73.4 (99)	98.9 (09)
Philippines	95.5 (91)	92.1 (08)	75.3 (01)	75.3 (07)	87.5 (99)	93.7 (08)
Singapore	...	...	99.1 (07)	98.7 (08)	...	...
Thailand	93.2 (06)	90.1 (09)	...	...	...	87.0 (99)
Timor-Leste	68.9 (05)	83.0 (09)	...	...	...	79.8 (08)
Viet Nam	95.8 (99)	94.5 (01)	82.8 (99)	85.4 (02)	96.2 (99)	102.3 (01)
South and South-West Asia						
Afghanistan	...	...	...	...	...	38.8 (05)
Bangladesh	90.5 (05)	89.4 (09)	54.8 (05)	66.6 (08)	59.5 (00)	60.5 (09)
Bhutan	55.9 (99)	88.4 (09)	81.5 (99)	89.5 (08)	50.8 (99)	88.5 (09)
India	85.0 (00)	96.9 (08)	62.0 (99)	68.5 (06)	69.9 (99)	94.8 (08)
Iran (Islamic Rep. of)	92.9 (99)	99.6 (07)	71.0 (91)	94.3 (08)	87.6 (91)	100.8 (09)
Maldives	97.9 (99)	96.2 (08)	...	...	148.1 (03)	119.4 (09)
Nepal	67.5 (99)	73.6 (00)	35.7 (91)	61.7 (07)	51.1 (91)	70.0 (02)
Pakistan	57.0 (01)	66.4 (09)	69.7 (04)	60.2 (08)	60.8 (05)	61.1 (09)
Sri Lanka	99.8 (01)	95.1 (09)	96.9 (91)	98.6 (06)	101.2 (91)	97.5 (09)
Turkey	90.4 (91)	94.7 (08)	89.9 (91)	94.2 (07)	90.1 (91)	93.4 (08)
North and Central Asia						
Armenia	93.2 (01)	92.9 (07)	95.8 (02)	97.7 (06)	93.7 (02)	97.9 (07)
Azerbaijan	88.8 (91)	85.5 (09)	96.3 (99)	98.4 (08)	92.2 (99)	91.8 (09)
Georgia	92.4 (04)	100.0 (09)	99.1 (99)	94.6 (08)	85.8 (99)	107.4 (09)
Kazakhstan	94.8 (00)	99.3 (09)	95.0 (00)	98.8 (09)	94.4 (00)	104.8 (09)
Kyrgyzstan	88.0 (99)	91.0 (09)	94.5 (99)	96.2 (08)	95.2 (99)	94.3 (09)
Russian Federation	94.5 (06)	94.1 (08)	94.8 (99)	95.2 (07)	96.0 (99)	95.2 (08)
Tajikistan	96.7 (00)	97.5 (08)	95.8 (99)	99.2 (07)	95.1 (99)	97.7 (08)
Turkmenistan	...	...	...	...	...	...
Uzbekistan	92.5 (07)	89.9 (09)	99.5 (99)	98.4 (08)	96.2 (99)	91.6 (09)
Pacific						
American Samoa	...	...	...	...	...	...
Cook Islands	86.3 (99)	98.7 (07)	...	...	87.9 (99)	107.6 (07)
Fiji	98.7 (99)	91.7 (08)	82.1 (99)	92.8 (03)	104.0 (99)	91.8 (08)
French Polynesia	...	...	...	...	...	...
Guam	...	...	...	...	...	...
Kiribati	98.8 (99)	99.5 (02)	69.4 (01)	78.9 (03)	107.2 (99)	118.1 (05)
Marshall Islands	85.1 (01)	80.3 (07)	42.4 (02)	83.5 (08)	92.0 (99)	93.7 (09)
Micronesia (F.S.)	...	...	...	...	...	...
Nauru	...	...	...	25.4 (01)	87.0 (01)	97.3 (07)
New Caledonia	...	...	...	...	...	...
Niue	...	98.5 (99)	...	...	85.4 (99)	126.1 (05)
Northern Mariana I.	...	...	...	...	...	...
Palau	96.8 (99)	96.4 (00)	...	...	99.4 (99)	104.5 (04)
Papua New Guinea	...	...	...	46.4 (91)	46.5 (91)	53.4 (00)
Samoa	94.2 (99)	99.2 (09)	...	90.0 (99)	95.3 (99)	93.5 (09)
Solomon Islands	63.2 (03)	80.6 (07)	...	63.7 (91)	...	72.1 (91)
Tonga	88.2 (99)	99.2 (06)	...	90.4 (05)	98.9 (91)	104.9 (06)
Tuvalu	...	...	...	...	109.9 (00)	99.2 (06)
Vanuatu	91.8 (99)	97.5 (05)	68.9 (99)	71.5 (08)	85.2 (99)	82.9 (09)

Note: The number in parenthesis is the year of the data point.
Source: United Nations MDG Database.

Goal 3: Promote gender equality and empower women

	Gender parity index in primary		Gender parity index in secondary		Gender parity index in tertiary	
	Earliest	Latest	Earliest	Latest	Earliest	Latest
East and North-East Asia						
China	0.92 (91)	1.04 (09)	0.75 (91)	1.07 (09)	0.83 (03)	1.07 (09)
Hong Kong, China	0.96 (99)	1.02 (09)	0.97 (01)	1.03 (09)	0.96 (03)	1.03 (09)
Macao, China	0.96 (91)	0.95 (09)	1.11 (91)	0.96 (09)	0.48 (91)	0.92 (09)
DPR Korea	...	...	...	...	...	...
Republic of Korea	1.01 (91)	0.98 (09)	0.96 (91)	0.96 (09)	0.49 (91)	0.70 (09)
Mongolia	1.02 (91)	0.99 (09)	1.14 (91)	1.07 (09)	1.86 (99)	1.55 (09)
South-East Asia						
Brunei Darussalam	0.94 (91)	1.01 (09)	1.09 (91)	1.02 (09)	1.98 (99)	1.76 (09)
Cambodia	0.87 (99)	0.94 (09)	0.53 (99)	0.82 (07)	0.34 (00)	0.54 (08)
Indonesia	0.98 (91)	0.97 (09)	0.83 (91)	0.99 (09)	0.76 (01)	0.96 (09)
Lao PDR	0.79 (91)	0.91 (08)	0.69 (99)	0.81 (08)	0.49 (99)	0.78 (08)
Malaysia	0.99 (91)	0.99 (08)	1.05 (91)	1.07 (08)	1.02 (99)	1.30 (08)
Myanmar	0.95 (91)	0.98 (09)	0.97 (91)	1.02 (09)	...	1.37 (07)
Philippines	0.99 (91)	0.98 (08)	1.09 (99)	1.09 (08)	1.26 (99)	1.24 (08)
Singapore	...	...	...	...	...	...
Thailand	0.98 (91)	0.98 (09)	0.99 (91)	1.09 (09)	1.14 (99)	1.24 (09)
Timor-Leste	0.93 (04)	0.95 (09)	0.99 (04)	1.00 (05)	1.27 (02)	0.71 (09)
Viet Nam	0.93 (99)	0.95 (01)	0.90 (99)	0.92 (01)	0.76 (99)	0.73 (01)
South and South-West Asia						
Afghanistan	0.55 (91)	0.67 (09)	0.51 (91)	0.49 (09)	0.28 (03)	0.24 (09)
Bangladesh	1.04 (05)	1.04 (09)	0.98 (99)	1.12 (08)	0.49 (99)	0.56 (09)
Bhutan	0.85 (99)	1.01 (09)	0.81 (99)	0.99 (09)	0.58 (99)	0.59 (08)
India	0.76 (91)	0.97 (07)	0.70 (99)	0.88 (08)	0.54 (91)	0.70 (07)
Iran (Islamic Rep. of)	0.90 (91)	0.99 (09)	0.75 (91)	0.95 (09)	0.40 (91)	1.07 (09)
Maldives	1.00 (99)	0.95 (09)	1.09 (99)	1.05 (06)	2.41 (03)	2.40 (04)
Nepal	0.63 (91)	0.86 (02)	0.46 (91)	0.89 (06)	0.33 (91)	0.40 (04)
Pakistan	0.68 (00)	0.84 (09)	0.48 (91)	0.79 (09)	0.81 (02)	0.85 (08)
Sri Lanka	0.96 (91)	1.00 (09)	1.09 (91)	1.02 (04)	...	0.48 (91)
Turkey	0.93 (91)	0.97 (08)	0.62 (91)	0.89 (08)	0.53 (91)	0.78 (08)
North and Central Asia						
Armenia	1.01 (01)	1.03 (09)	1.06 (01)	1.03 (09)	1.11 (99)	1.29 (09)
Azerbaijan	0.99 (91)	0.99 (09)	1.01 (91)	1.03 (09)	0.67 (91)	0.99 (09)
Georgia	1.00 (91)	1.00 (09)	0.97 (91)	0.96 (08)	0.91 (91)	1.23 (09)
Kazakhstan	1.01 (99)	1.00 (09)	1.00 (99)	0.98 (09)	1.15 (99)	1.45 (09)
Kyrgyzstan	0.99 (99)	1.00 (09)	1.02 (91)	1.01 (09)	1.04 (99)	1.32 (09)
Russian Federation	1.00 (91)	1.00 (08)	1.00 (03)	0.97 (08)	1.23 (91)	1.36 (08)
Tajikistan	0.98 (91)	0.96 (08)	0.86 (99)	0.87 (08)	0.35 (99)	0.41 (09)
Turkmenistan	...	...	...	...	...	...
Uzbekistan	0.98 (91)	0.98 (09)	0.98 (99)	0.99 (09)	0.82 (99)	0.70 (09)
Pacific						
American Samoa	...	1.02 (91)	...	1.05 (91)	...	...
Cook Islands	0.95 (99)	1.07 (09)	1.08 (99)	1.13 (09)	...	...
Fiji	1.00 (91)	0.99 (08)	0.97 (91)	1.07 (08)	1.20 (03)	1.20 (05)
French Polynesia	...	0.96 (91)	...	1.19 (91)	...	...
Guam	...	...	...	...	...	...
Kiribati	1.01 (99)	1.04 (08)	1.19 (99)	1.11 (08)	...	...
Marshall Islands	0.98 (99)	0.99 (09)	1.07 (99)	1.05 (09)	1.28 (01)	1.30 (03)
Micronesia (F.S.)	0.99 (04)	1.01 (07)	1.05 (04)	1.07 (05)	...	...
Nauru	1.33 (00)	1.06 (08)	1.17 (00)	1.20 (08)	...	...
New Caledonia	...	...	...	...	...	...
Niue	1.00 (99)	0.89 (05)	1.10 (99)	1.78 (05)	...	...
Northern Mariana I.	...	...	...	...	...	...
Palau	0.93 (99)	1.03 (07)	1.07 (99)	0.98 (07)	2.35 (00)	2.04 (02)
Papua New Guinea	0.85 (91)	0.84 (06)	...	0.62 (91)	... ...	0.55 (99)
Samoa	0.98 (99)	0.98 (09)	1.10 (99)	1.13 (09)	1.04 (99)	0.93 (01)
Solomon Islands	0.87 (91)	0.97 (07)	0.61 (91)	0.84 (07)	...	...
Tonga	0.98 (91)	0.97 (06)	1.03 (91)	1.03 (06)	1.30 (99)	1.62 (04)
Tuvalu	1.02 (99)	0.95 (06)	...	1.10 (01)	...	...
Vanuatu	0.96 (91)	0.95 (09)	0.80 (91)	1.09 (09)	0.57 (02)	0.59 (04)

Note: The number in parenthesis is the year of the data point.
Source: United Nations MDG Database.

Goal 4: Reduce child mortality

	Under-5 mortality rate (per 1,000 live births)		Infant mortality rate (per 1,000 live births)	
	1990	2010	1990	2010
East and North-East Asia				
China	48	18	38	16
Hong Kong, China	...	...	...	...
Macao, China	...	...	...	...
DPR Korea	45	33	23	26
Republic of Korea	8	5	6	4
Mongolia	107	32	76	26
South-East Asia				
Brunei Darussalam	12	7	9	6
Cambodia	121	51	87	43
Indonesia	85	35	56	27
Lao PDR	145	54	100	42
Malaysia	18	6	15	5
Myanmar	112	66	79	50
Philippines	59	29	42	23
Singapore	8	3	6	2
Thailand	32	13	26	11
Timor-Leste	169	55	127	46
Viet Nam	51	23	37	19
South and South-West Asia				
Afghanistan	209	149	140	103
Bangladesh	143	48	99	38
Bhutan	139	56	96	44
India	115	63	81	48
Iran (Islamic Rep. of)	65	26	50	22
Maldives	102	15	74	14
Nepal	141	50	97	41
Pakistan	124	87	96	70
Sri Lanka	32	17	26	14
Turkey	80	18	66	14
North and Central Asia				
Armenia	55	20	46	18
Azerbaijan	93	46	74	39
Georgia	47	22	40	20
Kazakhstan	57	33	48	29
Kyrgyzstan	72	38	59	33
Russian Federation	27	12	22	9
Tajikistan	116	63	91	52
Turkmenistan	98	56	78	47
Uzbekistan	77	52	63	44
Pacific				
American Samoa	...	...	...	...
Cook Islands	20	9	17	8
Fiji	30	17	25	15
French Polynesia	...	...	...	...
Guam	...	...	...	...
Kiribati	87	49	64	39
Marshall Islands	51	26	40	22
Micronesia (F.S.)	56	42	44	34
Nauru	40	40	32	32
New Caledonia	...	...	...	...
Niue	14	22	12	19
Northern Mariana I.	...	...	...	...
Palau	33	19	27	15
Papua New Guinea	90	61	65	47
Samoa	27	20	23	17
Solomon Islands	45	27	36	23
Tonga	25	16	21	13
Tuvalu	57	33	44	27
Vanuatu	39	14	31	12

Note: The number in parenthesis is the year of the data point.
Source: United Nations MDG Database.

Goal 5: Improve maternal health

	Maternal mortality ratio (per 100,000 live births)		Skilled birth attendance (%)		Antenatal care (≥ 1 visit) (%)	
	1990	2008	Earliest	Latest	Earliest	Latest
East and North-East Asia						
China	110	38	94.0 (90)	99.1 (08)	69.7 (92)	91.0 (08)
Hong Kong, China	...	...	...	...	...	...
Macao, China	...	...	...	...	...	...
DPR Korea	270	250	96.7 (00)	100.0 (09)	97.1 (00)	100.0 (09)
Republic of Korea	18	18	98.0 (90)	100.0 (97)	...	...
Mongolia	130	65	96.6 (00)	99.4 (08)	89.8 (98)	99.5 (06)
South-East Asia						
Brunei Darussalam	28	21	98.0 (94)	99.9 (09)	100.0 (94)	99.0 (09)
Cambodia	690	290	34.0 (98)	43.8 (05)	34.3 (98)	69.3 (05)
Indonesia	620	240	40.7 (90)	74.9 (08)	76.3 (91)	93.3 (07)
Lao PDR	1,200	580	19.4 (01)	20.3 (06)	26.5 (01)	35.1 (06)
Malaysia	56	31	92.8 (90)	98.6 (07)	73.6 (03)	78.8 (05)
Myanmar	420	240	46.3 (91)	63.9 (07)	75.8 (97)	79.8 (07)
Philippines	180	94	52.8 (93)	62.2 (08)	83.1 (93)	91.1 (08)
Singapore	6	9	...	100.0 (98)	...	...
Thailand	50	48	99.3 (00)	99.4 (09)	85.9 (96)	99.1 (09)
Timor-Leste	650	370	25.8 (97)	29.3 (10)	70.9 (97)	84.4 (10)
Viet Nam	170	56	77.1 (97)	87.7 (06)	70.6 (97)	90.8 (06)
South and South-West Asia						
Afghanistan	1,700	1,400	12.4 (00)	24.0 (08)	36.9 (00)	36.0 (08)
Bangladesh	870	340	9.5 (94)	24.4 (09)	25.7 (94)	51.2 (07)
Bhutan	940	200	14.9 (94)	71.4 (07)	51.0 (00)	88.0 (07)
India	570	230	34.2 (93)	52.7 (08)	61.9 (93)	75.2 (08)
Iran (Islamic Rep. of)	150	30	86.1 (97)	97.3 (05)	76.5 (97)	98.3 (05)
Maldives	510	37	90.0 (94)	94.8 (09)	81.0 (01)	99.1 (09)
Nepal	870	380	7.4 (91)	18.7 (06)	15.4 (91)	43.7 (06)
Pakistan	490	260	18.8 (91)	38.8 (07)	25.6 (91)	60.9 (07)
Sri Lanka	91	39	94.1 (93)	98.6 (07)	80.2 (93)	99.4 (07)
Turkey	68	23	75.9 (93)	91.3 (08)	62.3 (93)	92.0 (08)
North and Central Asia						
Armenia	51	29	96.4 (97)	99.9 (07)	82.0 (97)	93.0 (05)
Azerbaijan	64	38	99.8 (98)	88.0 (06)	98.3 (97)	76.6 (06)
Georgia	58	48	96.6 (90)	98.3 (05)	74.0 (97)	94.3 (05)
Kazakhstan	78	45	99.6 (95)	99.8 (06)	92.5 (95)	99.9 (06)
Kyrgyzstan	77	81	98.1 (97)	97.6 (06)	97.3 (97)	96.9 (06)
Russian Federation	74	39	99.2 (90)	99.6 (08)	...	...
Tajikistan	120	64	79.0 (96)	88.4 (07)	71.3 (00)	88.8 (07)
Turkmenistan	91	77	95.8 (96)	99.5 (06)	98.1 (00)	99.1 (06)
Uzbekistan	53	30	97.5 (96)	99.9 (06)	94.9 (96)	99.0 (06)
Pacific						
American Samoa	...	...	...	...	...	...
Cook Islands	...	...	99.0 (91)	98.0 (06)	...	100.0 (08)
Fiji	40	26	100.0 (98)	99.0 (08)	...	100.0 (08)
French Polynesia	...	...	...	...	...	...
Guam	...	...	...	...	...	...
Kiribati	...	...	72.0 (94)	65.0 (08)	88.0 (94)	100.0 (08)
Marshall Islands	...	...	94.9 (98)	86.2 (07)	...	81.2 (07)
Micronesia (F.S.)	...	...	92.8 (99)	92.0 (08)	...	80.0 (08)
Nauru	...	...	...	97.4 (07)	...	94.5 (07)
New Caledonia	...	...	...	...	...	...
Niue	...	...	99.0 (90)	100.0 (08)	...	100.0 (08)
Northern Mariana I.	...	...	...	...	...	...
Palau	...	...	99.0 (90)	100.0 (08)	100.0 (07)	100.0 (08)
Papua New Guinea	340	250	53.2 (96)	53.0 (06)	77.5 (96)	78.8 (06)
Samoa	...	...	76.0 (90)	80.8 (09)	...	93.0 (09)
Solomon Islands	130	100	85.0 (94)	70.1 (07)	...	73.9 (07)
Tonga	...	...	92.0 (91)	98.0 (08)	...	99.0 (08)
Tuvalu	...	...	100.0 (90)	97.9 (07)	...	97.4 (07)
Vanuatu	...	...	87.0 (94)	74.0 (07)	...	84.3 (07)

Note: The number in parenthesis is the year of the data point.
Source: United Nations MDG Database.

Goal 6: Combat HIV and AIDS, malaria and other diseases

	HIV prevalence (% ages 15-49)		TB incidence rate (per 100,000)		TB prevalence rate (per 100,000)	
	1990	2009	1990	2009	1990	2009
East and North-East Asia						
China	...	0.1	130	96	280	138
Hong Kong, China	...	...	143	82	200	98
Macao, China	...	...	115	64	163	72
DPR Korea	...	...	344	345	469	423
Republic of Korea	0.0 *	0.0 *	186	90	266	114
Mongolia	0.0 *	0.0 *	405	224	909	323
South-East Asia						
Brunei Darussalam	...	...	70	60	87	72
Cambodia	0.5	0.5	574	442	1,237	693
Indonesia	0.0 *	0.2	189	189	419	285
Lao PDR	0.0 *	0.2	88	89	158	131
Malaysia	0.1	0.5	127	83	227	109
Myanmar	0.2	0.6	404	404	924	597
Philippines	0.0 *	0.0 *	393	280	1,003	520
Singapore	0.0 *	0.1	66	36	86	43
Thailand	1.0	1.3	137	137	209	189
Timor-Leste	...	...	498 (02)	498	810 (02)	744
Viet Nam	0.0 *	0.4	204	200	395	333
South and South-West Asia						
Afghanistan	...	...	189	189	452	337
Bangladesh	0.0 *	0.0 *	225	225	499	425
Bhutan	0.0 *	0.2	308	158	495	179
India	0.1	0.3	168	168	337	249
Iran (Islamic Rep. of)	0.0 *	0.2	36	19	61	27
Maldives	0.0 *	0.0 *	150	39	286	47
Nepal	0.2	0.4	163	163	335	240
Pakistan	0.0 *	0.1	231	231	565	373
Sri Lanka	0.0 *	0.0 *	66	66	114	101
Turkey	0.0 *	0.0 *	58	29	52	25
North and Central Asia						
Armenia	0.0 *	0.1	33	73	56	107
Azerbaijan	0.0 *	0.1	110	110	222	172
Georgia	0.0 *	0.1	107	107	226	116
Kazakhstan	0.0 *	0.1	139	163	255	211
Kyrgyzstan	0.0 *	0.3	143	159	281	236
Russian Federation	0.0 *	1.0	107	106	220	132
Tajikistan	0.0 *	0.2	92	202	171	373
Turkmenistan	...	...	64	67	73	90
Uzbekistan	0.0 *	0.1	128	128	255	227
Pacific						
American Samoa	...	...	21	2	35	6
Cook Islands	...	...	0	27	3	54
Fiji	0.0 *	0.1	51	19	80	26
French Polynesia	...	...	38	22	56	28
Guam	...	...	21	64	82	85
Kiribati	...	...	513	351	1,129	288
Marshall Islands	...	...	302	207	753	231
Micronesia (F.S.)	...	...	188	90	404	155
Nauru	...	...	85	2	105	54
New Caledonia	...	...	104	24	147	33
Niue	...	...	59	0 (08)	147	0
Northern Mariana I.	...	...	80	49	110	69
Palau	...	...	64	65	224	83
Papua New Guinea	0.0 *	0.9	250	250	523	337
Samoa	...	...	32	18	42	33
Solomon Islands	...	...	312	115	630	185
Tonga	...	...	34	23	53	44
Tuvalu	...	...	296	155	327	194
Vanuatu	...	...	139	72	176	110

Note: The number in parenthesis is the year of the data point; * Less than 0.1
Source: United Nations MDG Database.

Goal 7: Ensure environmental sustainability

	Forest cover (% land area)		Protected area (% territorial area)		CO_2 emissions (metric tons per capita)	
	1990	2010	1990	2010	1990	2008
East and North-East Asia						
China	16.7	21.9	13.03	16.04	2.15	5.26
Hong Kong, China	...	...	41.10	41.78	4.85	5.52
Macao, China	...	...	0.00	0.00	2.78	2.54
DPR Korea	68.1	47.1	2.84	3.92	12.15	3.29
Republic of Korea	64.5	63.0	2.67	2.96	5.67	10.57
Mongolia	8.0	7.0	4.10	13.39	4.53	4.12
South-East Asia						
Brunei Darussalam	78.4	72.1	24.76	29.58	24.98	27.01
Cambodia	73.3	57.2	0.03	23.35	0.05	0.32
Indonesia	65.4	52.1	3.96	6.42	0.84	1.79
Lao PDR	75.0	68.2	1.49	16.62	0.06	0.25
Malaysia	68.1	62.3	12.81	13.67	3.13	7.71
Myanmar	59.6	48.3	2.61	5.22	0.10	0.26
Philippines	22.0	25.7	2.98	5.03	0.71	0.92
Singapore	2.9	2.9	2.47	3.40	15.56	7.00
Thailand	38.3	37.1	12.84	17.34	1.69	4.24
Timor-Leste	65.0	49.9	0.00	6.36	0.19 (02)	0.17
Viet Nam	30.2	44.5	2.98	4.57	0.32	1.46
South and South-West Asia						
Afghanistan	2.1	2.1	0.37	0.37	0.21	0.03
Bangladesh	11.5	11.1	1.42	1.59	0.13	0.29
Bhutan	64.6	69.1	14.25	28.35	0.23	1.07
India	21.5	23.0	4.49	4.82	0.80	1.48
Iran (Islamic Rep. of)	6.8	6.8	5.07	6.87	4.00	7.34
Maldives	3.3	3.3	0.00	0.00	0.71	3.02
Nepal	33.7	25.4	7.69	17.00	0.03	0.12
Pakistan	3.3	2.2	9.81	9.81	0.59	0.92
Sri Lanka	36.4	28.8	13.82	14.95	0.22	0.59
Turkey	12.6	14.7	1.78	1.94	2.69	3.84
North and Central Asia						
Armenia	12.3	9.3	6.93	7.99	1.07 (92)	1.80
Azerbaijan	11.3	11.3	6.20	7.15	5.93 (92)	5.40
Georgia	40.0	39.5	2.55	3.39	2.87 (92)	1.21
Kazakhstan	1.3	1.2	2.40	2.52	15.90 (92)	15.27
Kyrgyzstan	4.4	5.0	6.36	6.94	2.43 (92)	1.15
Russian Federation	49.4	49.4	4.78	9.19	14.94 (92)	12.08
Tajikistan	2.9	2.9	1.94	4.14	1.31 (92)	0.46
Turkmenistan	8.8	8.8	2.99	2.99	7.23 (92)	9.49
Uzbekistan	7.2	7.7	2.12	2.26	5.30 (92)	4.59
Pacific						
American Samoa	90.0	90.0	2.03	16.69	...	...
Cook Islands	62.5	66.7	0.01	0.05	1.24	3.56
Fiji	52.2	55.5	0.15	0.18	1.13	1.49
French Polynesia	15.0	42.3	0.01	0.07	3.23	3.35
Guam	47.3	47.3	3.30	3.56	...	...
Kiribati	14.8	14.8	0.34	22.63	0.31	0.30
Marshall Islands	72.2	72.2	0.00	0.62	1.01	1.63
Micronesia (F.S.)	91.4	91.4	0.06	0.09	0.51 (99)	0.56
Nauru	0.0	0.0	0.00	0.00	14.43	14.05
New Caledonia	45.9	45.9	1.06	23.91	9.49	12.79
Niue	80.8	73.1	0.00	1.86	1.74	2.64
Northern Mariana I.	73.9	65.2	0.03	28.43	...	...
Palau	82.6	87.0	0.45	4.80	15.74	10.45
Papua New Guinea	69.6	63.4	0.93	1.37	0.52	0.32
Samoa	45.9	60.4	0.94	1.18	0.77	0.90
Solomon Islands	83.0	79.1	0.01	0.12	0.51	0.39
Tonga	12.5	12.5	0.05	9.42	0.81	1.70
Tuvalu	33.3	33.3	0.00	0.19	...	...
Vanuatu	36.1	36.1	0.39	0.47	0.47	0.39

Note: The number in parenthesis is the year of the data point.
Source: United Nations MDG database.

Goal 7: Ensure environmental sustainability

	ODP substance consumption (ODP metric tons)		Safe drinking water (% population)		Basic sanitation (% population)	
	Earliest	2009	1990	2008	1990	2008
East and North-East Asia						
China	59,674.0 (90)	20,371.2	67	89	41	55
Hong Kong, China	...	...	...	...	...	...
Macao, China	...	...	...	...	...	...
DPR Korea	192.0 (91)	89.0	100	100	59 (95)	59 (00)
Republic of Korea	0.0 (91)	4,272.3	90 (95)	98	100	100
Mongolia	0.0 (91)	1.9	58	76	49 (95)	50
South-East Asia						
Brunei Darussalam	0.0 (91)	5.0	...	...	...	...
Cambodia	0.0 (91)	17.1	35	61	9	29
Indonesia	80.8 (91)	374.8	71	80	33	52
Lao PDR	0.0 (90)	2.1	44 (95)	57	18 (95)	53
Malaysia	4,193.7 (90)	604.5	88	100	84	96
Myanmar	0.0 (91)	4.1	57	71	49 (95)	81
Philippines	3,477.2 (90)	403.4	84	91	58	76
Singapore	4,855.2 (90)	226.9	100	100	99	100
Thailand	6,984.2 (90)	1,012.0	91	98	80	96
Timor-Leste	0.3 (91)	0.9	52 (00)	69	32 (00)	50
Viet Nam	430.0 (91)	289.3	58	94	35	75
South and South-West Asia						
Afghanistan	0.0 (91)	49.2	3 (95)	48	29 (95)	37
Bangladesh	202.1 (90)	195.9	78	80	34	53
Bhutan	0.0 (91)	0.3	91 (00)	92	62 (00)	65
India	0.0 (90)	977.0	72	88	18	31
Iran (Islamic Rep. of)	1,393.9 (90)	416.6	91	93 (00)	83	83 (00)
Maldives	4.5 (90)	5.1	90	91	69	98
Nepal	25.0 (91)	1.2	76	88	11	31
Pakistan	1,455.8 (90)	245.3	86	90	28	45
Sri Lanka	218.2 (90)	13.5	67	90	70	91
Turkey	4,361.0 (90)	609.9	85	99	84	90
North and Central Asia						
Armenia	0.0 (91)	24.9	92 (95)	96	88 (95)	90
Azerbaijan	2.8 (91)	3.5	70	80	57 (95)	45
Georgia	94.8 (91)	4.6	81	98	96	95
Kazakhstan	2,355.9 (90)	130.2	96	95	96	97
Kyrgyzstan	133.5 (91)	7.7	78 (95)	90	93 (95)	93
Russian Federation	130,578.5 (90)	1,199.7	93	96	87	87
Tajikistan	93.3 (91)	2.6	58 (95)	70	89 (95)	94
Turkmenistan	145.2 (90)	13.1	83 (95)	84 (05)	98	98
Uzbekistan	4.4 (91)	1.8	90	87	84	100
Pacific						
American Samoa	...	...	...	...	...	...
Cook Islands	0.1 (91)	0.0	94	95 (05)	96	100
Fiji	41.8 (90)	7.6	...	...	...	...
French Polynesia	...	...	100	100	98	98
Guam	...	...	100	100	99	99
Kiribati	0.0 (91)	0.0	48	64 (05)	26	35 (05)
Marshall Islands	1.2 (90)	0.2	95	94	64	73
Micronesia (F.S.)	0.0 (91)	0.1	89	94 (05)	29	25 (05)
Nauru	0.0 (91)	0.0	...	...	...	...
New Caledonia	...	...	...	...	...	...
Niue	0.0 (91)	0.0	100	100	100	100
Northern Mariana I.	...	...	98	98	84	94 (05)
Palau	0.0 (91)	0.1	81	84 (05)	69	83 (05)
Papua New Guinea	28.5 (91)	3.2	41	40	47	45
Samoa	4.0 (91)	0.2	91	88 (05)	98	100
Solomon Islands	2.1 (90)	1.6	69 (95)	70 (05)	30 (95)	32 (05)
Tonga	0.4 (91)	0.0	100 (95)	100	96	96
Tuvalu	0.0 (91)	0.1	90	97	80	84
Vanuatu	0.0 (91)	0.1	57	83	35 (95)	52

Note: The number in parenthesis is the year of the data point.
Source: United Nations MDG Database.

Accelerating Equitable Achievement of the MDGs:
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This publication follows the United Nations practice in references to countries. Where there are space constraints, some country names have been abbreviated. In the Asian Development Bank, China is referred to as the People's Republic of China and Kyrgyzstan is referred to as the Kyrgyz Republic. The phrases such as "Asia and the Pacific", "the Asia and Pacific region" and "Asia-Pacific region" refer to the Asia and Pacific region.

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With less than five years to go before 2015, work has begun on a post-2015 development agenda. This report – sixth in the series published by ESCAP, ADB and UNDP on MDG achievement in Asia and the Pacific region – is part of that effort.

The report, Accelerating Equitable Achievement of the MDGs: Closing Gaps in Health and Nutrition Outcomes, focuses on disparities in MDG achievement within and between countries, to address major bottlenecks holding back MDG progress in Asia and the Pacific region. Even countries making rapid economic progress continue to lose shocking numbers of children before their fifth birthdays as well as thousands of mothers who die unnecessarily during childbirth. Given the lagging performance on health outcomes in the region, the report delves into the causes and shows the many opportunities that exist to achieve good health for all. It discusses options, both within and outside of the health sector that could help bring about a turnaround in performance on health in the region, thus accelerating progress in achievement of all the MDGs.

The report is a result of wide consultations, not just amongst ESCAP, ADB and UNDP, but also with many UN agencies participating in the Regional Coordination Mechanism.

The report is a resource which policy makers, development practitioners and other stakeholders should find useful in addressing the remaining challenges in achieving the MDGs.

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