Chapter 2

RESEARCH APPROACH AND METHODS
HIGHLIGHTS FROM STUDY COUNTRIES

Good Health at Low Cost research team

Purpose and objectives

As in the original *Good health at low cost* report, we aimed to identify plausible explanations for why some countries have achieved better health outcomes than others in a similar economic position. Since the term 'good health at low cost' has become so iconic, at times we refer to this as our theme, although – as with the original report – we share the interpretation of this as good health relative to income.

We sought to explore these explanations further in five countries that were not included in the original report but were seen as success stories in specific areas of health and health systems development. We were interested in exploring the meaning and value of the 'good health at low cost' concept and also in identifying how the range of determinants of health has changed over the past two decades. This chapter explains the research objectives, framework and methods used. It also presents the rationale behind the selection of the five study countries.

The overall objective of the study was to examine how certain factors – both individually and combined – contribute to improvements in health and in access to key services:

- factors related to the health system (the main focus of the study);
- factors related to living conditions and public services (e.g. policies in other sectors);
- factors related to the institutional environment (e.g. political, economic, social); and
- factors related to the context (e.g. geography, climate).

The study was conducted by a partnership of researchers in the selected countries and within the London School of Hygiene & Tropical Medicine (LSHTM). The formulation of the approach to research and initial proposals involved intensive interactions within the research team. The case studies were conducted by each respective partner drawing on the insight and the intellectual contribution from the rest of the team. A common research framework and research tools were initially created for the purpose of achieving methodological and conceptual consistency and were adapted to countries by each partner institution. In-country research presented a rich context and accentuated country differences. Various combinations of methods and data sources were used in each setting, reflecting national specificities (see Annex). International Health Policy Program, Thailand (IHPP-Thailand) conducted a series of cross-country quantitative analysis on outcomes and their determinants which informed the development of the research.

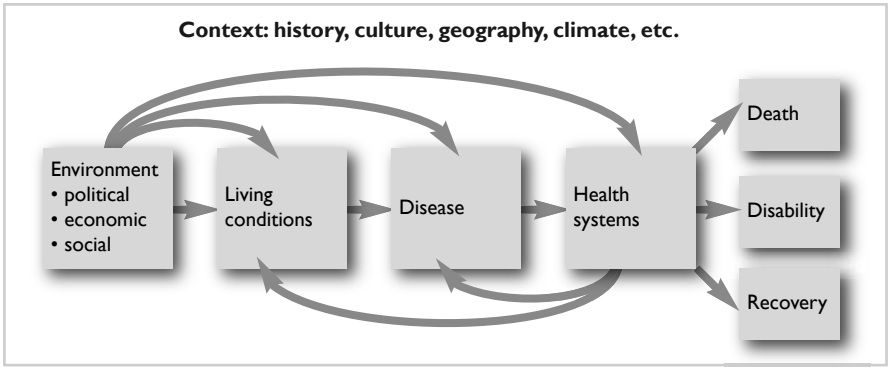
Further analytical work facilitated through bilateral and multilateral discussions helped to identify common patterns of development within the health systems, other sectors, and contexts. As the research progressed, there was a continuous process of dialogue with national policy-makers and consultations with external experts and peer reviewers, seeking to validate findings and contribute to national policy processes as well as to the international debate.

Conceptual framework

We used the widely accepted WHO definition of the health system as consisting of "...all organizations, people and actions whose primary intent is to promote, restore or maintain health. This includes efforts to influence determinants of health as well as more direct health-improving activities"[1]. This is coherent with the aim of the study, whereby we examine the entire range of "organizations, people and actions" contributing to population health. These extend beyond those in the public sector to include a range of private for-profit and not-for-profit organizations and individuals, as well as actions taken by actors both within and outside the health sector. The unifying theme is that all of these have, as their primary intent, the promotion, restoration or maintenance of health. Underlying this definition is the understanding that the health system is not a fixed entity: its boundaries change over time.

To address the complex task of explaining why some countries have been able to improve the health of their populations even at relatively low levels of economic development, the starting point of the analysis was a conceptual framework that sought to represent the myriad determinants of health, acting at different levels, and the ways in which they interacted with each other (Figure 2.1). We began from the premise that the immediate determinants (or causes) of health, such as infectious agents, inadequate diet, or smoking, are well established. The relationships between these risk factors and disease were not the focus of our attention. Instead, we were interested in the "causes of the causes" of disease and their relationship with the health system. The assessment of the strength of a health system can be made on the basis of how it affects the transition from disease to death, disability or recovery, or prevention of disease in the first place. However, countries face different disease burdens, which, in turn, are influenced by living conditions and the broader environment (which includes factors that are malleable, at least in the medium term) and context (which are those factors such as climate or geography that are relatively fixed). A health system in a country that has been spared the AIDS epidemic or where fertility is low will find it easier to achieve good health than one in which AIDS or fertility are higher.

Figure 2.1 Conceptual model: determinants of health



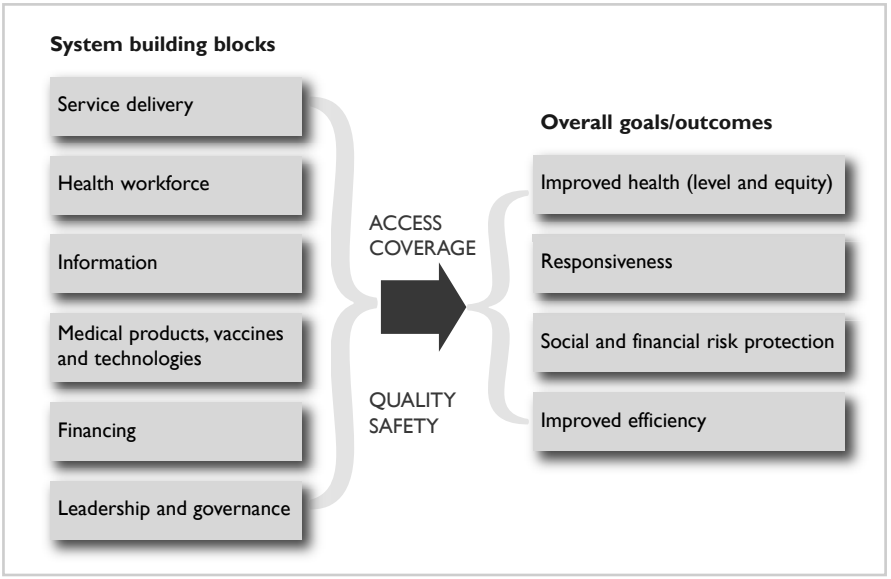
Source: Reference 2.

In this way, we sought to encompass the broader determinants of population health, as well as the more distal political and socioeconomic factors, such as societal inequalities in income and status[3], and the political-economic systems that may or may not favour the accumulation of private wealth over redistribution of power and privilege[4,5]. However, it soon became clear that this framework, while helpful in organizing our thoughts, was unduly ambitious in the settings being studied, due to lack of data. The limited data on outcomes were not matched by data on health determinants or policy responses. The data that were available were often extrapolated from surveys, were episodic and their sources precluded disaggregation. Consequently, it was difficult to establish trends and compare different health outcomes and the changes within health systems and societies that might have been associated with these outcomes.

Given the primary focus on health systems, it was helpful to review how thinking about them has developed in recent years. Historically (and in some quarters, currently) health care is viewed as essentially unproductive, diverting resources from other more productive sectors of the economy. This view has largely given way in the face of evidence[6] that poor health is a drag on economic growth and, conversely, investment in health is, like education, a driver of growth. But health investment decisions are not straightforward. Although there is recognition that, collectively, health care interventions can make a measureable contribution to overall population health, growing evidence demonstrates that health systems do not always achieve their potential. For example, some health systems deliver unduly expensive and inappropriate care to those who need it least while failing to provide effective care to those in most need.

The shift in thinking about the importance of the health system has been matched by changing ideas about how it might be organized. The 1978

Figure 2.2 The WHO health system framework



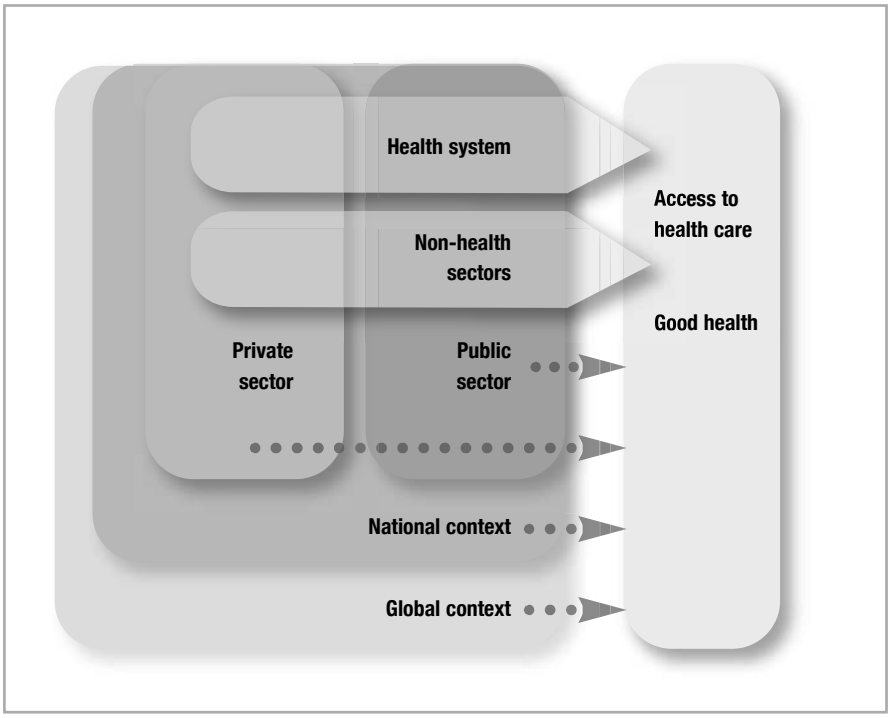
Source: Reproduced from reference 1.

Declaration of Alma-Ata set out a vision of integrated health care, based on a strong primary care component. However, for a variety of reasons, in particular, resource constraints and perceived political feasibility, this was displaced by a focus on targeted delivery of specific interventions, such as the GOBI package (growth monitoring, oral rehydration, breastfeeding, immunization), which helped to create a number of often-isolated vertical systems. These have grown over the years, especially following the creation of a number of specialized global programmes, such as the Global Fund against AIDS, TB and Malaria (Global Fund) and the US President's Emergency Plan for AIDS Relief (PEPFAR).

Over time, the strengths and limitations of the vertical approach have been acknowledged, and some have sought synergies between vertical and integrated approaches, for example by means of what have been termed "diagonal" systems[7]. However, the choice of the most appropriate approach remains the focus of an enduring debate, with different views about what strategy each country should adopt if it is to provide universal access to quality health care on a sustainable basis[8].

Such debates have led to work that has sought to conceptualize the role of a health system in translating inputs into outcomes. The most widely used conceptual model is that developed by the WHO (Figure 2.2)[1], in which a series

Figure 2.3 Conceptual framework: *Good health at low cost* 2011



of health system building blocks (such as the health workforce, medical products and leadership) are combined, in a manner that promotes access, coverage, quality and safety, to create better health, greater responsiveness, and protection of individuals from financial risk in an efficient manner.

Other work has examined the mechanisms that are available to ensure the optimal performance of a health system. An example is the Harvard Control Knobs framework, which identifies five 'control knobs' (financing, payment, organization, regulation and behaviour) that can be used by policy-makers to achieve goals such as better health or financial risk protection[9,10]. While the framework has many similarities with the WHO model, and informed its development, it emphasizes that understanding the behaviour of the actors is crucial in translating plans into reality.

Our approach to the research (illustrated in Figure 2.3) draws on these frameworks but goes beyond them in exploring the broader environmental factors – including political, cultural and economic factors – that have influenced the way health systems develop and operate over time and their ability to scale up

priority health interventions. These contextual and environmental factors are increasingly seen as influential yet are not easily captured by the WHO framework[11]. They are, however, addressed explicitly in our analyses.

The health system forms the core of our conceptual framework. Our understanding of the role of the health system is as a social institution working with other institutions to promote well-being rather than just providing treatment. In exploring health systems, we pay particular attention not only to structures and resources but also to processes such as communication, integration, collaboration and participation, which are seen as crucial elements of health system performance[12]. In particular, we look at the enabling factors and bottlenecks to achieving effective service provision and good health, as well as the contextual factors that encourage or discourage their development[13–16]. We focus on both private and public sectors, recognizing that in some countries both non-profit and for-profit organizations have significant roles in the health system.

Non-health sectors, however, also influence access to health care and good health. For example, maternal and child survival in poor countries is influenced by education and literacy programmes as well as by access to clean water. If both are made available, outcomes may improve regardless of health system deficiencies. Non-health initiatives may be provided by either the private or the public sector.

The next level of analysis concerns the **national context features** likely to influence health and health systems, as well as other sectors. Achieving good health is likely to be influenced by broad aspects of governance. At its most basic, this entails the presence of a functioning state with viable mechanisms to develop policies and the capacity to implement interventions. Broad norms and approaches to governance in a country obviously influence the governance of the health system, but beyond this, they can promote health, enabling citizens to voice their needs and demand responsive services.

Other important dimensions of national context are economic factors, such as the level and distribution of national income; political factors, such as political freedom, civil liberties, empowerment (especially of women), visionary leadership, and the status of the health ministry within government; and social and cultural factors, such as the level of social, ethnic and religious cohesion. There are also less widely recognized contextual factors which affect health systems. One is geography (for example, whether countries are landlocked); another is population size (for example, the ability to create a critical mass of expertise within government) and yet another is a country's history (for example, attitudes to solidarity or individualism). Elements of national context can affect health status and health systems directly. Thus, a country with a failing economy, where

the health ministry is weak and where the government favours military rather than health spending is unlikely to have an effective health care system.

All of these factors are influenced by the **global position of the country**. For example, whether donor funding is important, or what the scope is for migration and brain drain (influenced, for example, by what languages are spoken widely). The global position of a country will have implications for how its health system is shaped and also directly for the health of its population (for example, its openness to trade will affect food security and the prevalence of health-affecting foods and beverages).

Approach to the research

Given these considerations relating to the conceptual framework, our approach was driven by several imperatives.

(i) Seeking to capture some of the complexity of the determinants of health and the factors that enable functioning health systems. Determinants of health are inherently complex. Complexities are manifested in the sheer number of pathways involved, the ways in which determinants interact, and the possible time lag between cause and effect. There are many diverse studies of factors associated with improvements in health indicators, particularly maternal and child health. Some have provided periodic country profiles, such as the three Countdown to 2015 Reports tracking factors known to influence maternal and child health[17], while more recent studies have started to explore how the factors interact with each other[18]. We sought to examine hierarchies and interrelationships of factors that affect intermediate and final outcomes.

We also attempted to investigate how different determinants are shaped by context, particularly by social relations, power, trust, politics, cultural norms and values. We drew on the concept of pluralistic health systems as "social contracts between actors, underpinned by shared behavioural norms … [which] may influence how health systems operate"[19]. Many of these contextual features are likely to influence both health systems and determinants of health outside the health system. Moreover, these factors are likely to influence the behaviour of users and other actors, affecting their preferred means of engagement with the health system[20].

(ii) Taking account of the phenomena of path dependency and dynamic change. Health systems and other social systems are shaped by multiple historical, institutional and political processes, many with origins outside the health sector. The phenomenon of path dependency means that the starting conditions (reflecting

past policies) may constrain the scope for a system to develop in the future[21]. An example is the difficulty that the United States, with the dominance of a private health insurance industry, has faced in implementing a universal health care system. Thus, our analysis is situated within knowledge of the history of political, economic and social change in the country concerned.

At the same time, the health system exists within a wider set of systems, with which it interacts in a dynamic fashion. For instance, while health worker performance is influenced by established professional norms and clinical practices, the political influence and bargaining position of medical associations may affect the status of the particular staff categories and, thus, workers' incentives to deliver good-quality services in the public sector. These interactions are complex, in that they are characterized by non-linear relationships and feedback loops, leading to the presence of unpredictable and unintended consequences[22]. Therefore, our approach seeks to examine examples of factors influencing health and the multiple influences on these factors, historically and currently, and explore what triggers change in established trajectories.

(iii) Tracing pathways by which good health at low cost is achieved. We aim to identify the contribution of multiple factors to good health, while recognizing that attribution of cause and effect must be somewhat speculative. However, we attempt to identify plausible pathways by which health systems might influence health and through which decisions are translated into action, accepting that, in many countries, there is a large gap between the de jure and de facto situations[23].

(iv) Generating propositions through pattern recognition. Our analysis is based on five country studies, which is insufficient for statistical analysis to test hypotheses. However, through an iterative process and drawing on multiple data sources, we aim to identify common patterns among the countries so that propositions about the relationship between health, health systems and social determinants can be generated. Where possible, comparisons are drawn with countries with similar income levels or located in the same geographical regions.

Methods

Country selection

In collaboration with the Rockefeller Foundation, we selected Bangladesh, Ethiopia, Kyrgyzstan, Thailand and the Indian state of Tamil Nadu to be included in the study. Even though Tamil Nadu is a state rather than a country, we refer to them collectively as the five study countries. Countries were chosen

as a result of research commissioned by the Rockefeller Foundation, which led to a ranking and ultimately to a shortlist of possible study countries.

Drawing on this list, we identified countries that had undertaken large-scale and innovative system-level reforms, suggesting effective government stewardship, vision and capacity to implement change despite financial constraints. A further criterion was that the sample should include a variety of health system configurations, geographical regions, population sizes and income levels. A third consideration was that the selected countries offered a range of health system configurations and models of governance.

The five study countries have seen considerable improvements in the health of their population or in access to key interventions, beyond what might be expected on the basis of their income level. Many of these positive trends were sustained or accelerated over long periods of time (see Highlights from the study countries, below).

Availability of documented experience from implementing policies and programmes both within the particular country and internationally was also important. Thus, a fourth factor we considered was whether there were well-established research organizations in the countries with expertise and interest in health systems research. Consideration was also given to the scope for policy engagement and the level of international and regional interest likely to be generated through the research.

Finally, we also revisit the original countries included in the 1985 *Good health at low cost* volume: China, Costa Rica, the Indian state of Kerala, and Sri Lanka. At the time of the original report, these four countries had shown dramatic improvements in infant mortality rate and life expectancy, despite severe economic constraints, and their improvements were substantially better than comparable countries.

Mapping data

We began by identifying data on key indicators of maternal and child health, including under-5 mortality, infant mortality, maternal mortality, and life expectancy, as well as intermediate indicators such as the presence of skilled birth attendants and antenatal care. These indicators, while limited as measures of population health, have the benefit of being available over time and of capturing a series of diverse processes within the health system. Thus, effective maternal health care, for instance, requires the presence of a skilled birth attendant and access to emergency care in case of complications; child health

requires timely access to antibiotics, immunization, oral rehydration therapy and safe water and sanitation. Each country mapped all data sources available, and identified any discrepancies in definitions and data between national and international sources.

This mapping allowed us to link available data to the framework (Figure 2.3), identifying gaps and duplications and then finding ways to approach these through choice of methods.

Review of literature

We sought to identify country studies that have linked health outcomes with health systems or non-health system factors. We also conducted a desk review of the original countries in the 1985 volume (China, Costa Rica, the state of Kerala, Sri Lanka) to determine whether good health outcomes have been sustained.

The first review, undertaken by researchers at the LSHTM, focused on the published literature. Databases searched included PubMed, MEDLINE, BIDS, HINARI, EconLit, and also media accounts and Google Scholar. The topic did not lend itself to a classic Cochrane-type systematic review that focuses on a single question. Rather, we undertook a scoping review with an iterative search strategy to help to identify key issues[24]. First, country-specific time limits were set, specifying the time period to be considered for each country. Second, papers and texts containing the country name and outcomes of interest (for example, under-5 and child mortality, as well as intermediate outcomes, such as institutional childbirths) were identified, using standard terms in each database. Third, searches were undertaken including the name of the country and major determinants of health related to the health system and other sectors. Fourth, searches were combined to identify papers that considered both outcomes and determinants of health. Finally, abstracts were screened to identify the most relevant papers. This process was guided by key themes emerging from the fieldwork. Since some relevant papers might not have been captured by formal search terms, we supplemented our searches with reference tracing and advice from case study material and key informants.

At country level, the research teams focused on identifying main documents that might have been missed in the first review. These included books, published and unpublished papers, official government or donor reports, research reports, strategy papers and policy documents. Key papers were included on governance, accountability, the country's political structure, decision-making patterns, ideology, gender issues and history, while giving priority to papers that explored the

associations of these with health outcomes. The literature sources included both published and grey literature on health policy and systems, but also relevant material from the social sciences. The process was iterative, as data from interviews and the first round of documentary evidence were used to build more refined and focused searches. A large proportion of the data used originated at country level and was found in unpublished sources.

Finally, within each country, trend data were gathered on health-related outcomes, determinants, and inequalities (disaggregated by year, gender, socioeconomic group, urban–rural, important regional divisions and ethnic groups). The main source was the national statistics agency in each country or state. Data were compared with figures from the WHO Statistical Information System, Demographic and Health Surveys, Living Standards Measurement Surveys, World Bank World Development Indicators (WDI) database, World Health Survey, Countdown to 2015 series and UNICEF Multiple Indicator Cluster Surveys.

Data collection and analysis

The case studies were conducted in each study country in late 2009 and the first half of 2010 and involved an in-depth exploration of developments over many years in each country. This historical perspective sought to identify how these developments were affected by institutional, political and cultural factors influencing both government institutions and health systems, as well as the broader context[25]. Recognizing the considerable challenges in attributing causality in complex systems where data are limited, the case studies sought to identify temporal and/or geographical associations among changes in health policies, health determinants (immediate and underlying), and health outcomes.

The case studies triangulated data from multiple sources, drawing on existing quantitative and qualitative data. The approach identified associations and generated and tested plausible explanations of these, drawing on multiple data sources and on the literature, which then generated further propositions. The research process included several stages, each of which built upon each other.

Stage I. Understanding health outcomes and their proximal determinants

The objective of the first stage was to describe how health outcomes, proximal determinants, and other potentially relevant explanatory factors have evolved over time. The trends in under-5 mortality, maternal mortality and other outcome indicators relevant to particular country settings were examined.

In Thailand, determinants of health and mortality that were analysed included the coverage of health interventions and characteristics of individuals and households (for example, wealth and education), and publicly provided infrastructure. The work in the other countries explored and synthesized published literature on determinants of health in their particular settings, particularly factors influencing maternal and child health. This provided the necessary insights into the health problems that each health system faced and pointed to how much health improvements were due to reductions in diseases (for example, vaccine-preventable ones) through a functioning health system. These findings fed into the next stage, where we examined the policy context and the role of health systems.

Quantitative methods included a review of descriptive statistics on mortality, health interventions and health system indicators over time. Much of the analysis drew on standard datasets, in particular Demographic and Health Surveys, Multiple Indicator Cluster Surveys, and other national surveys, as well as time series estimates generated using statistical modelling by the Institute for Health Metrics and Evaluation and WHO. These data were used to generate a set of common country profiles using a range of comparable indicators (related to disease, economic and health system resources) that were compared with global and regional averages. This was complemented with further country-specific reviews of available evidence exploring relevant issues in more depth. These describe how health outcomes, their determinants and other potential explanatory factors have changed over time and how they vary within the population. The latter analyses were informed by knowledge of locally relevant determinants of health inequalities and of disease patterns and their determinants.

Stage II. Analysing the policy context and the health system, including key changes over time

Using our conceptual model described above (Figure 2.3), and drawing on the findings from Stage 1, we now focused on the health system and the wider policy context in which it operates, recognizing the mutual interdependence of all elements of the conceptual model. Drawing on the conceptual framework, the main areas of research were operationalized to specific research questions (Box 2.1).

Health systems. We used WHO's building blocks health systems framework as a basis for our analysis of the country health systems. The focus was not just on which developments took place in public programmes, including the health system, but also how and why these changes were initiated and implemented.

Box 2.1 Steps in the analytical approach

1. Why is the country an example of 'good health at low cost'?

2. What are the key areas of health improvement that have secured 'good health at low cost' over the last few decades (cause-specific health gains in whatever way possible, not only in infant and maternal mortality rates)?
   - How does the country compare with other similar countries?
   - Has the country done it well in all parts of the country and for all groups in the population?

3. How has the country achieved these specific health gains (what diseases/conditions have been tackled)?
   - What interventions (inside or outside the health sector) have been delivered to address these conditions?
   - Recognize evidence limitations! Plausible arguments.

4. How did the health system and other sectors support the effective delivery of these interventions?
   - What were the key changes over time in the system or other sectors that supported these interventions?

5. How and why were these health system developments and wider policy interventions possible (consider, for example, policy actors, policy processes/strategies for policy formulation, implementation, institutionalization as well as sociocultural and political influences over these issues)?
   - Key details of sociopolitical context that are relevant.

6. What other sociocultural-political factors may explain health gains through influence over patients/community health behaviours and activities (e.g. employment or gender equity that influence service use and health behaviour)?
   - Key relevant details of sociocultural context that are relevant.

7. Conclusions
   - What lessons can other countries learn from our experience?
   - What are the challenges for the future? Challenges for health and ensuring equitable health systems? Challenges of addressing them?

We also sought to explore the process of *policy change*, with the following key questions:

- What were the policy changes or reforms in terms of their design, key features and timelines?
- What were the intended aims and the expected changes in health outcomes and health equity and access (such as maternal mortality), or intermediate outcomes (such as staff retention) of the policy changes or reforms?
- Were there unintended changes associated with the policy changes?
- How did the key policy changes take place? What were the main drivers and factors that shaped these policy changes?
- In what ways have different actors engaged in policy initiation and development, such as setting the agenda, assuming an active role in implementing the policy, or indirectly helping or obstructing it? The range of actors whose roles were explored varied among countries and included politicians, senior civil servants, parliamentarians, health professional groups and lobbies, civil society groups, businesses, the media, professional associations, international organizations and donors.

Policy context. The development and implementation of health and other public policies take place within a national and international context. Our proposition was that health policies that contribute to 'good health at low cost' are more likely to emerge within a supportive social policy and political context. We, therefore, looked for factors such as the constitutional and legislative basis for action; partnerships among stakeholders; economic resources and financial systems; capacity for management, innovation, monitoring and evaluation; attitudes towards gender; the situation regarding human resources (including competing health worker employment, migration); bureaucratic effectiveness; level of solidarity; and the role of civil society. These categories are not, however, exhaustive. The activities of other relevant sectors, such as education, management of natural resources and agriculture, were also considered, as they influence health and the way health systems operate.

Across the five countries, extensive interviews were undertaken with a range of respondents working currently or previously at national, district and local levels, including government representatives, civil servants, donor and civil society representatives and private sector organizations selected to represent a variety of actors in each context (the fieldwork undertaken in each country, along with a description of the settings, data sources and methods, are provided in the

Annex). Key informants were identified through a snowball technique, in order to identify people who had been involved at major stages of health system development, had a good overview of the determinants of health and were knowledgeable about the sequencing of the most important events. These included managers, planners, health practitioners in charge of programmes, and representatives of the private sector and nongovernmental organizations (NGOs) within the health system and beyond. Data were collected using a semi-structured interview guide. To improve consistency and comparability, a generic research guide was developed and adapted to each country. Data collection instruments were translated and tested in each country, and shared among all research teams, while retaining sufficient flexibility to capture unexpected issues. Questions were adapted to the expertise and circumstances of each respondent, but retained an exploratory focus.

Thus, the country case studies adopted an iterative approach with triangulation of both qualitative and quantitative data. The quantitative data were examined critically, given their known weaknesses, with cross-checking of figures from different sources and inspection for discontinuities in time trends as described above. Findings were presented at national workshops and at policy and technical fora; feedback from these, as well as from independent reviewers, was considered. The country case studies are presented in the subsequent chapters.

Stage III. Synthesizing stage: why do some countries achieve 'good health at low cost'?

The final stage of the research integrated the findings from the previous two stages, and sought to explain the health outcomes observed in each country and across countries, with reference to our conceptual model. Some caveats are in order, however. First, it is important to stress that we did not expect to identify a single magic bullet – health outcomes are a consequence of many interacting factors. Second, by focusing on specific outcomes (such as maternal and child health) where we understand the factors that can potentially affect them, we were more likely to be able to determine the possible reasons for observed broad changes in health and health systems. Third, there are huge constraints imposed by what are, in effect, analyses of natural experiments over long time periods, and in situations of limited data. Hence, we did not expect to establish causal associations. Our objective was to draw on relevant evidence, to propose plausible relationships and to identify patterns across countries through comparative analysis.

This study has certain limitations. First, we are focusing on success stories. Ideally, we would have compared the countries included with others that were

generally similar but which have failed to improve health outcomes to the same extent. However, this would pose many problems, especially the cost and time required to do in-depth case studies in a large number of countries. In addition, at least some of the other potential countries lack indigenous capacity to undertake the research and have weak data systems. In addition, it may be difficult to identify triggers for implementation of particular programmes and policies. It may be that, especially in political environments where there is considerable insecurity, local policy-makers are reluctant to participate in interviews. We did, however, attempt to compensate for this limitation by making regional comparisons where possible, and including the original four countries in the study to take into account their trajectories and mixed fortunes.

Second, while we can identify potential contributors to 'good health at low cost', we cannot quantify their relative contribution. One promising avenue for investigation could have used subnational longitudinal data on health outcomes and the coverage of health interventions to explore the relative contribution of different determinants on changes over time and to seek associations with policy developments. However, in most cases (with the exception of Thailand), there were severe limitations on the availability of good quality data that precluded such an analysis.

Finally, on a related note, while there were many more data available to us than to the authors of the 1985 *Good health at low cost* report, the quality of data remains variable, often limiting comparisons both nationally and regionally.

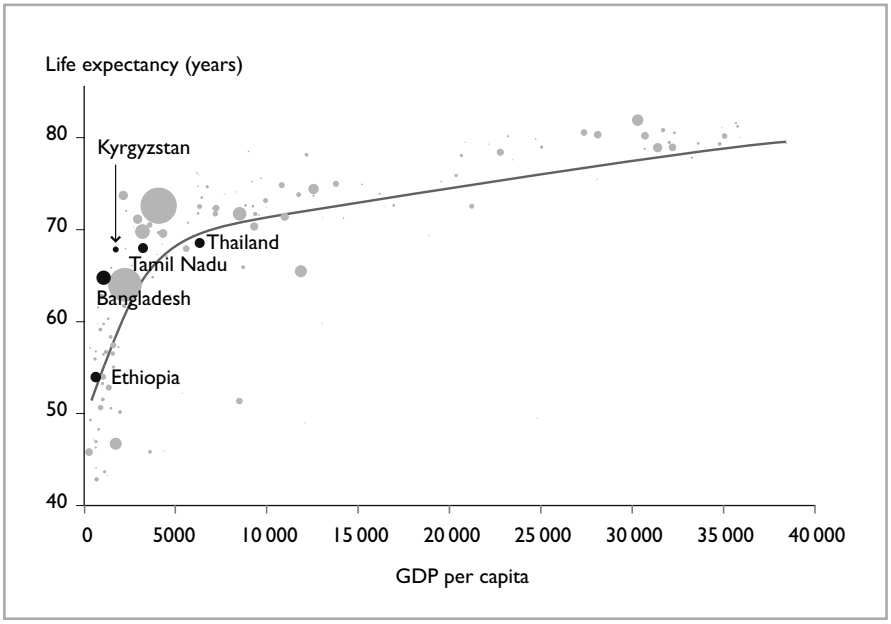
Highlights from the study countries

This section introduces the five study countries by comparing their achievements with others in their region and beyond on a number of commonly used metrics. The country chapters provide more detailed information on within-country variations. As the following data demonstrate, each country's performance is generally encouraging.

Achievements in improving health

Figure 2.4 reproduces an updated version of the Preston (1975) curve showing the relationship between life expectancy and gross domestic product (GDP) per capita in current US dollars at purchasing power parity (i.e. as international dollars (Int$)). Average income is strongly associated with improvements in life expectancy for the poorest countries, but at around US$7000, the relationship flattens out. The five study countries have similar or better life expectancy than

Figure 2.4 Life expectancy and GDP per capita, 2005 international dollars



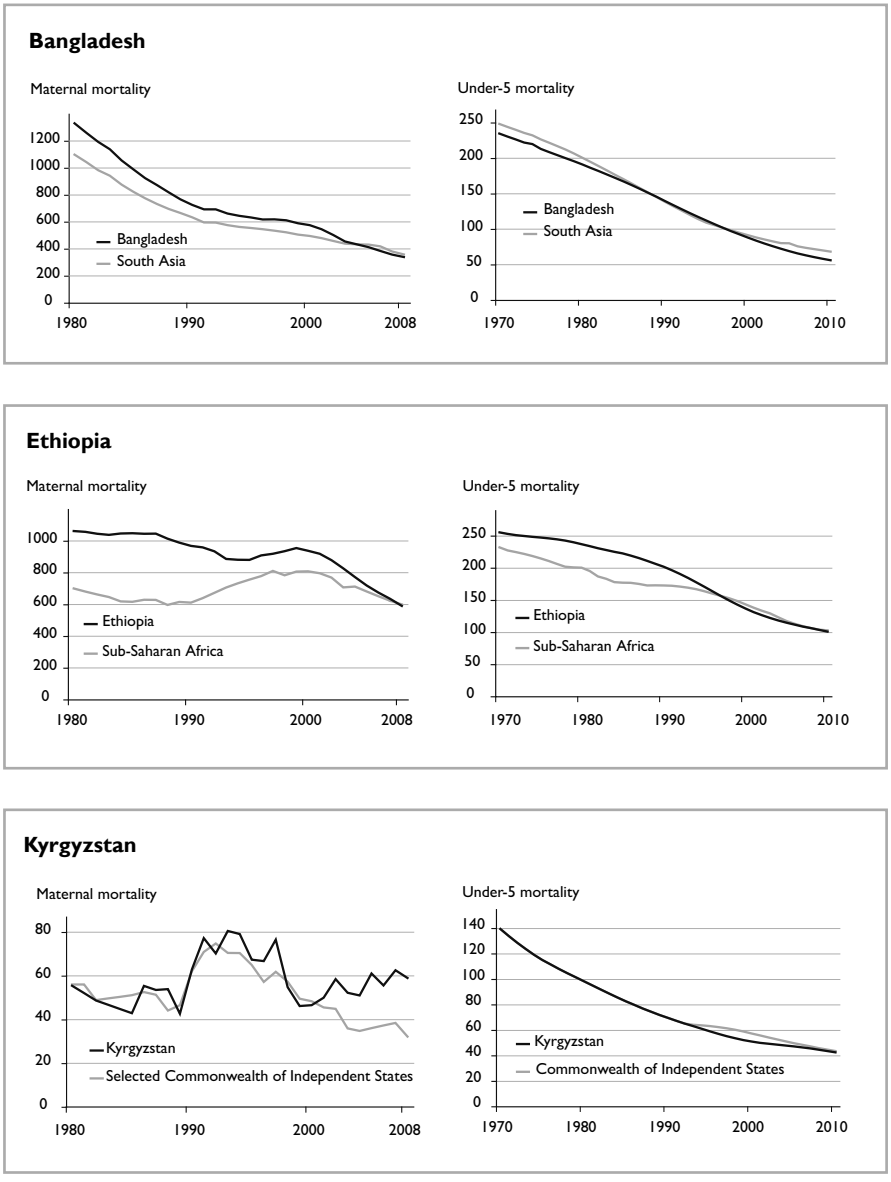
Sources: References 26 and 27.

Note: This is an updated version of the Preston curve[28]. The size of each country data point is proportional to the population size. The line represents a plot of a non-parametric regression. The five study countries are shown in red.

predicted by the regression curve. This static representation, of course, cannot show the trajectories that each country has followed to get to where it is now. Thailand, for example, has seen increases in both income and life expectancy, while Ethiopia's improvements in life expectancy have taken place despite very limited economic growth.

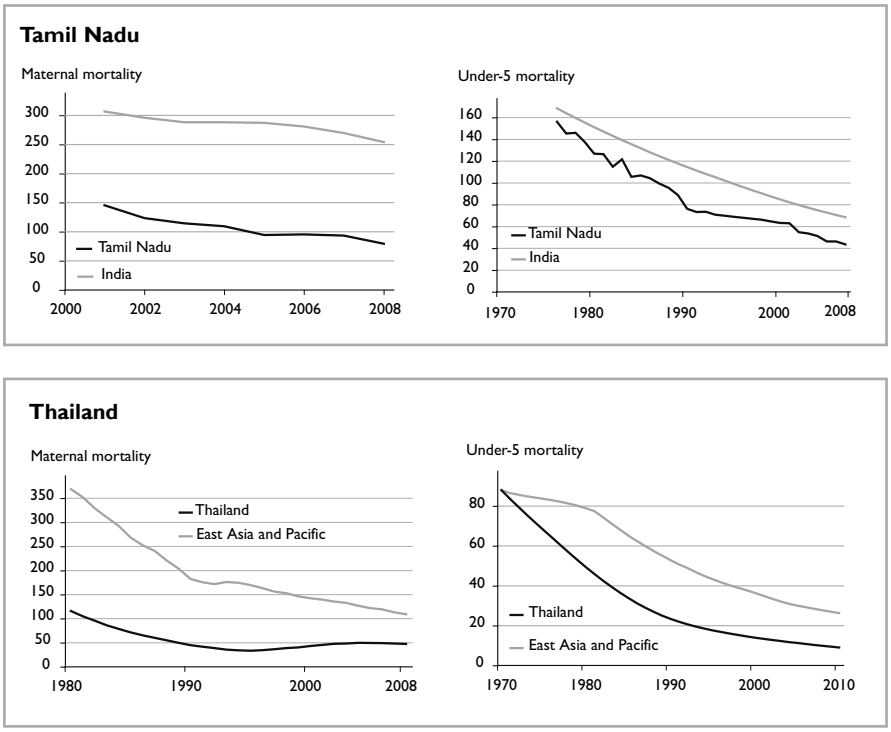
There have been impressive health gains in each of the study countries, although some of these improvements are more recent than others. Figure 2.5 shows trends over time for two health outcomes in each study country and their respective region (or country in the case of Tamil Nadu). Because of the limited availability of data over time, we focus on under-5 mortality and maternal mortality, drawing on recently published estimates[29,30]. We use model estimates for each country, with the exception of Tamil Nadu, where we have vital registration data. In addition, Figure 2.6 shows the proportion of children underweight at two points in time for which good quality data are available.

Figure 2.5 Trends in maternal and child health in the study countries



Note to Kyrgyzstan: The reduction in maternal mortality after 2000 may reflect concerted policy efforts to improve maternal and child health in the region (particularly in the Russian Federation), as well as improving standards of living and falling birth rates. However, there are significant concerns with unrecorded births due to out of facility deliveries and underreporting of deaths in countries such as Turkmenistan. In 2004, Kyrgyzstan introduced new WHO live birth criteria while other countries in the region did not, and thus regional comparisons are difficult[31].

Figure 2.5 (continued)



Sources: References 29 and 30.

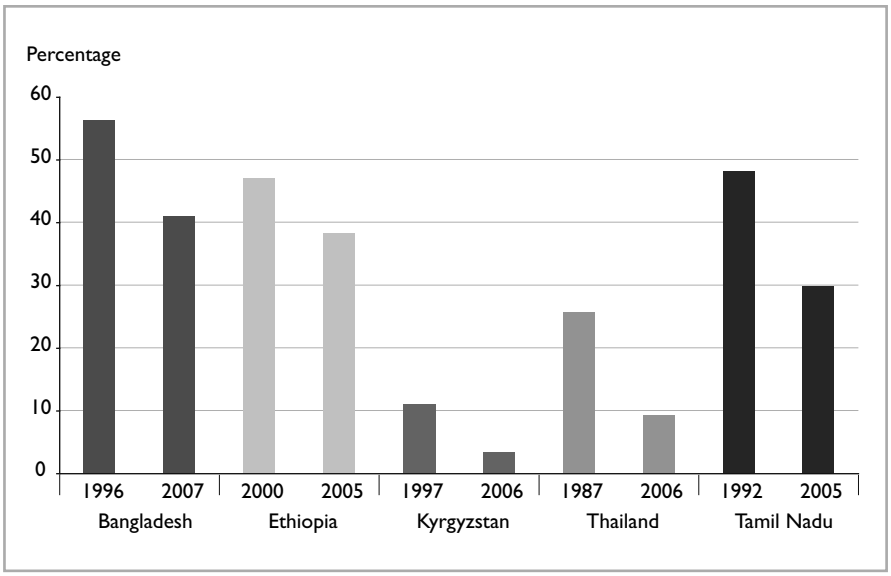
Notes: The regional trend line uses the median value for the region because the required information to calculate a weighted average across all countries in a region was not available. Maternal mortality per 100 000 live births; under-5 mortality per 1000 live births.

The two health outcomes in the study countries have improved despite significant demographic and geographical challenges, as well as a series of economic and political crises. While undernutrition remains a major problem in three of the countries (Bangladesh, Ethiopia and Tamil Nadu), there have nonetheless been sizeable reductions in all countries. The direction of progress is encouraging.

Although Bangladesh has not outpaced the regional average for maternal and under-5 mortality since independence in 1971, there have been impressive gains. In addition, total fertility fell from 6.1 children per woman in the 1970s to 2.8 in 2010. The country is considered on track to meet Millennium Development Goal number four (MDG4) (reducing child mortality)[17].

Historically, health status in Ethiopia lagged behind other low-income countries in sub-Saharan Africa. In recent years, however, it has caught up and now

Figure 2.6 Improvements in underweight prevalence among children under 5 years of age in the study countries



Sources: Bangladesh[32,33]; Ethiopia[34,35]; Kyrgyzstan[36,37]; Thailand[38,39]; Tamil Nadu[40,41].
Notes: Kyrgyzstan data for 1997 is for children under 3 years.

maternal and under-5 mortality are similar to the regional averages. In just five years, between 2000 and 2005, under-5 mortality in Ethiopia fell from 188 to 132 deaths per 1000 live births[34,35]. Over the same period, the proportion of underweight children decreased from 42% to 33% and total fertility rates decreased from 5.9 to 5.4 births per woman.

Kyrgyzstan has achieved improvements in child health outcomes over time, although maternal mortality has stagnated. Despite economic and political challenges, life expectancy (shown in the country chapter) is higher than in many wealthier countries in the former Soviet Union, such as Russia and Kazakhstan. Kyrgyzstan has implemented rigorous vital registration systems that have masked the improvements in mortality rates compared with its neighbours, because previous mortality rates were underestimated. Access to health care is greater than in neighbouring countries due to improved primary care coverage and financial protection for many population groups. Almost all women give birth in a health facility, despite high out-of-pocket payments, in contrast to Tajikistan, where only about 60% of women deliver in a health facility.

Thailand has attracted international attention because of its remarkable health and health system achievements. Maternal and under-5 mortality have both

fallen rapidly, far outpacing other countries in the region. By 1990, mortality had already reached very low levels, providing scope for only marginal improvements over the following two decades. This progress not only puts the country on track to achieve MDG4, but has also been accompanied by a narrowing of the rich–poor gap[42]. In addition, Thailand has achieved universal coverage of essential services and substantial protection from the risk of catastrophic health expenditure[43]. Use of public health services, especially primary and secondary care, has increased substantially, with most benefit seen by the poor.

In health terms, Tamil Nadu has long outperformed most other states in India. In 2006, Tamil Nadu had the third lowest rate of under-5 mortality in India (9.2 versus 17 deaths per 1000 live births for all of India), and in 2001–2003, the state was second lowest in terms of maternal mortality (134 per 100 000 lives births versus 301 average for India)[44]. Total fertility, most recently estimated at 1.6 births per woman, compares favourably with the Indian average of 2.7. Although there is variation among districts, the state's population as a whole has relatively good access to public health care facilities.

Coverage of health interventions

The literature points to a wide number of health interventions that are key to improving maternal, neonatal and child health (sometimes referred to as intermediate health outcomes). Coverage indicators for a selection of health interventions mainly related to maternal and child health are presented in Table 2.1. There is wide variation among countries and across interventions. Three of the study countries have almost achieved universal coverage on skilled birth attendance (regarded a good proxy for access to primary health care), while Bangladesh and Ethiopia have a long way to go. As shown by the data, when coverage of skilled birth attendance is low, there is more scope for large inequalities in access. With the exception of Ethiopia, immunization rates are high in the study countries. As will be illustrated in the country chapters, there are dramatic improvements in access to essential interventions over time, leading to health improvements.

Health system inputs

With the exception of Thailand, the GDP per capita of the study countries is substantially less than Int$ 5000 and all countries spend under Int$ 500 per capita on health (Figure 2.7). The resource challenges these countries are facing are illustrated in Table 2.2. The five study countries have achieved health gains despite spending (in absolute terms) no more on health than countries that are

Table 2.1 Coverage of key health interventions, most recent year available

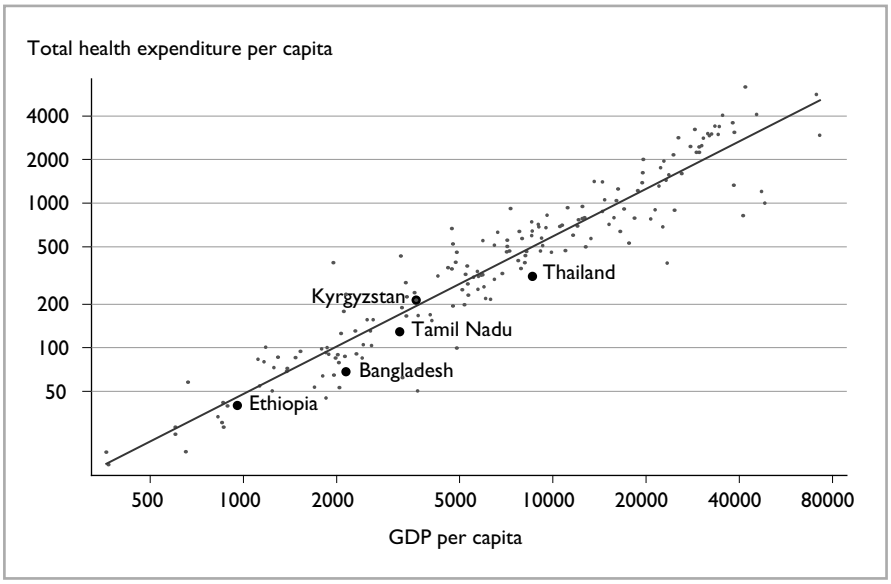
Coverage indicators	Bangladesh	Ethiopia	Kyrgyzstan	Tamil Nadu	Thailand
% of births with skilled attendant at delivery	18	6	98	91	97
Skilled attendance at delivery, ratio richest to poorest	11	38	1	1	1
% of births with antenatal care (1 or more visit)	60	28	98	99	99
% of children (12–24 months) vaccinated with DPT	91	32	92[a]	96	94
% of children (12–24 months) vaccinated against measles	83	35	97[a]	93	96
% of currently married women (or in union) using modern contraceptive method	48	14	46	60	70
% of children under 5 years with suspected pneumonia taken to health provider	37	19	62	75	84
% of children under 5 years with diarrhoea receiving appropriate treatment[b]	68	37	22	47	46

Sources: Bangladesh[33]; Ethiopia[35]; Kyrgyzstan[37,45]; Tamil Nadu[41]; Thailand[39].

Notes: DTP: Three doses of combined diphtheria, pertussis, tetanus; [a] Values are for 1 year olds; [b] Appropriate treatment is defined as having received oral rehydration therapy or increased fluids, and continued feeding; value for Ethiopia is only for received oral rehydration therapy or increased fluids.

otherwise comparable in economic development. The usual explanation is that these countries may be spending a greater share of their resources on health. However, as Figure 2.7 shows, per capita health spending in most countries is similar to the level expected on the basis of their national income. If anything, Thailand spends less than would be predicted by its GDP per capita. Thus, the study countries appear to be no different from other countries at similar levels of national income in terms of their health spending.

Figure 2.7 Total health expenditure and GDP per capita, 2005 international dollars



Sources: References 27, 46–48.

These countries have disproved the hypothesis that better outcomes are a result of a larger proportion of GDP per capita spent on health. A related hypothesis is that the governments in the five study countries spend more on health as a proportion of their GDP than other countries with similar levels of national income (that is, that the public share of health expenditure is higher). Figure 2.8 shows that as countries become richer, they tend to spend more on health as a proportion of their GDP. Nevertheless, the evidence suggests that the governments in the five study countries are not unusually generous investors in the health sector and, if anything, spend less as a proportion of GDP than predicted by the linear regression line.

The strong relationship between health workers and health outcomes is well established[56]. Figure 2.9 illustrates this relationship between maternal mortality and the density of nurses and midwives. The relationship between under-5 mortality and density of physicians is almost identical. In countries with scarce human resources, increases in the availability of health workers are strongly associated with reductions in child and maternal mortality. The density of physicians varies quite considerably across the five study countries, with Ethiopia at one end of the scale and Kyrgyzstan at the other. None of the study countries are outliers

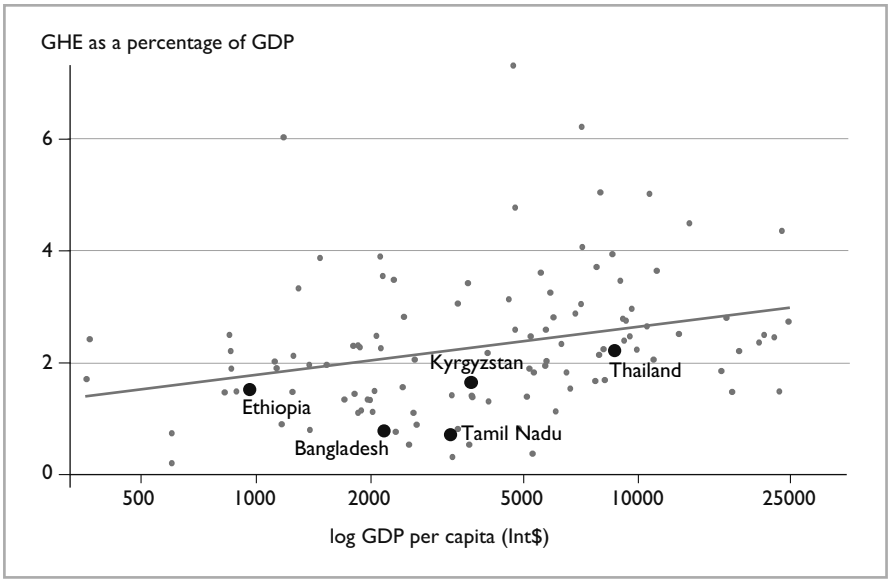
Table 2.2 Health system inputs, 2009

	Bangladesh	Ethiopia	Kyrgyzstan	Tamil Nadu[a]	Thailand
Health system capacity[49]					
Density of physicians, nurses and midwives per 10 000[b]	6	2–3	80	12[c]	17
Hospital beds per 10 000 population[b]	4	2	51	10[50]	22
Health system financing[51]					
Health expenditure, total (% of GDP)	3.4	4.3	6.8	4.0[d,e]	4.3
Health expenditure per capita (current US$)	18.8	14.7	57.1	27.9[d,f]	167.7
Health expenditure per capita (constant 2005 Int$)	48.5	39.9	151.7	–	344.7
Health expenditure, general government (% of total health expenditure)	32.9	47.6	50.9	17.7[d]	75.9
Out-of-pocket health expenditure (% of total health expenditure)	64.8	42.0	39.9	82.0[d]	16.5
Out-of-pocket health expenditure (% of private health expenditure)	96.5	80.1	81.3	100.0[e]	68.1
Private insurance expenditure on health (% of total health expenditure)	0.2	0.8	–	0.2[d,g]	5.9
Formal population coverage (% covered by insurance or tax-based arrangements)	0.4[h]	–	100.0[i]	100.0[j]	97.7[h]

Sources: As indicated in the table and below.

Notes: [a] Data for Tamil Nadu from reference 47 unless otherwise stated; [b] Values are for 2000–2009; [c] Value is for 2008, data from reference 52; [d] Values are for 2004–2005; [e] Estimated value; [f] Exchange rate of US$ 1 = Rs 45; [g] Values is the all-India figure; [h] Values are for 2008, data from reference 53; [i] Depth of coverage varies, data from reference 54; [j] Nominal figure, data from reference 55.

Figure 2.8 Government health expenditure (GHE) as proportion of GDP versus GDP per capita, 2005 international dollars



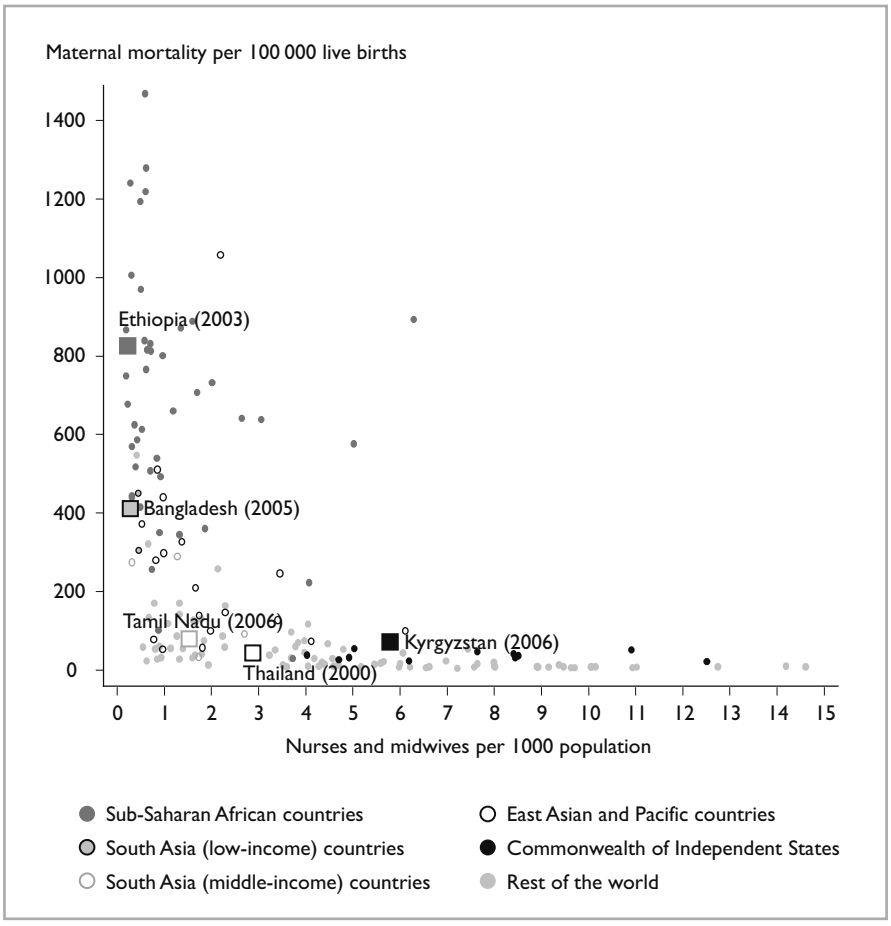
Sources: References 27, 46–48.

in the relationship between these measures, except Kyrgyzstan, where under-5 mortality is higher than would be expected given its historical density of physicians, an issue that will be discussed in the country chapter. Figure 2.9 exhibits a similar pattern for maternal health, although here, Kyrgyzstan is no longer an outlier.

Other public sector inputs

Sectors outside of health are known to be important for health outcomes. Non-health factors are too numerous to mention; this section focuses on just two – education and sanitation – that are regarded as being particularly influential. Education is a key determinant of health and there is an enormous literature devoted to the study of this relationship. Education may have a direct effect on health through its influence on health-related behaviours or indirectly as a driver of higher income. Figure 2.10 shows the cross-country relationship between under-5 mortality and adult female literacy, with the five study countries highlighted. The first thing to note is that the female literacy rates differ enormously between the five study countries. Second, higher female literacy is associated with lower under-5 mortality. The majority of the five study countries fall below

Figure 2.9 Maternal mortality and nurse/midwife density, latest year

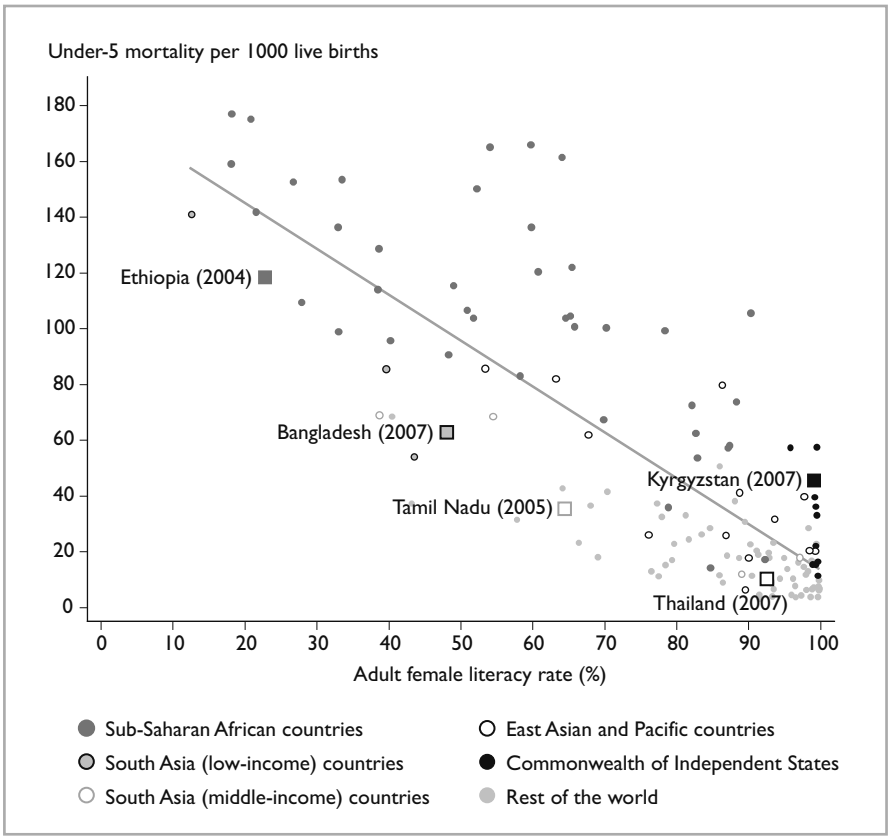


Sources: References 26 and 29.

the linear regression line, suggesting that, on average, they achieve better health outcomes than other countries with similar female literacy rates.

Sanitation is another developmental indicator outside the health system that is regarded as a strong predictor of good health[57] (Figure 2.11). The plot confirms that countries with greater access to sanitation tend to have lower under-5 mortality. As with the previous indicators, there are wide differences in access to sanitation across the five study countries. With the exception of Tamil Nadu, the study countries show levels of mortality that are similar to other countries with the same access to sanitation.

Figure 2.10 Under-5 mortality and adult female literacy, latest year



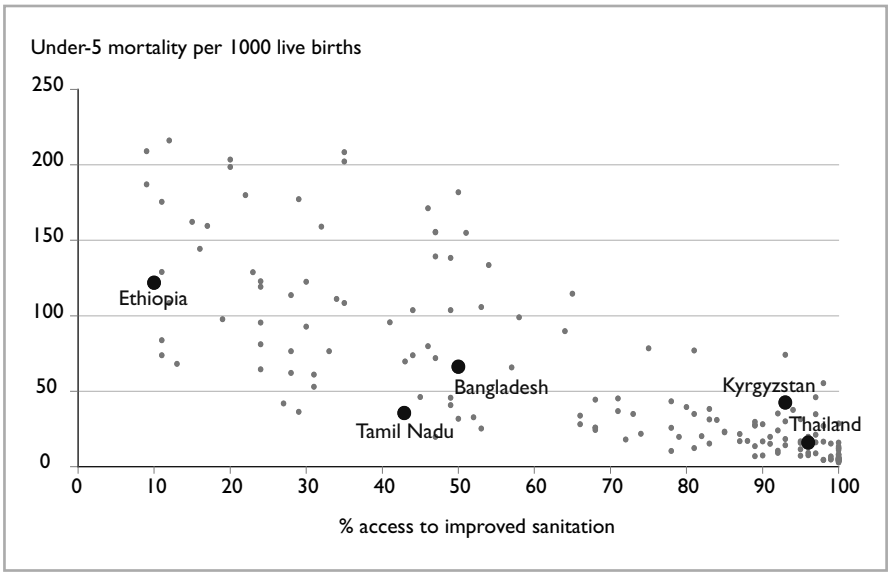
Sources: References 26 and 30.

Innovation and large-scale investment in health sector reforms

All the countries included met the criterion of having undergone large-scale reform in their health sectors, either alone or as part of broader public sector reform. Improvements in maternal and child health in Bangladesh since the 1980s have been linked to the prioritization by government of population control and emergency obstetric care. Since independence, the government and donors invested heavily in a network of community clinics offering curative and preventive services. The large non-state sector developed sophisticated micro-finance schemes that contributed to health and employment.

The government of Ethiopia implemented a series of innovative reforms from 2000 onwards, seeking to achieve universal access to primary health care by

Figure 2.11 Under-5 mortality and access to improved sanitation, 2005



Sources: References 26 and 41.

2017. Its Health Extension Programme, introduced in 2003, has sought to provide two trained health workers in every village health post in the country.

Soon after independence from the USSR in 1991, Kyrgyzstan launched a radical reform plan (MANAS) that has provided a coherent framework for donor investment in the health sector under government leadership. The country represents a unique example of sustained and concerted action in the region. Reforms led to a shift from specialist-oriented care to family practice, implementation of a basic benefits package, hospital rationalization, introduction of contracting, creation of a single payer system, and liberalization of the pharmaceutical market.

The government of Tamil Nadu has implemented extensive health system reforms since the 1970s, most recently within the framework of the 2005 National Rural Health Mission of the Government of India. This study focuses on reforms up until 2005, due to the fact that it is still too early to assess the impact of the Health Mission. Nevertheless, the new reform is addressing fundamental weaknesses of the public health system, including the provision of substantial increases in financing and managerial autonomy. These have been associated with marked increases in the uptake of services in rural areas and unprecedented health improvements, particularly in maternal and child health.

The available evidence indicates that the increased public spending on primary care (particularly preventive care and health promotion) is largely pro-poor (Vaidyanathan G et al. *Do the poor benefit from public spending on healthcare in India? Results from benefit (utilization) incidence analysis in Tamil Nadu and Orissa*. Draft report, May 2010). Tamil Nadu is a good example of a mixed health system, which, despite a growing private sector, has safeguarded key public services (immunization, deliveries, etc.) in the public sector.

Thailand has implemented a range of far-reaching and ambitious reforms over many decades. Coverage was increased step-by-step by expanding insurance schemes for particular income groups. Successive improvements in financial protection through user fee exemption and community and formal sector insurance schemes were consolidated in 2002 to establish a system of universal health care. This has been accompanied by capacity building in public and private sectors, growth of infrastructure and human resources, and extension of primary care, all with only modest increases in total health expenditure.

Although the countries have been selected as success stories, they still face significant challenges, as will be discussed in the chapters that follow. Kyrgyzstan has experienced three coups since independence. In Bangladesh and India, there are persistent concerns about how to regulate the large and complex private sector. There are still high out-of-pocket payments in Bangladesh, Kyrgyzstan and India, placing substantial burdens on households. In addition, considerable income and health inequalities exist in all countries, across population groups and across geographical areas. Most countries face workforce shortages. Despite abundant donor funding in Ethiopia, there are concerns about its capacity to use donor and government funds effectively[58]. Our study explores how the countries are improving health, while managing these challenges and preparing for the future.

Much can be gained by understanding the five countries' achievements and successes. Countries such as Thailand and the state of Tamil Nadu have done well over long periods of time; others, like Ethiopia, Kyrgyzstan and Bangladesh, have demonstrated faster improvements in recent years compared with countries with comparable economic resources. All have implemented ambitious and far-reaching reforms. The following chapters provide individual country case studies to chart how these measurable improvements have developed. This is with a view to providing lessons on how other, less successful countries – at similar stages in their economic development – might follow in their footsteps. A separate chapter analyses the experience of those countries studied in the original *Good health at low cost* report 25 years later.

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All GHLC team members and Steering Committee members contributed to the development of the initial ideas, framework for analysis and methodologies.

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