

2. India's health and development challenges and responses

India is in the middle of a process of change. Some of the critical challenges it confronts concern the socially mandated health system results. These consist of both final outcomes and intermediate objectives. The final outcomes are goals such as improving health levels and equity, protecting people against the catastrophic consequences of disease, improving responsiveness to peoples' expectations and achieving all of the above efficiently. Examples of the intermediate objectives include: improving access, quality, continuity and sustainability. Other challenges affect the means by which India can obtain these desired results (inter-sectoral actions for health plus service delivery in primary health-care centres and hospitals, public health services and programmes, staff, buildings, technology, financing, laws, and information systems among others).

For the past 30 years the geographically wide, densely populated and enormously varied Republic of India has made remarkable efforts in the field of health. The list of initiatives include the adoption of a National Health Policy in 1983; the 73rd and 74th Constitutional Amendments devolving power to local institutions in 1992; the

National Nutrition Policy in 1993; the National Health Policy, the National Policy on Indian System of Medicine and Homeopathy and Drug Policy in 2002; introduction of (embryonic) health insurance schemes for the poor in 2003; and the inclusion of health in the Common Minimum Programme of Government in 2004. More recent achievements are the commitments to implement the National Rural Health Mission (NRHM) and proposals to achieve universal health coverage (UHC). The High Level Expert Group (HLEG) on UHC constituted by the Planning Commission of India in October 2010, with the mandate of developing the UHC framework to be considered for the 12th Five-Year Plan of the GoI submitted its detailed report in October 2011.²²

While the effectiveness of the above initiatives has been variable, this section of the strategic document tries to identify today's most pressing challenges and find logical links between "first-, second- and third-order" causes and effects, focusing on the distinction between:

- outward-looking challenges to be overcome to unleash India's potential in the global health scene; and

- inward-looking challenges where joint work in partnership between the government (GoI) and WHO can mitigate or solve long-standing problems.

2.1 Challenges to the role of India in the global health scene

India faces a number of challenges which few societies have ever addressed before. While the effects of these challenges are largely manifested in the domestic arena, they also have global implications, mainly due to India's size and growing economic clout. India's significant participation in the global economy and its increasingly influential role in global governance, in turn increase the urgency for the GoI to address domestic development challenges.

2.1.1 Economic development, inclusive growth and equity

The first challenge in the global context is to cope with India's participation in highly competitive global markets as an "emerging" country and as part of the BRICS grouping (i.e. Brazil, Russia, India, China and South Africa). Millions of industry and service jobs are needed, as well as a highly qualified workforce, and their creation is dependent on an upgrade of a) the health and educational status of the population, b) the country's infrastructure, c) the necessary "inclusive growth" that could pull millions straight out of the poverty, and d) the entire set of prevailing social relationships.

The challenge of "inclusive growth" is magnified due to the massive territory and population of India and its enormous geographical and sociodemographic variation. India is divided into 28 states and 7 union territories, some large and others small. Poverty remains concentrated regionally in certain states

and inequalities have increased despite years of economic development (specifically annual GDP growth rates from 2004–2005 to 2010–11 which ranged from 6.8% to 9.6%; savings which were in the range of 32.21% to 36.85% of GDP and foreign direct investments which increased from US\$ 2,188 million to US\$ 27,330 million)²³ and policies favouring those areas and population groups most in need (by means of "backward regions grant funds"). It is also relevant that although from 2004–2005 to 2006–2007, the average per capita comparable gross state domestic product of the bottom five Indian states grew from US\$ 3,396 million to US\$ 4,204 million, the absolute difference from the average of the top five Indian states increased from US\$ 6,931 million to US\$ 9,207 million and the per cent difference grew from 204% to 218%.²⁴

The proportion of people living on less than US\$ 1.25 a day purchasing power parity (PPP) decreased from 60% in 1981 to 42% in 2005, but the actual number of people living on less than US\$ 1.25 a day PPP increased from 435.5 million in 1990 to 455.8 million in 2005 (see Table 1).²⁵

In rural areas, the share of the poorest quintile in total consumption (that is, the consumption accounted for by the poorest 20% of the population) based on uniform recall period (URP) declined from 9.6% in 1993–1994 to 9.5% in 2004–2005 and the decline was even sharper in urban areas (from 8% to 7.3%). Inter-state differences in health status remain; for instance, there is an 18 year difference in life expectancy between Madhya Pradesh at 56 years and Kerala at 74 years.²⁶

In the context of the 12th Five-Year Plan, the Planning Commission has adopted a broad approach to health, which

Table 1: Number of people living on less than \$1.25/day (millions)

Region or Country	1990	2005	2015
East Asia & the Pacific	873.3	316.2	137.6
China	683.2	207.7	84.3
Europe & Central Asia	9.1	17.3	9.8
Latin America & the Caribbean	49.6	45.1	30.6
Middle East & North Africa	9.7	11.0	8.8
South Asia	579.2	595.6	403.9
India	435.5	455.8	313.2
Sub Saharan Africa	297.5	388.4	356.4
Total	1,818.5	1,373.5	947.2

Ravallion M and Chen S, 2008, Global Economic Prospects, The World Bank, Washington

includes key determinants of health, a range of resources like food supply chains and nutrition. In terms of policy this will translate into a stewardship role for the Health Ministry over other sectors in matters that have a direct bearing on health. It also proposes a roadmap which is intended to guide the health sector in this regard.²⁷ Years of healthy economic growth are helping India to overcome problems such as integrated water management. The population fraction using drinking-water sources, however has only increased from 72% to 88% (rural 66% to 84%; urban 90% to 96%). Also, despite the government being keen to improve sanitation for the lowest socioeconomic quintile, from 1990 to 2008 the population using improved sanitation (the population sharing improved type of sanitation facility is deducted) only grew from 18% to 31% (rural from 7% to 21%; urban from 49% to 54%). According to a report by WHO and UNICEF, some 69% of rural dwellers and 18% of

India's urban population do not make regular use of sanitary toilets.²⁸ When figures for 2008 were studied, only 366 million people had access to proper sanitation whereas more than half of India's 1.17 billion people were mobile-phone subscribers²⁹ illustrating the differential penetration and adoption of technologies addressing health and development needs.

2.1.2 India and global development

The prowess of India in the area of biotechnology is clearly proving to have a global impact. The introduction of the Meningococcal A conjugate vaccine produced by the Serum Institute of India through the Meningitis Vaccine Project - a partnership between the Seattle-based nonprofit PATH (Program for Appropriate Technology in Health) and WHO in Burkina Faso, Mali, and Niger in 2010, has resulted in the lowest number of confirmed cases of meningitis A ever recorded during an epidemic season in 2011.³⁰ The new vaccine is expected to be cost-saving when compared to current expenditures on these epidemics; an analysis shows that introducing it in seven highly endemic countries could save US\$ 350 million or more over a decade. The vaccine's low cost – less than half a US\$ per dose – makes it possible for the affected countries themselves to purchase vaccines for future birth cohorts.³¹

Major success stories such as the above, point to a new set of relationships for India which offers a whole new world of opportunities. At the same time, some challenges emerge in the health-related policy implementation area.³² International experience indicates a need for skilled staff, administrative capability and infrastructure for implementing policies;

technological, financial and workforce limitations may make a particular policy hard to implement.³³ Issues related to international trade and health, pharmaceutical quality assurance, capacity for planning and policy formulation need to be mentioned.

The second challenge in a global governance context is functioning as a reference for other countries. India could be a model for countries striving to find their own developmental pathways in a context of severe inequities and resource constraints. It is worth noting that while the burden of disease (BoD) distribution is estimated to be 93% and 7% between medium & low income countries compared to high income countries respectively, the medium & low income countries spend 10% of total expenses on health against 90% spent by the high income countries (as additional references, world income distribution is 18 – 82% and population distribution is 84 – 16%³⁴, respectively between these country groups).

In 2010, non-OECD countries released over 100 times more aid to developing countries – as requested by the Paris Declaration and the Accra Agenda For Action – than they had done in 1990.³⁵ GoI is receiving in this context numerous requests for support and advice through *South–South cooperation (S-SC)*, *triangular cooperation in the Asia-Pacific region* and beyond, and other modalities of collaboration between countries. These innovative mechanisms are based on solidarity, mutual benefit, capacity building and technological transfer, with a focus on equity in health within and between countries. The GoI has begun to commit between 0.08% and 0.11% of national income to meet these requests. Cooperation primarily takes place in

science and technology, trade, security, agriculture, industry and culture; initiatives are underway in the field of health, for example, on pharmaceuticals and biotechnology.

These demands and engagements elevate India's ranking in the world and are first-order incentives to find innovative solutions for supporting other countries. Under the Indian Technical and Economic Cooperation programme (ITEC) and the Special Commonwealth Assistance for Africa Programme (SCAAP) technical cooperation reaches out to 156 countries in Asia, Eastern Europe, Central Asia, Africa, and Latin America. Economic cooperation grants and loans, in contrast, are concentrated in smaller countries in South Asia (mainly Afghanistan, Bhutan, Nepal, Bangladesh, Maldives, Myanmar and Sri Lanka) and African countries.³⁶

The number of conventions, treaties and agreements – many of them supra-national – has sky-rocketed in recent years.³⁷ Effective implementation of the multiplicity of norms and standards, in addition to International Health Regulations, is crucially dependent upon institutional arrangements, many known to be dependent in turn upon social structures, political culture and power dynamics and upon the quality of the workforce.³⁸ This is applicable also to India in its new role as an economic powerhouse.

2.1.3 People's expectations and health system responsiveness

The third challenge confronting India is the increased expectations of its population when using services. The sheer numbers of better trained and informed citizens lead to an ever-

increasing demand for improved, higher-quality services in all spheres. As societal creations, health systems “cannot be conceived outside the values and characteristics of the societies concerned”.³⁹ This means that the institutions that, for example, foster inter-sectoral actions, produce, finance and regulate services, and train staff, necessarily receive demands reflecting the aspirations of citizens (as well as the values, socioeconomic situation, technological development and political climate in which they are developed) and are also witnessing the emergence of “consumerism”. A new era is dawning in terms of expectations for quantities and varieties of affordable, efficiently networked and sustainable quality services.

While public institutions strive to improve their standards, many Indian private hospitals have achieved impressive results in recent years and are quoted in international books and journals as successful case-studies in innovation.

The Aravind Eye Care System, for example, with its mass production of cataract operations inspired by Ford and the fast-food industry’s business model, “performs 180,000 operations per year, 70% of them for free at a cost of US\$ 10 per operation – whereas the cost in the United States of America is \$1,650”.⁴⁰ The same can be said of paediatric cardiac surgery at the Narayana Hrudayalaya Hospital; since 2001 it has been performing some 24 open-heart surgeries and 25 cardiac catheterization procedures a day – eight times the average at other Indian 13 hospitals – with services being offered free to the poor; it also provides telemedicine services for two rural hospitals in India and other hospitals in Malaysia, Mauritius and Pakistan – free to all.⁴¹

In that context, the Indian health system is under unprecedented public scrutiny. Initial arrangements such as the Right to Information Act, Rogi kalyan samitis (hospital users societies) and Village Health, Nutrition and Sanitation Committees favour increased responsiveness – the degree to which legitimate expectations of the public and the patients are met. This means ensuring respect for individuals (dignity, confidentiality and autonomy) and client orientation (prompt attention, basic amenities and choice). Such issues are also often highlighted by the media.

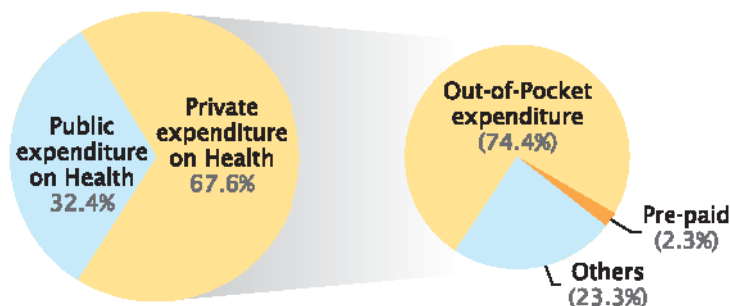
2.2 Health and health systems challenges yet to be resolved

Certainly the most complex challenge for India is what in 2005 the National Commission on Macroeconomics and Health called the “unfinished agenda” of health care.⁴²

2.2.1 Health financing

At 4.2% of its GDP in 2009⁴³, India’s health expenditure relative to GDP is not too small a figure in comparative terms. The historically low tax-base and “revenue to GDP” ratio, however, have so far precluded sustainable action from the public purse. Governmental expenditure is only around 1.4% of GDP, with only 32.4% of the total spending as general Government contributions, some 15–20 percentage points below that of the United States or America, China and Brazil, and 40–45 percentage points below those of the European Union averages and Japan. In terms of the priority given by the government to health in recent years, centre and states combined allocate to health at the moment only around 4% of total public spending (among the 10 lowest countries in the world). The country’s per

Figure 2: India, Health Care Financing by Source, 2008



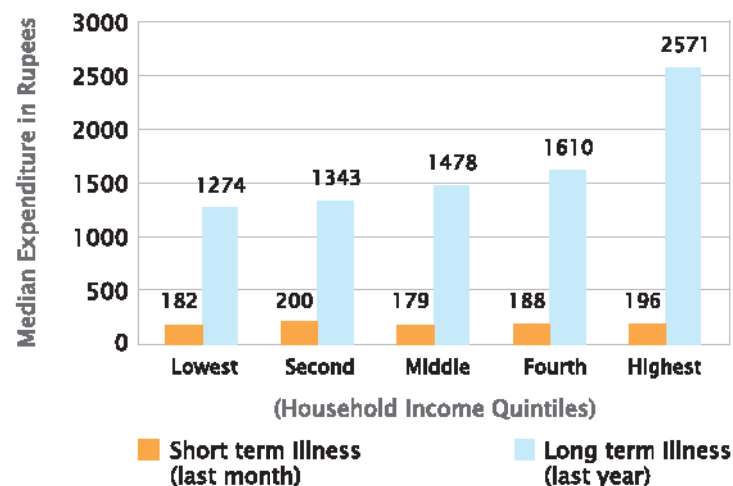
Source: World Health Statistics, 2011

capita health spending also remains among the five lowest in the world even if it has risen from US\$ 21 in 2000 to US\$ 45 in 2009 (with government expenditure within it increasing from US\$ 6 to US\$ 15). Public spending on health rose nearly 2.6-fold between 2004–2005 and 2009–2010 (the latter being budget estimates).

Only a small fraction of total expenses is pre-paid and most are out-of-pocket payments (OOP). Even if these OOP payments have decreased as a percentage of private expenditure, from 92.2% in 2000 to 78% in 2004–2005, according to the National Health Accounts study in 2009, private services users clearly have considerable amounts of OOP expenses to pay including for excluded conditions and for ambulatory care. Those who access “free” government-sponsored services have, in turn, to buy medicines from pharmacies, pay for laboratory tests and often face the ubiquitous *informal* fees. As figure 3 shows, OOP expenses have major equity implications.

In short, the vulnerable sections of the Indian population hardly enjoy proper financial protection when they fall sick.⁴⁴ Low public expenditure and insufficient health insurance coverage (pre-paid health expenses) hamper effectiveness regarding health gain and equity because of the high risk of catastrophic/impoverishing payments by the population, as well as the financial barriers to access. As indicated above, “tracer conditions” send worrying signals, for example, that pregnant women do not receive the help they should, infectious disease outbreaks are not properly studied and children do not get immunized. From 1995–1996 to 2004, ailments that went untreated for financial reasons increased from 15% to 28% in rural areas and from 10% to 20% in urban areas according to

Figure 3: Medical Spending by Household Income (all members)



Adapted from Source: Desai SB et al, 2010, *Human Development in India: Challenges for a society in transition*

the National Sample Survey Organization. With the right incentives, public funding offers space for spending reasonably more and better in health – although attention has to be paid to sudden big increases in expenditure that could lead to absorption problems (partly related to wider issues of public sector financial management such as rigid budget structures).

The problems that some states have in absorbing the support provided by the Union⁴⁵ through “Centrally Sponsored Schemes” – some of them at the 100% level, others in partnership – are probably the result of frequent gaps in planning combined with limited implementation capacity and uneven technological endowment. It is also partly linked to the paucity of and difficulties in handling health data (involving the use of substantial resources). To address this challenge, from 2010–2011 the GoI launched a health survey in 284 districts in nine states (Assam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Uttarakhand and Uttar Pradesh). The project is being carried out jointly by the MoH&FW, the Ministry of Home Affairs and the Registrar General and aims to assess the impact of schemes under the National Rural Health Mission (NRHM) in reducing fertility and infant mortality at the district level and maternal mortality at the regional level by estimating rates on an annual basis.

State-specific problems have been recognized by the GoI. While expanding central government influence over state-level decisions, it has both increased public spending on health and introduced the NRHM at the national level in 2005 and the health insurance *Rashtriya Swasthya Bima Yojana* (RSBY) programme under the governance of the Ministry of Labour and Employment under the Union Budget 2007–2008.

Table 2: Summary of Health Systems Financing, India (2008)

Total per capita expenditure on Health	US\$ 45
Percentage of national GDP spent on Health	4.2
Out of pocket expense as a percentage of private expenditure on Health	74.4
General Government contributions as a percentage of total medical spending	32.4

Source: World Health Statistics, 2011

RSBY provides coverage to workers in the non-organized sector who fall in the category of “below the poverty line” with a total insured sum of Rs. 30,000 per family per annum (of the estimated premium of Rs. 750 per family, central government contributes 75% and the remaining 25% comes from each state). Reported total enrolment in RSBY as of September 2010 was more than 19 million households – or close to 60 million individuals.⁴⁶ Families have to enroll, and a small registration fee is collected at the time of enrolment. Provider payment is fee-for-service for marginal costs (same payment rates for public and private hospitals, although public hospitals also receive a budget subsidy for fixed costs).

In addition, the High Level Expert Group on Universal Health Coverage has recommended that the Government (central government and states combined) should increase public expenditure on health from the current level of 1.2% of GDP to at least 2.5% by the end of the 12th Five-Year Plan, and to at least 3% of GDP by 2022.

2.2.2 Human resources for health

Human resources are a particularly important challenge for India. Total numbers and distribution of staff were rightly identified recently as a “critical field for progress in introducing change”. Despite producing massive numbers of health professionals, the number of doctors with recognized medical qualifications under the Medical Council of India (MCI) Act and registered with state medical councils was only 0.9/1000 inhabitants in 2010 (some 816,629 doctors plus 104,603 registered dental surgeons); there are also 752,254 registered AYUSH (traditional medicine) doctors.⁴⁷ The number of nurses is also 0.9/1000 inhabitants in India. Table 3 gives an international comparator with relevant countries.

Moreover, every year India loses thousands of doctors, nurses and other health professionals to migration; in 2006, for example, almost 60,000 physicians (equal to 10% of India’s total physicians) practised in the United States of America, United Kingdom, Canada or Australia.⁴⁸ Measures have been initiated to fill posts and contain absenteeism in rural and remote areas, such as recruitment on contractual appointment, compulsory rural posting for a certain period, earmarking percentages of postgraduate seats for those who have served in rural areas and a rural service allowance, but challenges remain both in PHC and in hospitals.

Challenges also relate to the distribution of staff per 1,000 population. Urban areas are much better served than rural areas (1.3 versus 0.39 doctors; 4.2 versus 1.18 total health workers; 1.59 versus 0.41 nurses and midwives).

Table 3: Numbers of doctors, nurses and hospital beds per 1000 inhabitants

	Doctors	Nurses (Including midwives)	Hospital beds
Brazil	1.72	6.50	2.4
China	1.42	1.38	4.1
Russian Federation	4.31	8.52	9.7
South Africa	0.77	4.08	2.8
Germany	3.64	10.98	8.2
United Kingdom	2.71	9.46	3.3
United States	2.44	8.01	3.1

Sources: OECD Health Data 2011 and World Health Statistics 2011, WHO

The distribution of teaching institutions is also skewed: Andhra Pradesh, Karnataka, Kerala, Maharashtra and Tamil Nadu, which are home to 31% of the population, account for 58% of medical schools in the country, both public and private, and 63% of the General Nursing and Midwifery (GNM) colleges, 95% of them private. In contrast, the states with greatest human resources needs have the lowest capacity for meeting them; Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh together only have 9% of the nursing schools.⁴⁹

While the intermediate professions currently included within PHC make heroic contributions to health, most job descriptions (male multipurpose worker, female multipurpose worker/registered auxiliary nurse midwife [ANM], accredited social health activist [ASHA], and even AYUSH professionals) would, in the long run, benefit from functional refinement, if not redefinition.

An overhaul of the health personnel production and utilization system will therefore be needed to achieve the required human resources numbers, skills and ethical standards of practice. The governments, both at the centre and states, are firmly committed. A consultation with all stakeholders in 2010 resulted in a proposal for setting up a National Commission for Human Resources for Health (NCHRH) with the dual purpose of reforming the current regulatory framework and improving the supply of skilled personnel in the health sector with the involvement of professional associations.

The High Level Expert Group on Universal Health Coverage²² has recommended that adequate numbers of trained health-care providers and technical health-care workers at different levels should be ensured, giving primacy to the provision of primary health care and increasing the density of human resources for health (HRH) to achieve WHO norms of at least 23 health workers (doctors, nurses, and midwives) per 10,000 population. It has also recommended increased investments to establish additional educational institutions to produce and train the requisite health workforce and also to enhance the quality of HRH education and training by introducing competency-based, health system-connected curricula. The production of these and other recommendations by the HLEG has been supported by the WHO.

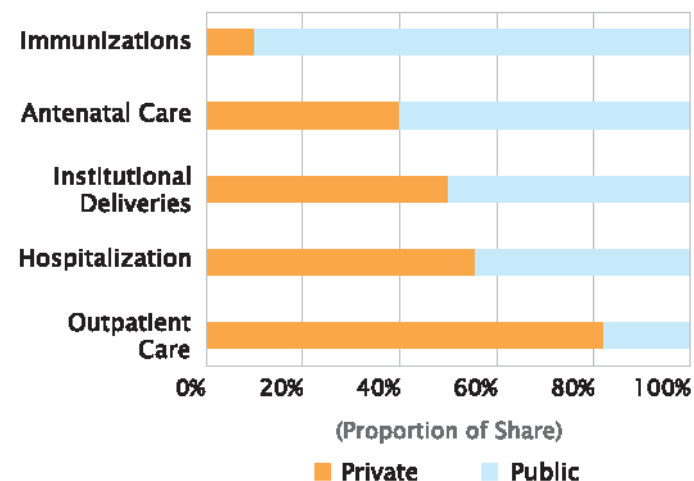
2.2.3 Provision of health services

Personal/individual and population health service provision, both routine and emergency, shows complex patterns in terms of availability, access and quality. For a start, India is endowed, on average, with rather few (only 0.6) hospital beds/1,000

inhabitants (see Table 3 for some international comparators), and shortages are worsened by the above-mentioned lack of clinical and maintenance/support staff, which makes nearly 50% of beds in the public sector and 30% in the private sector non-functional.⁵⁰

At the same time, modern inpatient and outpatient secondary care (hospital) is changing the health services landscape for the better but the challenge is the dominant presence of the private sector in all submarkets. Around 68% of an estimated 15,097 hospitals and 37% of 623,819 total beds in the country are in the private sector. Of these most are located in urban areas.⁵¹ This has occurred despite the fact that at the time of independence

Figure 4: Public versus private share of healthcare provision, India



Source: National Sample Survey Organization, 52nd Round, CSO, 1995

only 8% of qualified modern medical care was provided by the private sector and that limiting the need for private practitioners was one of the recommendations of the seminal 1946 *Report on the Health Survey and Development Committee (Bhore Committee)*. The private sector now dominates the provision of personal medical care except in selected health programmes (80% of all outpatient care and 60% of all inpatient care), human resources and advanced medical technology and diagnostics (over 75%), pharmaceuticals and hospital construction and ancillary services. The share of private and public sectors is shown in Figure 4. The public-private-partnership (P-P-P) model is being extensively used to cover the gap between the demand and supply of health care.⁵²

In the public sector the situation is even more complex. Rural areas have a three-tier system (a sub-centre per 5,000 population staffed with a male and a female worker; a primary care (PHC) centre per 30,000 population with a medical doctor and paramedical staff, and a community health centre (CHC), per 100,000 population with 30 beds and basic specialists). Such public infrastructure is not evenly distributed across states, with

many institutions being hampered by lack of staff, essential equipment, drugs and consumables, as mentioned above.

Furthermore, according to data updated in 2010, some 12.4% of primary health centres and 27.8% of sub-centres function without a regular water supply; 14.2% and 28.5%, respectively, without electricity; 7.5% and 8.1%, without an all-weather, motorable approach road; and 54.3% and 47% of primary health centres have no telephone or computer respectively.⁵³

Urban areas have a two-tier system (a basic health post for every few thousand population, wherever it exists) and/or an urban health centre/urban family welfare centre per 100,000 population attached to a general hospital). Based on the above, it is clear that access to good-quality health care is uneven.

Recognizing the efforts that will be needed to address inequalities in the provision of and access to health services and thereby to enhance the “substantive freedoms” of large sections of the population in the coming years, major changes are being introduced in the context of the NRHM. This is in its own

Box 3: Public services and “substantive” freedoms

*“When we assess inequalities ... in being able to avoid preventable morbidity, or escapable hunger, or premature mortality, we are not merely examining differences in well-being... [T]he available data regarding the realization of disease, hunger, and early mortality tell us a great deal about the presence or absence of certain central basic freedoms”.*⁵⁴

– Professor Amartya K Sen
Nobel Laureate from India

words, “a departure from earlier trends of financing specific lines of health care for identified diseases and health conditions that assumed a functional health system (which in most cases was not so efficiently functioning)”.⁵⁵ The NRHM is well-funded (85% by the Union and 15% by states), innovative in selected topic areas and has deployed more than 800,000 community workers who are paid based on performance. The NRHM is likely to be continued under the 12th Five-Year Plan, to meet the health challenges and health transitions confronting the country.

The planned allocation of resources by the MoH&FW and a number of donors and development partners increased from US\$ 4.2 billion in 2009–2010 to US\$ 4.8 billion in 2010–2011. Moreover, in order to meet the revised costs of construction, the GoI allocated in March 2010 an additional US\$ 1.23 billion for six upcoming super-specialty tertiary care All India Institute of Medical Sciences (AIIMS)-like institutes and for upgrading 13 existing Government Medical Colleges.⁵⁶

2.2.4 Health system stewardship

Regulation in India is abundant. For a start, the right to health is recognized as a Fundamental Right by Article 21 of the Constitution and the Directive Principles of the State Policy of the Indian Constitution enjoin on all the responsibility to ensure that all state action is directed towards the reduction of inequity.⁵⁷ However, certain adjustments are required in order to help the health system confront the above-mentioned challenges.⁵⁸ A robust modern regulatory framework is indispensable to protect society and the environment while allowing stakeholders to defend their legitimate interests. Ideally, theory has it that regulation should allow competitive businesses

to create income and wealth and thus tax revenues, and not impose unreasonable financial burdens on the nation's economy.⁵⁹ It should also generate opportunities for philanthropy.

The World Health Report 2000 recommended three types of capacity in the field of stewardship in a context of transparency and accountability: i) capacity to formulate strategic policy direction; ii) capacity to regulate, including building coalitions/partnerships; collaborating across sectors; and arbitrating, among others; and iii) capacity to generate relevant intelligence.⁶⁰ It is understood that the lack of these three capacities is usually a major obstacle to effective performance.

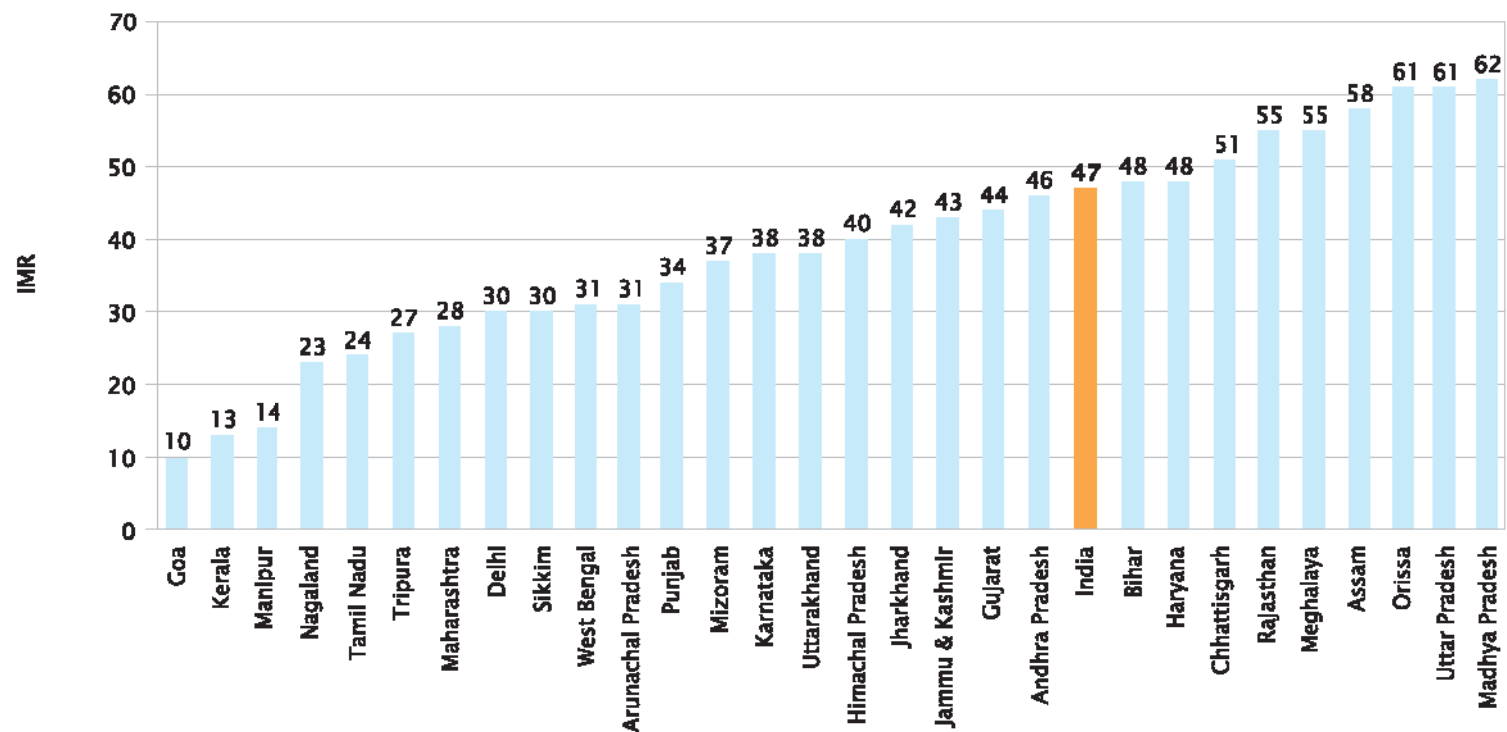
More than improving planning per se (which in many ways is already of sufficient quality), India faces the biggest gaps in relation to types 2 and 3 of the above capacities. Regulatory updating efforts are needed in many areas of the health system – to name a few: reshaping the structure of the market and the overall capacity of the system, setting standards for facilities, equipment, services, assuring quality of care, reviewing criteria for professional practice, redefining entitlements and rights, determining the major financial issues as well as rules of engagement for the public and private mix, capital and recurrent costs, prices, contracts, etc. The short supply of evaluation studies on the health system in India overall is an obstacle in this regard, partly related to health information issues and suboptimal operational research capacity.

Recent research⁶¹ has shown that health research expenses are very unevenly distributed throughout the world: almost 95% of the total US\$ 478 billion of research and development spending

in 2006 came from developed countries (topped by North America with 43.7%, Europe with 28.9% and Japan with 21.5%), whereas China and India spent 0.6%, the rest of Asia 4.8% and other countries 0.5%.⁶² In India, the Indian Council of Medical Research (ICMR), New Delhi, is the apex body for the formulation, coordination and promotion of biomedical

research; funding for health research has been substantially enhanced with the recent establishment of a separate Department of Health Research which administers ICMR institutions across the country. The scope for operations research focused on strengthening health systems has been significantly widened under the stewardship of this new department.

Figure 5: Infant Mortality Rates (IMR) by state in India, 2010



Source: Registrar General of India(b), SRS Bulletin, Sample Registration System, Released December 2011.

Data collected at the moment are reasonably good for district-level planning and management but less so for performance assessment and policy analysis at the central level through either analyses of health system output growth,⁶³ service quality, financial protection, health systems productivity and other final and intermediate health system results⁶⁴ or responsiveness and consumer interaction, usually via consumer satisfaction surveys,⁶⁵ or in patient-reported outcomes.⁶⁶ Also, utilization of available data at the district level is often suboptimal. In order to improve programme management, practical mechanisms are needed to make feasible the uploading of data on to the district's web pages, as are suggestions as to which of the old forms could be abolished or streamlined.

Improving the health information system (HIS) is therefore a crucial challenge, as an anchor for accountability. International evidence suggests that a unified or inter-operable information system is a technical prerequisite for efficient progress at all levels, including, for example, universal coverage. Building on the current health management information system (HMIS), the NRHM National Health Systems Resource Centre has created a district-by-district picture amenable to managerial follow-up, for example, in terms of trends. In terms of intelligence creation, experts suggest that more than having an identical system across the whole country, what matters is that the system should ensure interoperability, with share codes and compatible approaches so that data from different origins can be brought together and analysed.

2.2.5 Maternal and child health; and gender issues

India urgently needs to catch up with certain health challenges also in order to unleash its development potential. India's share of the world's global BoD is several points above its population

share (21% versus 17%) and very inequitably distributed. No comprehensive wealth and income related mortality data are available but all estimates show a bias against poor households in this "spoilage of human capital".⁶⁷

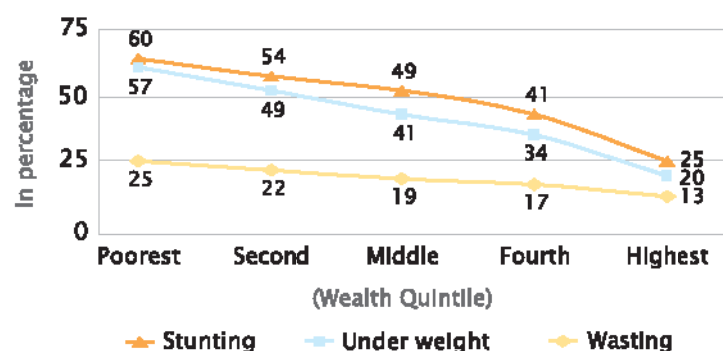
Infant mortality rate (IMR) declined from 83 per 1000 live births in 1990 to 47 per 1000 live births in 2009⁶⁸ and maternal mortality ratio (MMR) was twice almost halved from 570 per 100,000 live births in 1990 to 390 in 2000 and further down to 212 in 2007–2009.^{69,70} However both remain high and show regional variations; e.g., a girl born in rural Madhya Pradesh has an almost 6 times higher risk of dying before the age of 1 year than a girl born in rural Kerala.⁷¹

Child health and under-nutrition and the issues relating to the Millennium Development Goals (MDGs) 4 and 5 constitute other major challenges. Meeting the goals has proved more difficult than expected; indicators are not improving fast enough and a more refined strategy is needed to identify key issues, propose more effective measures and develop a better follow-up protocol.

Box 4: Summary of current nutrition challenges, India

- Ranks 67 out of 84 countries in Global Hunger Index 2010
- 22% of population is under nourished
- 42% of the world's stunted children reside in India
- Obesity is emerging as part of the dual burden of malnutrition

Figure 6: Under-nutrition in under five children by wealth quintile



Source: International Institute for Population Sciences, 2009, National Family Health Survey (NFHS-3) India 2005-06, Nutrition in India, August 2009

Infant mortality ranges in various states from 10 in Goa, 13 in Kerala and 14 in Manipur, to 61 in Uttar Pradesh and Orissa and 62 in Madhya Pradesh. The figure is significantly higher in rural areas and more than half of deaths are concentrated in the neonatal period.⁶⁸ Figure 5 shows some of these striking inter-state variations.

The picture of the 640 districts (264 of them spread across 24 states considered “priority action districts” because they account for nearly 70% of infant and maternal deaths although they are home to only 35% of the population and have high fertility rates as well as low immunization coverage) is even more different. Maternal mortality ratio (MMR) at the national level is 212 per 100,000 live births, but rates range from 81 in Kerala, 97 in Tamil Nadu and 104 in Maharashtra to 318 in Rajasthan, 359 in Uttar Pradesh/Uttarakhand and 390 in Assam.⁷⁰

Also the percentages of underweight children aged under 5 years are the highest in the world and are proving hard to reduce (48% of children in this age group are reported as “chronically malnourished” and 43% as “underweight for their age”). Seven out of every ten children aged 6–59 months are anaemic, with prevalence of anaemia ranging from 38% in Goa to 78% in Bihar. Of those classified as anaemic, 3% are severely anaemic (haemoglobin figures of less than 7.0 g/dl), 40% moderately anaemic (7.0–9.9 g/dl) and 26% mildly anaemic (10.0–10.9 g/dl).⁷² Sickle cell anaemia is endemic in tribal areas and iron plus folic acid prophylaxis seems not to be working well in cases of severe anaemia. India’s current key nutrition challenges are listed in Box 4 (page 17) and the variation in the proportion of pre-school children who are under-nourished classified by wealth quintiles is shown in Figure 6.

Gender inequality is also a concern (Box 5). The worrying proportions of selective gender abortion became visible again in

Box 5: India: Summary of gender inequality issues

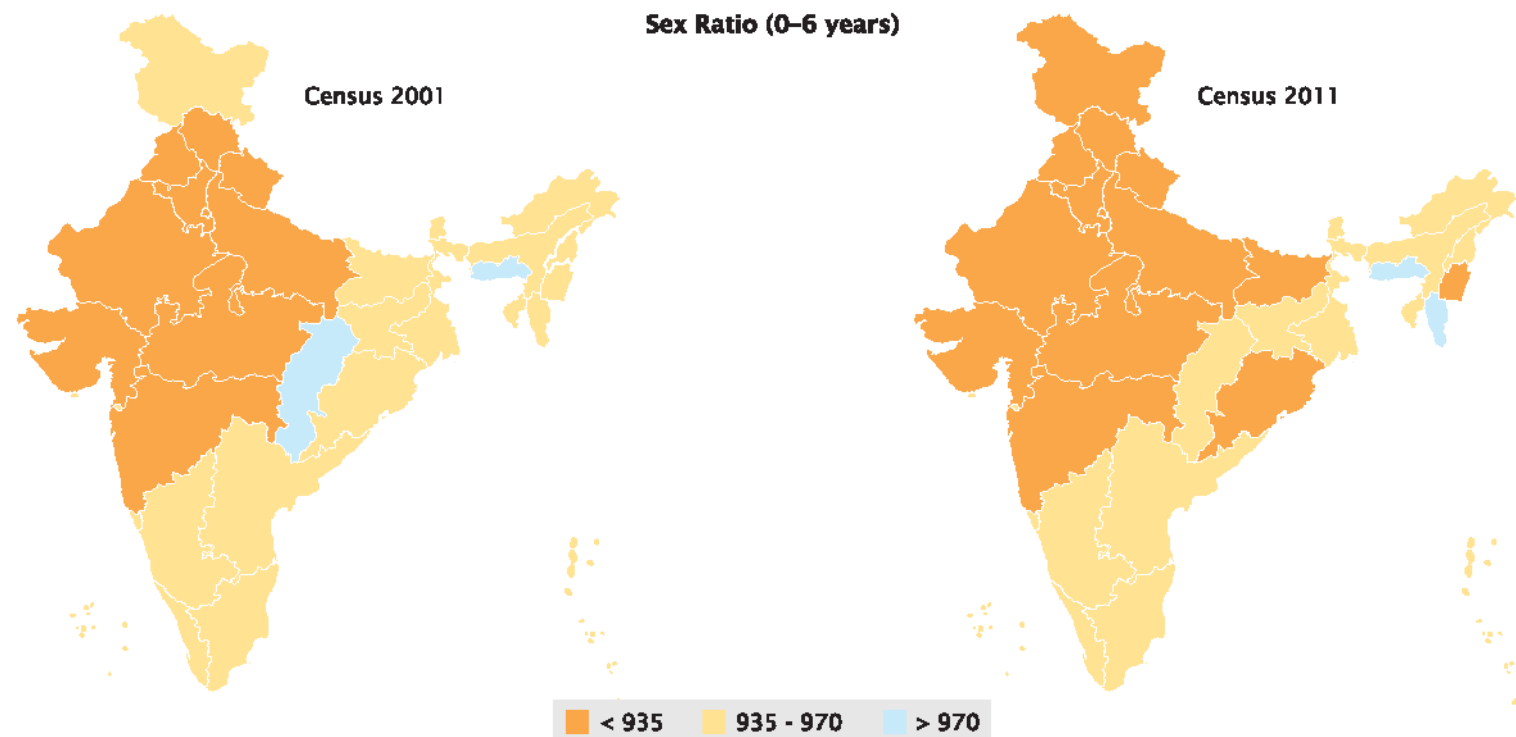
- Female to male sex ratios at birth: 0.914 (2011 census)
- Literacy – Overall: 74.04%
 - female: 65.5%
 - male : 82.1%
- Every third woman in India is undernourished (35.6% have a low body mass index)
- Girls marrying before the legal age of marriage: 2–46%
- Currently married women who usually participate in household decisions: 36.7%

Source: http://planningcommission.gov.in/plans/planrel/12appdrft/approach_12plan.pdf and <http://www.nfhsindia.org/pdf/India.pdf>

the 2011 census (see Figure 7: the female-to-male sex ratio in the 0–6-year age group declined steeply from 0.945 in 1991 to 0.927 in 2001 and alarmingly was down to 0.914 in the 2011 census). It is also revealing that while the overall literacy rate in India is 74.04%, female and male literacy rates are 65.5% and 82.1%, respectively. The Gender Equality Index (GEI), which captures loss in achievement due to gender disparities in *reproductive*

health, empowerment and labour force participation (values range from 0 = perfect equality to 1 = total inequality) in India is 0.748, well below, for example, China (0.405) or Sri Lanka (0.599). In 2008, India was 122nd in the ranking of 168 countries. Also, in 2008, between 2% (Himachal Pradesh) and 46% (Bihar) of girls were married before reaching the age of 18 years, the legal age for marriage.⁷³

Figure 7: 2001–2011 census figures showing evolution of the sex ratio in India



Source: Office of the Registrar General and Census Commissioner, 31 March 2011, *Census 2011 Our Census, Our future, provisional population totals*, Ministry of Home Affairs, India, Delhi

Box 6: Intra-country immunization coverage in India and its impact on regional benchmarks

The South-East Asia Regional Immunization Strategic Plan (2010–2013) envisages strengthening of routine immunization services focusing on district-level efforts as a priority to achieve the Global Immunization Vision & Strategy (GIVS) goals⁷³ in 10 Member States by 2010, and in all Member States by 2013. Seven Member States (Bangladesh, Bhutan, DPR Korea, Maldives, Myanmar, Sri Lanka and Thailand) have already achieved >90% coverage for the third dose of diphtheria, tetanus toxoid and pertussis vaccine (DPT3) at national level. Indonesia and Nepal have >80% DPT3 coverage at national level. India and Timor-Leste are the only countries that have not achieved at least 80% DPT3 coverage nationally.

The immunization coverage rates vary tremendously across Member States, as well as within countries between states,

provinces and districts or equivalent administrative areas. In India, according to the District Level Health Survey III (2007–2008), 90% of children who did not receive DPT3 resided in 11 states (Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, Maharashtra, West Bengal, Assam, Jharkhand, Gujarat, Andhra Pradesh and Chhattisgarh in order of magnitude of unvaccinated children). Of these states Maharashtra, West Bengal, Gujarat and Andhra Pradesh are medium-performing states, with DPT3 coverage of at least 70% while the rest have less than 70% coverage.

Source: WHO SEAR Regional Committee Sixty-fourth Session. Jaipur, Rajasthan, India 6–9 September 2011. Regional Committee Document - SEA/RC64/8 Inf. Doc. (pages 3–4); 2 August 2011. Provisional Agenda Item 5.3. http://www.searo.who.int/LinkFiles/RC64_Agenda-5.3-Inf-Doc.pdf accessed on 6 Dec 2011

The percentages of pregnant women who experienced delivery and post-delivery complications were 61% and 35%, respectively in 2008. Only about 18% of women received full antenatal care - a minimum of three antenatal care visits, at least one tetanus toxoid injection and 100 or more folic acid tablets or its syrup equivalent. In the past few years, however, hospital delivery services utilization accompanied by cash transfers has increased by 10 million. Free care for pregnant women and sick children, including free referral transport, aimed to bring OOP expenditure down to nil is now guaranteed in the public sector with some states offering free transportation for all sick children below the age of 5 years. Furthermore, public sector facility-based deliveries and caesarean sections are being monitored monthly by State Project Management Units. The emphasis is

on outputs, outcomes and quality training towards capacity building, while ensuring that every health facility has medicines and means for diagnosis.⁷⁴

From 2000 to 2009, immunization against vaccine-preventable diseases also improved (BCG immunization coverage among one-year olds rose from 74% to 87%, polio from 62% to 67%, measles from 50% to 71% and diphtheria, tetanus and pertussis from 60% to 66%). Further initiatives include the introduction of new vaccines in the national immunization programme, such as the second dose of measles, bivalent polio, hepatitis B and pentavalent vaccine. India has made significant progress in the journey towards Polio Eradication with the last case of polio recorded on 13 January 2011, thus completing more than one

year of being a Polio Free Nation. On achieving this historic public health milestone, the WHO has removed India from the list of countries with active endemic wild poliovirus transmission. This achievement has global public health significance.

The impact of the slow improvement of national coverage on the achievement of South-East Asia Regional (SEAR) immunization coverage benchmarks and the magnitude of the intra-country variations in coverage that India needs to address are well illustrated (Box 6). Partnerships with the voluntary and private sector institutions for providing publicly-funded services in these fields have now been established in the *Chiranjeevi* scheme in Gujarat.

2.2.6 Communicable diseases

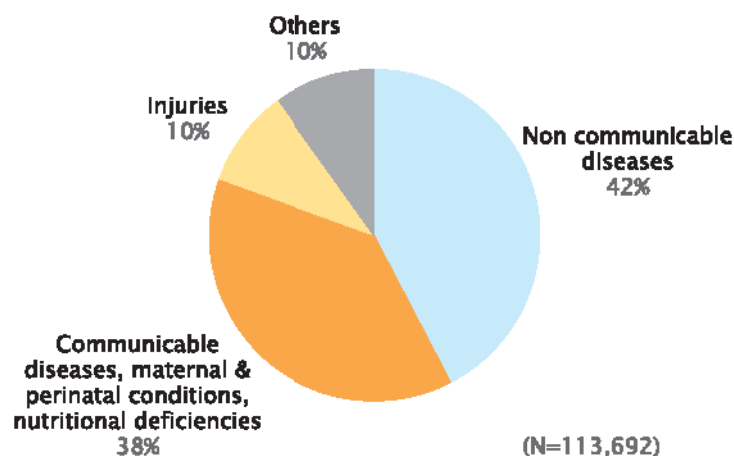
A high proportion of the BoD in India is due to communicable diseases. For instance, in 2010, there were 8.8 million incident cases of TB globally of which 2.3 million were in India. The GoI's Revised National Tuberculosis Control Programme (RNTCP) has achieved some notable successes through the implementation of the WHO Stop TB Strategy. WHO has estimated that from 1990 to 2010, the prevalence of TB declined from 459 to 256 per 100,000 population and mortality from 38 to 26 per 100,000 population.⁷⁶ Despite this progress, approximately 1.1 million incident TB cases remain either undiagnosed or are diagnosed and managed outside the TB programme with uncertain quality of treatment. Although in 2010 the RNTCP was able to diagnose and treat 2,178 cases of multidrug-resistant (MDR)-TB, this still represented only about 2% of the estimated MDR-TB burden that emerged in the country in the same period. Though there has been an

improvement in linkage of HIV-infected TB patients to freely available HIV care and treatment, most TB patients still do not know their HIV status.

AIDS also continues to take its toll on the country: with about 2.5 million HIV infected persons, India has the world's third highest number of cases in absolute numbers – much less so in rates. A similar picture is seen with sexually transmitted infections (STIs). Nearly half of the leprosy cases detected in the world in 2008 occurred in India, where also one third of the people with lymphatic filariasis live. Annually more than 1.5 million malaria cases are reported (estimates suggest a 5–6 times higher burden) and 300 million episodes of acute diarrhoea occur in children under 5 years of age. Diseases like dengue and chikungunya have recently emerged in different new locations and more than 300 million people are at risk of acute encephalitis syndrome (AES)/Japanese encephalitis (JE).

Infectious water-borne diseases are by definition linked with a shortage of drinkable water and toilets. They have also been reported recently to have a high cost in economic terms.⁷⁷ The economic loss amounted to US\$ 53.8 billion per year, equivalent to 6.4% of India's GDP in 2006 and some US\$ 48 per person per year. The health related economic impacts of inadequate sanitation were the most costly at US\$ 38.5 billion, some 72% of the total economic burden, followed by productive time lost to access sanitation facilities or sites for defecation at US\$ 10.7 billion, a further 20%, and drinking-water-related impacts at US\$ 4.2 billion, another 7.8%.⁷⁸ All such challenges require maintaining or even increasing previous commitments in the years to come.

Figure 8: Distribution of deaths, by major cause, India: Million Death Study, 2001–03



Source: Jha P et al, 2005, RGI-CGHR Million Death Study

Although many of the diseases concerned are very visible in international terms, particularly if compared with the country's current economic status, it seems safe to say that in terms of trends they no longer represent strategic challenges for India of a comparable proportion to what they were in the recent past. In some cases the country is even moving from an "elimination" to an "eradication" stage in technical terms, very much as smallpox and Guinea worm disease (dracunculiasis) were eradicated in the 1970s and 1990s, respectively.

2.2.7 Noncommunicable diseases

Rapid changes in India's core epidemiological profile have led to the double burden of CDs and NCDs. Cardiovascular and cerebrovascular diseases, metabolic diseases, cancer, mental

illnesses and other NCDs are already responsible for two thirds of the total BoD (an expected 66.7% in 2010) and about 53% of total deaths (up from 40.4% in 1990⁷⁹ and expected to increase to 59% by 2015). An estimate of distribution of deaths from the Million Death Study, 2001–2003 is given in Figure 8.

Also, India is currently home to some 50.8 million people affected by diabetes (approximately 17% of the world's total), commonly a major cause of blindness, kidney dysfunction, heart attacks and amputations (see also below, health system financing). India spends about 2.8 billion dollars on the care of its diabetic patients (1% of the total world expenditure in nominal terms, non adjusted by purchasing power – which indeed means that the proportion of patients taken care of in India would be higher).⁸⁰

The combination of fast growing NCDs with the above-described rather high incidence and prevalence of CDs will increase the number of patients affected by more than one health problem (i.e. having combined morbidities), which calls for significant changes in the services required to confront them in terms of prevention, diagnosis, treatment, rehabilitation and care. The government-appointed Working Group for the 12th Five-Year Plan has included the new epidemiological patterns among the priorities for the coming years which have been forwarded to the Planning Commission (together with PHC, tertiary health care and food and drugs). Also the MoH&FW is leading a large-scale effort aimed at ensuring early detection of diabetes; every person above 30 years of age and all pregnant women will be tested for diabetes in a phased manner (around 100 million people in 100 districts of 21 states, and slums in 33 cities in the first phase). ■